

September

2010

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By Gil Langwell

ON THE COVER: For Kim Walker, owner of Trenchmen Excavating and Construction, there's no such thing as "one and done." He tries to build lasting connections with every customer. He's shown here with son Trey working on a pressurized sand mound. (Photography by Jeff Smith)

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Decision Time

A soil investigation points to the best position for a conventional drainfield on a narrow, wooded lakefront lot in Northern Wisconsin

By Ted J. Rulseh, Editor

By 8 a.m. on Monday, May 10, I had caught half a dozen walleyes from Birch Lake and was waiting in the travel trailer on our Northern Wisconsin lot for a soil tester, onsite installer, and the builder of our planned cottage.

When my wife and I bought the lot last December, I promised to share our experience as onsite system customers. In the last column on this topic (July edition), I described the logistical issues of fitting a conventional system on this 100-foot-wide by 200-foot-deep lake lot, fully wooded and with a fairly steep slope.

The main question on the table May 10 was: Can we move the drainfield farther down the slope toward the lake, and so move the cottage site down as well, farther from the road, leaving room for a semi-circle driveway? And can we install the system without stripping the property of trees?

Below the surface

Soil tester Ben McMullen (McMullen & Associates Inc. of Minocqua, Wis.) arrived first along with Dwight Miesbauer and a Kubota tracked excavator. Soon to follow was Brian Grundy, owner of Brian Grundy Septic Systems, an installation company based in Minocqua. Both are subcontracted to Everest Builders of Minocqua, represented on this day by Jon Ottoson.

Wasting no time, Miesbauer drove the machine down the center of the lot past a pit dug for the orig-

inal soil test, stopping at a relatively flat strip about 30 feet closer to the lake that Grundy had identified as a possible drainfield site.

Miesbauer dug a pit seven feet deep and as wide as the excavator bucket; McMullen climbed in with his Munsell soil color chart and dictated the information. The test pit showed Class 1 sandy soil — the best there is for percolation, according to McMullen — with no mottling. So far so good. Another pit dug with the excavator near the easterly lot line showed the same result. McMullen then manually bored a hole near the opposite lot line using a posthole digger. He found the same soil conditions.

So the strip Grundy had identified would work from a soil test perspective. A few fairly small hemlock trees near the easterly lot line, a few nice red oaks with 10- to 12-inch trunks, and maybe a birch or two would need to be cut, but for the most part the drainfield could follow the gently curving and mostly treeless swath of flatter land. The drainfield, sized for a three-bedroom home, would measure 10 by 66 feet and would extend across the width of the lot, parallel to the lakefront.

Setback issues

Now came questions about setbacks. Would the new drainfield location be at least 50 feet back from the lake's ordinary high-water mark as required by the Oneida County shoreland zoning code? In a quick exercise with a tape measure,

McMullen and Miesbauer found that it would be.

Would the proposed drainfield meet the other setbacks? To observe the 50-foot setback from the well on the lot to the west, the drainfield would need to be placed not right in the center of the lot but off to the easterly side. In that event, would the field meet the 5-foot setback required from the easterly lot line?

It certainly appeared that way from the lot corner markers, one

And so all will depend on measurements taken from the edge of the finished drainfield. I determined that eight feet farther down the hill would be enough, if need be.

Now for the tank

With the drainfield located and the cottage corners in place, Grundy and Ottoson showed me the ideal location for the septic tank — off the front east corner of the cottage. Grundy informed me that

"It's a whole lot cheaper to do the survey than to move your system."

Ben McMullen

down at the lake and the other up near the road. But because of the hill and the foliage, a person standing at one marker could not see a person standing at the other, and so it wasn't possible to know the exact course of the lot line, and there were no markers between.

McMullen, also a surveyor, recommended having that lot line surveyed and marked. "It's a whole lot cheaper to do the survey than to move your system," he said. It's tough to argue with logic like that.

Then it was Ottoson's turn. Based on the new apparent drainfield location, he moved the flags marking the corners of the proposed 24- by 36-foot cottage about eight feet down the slope. I kept nudging him toward 10 or 12, whereupon Grundy interjected, "The system is going right here."

Wisconsin law requires an effluent filter on the tank outlet, and that "whether you like it or not," he would add a high-water alarm.

I told him that, knowing what I know, I wouldn't want it any other way (I would not want a plugged filter to mean a full basement). The fact he not only offered the alarm, but insisted on it, made a good impression.

So, there we are. There's the survey to take care of, to make sure we meet the setback for the easterly lot line. There are elevations to set for the cottage and septic tank. And then it's a matter of doing the work. Grundy was planning to get the system in the ground around the first of June. In the next column on this topic, I'll tell what I observe during the installation. ■

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From left, son and future partner Trey Walker, brother Tim Walker and owner Kim Walker are shown with the company's Kobelco 200 LC excavator and Freightliner dump truck. (Photography by Jeff Smith)



Keeping Connections

For installer Kim Walker, every customer contact is an opportunity to start and sustain a mutually beneficial business relationship

By Gil Longwell

Trenchmen Excavating and Construction LLC, Rexburg, Idaho

OWNERS:
Kim and Melanie Walker

YEARS IN BUSINESS:
10

EMPLOYEES:
2

MARKET AREA:
100-mile radius

SPECIALTIES:
Installation, repairs, management services



Long-term relationships are as important to Kim Walker as building flawless onsite systems. On every job site and in every customer contact, Walker's goal is to establish and nourish connections. He knows relationships bring future installation, maintenance, management and pumping work to his business in southeastern Idaho.

Walker and his wife Melanie own Trenchmen Excavating and Construction LLC, in Rexburg. He conducts more than 70 percent of his installation and excavating business directly with the landowner. "Individual homeowner connections are at least as important as relationships with commercial builders," Walker says. "That's because a builder's job is once and done, while a landowner will want and need continuing support for as long as he owns the home."

The business includes 25 percent new and replacement system installations, 15 percent repairs, 15

percent management services, and 45 percent general excavation. Walker prides himself on installing new systems that fit site conditions and on bringing troubled systems back to health through targeted repairs and effective maintenance and management.

Adapting to the market

After working for another company, Walker and a friend started

of Rexburg, the company has seen busy and slow times.

Rexburg, home to a Brigham Young University Campus, recently saw three years of rapid expansion, but then growth slowed down, and the backlog of work declined significantly. While new construction is in decline, other opportunities have emerged.

"We have recently been recruited to provide operation and manage-

"Individual homeowner connections are at least as important as relationships with commercial builders. That's because a builder's job is once and done, while a landowner will want and need continuing support for as long as he owns the home."

Kim Walker

an excavation business in 1999. Within about a year, Walker was on his own, and he has been ever since. Working throughout seven counties within a 100-mile radius

ment services to all of the Jet Inc. aerobic systems previously installed in the area," says Walker. "Jet, through our company, is responding to concerns of the state Depart-



Melanie Walker, wife and partner of Kim Walker, handles all financial matters and tracks permits and related paperwork.



Walker services a treatment system from Jet Inc.

ment of Environmental Quality that homeowners have not engaged qualified management service providers. It is important for each system's performance to be up to par, and that is now our responsibility."

The work starts with a thorough inspection of each system. "Any construction defects are identified and remedied," says Walker. "Non-working or out-of-spec parts are replaced, and a sample of the treated effluent is sent for lab analysis. We are refining our skills as we go."

Walker cannot understand installers who walk away from the oppor-

tunity for repeated customer contact and the ongoing cash streams that go with management services. "These are the opportunities I look for and build upon," he says.

Value of rapport

A positive and collaborative relationship with the state Department of Health regulators is an asset that Walker values and safeguards. "Rapport with the regulators is an intangible value I bring onto every site," he says. "Rapport brings with it trust. The regulators have developed confidence that I know what I am doing."

That doesn't mean regulators treat him with leniency, but they are comfortable moving from a "prove it" stance to a willingness to accept Walker's professional judgments. Rapport is strengthened when installers and regulators collaborate on best-case repair strategies.

The Department of Health regulations apply statewide. Counties cannot diminish the state regulations, but they have some latitude to augment them. Permits for repair systems are based on site conditions, but before any repair strategy is selected, the root cause of the failure must be understood. "From this dual understanding, we identify the best technology for the site," Walker says. "Sometimes that means proposing a system for a site that couldn't meet the specifications for new home construction."

Assuring Performance

Kim Walker is benefiting from a regulator's push to ensure that advanced treatment units operate properly. A survey of numerous advanced systems by the Idaho Department of Health found that long-term maintenance was not being done consistently.

"Abandoning the systems or replacing the ATU component with a conventional septic tank were not viable options," says Walker, co-owner of Trenchmen Excavating and Construction. The department approached the various equipment manufacturers and, not surprisingly, each responded differently.

When Jet Inc. reached out to Walker for help with maintenance on its systems, he welcomed the chance to grow his business in a somewhat different direction. "I am finding that many systems continue to operate at or near Jet's expectations, but

this is primarily on systems with only minimal installation errors," says Walker.

Most installation errors involve sagging or broken pipes, missing sampling parts, or other issues that resulted from the installer's inattention to detail.

"ATUs are an important tool for installers," says Walker. "We use them to overcome site limitations, but without ongoing service, the tool's effectiveness is significantly limited, and the customers are not getting the benefit of what they paid for."

Walker is happy to be part of a pilot program that is stepping up to restore older systems to proper operation and to prevent new installations from falling into disrepair. There are two rewards for his participation. He has a sense of accomplishment, and he is growing his business: "Everybody wins with this project."

Planning with care

When installing new or replacement systems, Walker plans each job carefully. "Almost as soon as I started digging holes for basements, I was in the onsite installation business," he says. "I recognized that by carefully planning all stages of activity before mobilizing and arriving on site, I could minimize conflicts between contractors, avoid the need to place and then reposition soil and soil stockpiles, and cut operating costs and customer expenses."

Planning also can diminish the need to haul in material. A well-planned project lets him use all of the site's attributes and resources with the least effort and cost. He allocates the site's best soils for onsite system use, and whenever possible he uses surplus soil for earth-shaping and landscaping. He may borrow soil from one spot to use in another. All this helps him save significant money for clients.

Trenchmen Excavating thrives on long-term relationships with customers. Here, owner Kim Walker works with a Topcon laser level.





Kim Walker and son Trey place geotextile cloth over the gravel bed on a pressurized sand mound.

When soil conditions or regulations require an area to be reserved for a future replacement drainfield, Walker recommends installing that drainfield during initial construction. He admits that the installation price is higher as a result, but notes that it will never be less expensive than when paid for with today's dollar.

"The intangible value of avoiding future site disruptions and the possible destruction of landscaping are all considerations I provide to enable my customers to make better decisions," he says. When there is no regulatory prohibition, he also recommends using both drainfields on an alternating basis from the outset.

Recognizing that an existing system may spontaneously regenerate in a few years, he connects many of his replacement drainfields with the failed system by means of a directional valve. At first, all flow is diverted to the new drainfield. Monitoring of the original drainfield will reveal if or when it can be returned to service. In cases where the old field recovers, he recommends alternating flows so that each system can work and recover.

Focused resources

Walker and Melanie are the firm's only full-time employees. "For some time, I employed a laborer, but as our work slowed, that person found an alternate opportunity," says Walker. "He left us rather than us having to let him go." Walker does call on his brothers from time to time, and

"We expect pumping and system service and management to grow significantly. These will be the future core services of our enterprise."

Kim Walker

they fill in as casual labor when a two- or three-man task is at hand.

Melanie runs the office, handling all financial matters and tracking permits and related paperwork. "Our 10-year-old son, Trey, is the next generation that will take on the business," Walker says. He likes to be around the equipment and especially by his father's side.

Excavation and onsite installation equipment includes a 2002 Case 580 Super M backhoe, a 1995 Kobelco 200 LC tracked excavator, and a 1988 Freightliner three-axle dump truck. Walker recently launched a pumping service (Simple Septic Solutions LLC). He traveled to Virginia to pick up his first vacuum truck, a 1998 Freightliner FL70 with a 2,500-gallon tank.

"We expect pumping and system service and management to grow significantly," Walker says. "These will be the future core services of our enterprise. We purchased our vacuum truck to enable us to keep all of the aerobic system support work in-house."

The Jet project has opened many homeowners' doors. "Homeowners do not know or understand their systems, and we find a large number of owner-induced stressors affecting system performance," Walker says.

Service delivery usually builds the long-term relationships Walker wants with every customer. Owners want to understand and protect their onsite system investments, and Walker has become an educational resource whom landowners seek out.

Advertising exclusively by word-of-mouth, he measures the initial success of his pumping service using a unique scale. In the first four days, he pumped seven septic tanks. Each stop either built a new relationship or extended a connection he already had.

Working in a small community,



Kim Walker checks sludge thickness in a septic tank using a Sludge Judge from Nasco.

Trenchmen Excavating sets itself apart by focusing on quality service, attention to detail, and a caring attitude on every job. "Whether a job will be tightly inspected or not has no bearing on our work," Walker says. "We do every job right. It is simply the right thing to do." ■

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

‘What’s That Smell?’

There won't be any from your onsite treatment systems if you take proper care with design and installation

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

An issue that comes up repeatedly at our workshops is what to do about odors from an onsite system. As usual, the time to deal with odors is at the time of installation. If the system is installed properly, any odorous gases will vent out through the system and out the plumbing stack on the roof of the house.

