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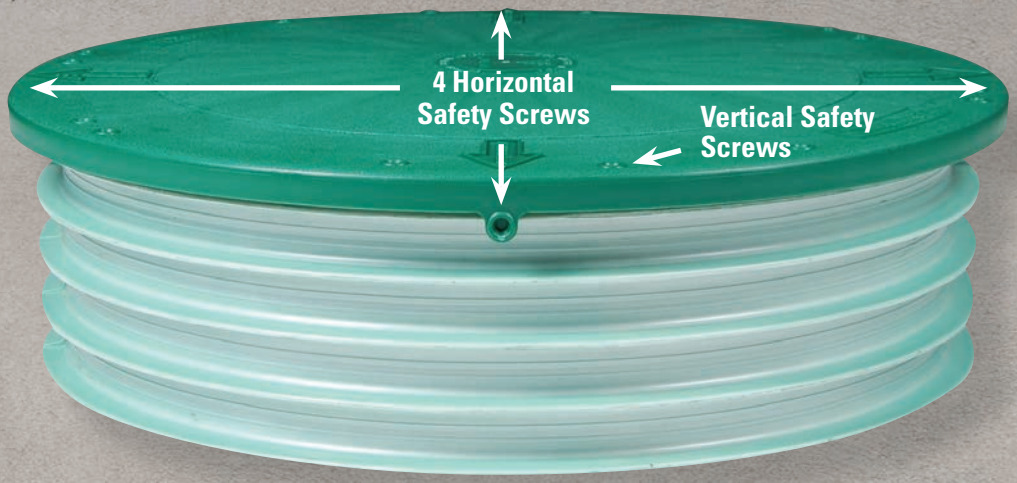

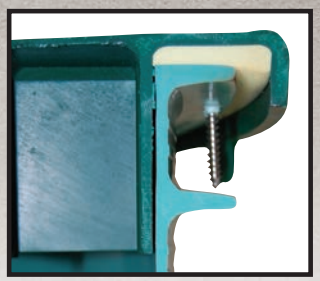

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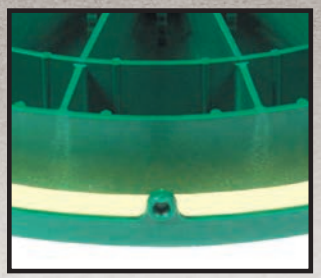

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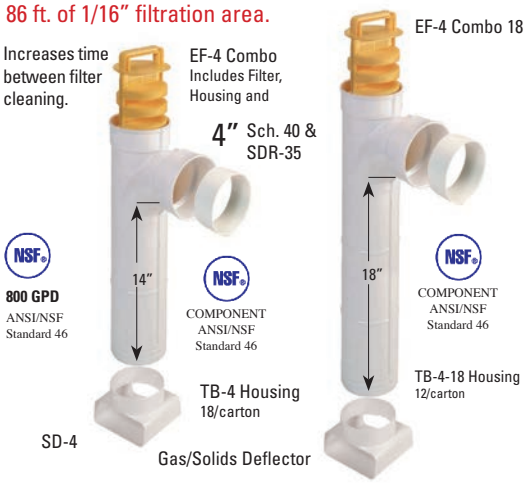

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One-piece effluent filter fits in 4" Sanitary Tee.

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- Simple to install - Easy to clean

4" Sanitary Inlet/Outlet T-Baffle™

Injection molded T-Baffle™.

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6" Effluent Filter and 6" T-Baffle™

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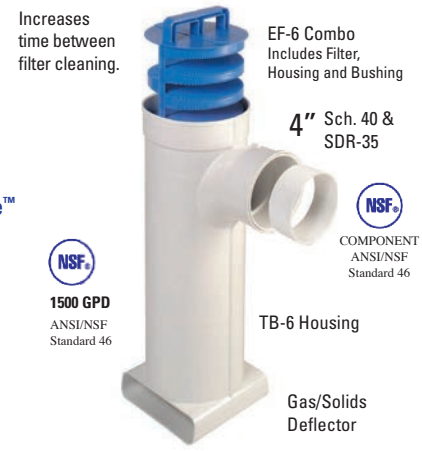

6" Effluent Filter EF-6

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- Simple to install
- Easy to clean

6" Sanitary T-Baffle™

Injection molded T-Baffle™.