Air must be able to flow from one part of the system to another for proper ventilation of the sewer gases through the plumbing stack. After installation of the septic tank, a smoke test can be used to verify that the tank is venting back through the stack. For dual-compartment tanks, the installer should verify that the air can pass from one compart-

ment of the tank to another across the gap in the top of the baffle wall.

If there is no space for this air movement to occur, you should discuss that with the tank manufacturer or supplier and ask them to fix the problem. In some concrete tanks with a slot or center hole positioned over the wall, a thin layer of concrete left over from the pouring process may need to be removed. Often, a hammer can be used to knock the excess off the top.

Sometimes additional vents are added to the tanks themselves, but recognize that there will likely be odors without the placement of a carbon filter in this vent pipe.

Hydrogen sulfide issue

A side problem to improper venting in concrete tanks is the accumulation of hydrogen sulfide gas, which can be converted to sulfuric acid in the head space of the tank. When improperly vented, this gas typically settles around the outlet baffle — because the gas is heavier than air. Where it settles, it will cause corrosion or breakdown of the concrete. This causes baffle deterioration and ultimate failure.

Most often, this problem occurs because the inlet piping from the house to the tank is pushed in too far so that it is up against the side-wall of the inlet baffle. In other cases, during backfilling around the tank and piping, the pipe on the outside ends up lower, so that it

enters the tank at an angle.

Either of these conditions will cut off the free flow of air back through the tank — and also provide a place for plugging and freezing to occur. This is one reason why you should visit the site about a month or six weeks after installation, open the tank, and check to see if everything is working properly.

If a pump station or another pretreatment unit tank is part of the system, this tank should also vent back through the system. Here again, you can check with a smoke test. A pump tank will effectively cut off the venting of the soil treatment part of the system. However, since unsaturated soil has anywhere from 40 to 50 percent pore space, the gases will naturally vent through the soil.

Conduit for odors?

One odor problem we have encountered with pump tanks is the venting of gases back through the conduit that carries the electric lines for the pump and the pump alarm system. Any opening for electrical wiring should be sealed at the tank. Even if the line only runs to an outside box or panel, odors can be noticeable around the pump tank and system.

Of course, another reason to seal this opening is to make sure that the tank is watertight. This same pathway under the right conditions can allow surface water to drain into the tank.



Covers brought to the surface can be a source of odors if not properly sealed.

Another potential cause of odors around tanks is the lids. Common practice now is to bring risers and lids to the surface to facilitate system maintenance. If the risers are at all exposed, they need to be sealed. This also insures that water cannot enter.

The lids need to be installed so that the covers are tight-fitting. Just last summer, we were at the site of new construction before landscaping and finishing work had been done. There was a stiff breeze blowing, and downwind there was a strong septic system odor.

Upon inspection we found that only one screw had been placed in the lid, and there was a crack about a quarter-inch wide between the cover and riser. Sure enough, the air blowing across the manhole was causing the tank to vent through the cover.

There are two other reasons to make sure all the screws are used: To prevent children or others from entering the tank, and to keep surface water from entering the sys-



Odors may be present just after cleaning of the septic tank.



Properly sealing wiring to pumps is important, because without it, odors can migrate through the wiring conduit and escape to the outside air.

tem. There is another reason to visit the system after installation.

Temporary issues

Odors may be apparent around newly installed tanks that have not yet developed normal biological processes, or just after a tank has been pumped. These should dissipate with time.

There also can be normal odor from the roof stack. This is most often noticeable at times of still air, particularly during temperature inversions

in the atmosphere that may occur in the early morning or late evening.

Here, possible remedies are to extend the roof stack higher to an elevation above the roof ridge, or to install an activated carbon filter. If you extend the stack, recognize that in cold climates this may result in freezing problems and blockage of the stack during winter. If you use filters, they will need to be replaced every six months. Filters also may cause vent-freezing problems in the winter.

If you are troubleshooting odors for older systems, everything mentioned above applies and should be checked. Additional items to look for include:

- Broken tank top or other tank deterioration.
- Submergence of the inlet due to blockage or system backup (this indicates potential drainfield failure).

Then of course there are the odors associated with sewage seeping to the surface in the drainfield area. We hope this gives you some idea how to deal with potential odor problems during installation. ■

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

Smooth Operators

The latest skid-steer loaders combine stouter breakout force and load capacities with greater operator comfort during long days on the job

By Greg Northcutt

Roomier, quieter and more comfortable cabs. Improved visibility. Low-effort joystick pilot controls for easier, smoother and more productive operation. Better fuel economy. Advanced systems diagnostics. Easier access to service points. Lower maintenance needs. Greater reliability. These are just some of the features you'll find in the latest skid-steer loaders.

"The performance and value of these versatile machines continue to improve," says Kelly Moore, skid-steer loader product manager for Gehl Company. "Using new designs and technology, manufacturers are getting more production out of their skid-steer loaders, without necessarily adding more horsepower. For example, advances in pumps, drive motors and the like have helped increase efficiency of hydraulic systems."

Comparing the performance of a used skid-steer loader with the newest version of that same model can be a real eye opener, and not just because of improved features. As components wear over time, machine performance slips, Moore notes. With increasing operating hours, cylinder seals begin to leak, and hydraulic systems lose some of their punch. Cycle times increase, production slows, and overall power declines.

Moore contends that now is a good time to demo a new skid-steer. If you can justify a new machine this year, manufacturers are offering deeper discounts for cash purchases and are looking for better financing deals for cash-strapped customers.

"Because of the down economy, new machines have remained very competitively priced, relatively speaking," Moore says. "In fact, in some cases, you can buy a new skid-steer for the same price that model sold for a year or two ago, depending on the model and its configuration."

Here's the rundown on a few of the latest skid-steer loader models:



Bobcat M Series

Introduced last year, the Bobcat M Series skid-steers offer significant design changes. The cab-forward design brings the operator closer to the work

area and provides better overall visibility, while a larger door improves visibility and makes entry and exit easier. Also, new engine mounts reduce noise by more than 60 percent and decrease vibration.

The re-engineered hydraulic system provides 15 percent more horsepower along with higher standard flow and pressure for more productivity, and tractive effort has been increased by 15 to 20 percent for more pushing and digging power.

Other features include a new, removable hydraulic hose guide that makes changing attachments easier; a lower rear frame that extends past the tailgate to protect the rear of the machine from scrapes and bumps on the work site; and a new hydraulic sight gauge and end-greased pivot pins at key points to simplify maintenance. **800/743-4340; www.bobcat.com.**



Caterpillar C Series

In addition to electro-hydraulic joystick controls, the four Caterpillar C Series skid-steer loaders — 246C, 256C, 262C, 272C — have electronic torque management, which maximizes power to the ground and keeps the engine from stalling in tough digging and dozing applications.

With a rated operating capacity of 3,250 pounds, the vertical-lift 272C is Caterpillar's largest-capacity model. The 262C, with an operating capacity of 2,700 pounds, also has a vertical-lift design for enhanced truck-loading capabilities. The 246C and 256C are radial-lift machines with rated operating capacities of 2,150 and 2,350 pounds.

The optional high-flow, high-pressure hydraulic system, High Flow XPS, equips any C Series model to work with tools requiring high flow and pressure, such as landscape rakes and cold planers. The optional Advanced Machine Information and Control System enables the operator to select the level of implement responsiveness for more precise control in demanding and delicate tasks. **309/675-1000; www.cat.com.**



IHI CL35

With an operating weight of 7,826 pounds, the IHI CL35 compact loader offers a spacious operator's area along with precision movement, reducing wobbling. All operation is consolidated in joystick controls. This two-speed loader has low fuel consumption and more than 14 cubic feet of capacity. The hydraulic system accurately responds to the will of the operator.

The unit is powered by a 67 hp Yanmar diesel engine and has one- and two-way auxiliary hydraulics. It rides on 12.6-inch-wide rubber tracks (15.8-inch tracks are optional). **800/538-1447; www.ihices.com.**



John Deere D-Series

John Deere D-Series skid-steer loaders — 318D, 320D, 326D, 328D and 332D — offer roomier cabs and new electronically controlled Tier 3/interim Tier 4 engines. Features include auto idle and optional cool-on-demand reversing hydraulic fan, both of which reduce noise and save fuel.

In addition to providing significantly more cooling capacity and performance, the V-Plenum cooling system is designed for easier maintenance. The EH (electro-hydraulic) Performance Package lets operators switch between ISO and H pattern controls. To improve operation in specific applications, this package also lets operators set wheel speed independently of the engine speed and adjust the maximum speed and sensitivity of the boom and bucket. Adjustments to the mid-frame of the 318D and 320D models allow them to dump into a 10-foot sidewall dump truck. **309/765-8000; www.deere.com.**



Case 400 Series 3

Four of the eight models of the Case 400 Series 3 skid-steer loaders have rated operating loads of at least 2,200 pounds, ranging from the model 440 rated at 2,200 pounds to the model 465 rated at 3,000 pounds. The 440, 450 and 465 models are powered by 4.5-liter, 83 hp turbocharged Case engines, while the 445 has a 3.2-liter, 77 hp turbocharged Case engine.

In addition to Tier 3 certification, these engines provide improved torque for increased performance. The 440 and 450 models, with a radial-lift design, are well suited for pushing or digging work, such as finish grading or material distribution. The 445 and 465 models, with a vertical-lift design, are more appropriate for lift-and-carry jobs, such as loading rock or dirt into a truck or placing pallets onto a trailer. The cabs offer more headroom and improved forward, side, rear and overhead visibility than previous models. A suspension seat is standard. **866/542-2736; www.casece.com.**



Komatsu SK820-5

The enhanced loader arm and bucket controls of Komatsu SK820-5 skid-steer loaders are aimed at handling tough conditions without losing power or performance. With Automatic Power Control, available on all Komatsu skid-steers, the operator can work at full power during any phase of the job without engine stall-out.

With an operating weight of 6,480 pounds, the vertical-lift SK820-5 delivers a net 54 hp. The turbocharged and water-cooled direct fuel injection engine meets U.S. EPA emissions requirements and remains fuel-efficient without

sacrificing power or productivity.

The machine has a rated operating capacity of 1,900 pounds, a tipping load of 3,800 pounds, and bucket breakout forces of 4,200 pounds and 3,530 pounds (based on short lip and long lip bucket designs). The optional, fully enclosed cab has a slide-up overhead front door, a large entrance, 360-degree visibility and heating. **866/513-5778; www.komatsuamerica.com.**

"Using new designs and technology, manufacturers are getting more production out of their skid-steer loaders, without necessarily adding more horsepower. For example, advances in pumps, drive motors and the like have helped increase efficiency of hydraulic systems."

Kelly Moore



Mustang 2700V

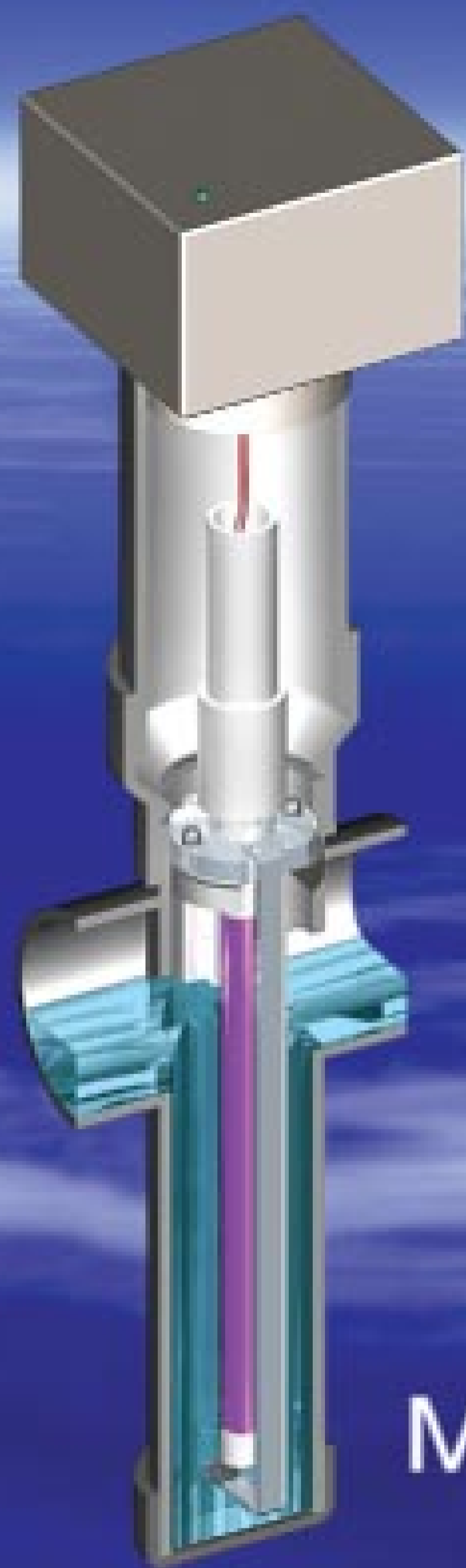
The Mustang model 2700V skid-steer, with a Yanmar Tier 3, 84 hp, turbocharged diesel engine, offers a 2,700-pound rated operating capacity. The vertical-lift boom offers more than 130 inches of lift height and provides considerable forward reach at trailer loading and dumping heights. Electronic engine control and a foot throttle allow operation at partial throttle, reducing sound levels and fuel consumption.