- Injection molded
- Fits 4" Sch. 40 and SDR-35 pipe
- Simple to install
- May also be used as Outlet Tee with Solids Deflector

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Make It Personal
By Scottie Dayton

ON THE COVER:
Coleman Lyttle Jr. (left) and Coleman Lyttle Sr. of Stamie E. Lyttle Co. in Richmond, Virginia, are shown in the yard with septic tanks built at the company. (Photo by Kevin Blackburn)

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ADVERTISER INDEX

October 2020

Enjoy this issue!

Established in 2004, *Onsite Installer*™ fosters higher professionalism and profitability for those who design and install septic systems and other onsite wastewater treatment systems.

Jim Kneiszel

Send your comments, questions or opinions to Jim Kneiszel at editor@onsiteinstaller.com.

Can We Talk? Share Your Views About These Onsite Issues.

Small-town septic stories often hold widespread interest to onsite installers. Where do you weigh in on these?

When I read news bulletins concerning local septic system issues, I often ask myself, "What would installers say?" I'm sure the installer community is made up of folks with diverse perspectives and a wide range of experiences, so I don't want to assume I would find total agreement on any single issue.

So to satisfy my curiosity, I've been collecting stories of interest and will share a few here. Following each brief recap, I ask a few follow-up questions for the readers of *Onsite Installer*. Let's start a conversation. You can post your thoughts below the online version of this column at www.onsiteinstaller.com or at the *Onsite Installer* Facebook page. Or contact me directly with your thoughts at editor@onsiteinstaller.com.

1. Help pay for your neighbor's septic inspection

Should every homeowner be willing to pay 50 cents per year toward the inspection of 57 septic systems in a community as a way to protect the water supply? That seemed like a fair deal to the local Town Council in Wellesley, Ontario, located west of Toronto. The vast majority of residents, who don't use a septic system, are helping foot the bill for the few who have their own private systems.

An interesting onsite septic situation might **explain why we each need to have our own lawn mowers to keep the peace.**

When the inspection program was started in 2015, the provincial government covered the cost for the first five-year round of inspections. But there were no such funds for the program starting this year, so the local government had to either split the $8,636 cost between the 57 septic users or find a way to spread out the bill.

After debate, the Town Council determined that all 3,500 property owners benefit from clean drinking water, so each would have to pay 50 cents per year for the inspections that are part of the Grand River Source Protection Plan, according to a report in the *Observer* newspaper. Septic system users will have to pay for required pumping on their own, said to be $350 to $400 per tank.

Is this cost sharing a good way to ensure inspections are completed? Is it wrong to bill all town residents to maintain septic systems for a few? One thing is certain: The levy will benefit private onsite system inspectors hired to complete the work.

2. Show me the money! How about direct government payments to installers?

This is an idea onsite installers could get behind. In East Hampton, New York, the town board is considering sending wastewater improvement rebates earmarked for private septic system upgrades directly to the installing contractors rather than the property owners. The town's wastewater system upgrade program helps pay for onsite system replacements, and one suggestion being considered is paying installers directly for the work rather than sending the money to homeowners first.

Of the 19,000 septic systems identified in the town, 12,500 are said to be antiquated or failing, according to a report in *The East Hampton Star*. So the town is taking money from a Community Preservation Fund to upgrade systems. Officials have said paying installers directly would reduce paperwork and be an incentive for contractors who they said sometimes have to wait months for payment.

And here's an interesting sidelight to the proposal: The town is also considering eliminating a $500,000 annual income cap for homeowners applying for the public funds. To this point, only property owners earning less than $500,000 qualified for the funding. If this passes, even the wealthiest waterfront property owners could apply for aid.

What do you think of direct government payments to onsite installers for replacing problem septic systems? Would this incentivize you to take on this type of work? And should there be an income cap for homeowners who want to apply for public funds to upgrade systems?

3. They say, "I do" to huge commercial septic systems

In my part of the world, the Upper Midwest, barn wedding venues have been popping up at about the same pace as family farms are going under.

I feel bad for the plight of farmers in America, but it seems like more than a few of them are transitioning away from cows and toward well-dressed bridal parties.

According to a story in the Vermont-based nonprofit news website www.vtdigger.org, this rural wedding industry trend is helping farm owners preserve historic buildings and earn a valued income during tough times in agriculture. But as I've often wondered when hearing of folks having barn weddings, the story also raises an interesting wastewater question: How in the world are these wedding venues handling the infrequent periods of heavy septic system flow?

"It's not just, you know, let's pull out the cows and start having the weddings. There's so much to it. I think we put about $600,000 into our barn," Grant Allendorf, barn owner and wedding barn owner, tells the news outlet. In Vermont, wedding barn owners must meet state requirements for commercial septic systems, and Allendorf says his cost $220,000. It's a case where the onsite system is probably worth more than the barn itself.

Has your crew installed a septic system for a wedding barn? If so, how did you solve the challenge of handling the flow of 500 guests drinking beer and champagne for hours on end, but only once a week over the summer season? It strikes me that this is a unique type of onsite project.

4. The joys and challenges of a community system

I've always thought it would be ideal if neighbors could share certain tools and equipment. For example, why does everyone on my street have their own lawn mower when one or two riders could handle all the grass clipping in the neighborhood? Well, an interesting onsite septic situation might explain why we each need to have our own lawn mowers to keep the peace.

On Landing Road in Duxbury, Massachusetts, a homeowner built a master bedroom onto his house and then went to the board of selectmen (acting as water commissioners) to ask for permission. As you might guess, the project should have been handled the other way around — with the homeowner asking for the added wastewater capacity for the bedroom before constructing it.

The problem was that the homeowner was restricted to three bedrooms for the septic system he shares with 30 other homes; the new bedroom was his fourth. According to a story in the *Duxbury Clipper* newspaper, the shared system installed in 1999 had six bedrooms to allocate and another home may have to be hooked up.

The homeowner argued that he should be allowed to have the fourth bedroom because other residents had requested and received permission in the past. The board eventually granted the fourth bedroom — in part because it had already been built. And then they declared a moratorium on similar requests in the future.

Have you been involved with constructing or maintaining a community shared septic system? If so, were there problems with some homeowners pushing the limits of the system? If two or more neighbors came to you and asked for advice about shared septic systems, what would you tell them?

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KEEP IT CLEAN
ATU Maintenance

There are potentially two or three compartments of an ATU that will need monitoring to determine a cleaning schedule. This online article from Sara Heger discusses how to set a schedule for ATU cleaning and what that maintenance should entail.
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Overheard Online

"In speaking with your employees, make it your mission to cut through some of the high emotions and arrive at the real source of the problem together."

– Tips for Managing Employees Who Don't Get Along
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KEY CONSIDERATIONS
Choosing an Excavator

Obvious as it may be, not all excavators are the same. Likewise, not all sites and projects are the same. While you can't necessarily consider all future site needs, it's important to understand what excavators perform best for the work you will be doing. If you're in the market for a new excavator, keep these factors in mind to find a machine that best suits your operations.
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MEASURING PERFORMANCE
Steps for Sampling

Taking wastewater samples from a septic system is an important part of maintenance. Collecting data for organic loadings and constituent levels is used for regulatory purposes or to help us understand what we are working with. This data can be used to compare systems, rate performance and calculate loading rates. Follow these guidelines to help determine the performance level of a system or component.
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Solution: Each of the two precast concrete tanks specified for the job were manufactured in three sections so they could be easily transported and installed. The concrete used to produce the tanks had a minimum compressive strength of 5,000 psi and was designed to withstand soil frost heave in the frigid winters. These specifications, along with being manufactured in a strict, quality-controlled environment, ensure the tanks will serve the community for years to come.