A long wheelbase and new chassis are designed to enhance stability and weight distribution. Thick steel plating and heavy-duty pins and bushings add to the loader's strength. The optional cab, with a wide-view glass door and large side screens for a clear view of the bucket cutting edge and front operating area, is pressurized to limit infiltration of dirt, debris and noise. Other options include high-flow auxiliary hydraulics and a hydraulic-powered mounting system. **800/628-0491; www.mustangmfg.com.**

(continued)

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New Holland L175

The New Holland L175 is powered by a turbocharged engine rated at 60 hp. Weighing 6,230 pounds, it has a 2,000-pound SAE-rated operating capacity and a bucket breakout force of 4,300 pounds. It features the Super Boom vertical lift linkage for improved dump height and reach, fast boom and bucket cycle times, and fast ground speeds for more productivity.



It also has a long wheelbase for added stability and no rear towers to impair visibility. The unit has a 10-foot lift height and 29 inches of forward reach. Options include a dual-range transmission with a top speed of more than 11 mph, low-effort joysticks, and a deluxe cab with air conditioning. 888/365-6423; www.newhollandconstruction.com. ■

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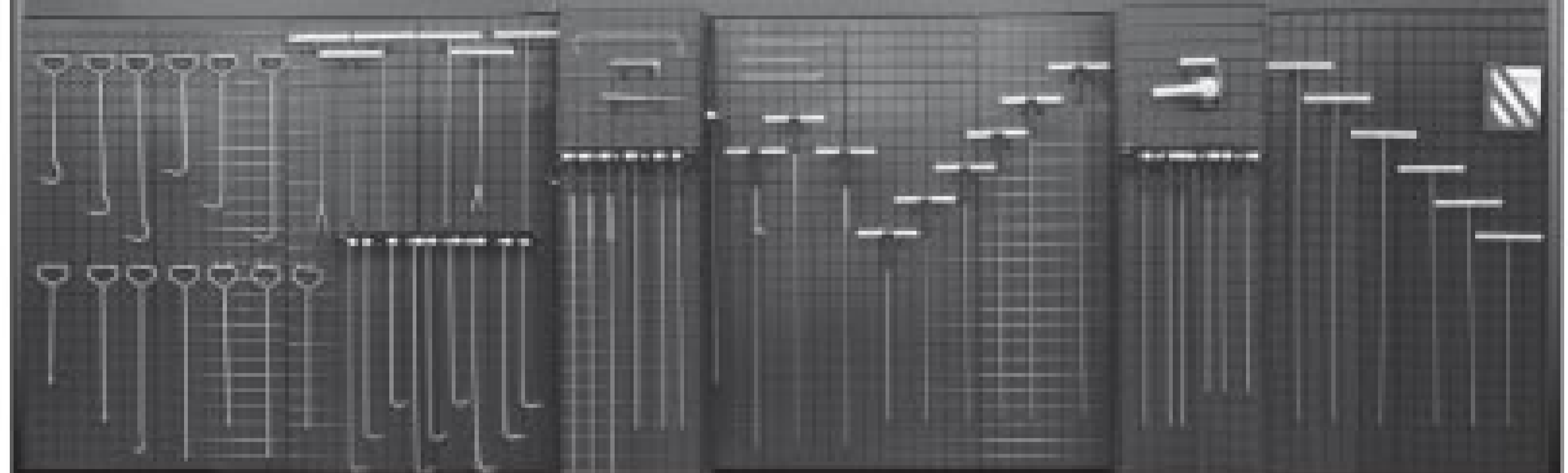


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"Surface Discharge: Challenges & Solutions"

October 25-28, 2010
Millennium Hotel
St. Louis, MO

Mark your calendar for the premier annual event for those involved in the onsite wastewater management industry: **NOWRA's 19th Annual Technical and Education Conference**. This conference is renowned for its ability to bring together recognized industry thought leaders and educators to deliver a first rate education program that provides both technical understanding and practical, hands-on information to professionals within the industry.

Beyond the top-notch education, you'll be able to:

- Meet with dozens of manufacturers and suppliers in the tabletop Expo,
- Participate in a field trip visiting several onsite systems facilities in the St. Louis area
- Connect with scores of colleagues from all segments of the industry.

All that and more awaits you when you join your colleagues in St. Louis, October 25-28 for this can't miss event!

NEW! THE CONTRACTORS TRACK

New changes in rules and regulations will require an expanded knowledge of the two major areas of an onsite wastewater system...treatment & dispersal. Wednesday's contractor day will provide a unique environment to gain as much exposure to both areas as possible. Manufacturers of both treatment systems and dispersal systems will be put to the test as NOWRA moderators combine the knowledge of the manufacturer and the questions of the contractor. The morning session will be dedicated to the many different treatment systems available from conventional septic systems to the most advanced systems available. In the afternoon the same protocol will be followed to fully understand all the options when dispersing wastewater into the soil.

After a short introduction of each product the manufacturers will be assigned to their respective tables where contractors can gather at the table of their choice. The NOWRA moderator at each table will keep the session a learning experience...not a sales pitch...and break the ice when needed for the contractor by asking the difficult questions.

This is a very innovative and interactive approach to education that has proven successful when applied in similar applications. Unfortunately these opportunities are only available when the most knowledgeable people about the products gather in one location. That opportunity is available Oct 27th at the annual NOWRA Conference in St. Louis, Missouri.

Conference Overview

Monday, October 25, 2010

NOWRA Pre-Conference Activities

1:00 pm – 5:00 pm	NOWRA Board meeting NOWRA partner organization meetings
4:00 pm – 8:00 pm	State affiliates meeting

Tuesday, October 26, 2010

7:00 am – 7:00 pm	Registration open
7:00 am – 8:00 am	Continental breakfast
8:00 am – 8:15 am	Conference welcome
8:15 am – 12:00 noon	Opening General Session
12:00 noon – 1:30 pm	Lunch on your own
1:30 pm – 4:45 pm	Technical sessions (3 tracks): <ul style="list-style-type: none">• Innovative Products & Solutions• Focused Surface Discharge Related Topics• Management & Education
5:00 pm – 7:00 pm	Reception with Suppliers in Tabletop Expo
7:00 pm – 9:00 pm	Committee and partner organization meetings

Wednesday, October 27, 2010

7:30 am – 9:00 am	Continental Breakfast & Tabletop Expo
7:30 am – 8:30 am	NOWRA past presidents breakfast
9:00 am – 11:45 am	Technical sessions (3 tracks): <ul style="list-style-type: none">• Innovative Products & Solutions• Systems Influences & Nutrient Evaluations• "Contractors Track" Pre-Treatment technologies
10:15 am – 11:00 am	Tabletop Expo
11:45 am – 1:30 pm	Lunch and Annual Business Meeting
1:30 pm – 4:30 pm	Technical sessions (3 tracks): <ul style="list-style-type: none">• Innovative Products & Solutions• Standards, Inspection & Enforcement• "Contractors Track" Soil Dispersal technologies
4:30 pm – 7:00 pm	Committee and partner organization meetings

Thursday, October 28, 2010

8:00 am – 4:00 pm	Optional Field Trip – Tour of Missouri Sites/Systems
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To Register and for Full Conference Details



MEET...PARTICIPATE...CONNECT

Hotel Registration

A block of rooms has been reserved at the Millennium Hotel (200 S. 4th St., St. Louis, MO 63102; Tel 800-325-7353) at a group rate of \$129 per night (single, double or quad), plus 15.5% state/city taxes) To reserve a room, call the hotel and mention that you will be attending NOWRA in order to receive the group rate. You must make your hotel reservation by September 24, 2010 in order to take advantage of the reduced rate.

Conference Fees

	NOWRA members & Partnering Orgs.*	Non-members
Full Conference		
Early registration (by Sept 21, 2010)	\$295	\$395
Regular registration (after Sept 21, 2010)	\$345	\$445
Regulators	\$195	\$295
Students	\$150	\$150
"Contractors" Track only		
Early registration (by Sept. 21, 2010)	\$150	\$175
Regular registration (after Sept. 21, 2010)	\$175	\$200
Field trip (Thur., Oct 28 – separate fee) (includes transportation & lunch)	\$75	\$100
Spouse/Guest (Includes all meal/social functions)	\$100	\$100

*NOWRA partnering organizations include:
 National Association of Wastewater Transporters
 National Environmental Health Association
 Rural Community Partnership
 U.S. Environmental Protection Agency
 Water Environment Research Foundation
 National Association of Towns and Townships
 Water Environment Federation
 State Onsite Regulators Alliance

NOWRA'S TABLETOP EXPO

While NOWRA will not be offering a full trade expo, there will be a Tabletop Expo. This will be an outstanding opportunity to:

- Reach new customers (especially contractors!)
- Save time (Arrive on the 26th, leave on the 27th)
- Save money (lower hotel, space and exhibiting costs)

With the addition of the Contractors Track, this Expo will offer a great, low-cost opportunity to reach those who design, install, and maintain onsite systems – lots of potential customers for your products!

Visit www.NOWRA2010.org for full details and to reserve your space!



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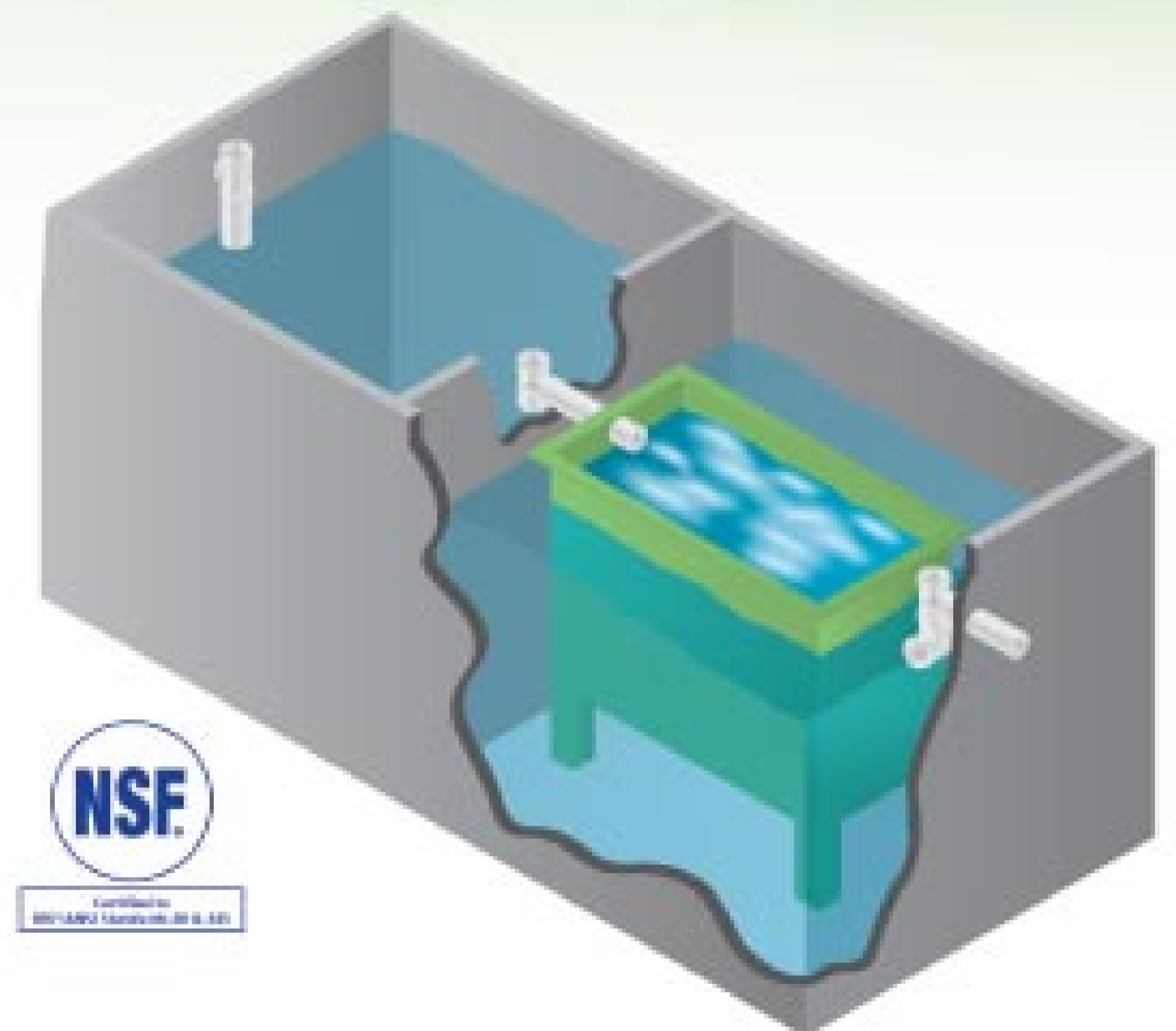