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MAKE IT PERSONAL

Direct and honest is the only approach to customer communication at Virginia's Stamie E. Lyttle Co.

By Scottie Dayton

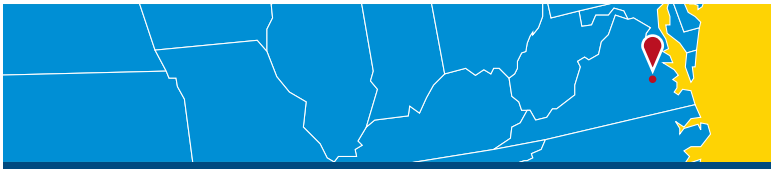
« The crew from Stamie E. Lyttle Co. spreads gravel and backfills in a deep trench, using a trench box and ladder for safety. (Photos by Kevin Blackburn)

Email Stamie E. Lyttle Co. (SELCO) or call the office in Richmond, Virginia, and both are answered promptly — by people.

"My parents believed that the personal touch was a keystone of providing quality service," says Coleman Lyttle Sr., SELCO's 66-year-old owner. "Those principles remain the backbone of our company's culture and saw us through the oil embargoes and four crippling economic recessions."

His parents, Stamie and Virginia Lyttle, founded SELCO in 1947. Stamie Lyttle and a partner installed septic systems, cleaned tanks and established a reputation for solving problems others wouldn't attempt. Always looking for new niches, Lyttle expanded the company until it peaked in the mid-1980s with 90 people, five septic crews and eight utility crews. The latter installed, repaired and replaced residential and commercial sewer and water laterals.

SELCO was an advocate for advanced treatment systems. (Health officials are still cautious about approving them.) For example, in 1985, crews installed one of Virginia's first decentralized systems with individual septic tanks, lift stations and force mains feeding acres of remote drainfields. The project was of great interest to regulators and helped to increase their acceptance of new technologies.

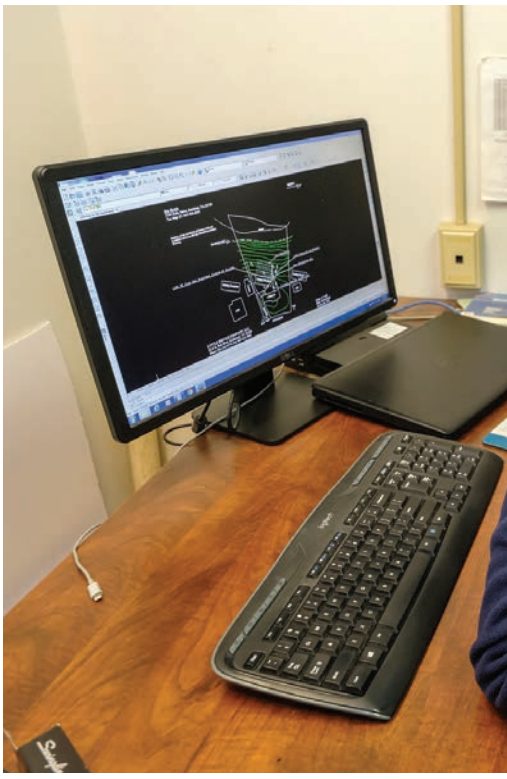


Stamie E. Lyttle Co.

Richmond, Virginia

Owner:	Coleman Lyttle Sr.
Founded:	1947
Employees:	48
Service area:	Greater Richmond and central Virginia
Specialties:	Onsite design, installation, maintenance, pumping and transfer of property inspections
Associations:	National Association of Wastewater Technicians, Virginia Onsite Wastewater Recycling Association, National Federation of Independent Business, Better Business Bureau
Website:	www.lyttleco.com

>> A crew member operates a Kobelco excavator as workers build trench lines for an onsite project in a state park.



Eric Tambourine reviews site plans for an upcoming septic system installation.

A machine operator on a John Deere excavator confers with Coleman Lyttle Jr. on a project.

Today, SELO's 48 employees specialize in onsite design, installation, maintenance, pumping and transfer of property inspections. "We learned the hard way that bigger isn't always better," Coleman Lyttle says. "If stretched too thin, quality suffers."

BUSINESS CYCLES

Lyttle grew up washing company trucks, carrying water for percolation tests and riding shotgun in the vacuum truck. With an eye toward one day running the company, he graduated from Virginia Polytechnic Institute and State University in 1975 with a business administration degree. From 1976 to 1982, Lyttle was SELCO's senior estimator and project manager before advancing to president in 1994. His father died in 1991.

By 2000, SELCO had shed its plumbing, portable restroom and equipment rental divisions and was focused on residential and commercial onsite work.

"We don't scrimp on anything, because quality saves money in the long run."
Coleman Lyttle Sr.

"In hindsight, I should have stayed small, but didn't. From 2003 to 2007, the onsite industry was rocking and so were we," Lyttle says. "When the 2008-09 recession hit, we never saw it coming, and the next two years were devastating."

After six years of progressing at a crawl, Lyttle had a halfway-respectable company again, but it was often outflanked by competitors who had survived the recession by staying small and simple. In 2017, he began the painful process of downsizing, doing less volume with fewer people and returning to the way the business was 30 years ago.

The toughest decision was releasing top-notch management. "We'd worked together for years and had become close," Lyttle says. "They all landed on their feet, so I probably did them a favor."

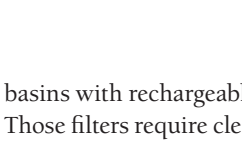
An advantage of downsizing was shedding less productive workers and keeping the A-teams. "We're proud of our low turnover," Lyttle says. "Three foremen have been with us for 25 to 30 years."

The service board reflects a balance between small and midsize projects. Lyttle defines midsize as $300,000 to $500,000 jobs. Large ones from yesteryears were bonded $2 million to $3 million projects, generating an annual revenue of $13 million. "We still install some commercial systems, like at the campground in Pocahontas State Park," Lyttle says. "It has seven tanks and massive drainfields, but now we prefer jobs that take two weeks instead of two months."

In 2019, SELCO installed 200 onsite systems, mostly residential. New construction equaled 25% and repairs 75%, comprising 47% of the company's annual revenue.

DRIVING THE TRAIN

Two state regulations have influenced SELCO's world: the Chesapeake Bay Preservation Act and the privatization of septic evaluations and designs. The preservation act requires septic tanks to be pumped every five years and owners of advanced treatment units to have evidence of annual maintenance agreements.



<< The Stamie E. Lyttle Co. crew works on a residential system.

Local health departments send yearly pumping reminders to residents in 84 localities, and SELCO piggybacks this by mailing service reminders to customers flagged by its database. In 2019, the company pumped 1.2 million gallons of septage and cleaned 1,300 grease traps, which amounted to 23% of annual revenue. Septage is offloaded at municipal wastewater treatment facilities in Richmond and neighboring counties.

"We also have 100 maintenance agreements, an increase of 25 from 2019," Lyttle says. "We want to expand this niche along with stormwater quality maintenance, which will be the next big thing because we're in the Chesapeake Bay watershed."

Many private commercial properties, such as strip malls, shopping centers and apartment complexes, have underground stormwater detention basins with rechargeable, media-filled cartridges to trap pollutants. Those filters require cleaning. A vacuum truck operator removes the sediment in the vault and the media in the cartridges, then swaps out the empty cartridges with refurbished units.

"Many property owners don't know these stormwater regulations exist, so our next sweet spot will be maintaining these filtration devices," Lyttle says.