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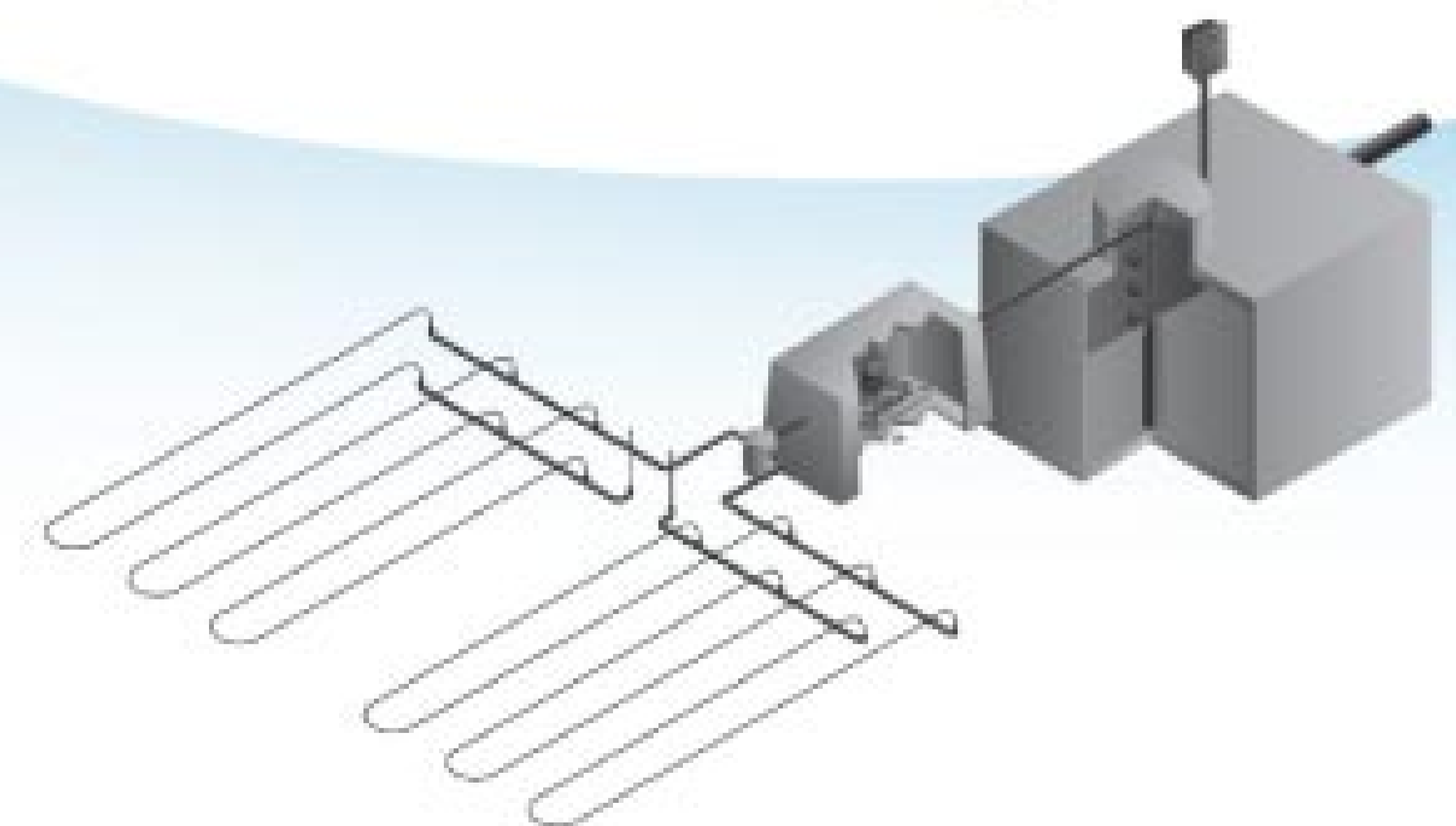
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Into the Soil

The latest distribution equipment helps deliver effluent from onsite systems to the place where the real work gets done

By **Scottie Dayton**



Recessed impellers on Webtrol pumps from Weber Industries Inc.

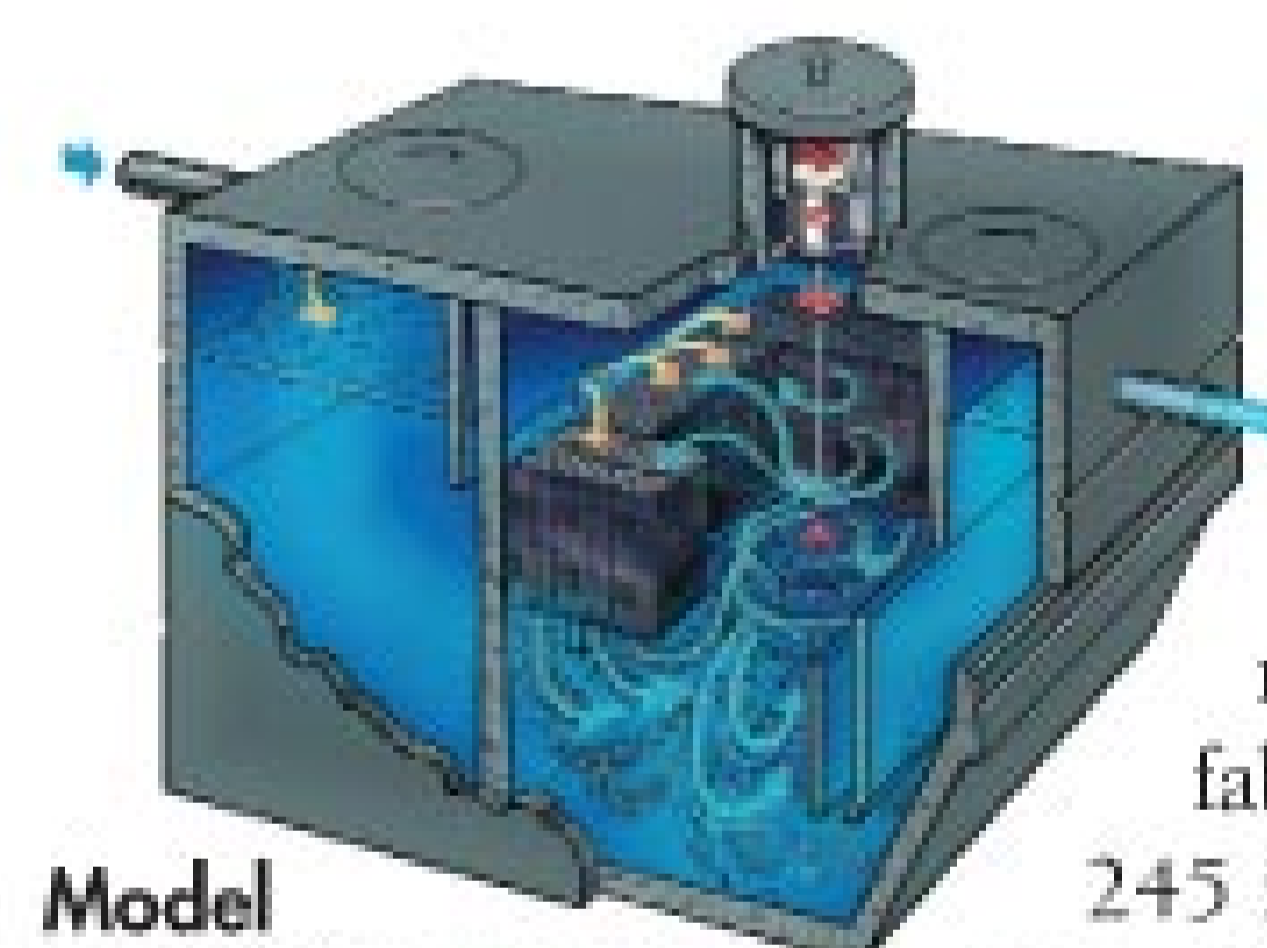
Effective onsite treatment depends on effective delivery of treated effluent to the soil treatment area. Here are some manufacturers' recent innovations in piping, pumps, drip line and alternative drain-field media.

Articulating chambers

Arc 36, Arc 36 HC, Arc 24 and Arc 18 articulating corrugated chambers from Advanced Drainage Systems are designed as an economical alternative to gravel and pipe leachfields. An optional side port coupler snaps into the center or either end of the chamber for cleanout access without affecting the 10-degree articulation. A diamond-plate pattern on the chambers and couplers provides a non-slip surface. 800/733-7473; www.ads-pipe.com.



Arc 36, Arc 36 HC, Arc 24 and Arc 18 chambers from Advanced Drainage Systems



Model J-500CF nutrient reduction system from Jet Inc.

Ready to install

The Model J-500CF nutrient reduction system from Jet Inc. uses intermittent aeration and additional filtration to reduce total nitrogen in effluent. The prefabricated unit meets NSF Standard 40 and 245 for reduction of TSS, BOD and total nitrogen. The system includes the 700LL aerator, attached pretreatment tank, and biologically accelerated treatment (BAT) media process to transform wastewater into colorless, odorless effluent. 800/321-6960; www.jetincorp.com.

Design flexibility

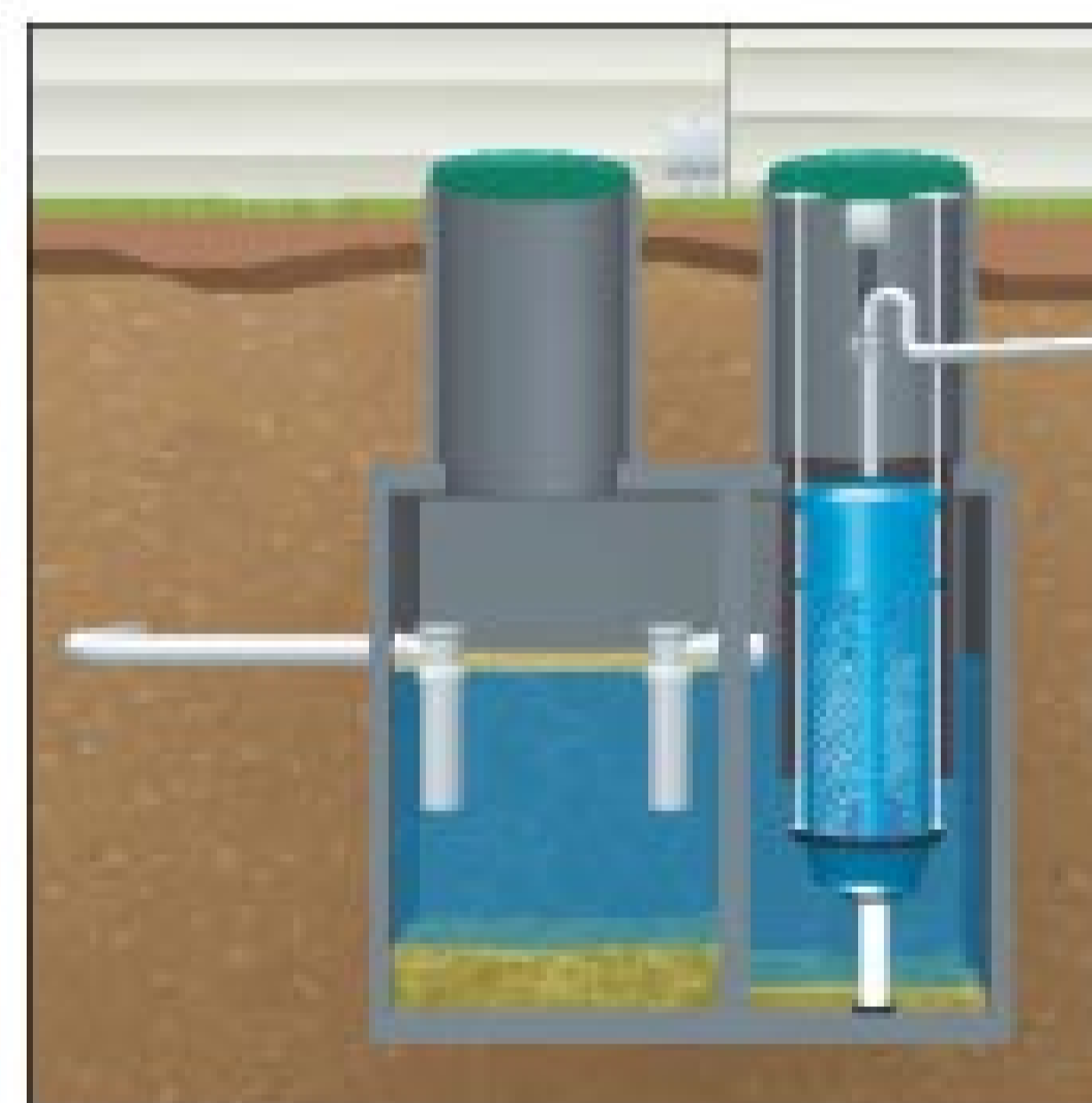
A center column increases the structural strength of Quick4 Plus standard LP chambers from Infiltrator Systems. Contour swivel connections on the 4-foot by 8-inch-high chambers allow 10-degree turns right or left. Two end cap options increase system configuration flexibility, while the all-in-one periscope rotates 180 degrees for raised inlet elevations in serial or crossover trench designs. 800/221-4436; www.infiltratorsystems.com.



Quick4 Plus standard LP chambers from Infiltrator Systems

Recessed impellers

Recessed impellers on Webtrol effluent, sewage and grinder pumps from Weber Industries Inc. reduce the load on the bearing and prevent clogging. Potted cord seals protect the motor from water. Options include silicon carbide mechanical seals and secondary lip seals for the maximum defense against intrusion. 800/769-7867; www.webtrol.com.



BioSTEP pump vaults from Bio-Microbics Inc.

Screened pumping system

BioSTEP pump vaults from Bio-Microbics Inc. have 16-inch SaniTEE screens to filter and deflect solids before they clog the pump and floats. Cleaning and maintenance can be done without removing the components. Technicians use an external swab to clean the pump vault exterior and flush the angled slots.

A ScumGuard shield protects the vaults from oil-laden scum and provides flexible, uniform installation for most tanks, manholes and risers. The standard effluent pump passes 3/4-inch solids, but many submersible pumps are compatible with the system. When combined with advanced treatment technologies, the vaults provide developers with sewer-like transfer and treatment options. 800/753-3278; www.biomicrobics.com.

Control panel

RK Series pump control panels from CSI Controls incorporate standard features onto the circuit board, inside sub-door control center and raised back panel. Float lights on the control center indicate the status of each float and flash if one fails. Other lights indicate control and alarm circuit power, high level, lag pump on, lead pump on, alarm and pump run.

Pushbuttons activate test/silence and hand/run functions. A digital display is optional. Units come with locking latches, flashing red alarm light with electronic horn, touch-to-silence pad, circuit breakers, start components, contactors and terminal strip. Single- and three-phase simplex and duplex models are available in UL/cUL Listed NEMA 4X enclosures. 800/363-5824; www.csicontrols.com.



RK Series pump control panels from CSI Controls

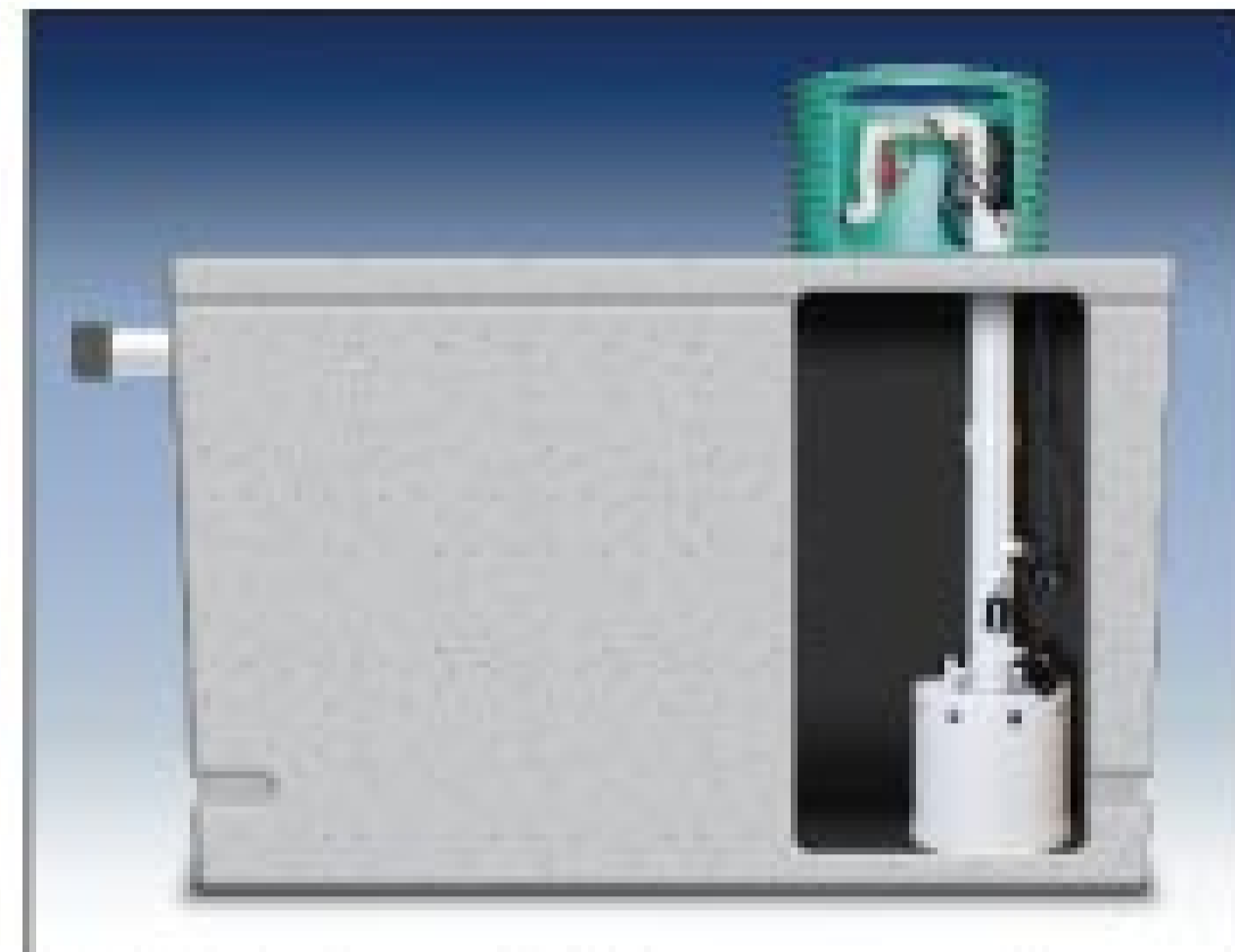


Bioline drip line from Netafim USA

application rate, are impregnated with an antibacterial to prevent slime buildup, and do not require protection from root intrusion. Lines are available in flow rates of 0.4, 0.6 or 0.9 gph and dripper spacings of 12, 18 and 24 inches. **888/638-2346; www.netafimusa.com/wastewater.**

Dosing pump

Biotube EasyPak demand-dose or timed-dose pump packages from Orenco Systems Inc. pump effluent directly to dispersal areas. The 15-inch-high molded ABS and PVC vaults pump nearly to the bottom of the tank. Besides the vault surrounded by three filter cartridges, packages have a 4-inch turbine effluent pump, flow inducer, control panel, float assembly, splice box and discharge plumbing assembly. Options include cold-weather and drain-back discharge assemblies. Free EasyPak



Biotube EasyPak pump packages from Orenco Systems Inc.

Design software automatically selects the correct package for every system. **800/348-9843; www.orenco.com.**



Fusion series systems from Clarus Environmental

Job ready

Fusion series residential and commercial wastewater treatment systems from Clarus Environmental, a division of Zoeller Pump Co., use anaerobic and aerobic zones, eliminating the need for a septic tank, and produce secondary effluent. Polypropylene filter media are never removed or replaced.

Features include constant recirculation of treated waste and twice-daily automatic backwash that returns residual sludge to the head of the system.

A quiet, programmable compressor delivers oxygen to aerobic zones, while consuming the same energy as an 80-watt light bulb. The control panel powers the blower and monitors airflow and water level. The drop-in system is easy to install and maintain. All models are NSF/ANSI Standard 40 Class 1 systems and are approved by many state and regional health entities. **877/244-9340; www.zoeller.com.**



A1 vault filters from Sim/Tech Filter Inc.

Vault filters

All-in-one A1 vault filters from Sim/Tech Filter Inc. work in pump or gravity-flow distribution systems. External filtration from outside to inside allows debris to slough off into the tank and not accumulate inside the unit. Technicians can clean the vaults without removing them and while the system is operational. Standard units have 2,200 square inches of filtration and filter to less than 1/16 inch. Multiple filtration sizes are available. The base height adjusts easily by adding 4-inch sewer or SDR35 pipe. Custom units also are available. **888/999-3290; www.simtechfilter.com.**

Subsurface dripperline

Bioline purple poly low-volume drip line from Netafim USA is debris resistant, continuous self-flushing, and pressure compensating from 7 to 70 psi. The drippers deliver a precise

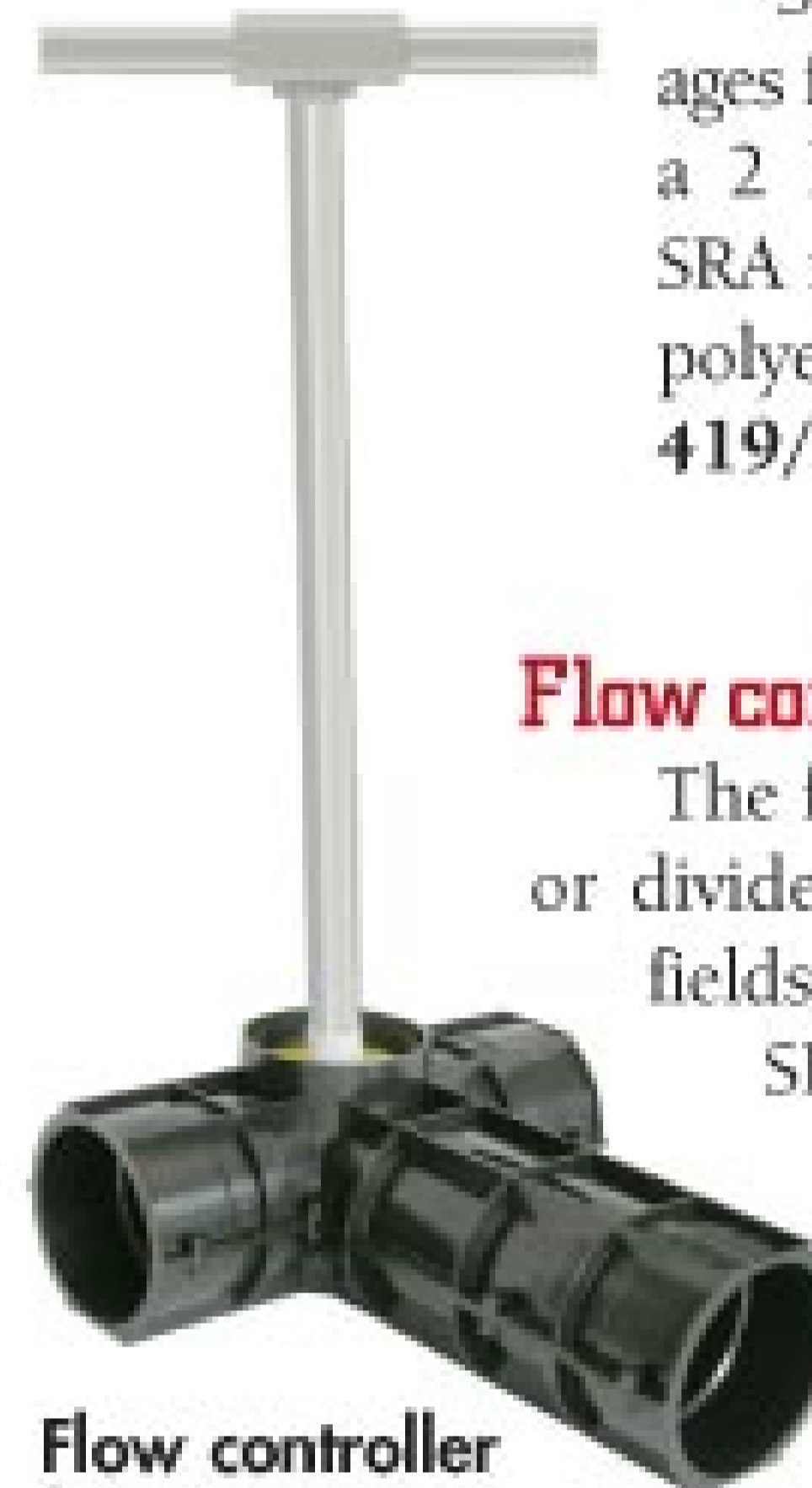
Ultrafiltration

Membrex from Premier Tech Aqua combines biological activated sludge treatment with submerged membrane ultrafiltration to meet stringent discharge requirements for nitrogen and phosphorus removal and disinfection. Effluent also meets California Title 22 requirements for reuse. The system is for commercial and community applications. **800/632-6356; www.premiertechaqua.com.**



Grinder pump package

Submersible grinder pump packages from Myers/Pentair Water include a 2 hp submersible grinder pump, SRA rail system, control panel, three floats and a polyethylene basin available at various depths. **419/289-1144; www.femyers.com.**



Flow controller from Polylok

Flow controller

The flow controller from Polylok alternates or divides flows between two separate drainfields. It attaches directly to Schedule 40 or SDR35 pipe. The channel split design splits the effluent flow equally. The valve is factory-set for equal distribution, but installers can set it for left or right distribution. **800/701-3941; www.polylok.com.**

Effluent pumps

Stainless steel Bullet effluent pumps from Septic Services Inc. have single-phase 1/2 hp motors, 120 volt, 10 amp, with heads of 145 feet. The pumps have 15-foot cords. **800/536-5564; www.septicsserv.com.**

Bullet effluent pumps from Septic Services Inc.



Gravelless pipe from Hancor

Gravelless pipe

Gravelless pipe from Hancor is designed as a cost-effective alternative to gravel-filled leachfields. The 8- and 10-inch pipe exceeds ASTM F667 specifications and comes in 10- and 20-foot lengths. A locator strip marking the top of the pipe is visible through the filter wrap and ensures correct placement of effluent orifices. **888/367-7473; www.hancor.com.**

Rockless drainfield

The 8 1/2-inch-high MPS-3609 multi-pipe from Plastic Tubing Industries Inc. fits snugly into 36-inch-wide trenches. The system is made of HDPE corrugated distribution pipe surrounded by constructed and banded void pipes. The voids, which replace crushed stone, have thousands of holes and slots to permit the free flow of effluent in and around the pipes and onto the soil. The corrugations help trap suspended solids and resist soil intrusion from the bottom. **800/780-5121; www.pti-pipe.com.**



MPS-3609 multi-pipe from Plastic Tubing Industries Inc.

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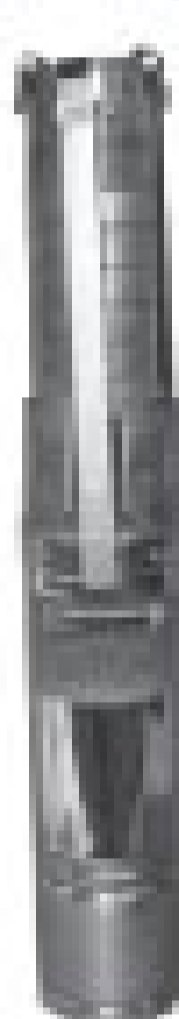
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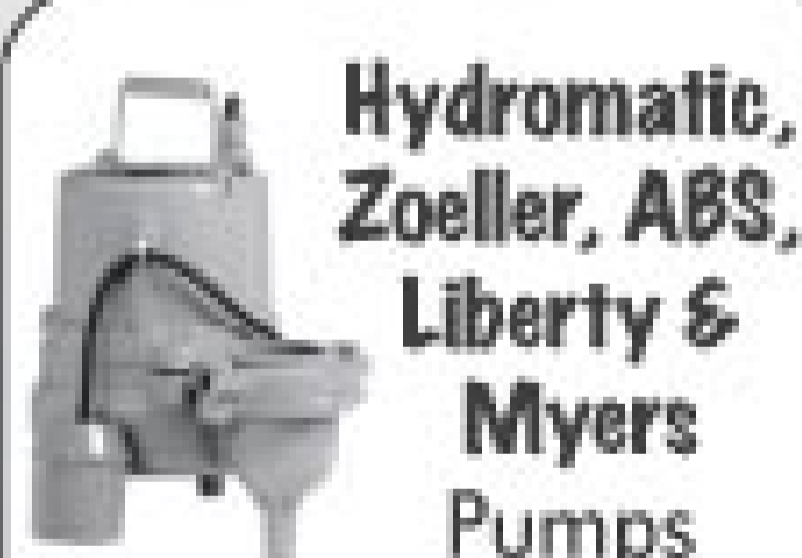


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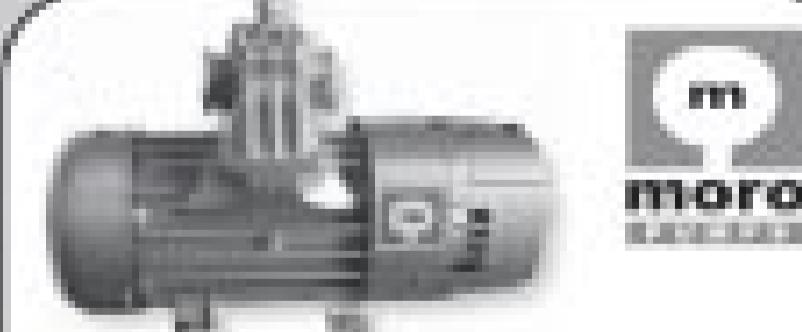


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Splitting flows

Distribution boxes from Tuf-Tite Corp. provide a simple yet reliable way to divide effluent flows. The strong, non-corrosive boxes have a speed leveler in each of the 4, 6, 7 or 9 outlets. Risers are available on 4- and 7-hole units. 800/382-7009; www.tuf-tite.com.

Distribution boxes
from Tuf-Tite Corp.

Floatless sensor

The C-Level sensor with floatless technology from SJE-Rhombus works with select Installer Friendly Series control panels. The sensor detects the liquid level in the tank and sends a signal to the panel, which displays the level in inches or centimeters. A touchpad on the inner door lets technicians adjust pump activation and alarm levels. The unit's compact design is easy to install and the set points are easy to adjust. One sensor takes the place of four floats and works with IFS and IFS In-Site single-phase simplex and duplex demand-/timed-dose control panels. 888/342-5753; www.sjrhombus.com.



C-Level sensor from
SJE-Rhombus

Vertical or submersible

Submersible effluent pumps from Goulds Pumps – ITT handle 3/4-inch solids, come in 1/3 to 2 hp models, pump up to 140 gpm, and have a maximum head of 240 feet. The submersible sewage pumps, available in 1/3 to 7.5 hp models, handle liquids with 2- to 3-inch solids, pump 600 gpm, and have a maximum head of 82 feet. 315/568-2811; www.goulds.com. ■

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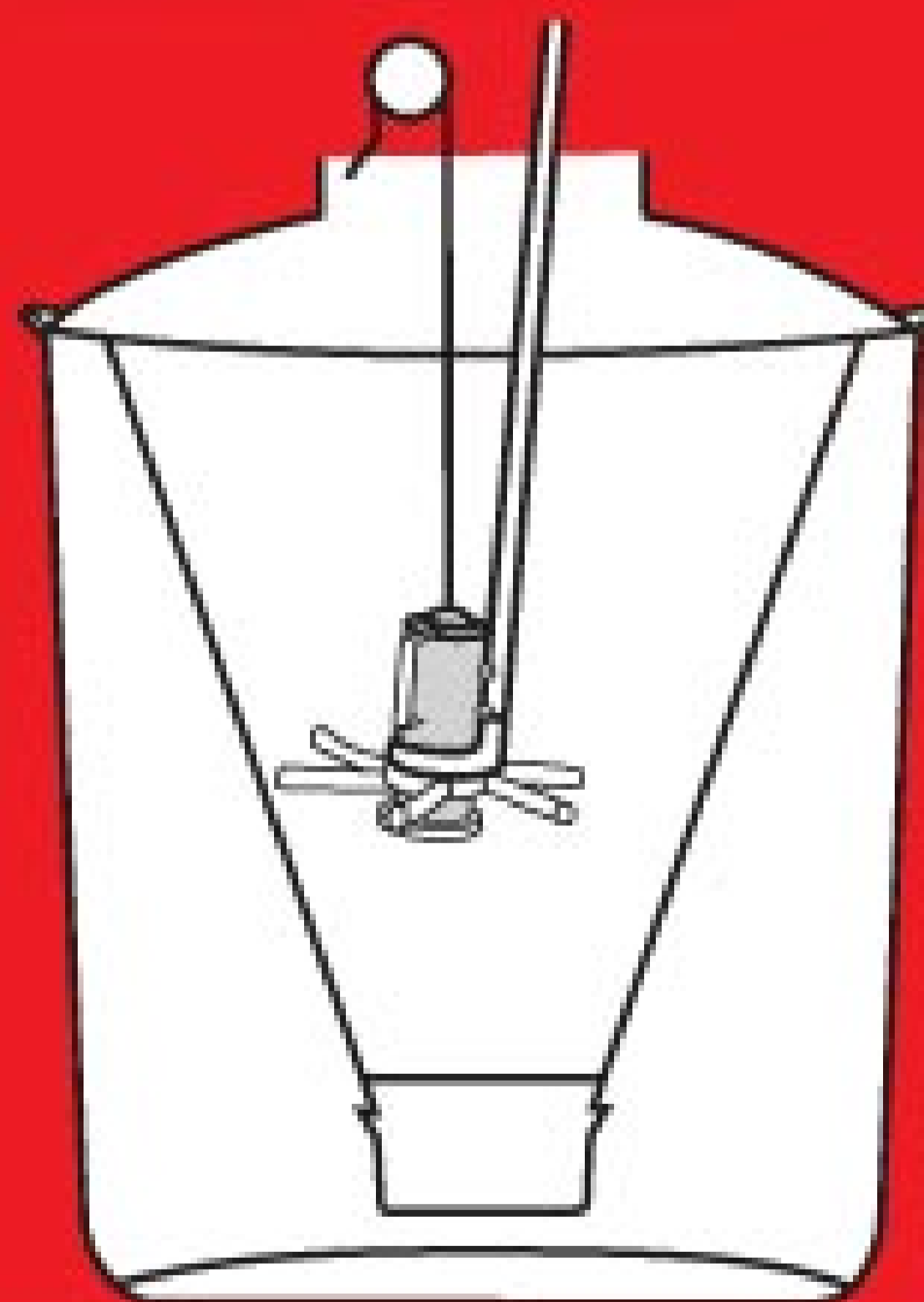
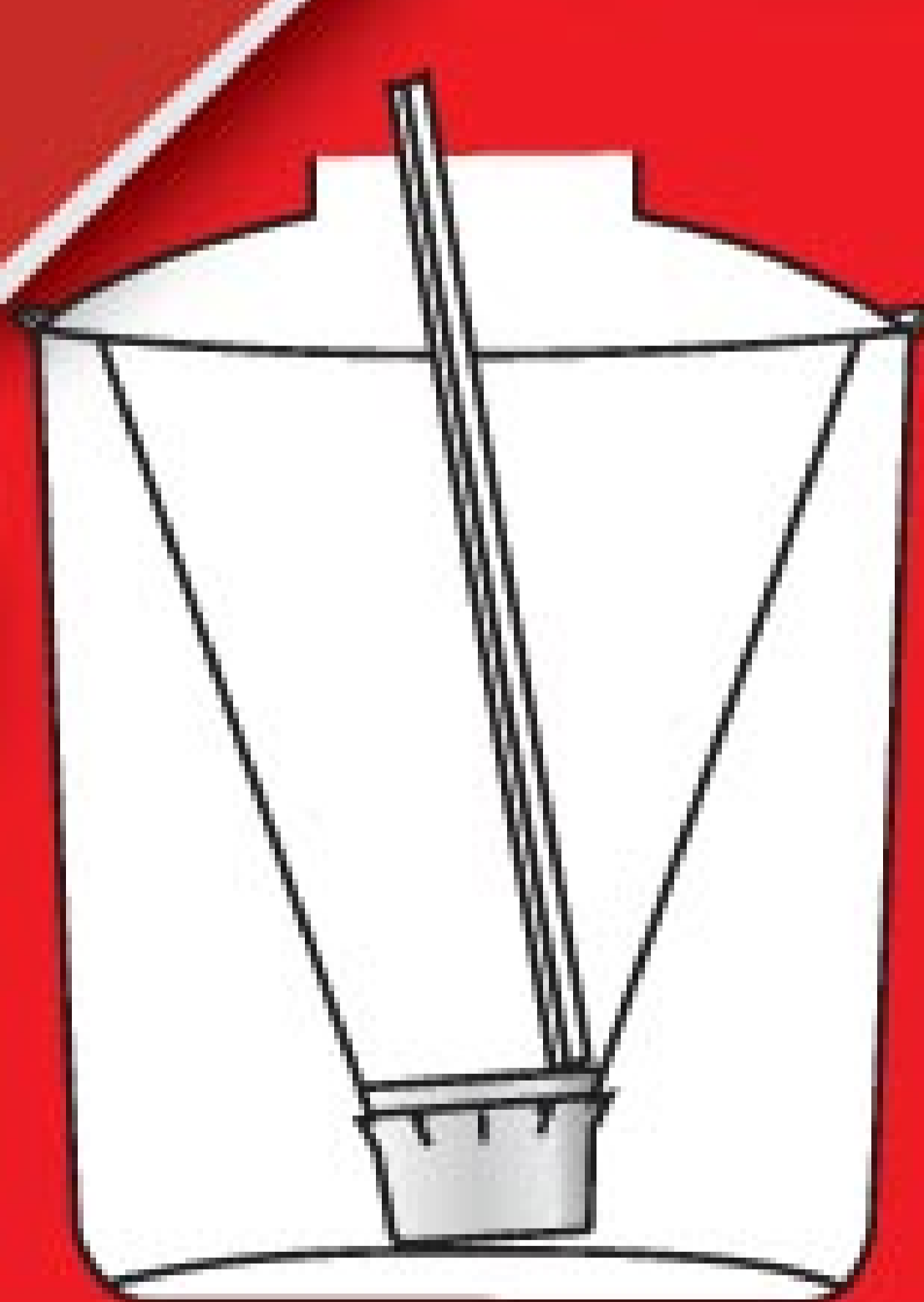
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Blow Ye Winds

A membrane bioreactor and site-specific treatment plant enable a state park building in northwest New Hampshire to continue operations

By **Scottie Dayton**

Effluent ponding and surfacing sewage from the Sherman Adams Building on Mount Washington, N.H., alerted the Mount Washington State Park staff to the failure of its conventional septic system with sand filter and drainfield.

Dennis Tupick, owner of White Mountain Communications Corp. in Randolph, N.H., won the bid and teamed with Bob Tsigonis, P.E., at Lifewater Engineering Co. in Fairbanks, Alaska, to find an answer. "We're accustomed to manufacturing treatment plants for extreme climates and vastly different summer and winter loading conditions, but designing for winds exceeding 200 miles per hour made

me nervous," says Tsigonis.

Tsigonis visited the site to learn how air intakes and exhausts were handled and how the staff dealt with rime ice. His solution was a treatment plant using cross-flow tubular membranes and a bioreactor inside a 40-foot shipping container. Meanwhile, Tupick hired Mary Ellen Parker, P.E., of Stantec, an engineering company in Auburn, N.H., to draw the as-built plans and handle the permitting and plan review submittals.

Once installed, the system performed well, producing effluent meeting the state Department of Environmental Services requirements for surface discharge.



COURTESY OF JIM SHEPPARD

Above: White Mountain Communications Corp. workers pour the concrete slab for the container. **Right:** Workers lay the permeate discharge pipe from the container. The framing around the window enables the staff to screw on plywood sheets if flying ice or debris breaks the glass.

Site conditions

Mount Washington, at 6,288 feet, is the highest peak in the northeastern United States. Winds exceeding hurricane force occur 110 days per year, and blow two-thirds of the day from November to April. The second highest wind ever recorded on the surface of the earth — 231 mph — was recorded there. The sensitive environment is alpine, but the climate is subarctic, averaging 26 feet of snow per year and a temperature of 27 degrees Fahrenheit. Snowstorms happen every month.



COURTESY OF LIFEWATER ENGINEERING CO.

System components

Tsigonis and lead mechanical engineer Jason Rowland designed the pre-engineered plant to handle 7,000 gpd. At its heart is an ExtremeSTP treatment plant from

System Profile

Location:	Mount Washington, N.H.
Facility served:	State park visitor center and observatory
System designer:	Bob Tsigonis, P.E., and Jason Rowland, E.I.T., Lifewater Engineering Co., Fairbanks, Alaska
Site designer:	Mary Ellen Parker, P.E., Stantec, Auburn, N.H.
Installer:	Dennis Tupick, White Mountain Communications Corp., Randolph, N.H.
Site conditions:	Highest peak in the northeast U.S.; dangerous, erratic weather
Type of system:	ExtremeSTP treatment plant from Lifewater Engineering Co.
Hydraulic capacity:	7,000 gpd



Above: The Sherman Adams Building is 75 feet above the treatment plant and 400 feet away. An arctic entrance has since been added to the plant. **Left:** The equipment room nears completion. The long, brown pipes are the tubular membranes. The Trojan UV disinfection system is mounted to the end of the lower tank. The control panel and operator's desk are on the right side, and the raw sewage screen is in the foreground.



Lifewater Engineering. Its major components include:

- Rotating auger inlet screen, IPEC Consultants Ltd., Burnaby, British Columbia.
 - Two-compartment welded plastic tank with 1,500-gallon bioreactor and 3,000-gallon surge tank.
 - Four Norit X-Flow side-stream tubular membranes from X-Flow North America, Rockford, Ill.
 - Two-compartment welded plastic tank with 700-gallon anoxic chamber and 600-gallon permeate chamber.
 - Process monitoring sensors for pH, dissolved oxygen, and mixed liquor suspended solids, MJK North America Inc., Lake Bluff, Ill.
 - UV disinfection unit, Trojan Technologies, London, Ontario.
- Other elements of the treat-

ment solution include HDPE pipe with 2-inch insulation from Tricon Piping, Canastota, N.Y., two existing 8,000-gallon concrete septic tanks for temporary storage of overflow and sludge, supervisory control and data acquisition (SCADA) system, and custom-built control panel.

System operation

The summit building houses a weather observatory, living facilities for the park and observatory staffs, visitors center with restrooms and cafeteria, two gift shops and a post office. Each summer, the center greets up to 4,000 tourists per day.

Sewage from the building runs 400 feet through a 4-inch arctic pipe that drops 75 feet to the treatment plant. Inside, a 22-foot-long tank holds the bioreactor and surge tank compartments. Stacked on top of it is a 17-foot-long tank with the anoxic chamber for denitrification

sludge to the bioreactor, but a side-stream goes to the anoxic tank to mix with the raw sewage.

The thick sludge in the bioreactor and surge tank remains in suspension and has an extended age. During winter, the sludge is stored in the two septic tanks. In summer, AAA Septic in Berlin, N.H., pumps the excess sludge from the bioreactor and septic tanks, which may also receive occasional high surge flows from the plant.

The clean water from the permeate compartment is used for flushing the membranes, mixing chemicals, controlling foam in the bioreactor and surge tank and flushing the inlet screen. Each time the system has a rest period, the computer activates an abbreviated automatic cleaning program. It flushes the membranes with permeate, then adds a little mild hypochlorite solution to the water and flushes again.

Extra permeate in the tank is surface discharged through a 4-inch arctic pipe. The system's retention time in summer is about 24 hours,

"The weather changes second by second and a dense cloud rolled in just as the heavy crane arrived to set the container. We couldn't see five feet in front of us as we tried to direct the operator. That was the trickiest part of the installation."

Dennis Tupick

and permeate compartment.

A rotating, shaftless auger screen with 1.5-mm openings filters solids from the influent before it is pumped to the anoxic tank. After the sewage mixes with returned mixed liquor from the membranes, the liquid flows to the bioreactor. Its 8-mm ultrafiltration high-flux membranes resemble straws packed inside 10-foot by 3-inch fiberglass pipes mounted in a horizontal loop. "They are called cross-flow membranes because the high velocity passing across their surfaces helps to clean them," says Tupick.

As the mixed liquor is pumped through the modules, clean water draining from the membranes overflows into the permeate chamber. The suspended solids in the membranes flow into the surge tank. The closed-loop system returns the

and flows average 5,000 gpd. In winter, flows often average 100 to 200 gpd.

Installation

The Lifewater team insulated the container with 4-inch foam sheets covered with plywood and fiberglass reinforced plastic for a white, durable, cleanable interior. The tanks, made of CNC router-cut thermoplastic sheets extrusion-welded together, were filled with water and the system tested. The crew then drained the membranes and winterized them with propylene glycol.

The men installed chemical tanks, a Web camera, pumps, and the control panel in the 15-foot-long equipment room. They added wood framing around the door so that park staff could attach a 4- by 8-

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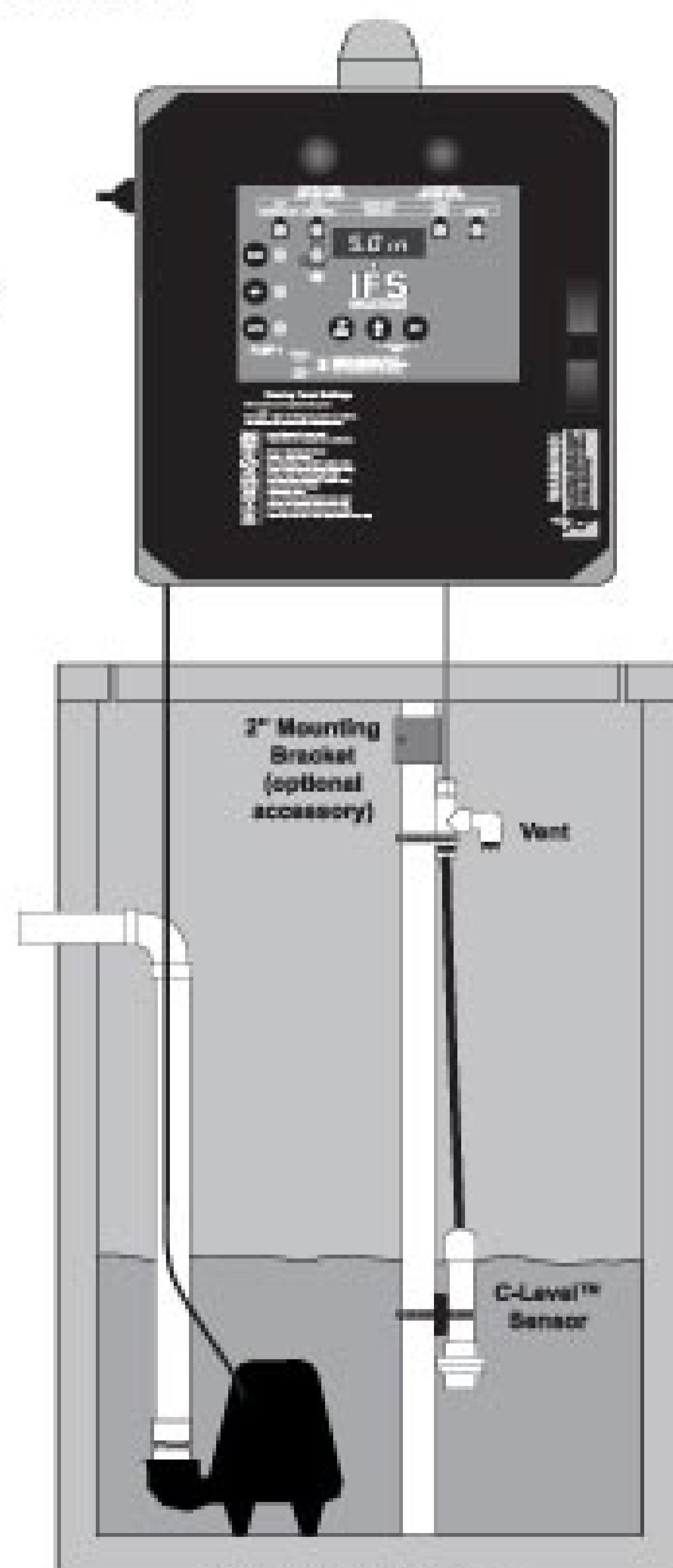
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foot arctic entry to improve access in winter. Framing around the windows enabled the staff to screw on plywood sheets in case flying ice or debris should break the glass.

To prevent rime ice from blocking the air intakes and exhausts, the men covered them with curved plastic shields. "Sometimes conditions are right for rime ice to grow three feet thick in one night," says Tsigonis. "Just hitting the plastic with a fist knocks off the crystals, but hurricane force winds will vibrate the plastic and break off the crystals as they form."

Before shipping the container 4,500 miles across the continent, the men painted the container to match the color of the summit rocks. They applied Loctite sealant, a division of Henkel, to the nuts and bolts and taped or zip-tied anything that could vibrate loose. The container then was loaded and welded to a gooseneck chassis. Only one pipe union came loose on the trip to Tupick's yard.

Meanwhile, Tupick's team built a retaining wall 75 feet below the summit building to conceal the container and its power transformer. All goods were transported up the mountain at night when there was no tourist traffic on the narrow road.

Trucks hauled gravel to the site before the men built the form for the 8.5- by 41- by 5-foot-thick concrete slab. "We welded 12 rectangular metal plates horizontally to the top of the rebar, six per side," Tupick says. "They are embedded flush in the concrete and the container is welded to them so it won't blow off in the wind."

The concrete cured for two weeks. "The weather changes second by second, and a dense cloud rolled in just as the heavy crane arrived to set the container," says Tupick. "We couldn't see five feet in front of us as we tried to direct the operator. That was the trickiest part of the installation."

Once the men connected the plug-and-play plant, AAA Septic hauled a load of seed sludge to start the system. The permeate is discharged in large enough doses to minimize ice accumulation. "The water usually runs away before it freezes," says Tupick. "We also created a depression in the rocks to



COURTESY OF LIFEWATER ENGINEERING CO.

Mount Washington State Park operators Jim Sherrard (left) and Chris Uggerholt (center) and Lifewater engineer Jason Rowland watch the first discharge of permeate.

trap snow, which insulates the pipe and protects it from the wind."

Maintenance

Lifewater trained the park service employees to operate and maintain the system. When severe weather prevents even the Tucker Sno-Cat from reaching the plant, the staff can operate it remotely using SCADA. The system even turns on a light and the Web camera. The state permit requires weekly sampling. AAA Septic pumps the bioreactor and surge tank as necessary. ■

MORE INFO:

IPEC Consultants Ltd.
 800/663-8409
www.ipec.ca

Lifewater Engineering Company
 907/458-7024
www.lifewaterengineering.com

MJK North America Inc.
 877/655-5465
www.mjk.com

Tricon Piping Systems Inc.
 877/395-3669
www.triconpiping.com

Trojan Technologies
 519/457-3400
www.trojanuv.com

X-Flow North America
 815/986-0391
www.x-flow.com

September 2010



Containment Solutions Offers Fiberglass Tanks

Flowtite fiberglass septic tanks from Containment Solutions Inc. have PVC or FRP risers with an adhesive joint that attach easily and permanently to the tank, creating a watertight system. The non-corrosive lightweight tanks can contribute to several credits of the LEED program for green building. Tanks range from 600 to 60,000

gallons. 877/274-8265; www.containmentsolutions.com.

Eljen Offers Geotextile Sand Filter

Geotextile sand filter modules from Eljen Corp. pretreat effluent with a two-stage Bio-matt. The first stage filters the liquid through an extensive membrane that exceeds the surface area required for soil infiltration. In the second pretreatment zone, effluent drips into a sand layer that protects the native soil from compaction. Perforated pipe centered above the module distributes effluent over and into the mini trenches created by the cusped core. 800/444-1359; www.eljen.com.



Griffin Offers Electric Submersible Pumps

Electric submersible pumps from Griffin Pump and Equipment are fully self-priming, available in 120-volt single phase or 460-volt three phase and suited for tight working conditions. Other features include a compact design, run-dry capability on some models and control panels with float switch capability for automatic start/stop conditions. 866/770-8100; www.griffinpump.com.

Markland Introduces Sludge Gun

The handheld Sludge Gun from Markland Specialty Engineering can be used to determine sludge levels in lagoons, ponds, clarifiers and septic tanks. Sensitivity is adjustable for thick or thin sludges. The sludge layer is indicated by an audible tone that varies in volume and pitch. 905/873-7791;

www.sludgecontrols.com.



Polylok Offers Poly-Cleanse Waste Digestant

Poly-Cleanse waste digestant from Polylok is a blend of bacteria designed to attack organic waste, including grease, toilet paper and soap scum buildup. The environmentally friendly digestant is available in liquid or powder and can be used in septic systems, cesspools, ATUs, drainfields, drains, grease traps, lift stations, sludge ponds and sewers. 888/765-9565; www.polylok.com.

Bord Na Mona Offers PuraM Membrane Bioreactor

The PuraM membrane bioreactor from Bord Na Mona Environmental Products comes in carbon steel or stainless steel tanks for treating 7,000 to 125,000 gpd, and concrete tanks for designs of 1 mgd or greater. Ultrafiltration membrane technology polishes effluent to reuse quality and total nitrogen standards within a small footprint. The systems install above or in-ground with various screening and pumping packages. Options include phosphorous and enhanced nitrogen removal packages. 800/787-2356; www.bnm-us.com. ■



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Grant funds curriculum

The Iowa Onsite Waste Water Association (IOWWA) received a \$100,000 USDA grant to develop an operation and maintenance training program for proprietary onsite equipment. The curriculum includes monitoring effluent quality from the 12 systems installed at the Habitat for Humanity training center in Waverly, and working with manufacturers to develop video clips of their maintenance procedures.

After taking the overview class, 29 onsite professionals passed the NEHA Certified Installer of Onsite Wastewater Treatment Systems exam in March, bringing the number of credentialed installers in the state to 183, or almost 50 percent of the IOWWA membership.

Four students with connections to IOWWA received \$500 scholarships for the 2010-11 academic year. They are Jenna Bird of Adel, Zachary Bertram of Aplington, Brandon Friedlein of Guttenberg, and D.J. Kohlhasse of Lincoln, Neb.

New Massachusetts officers

Jeff Helgerson of Helgerson Excavating in Carlton was elected president of the Massachusetts Association of Sewerage Pumping Contractors. His officers are Eric Muller of Southeast Septic Service in Carver, Tom Meagher of Rutland Sanitation in Rutland, and Frank King of Action King Services in Lowell.

Homeowner education brochure

The Pennsylvania Septage Management Association produced a brochure encouraging homeowners to maintain their onsite systems. Call the PSMA office at 717/763-7762 for details.

Certification adoption

Nearly 50 percent of Indiana's county health departments have adopted the Indiana Onsite Wastewater Professional Association (IOWPA) certification in place of individual county testing. If the revised state rule requiring IOWPA

certification passes, then all certified professionals must retest. The effective date would be Jan. 1, 2011.

Getting along

"Guidance for the Use of Water Softening and Onsite Wastewater Treatment Equipment at the Same Site," an article by Matt Byers, Joe Harrison, and Allison Blodig in the April Missouri Smallflows Association newsletter, is a collaboration between the Water Quality Association and the National Onsite Wastewater Recycling Association. Download it at www.mosmallflows.org.

Hot stuff

An apartment building constructed for the 2010 Winter Olympics Village in Vancouver, B.C., is one of three projects worldwide to heat air and water using heat recovered from wastewater. The central plant is already supplying heat to several buildings beyond the site.

A heat pump extracts heat from strained sewage, typically around 60 to 68 degrees F. Then a refrigeration unit draws thermal energy from the waste and feeds it into an underground high-efficiency, insulated piping system that distributes the 150-degree water to neighboring buildings. After circulating through them, the water returns to the energy center, some 59 degrees cooler, to be reheated.

The privately owned complex will ultimately meet the energy requirements of 100 acres of waterfront real estate, projected to have at least 16,000 residents by 2020.

CALENDAR OF EVENTS

Oct. 18-20

BioCycle Conference On Renewable Energy From Organics Recycling, Marriott Downtown, Des Moines, Iowa. Call 610/967-4135 or visit www.biocycle.net.

Oct. 18-20

North Carolina Annual Onsite

Water Conference, Jane S. McKimmon Center, Raleigh. Call Joni Tanner at 919/513-1678 or visit www.soil.ncsu.edu.

Oct. 19-20

Delaware Onsite Wastewater Recycling Association Conference, Dover Downs Hotel and Casino, Dover. Call Jim Williams at 302/492-3915 or visit www.dowra.org.

Oct. 21-24

Ontario Association of Sewage Industry Services Conference and Expo, Great Wolf Lodge, Niagara Falls. Call 877/202-0082 or visit www.oasisontario.on.ca.

Oct. 25-27

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

TRAINING & EDUCATION

NAWT

The National Association of Wastewater Transporters has these sessions:

- Oct. 14-15 – Inspector Certification, Monterey, Calif.
- Oct. 19-20 – Operation and Maintenance, Dover, Del.
- Nov. 11-12 – Operation and Maintenance Part 2, Mill Valley, Calif.
- Dec. 2-3 – Installer Training, Sonora, Calif.

For California classes, call Kit Rosefield at 530/513-6658 or visit www.cowa.org. For Delaware courses, call Jerry Williams at 302/855-5904.

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:

- Oct. 7-8 – Pumper
- Oct. 13-15 – Advanced

Installer II

- Oct. 28-29 – Continuing Education, Mobile
- Nov. 10-12 – Basic Installer
- Dec. 2-3 – Continuing Education
- Dec. 8-10 – Advanced Installer Level II

The first day of Continuing Education classes is for installers and the second day for pumpers and portable restroom operators. Call 334/396-3434 or visit www.aowatc.uwa.edu.

Arizona

The Arizona Onsite Wastewater Recycling Association has these classes:

- Nov. 1-2 – Intro to Design of Onsite Wastewater Treatment Systems, Tucson
- Nov. 3-4 – Advanced Design of Onsite Wastewater Treatment Systems, Tucson

Call Kitt Farrell-Poe at 520/621-7221 or e-mail kittfp@ag.arizona.edu.

California

The California Onsite Wastewater Association is offering these classes:

- Oct. 14-15 – NAWT Inspector Certification, Monterey
- Nov. 11-12 – NAWT Operation and Maintenance Part 1, Mill Valley
- Dec. 2-3 – NAWT Installer Training, Sonora

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

Iowa

The Iowa Onsite Wastewater Association is offering a Certified Installer of Onsite Wastewater Treatment Systems Installation Overview and NEHA exam Nov. 19-20 in Prairie City. E-mail Alice Vinsand at execdir@iowwa.com or visit www.iowwa.com.

Michigan

Waste Water Education 501(c)3 of Northwest Michigan is offering a wastewater system installer course, part one, on Sept. 13-14 in Benz-

onia, Mich. Call 231/233-1806 or visit www.wastewatereducation.org/payments.html.

Michigan

The Michigan Onsite Wastewater Training and Education Center at MSU Tollgate Center in Novi has an Onsite Systems Evaluator Training course Oct. 6-7. Call Barb DeLong at 517/355-4720 or visit www.egr.msu.edu/age/outreach.html.

Missouri

The Missouri Smallflows Organization is offering these CEU courses:

- Oct. 4 – Media Filters, Liberty
- Oct. 5 – Aerobic Treatment Units, Liberty
- Oct. 12 – Media Filters, Cape Girardeau
- Oct. 13 – Aerobic Treatment Units, Cape Girardeau
- Nov. 9-10 – High-Strength Waste, Branson
- Nov. 16 – Selling System to the Site, Camdenton
- Nov. 17 – Profitable Business, Camdenton

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 workshops:

- Oct. 7 – Bottomless Sand Filter Design and Installation
- Oct. 14 – Functional Inspections
- Nov. 4 – Rhode Island Designer Examination Preparation
- Nov. 18 – AutoCALCS: Automated Bottomless Sand Filter Sizing, Pump Calculations, and Support Material

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

North Carolina

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

- Oct. 6-7 – Installer and Onsite Inspector, Sunset Beach
- Oct. 8 – Pumper and Land

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

North Carolina

The North Carolina Pumper Group and Portable Toilet Group are holding the mandatory annual four-hour septage management training seminar on Dec. 11 in Raleigh. This session includes land application site operator training. Call Joe McClees at 252/249-1097 or visit www.ncpumpergroup.org or www.ncportabletoiletgroup.org.

North Carolina

The North Carolina Septic Tank Association offers these continuing education courses:

- Oct. 6-7 – Installers and Inspectors, Sunset Beach
- Oct. 8 – Pumpers and Land Application, Sunset Beach
- Oct. 11-12 – Installers and Inspectors, New Bern
- Oct. 27-28 – Installers and Inspectors, Greensboro
- Oct. 29 – Pumpers and Land Application, Greensboro

Call 336/416-3564 or visit www.ncsta.net.

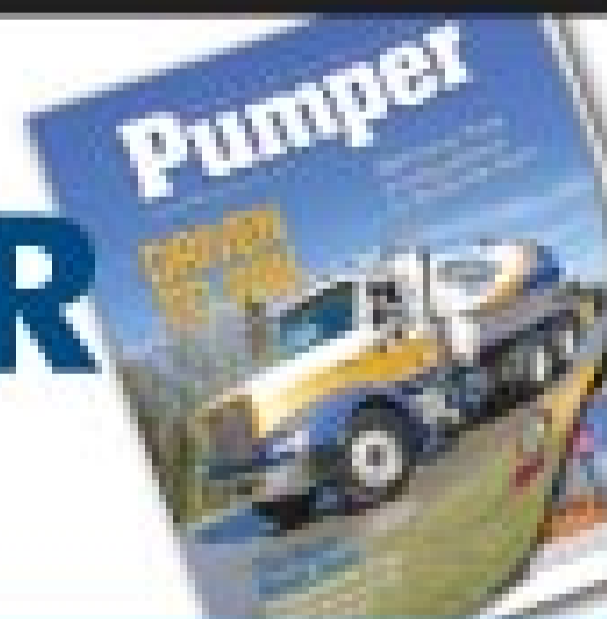
Utah

The Utah On-Site Wastewater Treatment Training Program is offering these Onsite Wastewater Treatment Certification Workshops in Logan:

- Oct. 19-20 – Level 2
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(2) Septic tank delivery trucks; 1-ready mix truck; 7-Celico septic tank forms (1000-1500 gallon); misc. drop box, riser forms, lift tank forms. Trucks and loaders in good condition. (In service in 2007) All forms in good or better condition. (Used in 2007) Package price \$70,000. 218-829-9678 or 800-829-5755. (IBM)

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PHILADELPHIA/ALLENTOWN PENNSYLVANIA AREA SEWER BUSINESS FOR SALE. Specializing in collection systems, video inspection, jetting, municipal work. Includes CUES TV & grout truck, Sewer Equipment Corporation jetter truck, Vactor 2100, RIDGID camera, confined space equipment and more! Good revenue history. Great opportunity to expand or start your own business. Current owner wants to retire. **Offered at \$330,000.** E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing.** www.BTwo.biz. (IBM)

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1984 Autocar Conventional tractor, 511,000 miles, 3406 DI 400 Cat, 13 speed transmission, tag axle. \$30,000. Call JD at 775-825-1595, email jd@watersvacuum.com. (P9)

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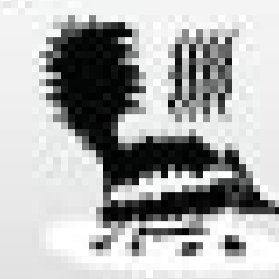


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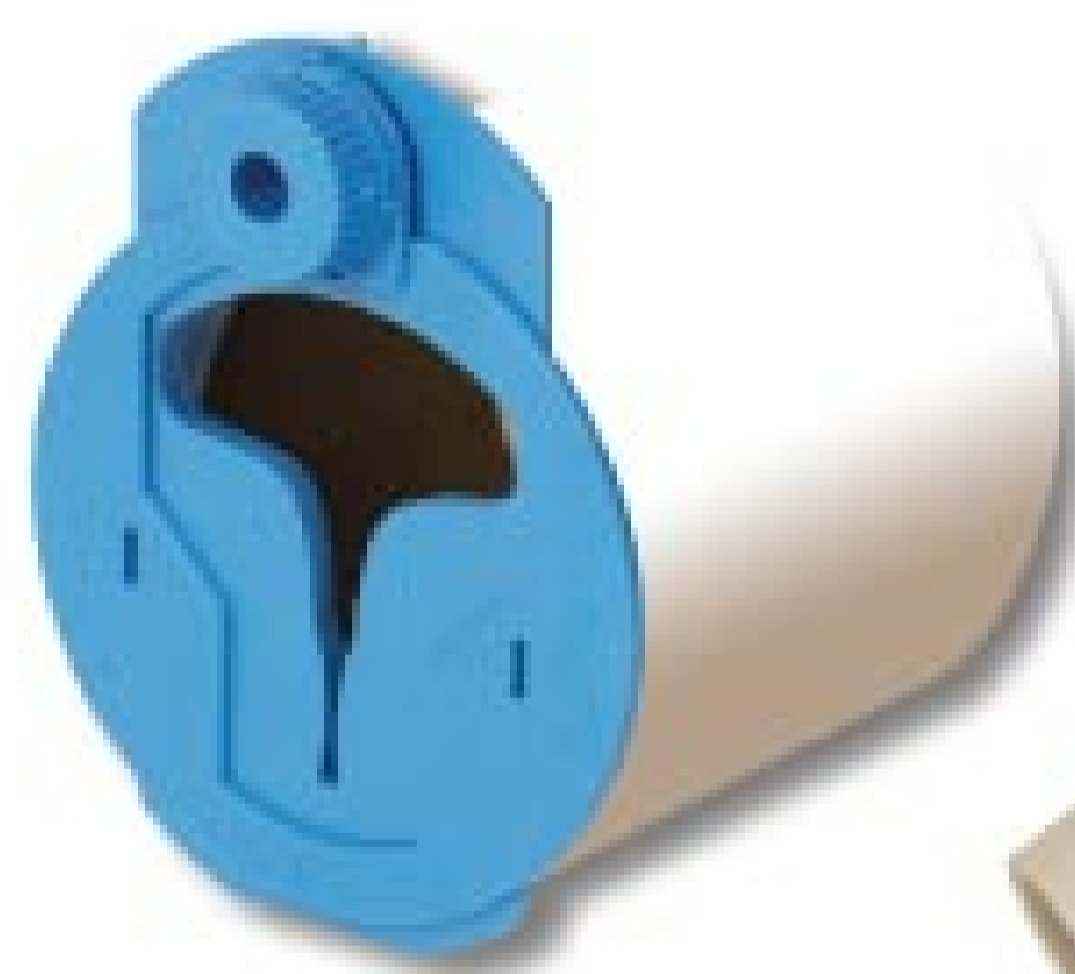


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