The privatization of septic permits made it easier for SELCO to initiate design-build procedures. With design-build, the designer, installer and homeowner work together from the beginning toward unified proposals that fit the client's budget and schedule.

In 2015, Lyttle hired Eric Tambourine, a licensed alternative onsite sewage evaluator, operator and professional soil scientist to prepare permit applications and manage projects. SELCO's engineer of record for systems greater than 1,000 gpd is the 3-Engineering firm. Another key longtime employee is Randy Poling, crew foreman.

OLDE LOCK LANE

An example of a difficult repair emphasizing SELCO's design-build capabilities began in 2018 with wastewater occasionally flowing across the driveway of a six-bedroom home in Richmond, accompanied by persistent odors. A technician discovered wastewater ponding when the dose pump activated.

Tambourine's soil evaluation revealed fill material over most of the 1.125-acre lot and a concrete storm drain running through the middle of it. A previous soil scientist had deemed the site impractical to use. "The limiting soils were sand and gravel with the water table 16 inches below grade and an average loading rate of 0.32 gpd per square foot," Tambourine says.

continued >>

THE EQUIPMENT CORNER

In the early 1950s, Stamie E. Lyttle Co. operated from a small office and one-bay shop on 11 acres. Numerous additions produced today's 3,000-square-foot office, 17,000-square-foot shop with heated and unheated warehouse, and a storage yard. A full-time mechanic in the five-bay shop maintains most of SELCO's fleet and equipment, which includes:

- International with a 4,000-gallon steel tank
- Sterling with a 4,000-gallon steel tank from Lely Tank & Waste Solutions
- Mack with a 2,000-gallon steel tank from Lely Tank & Waste Solutions
- 2016 John Deere 544K wheel loader
- 2016 John Deere 444K loader
- 1998 John Deere 270LC track backhoe
- 2001 Kobelco SK30SR mini-excavator
- Assorted older John Deere excavators and backhoes
- John Deere 333E skid-steer
- Taylor T-2205 forklift
- Caterpillar 225 excavator with Ho-Pac compactor (Allied Construction Products)
- Ditch Witch 410SX vibratory plow
- Bobcat 442A backhoe
- Two Mack 700 tandem-axle dump trucks with 8-cubic-yard boxes
- Ford F-550 pickup
- Ford Transit cargo van
- Dodge flatbed truck
- Dodge Ram 3500 pickup
- Ford L8000 flatbed
- Ford F-250 pickup
- GMC 2500 pickup truck

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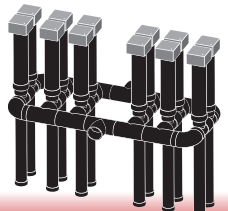

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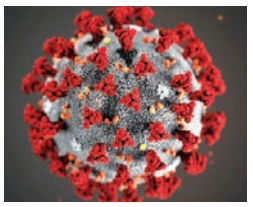

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Tambourine worked with the homeowners and engineer to find a solution. A private force main or tying to the sewer was too expensive. That left an advanced treatment unit pumping to a slope adjacent to a stream. Because of the site's complexity, code specified a professional engineer design the 900-gpd system, which includes:

- 1,500-gallon CEN10 system with nitrogen reduction (Fuji Clean USA)
- E-Z Treat 101 UV light disinfection unit (E-Z Treat)
- 36-inch-diameter pump vault (Orenco) with a Barnes pump (Crane Pumps & Systems)
- Zoeller spider valve manifold (Clarus Environmental) in a 24-inch riser (Orenco)
- 12-inch-diameter EZflow by Infiltrator drainage bundles (Infiltrator Water Technologies) in a 940-square-foot drainfield
- 30-inch N-12 Mega Green storm drain pipe (Advanced Drainage Systems)
- Simplex control panel (Orenco)

The wooded, built-out lot had a downgradient slope of 19% to 12%. "We squeezed our equipment between buildings, an intermittent stream, a fountain and fishpond, a stamped driveway, and an orange safety fence marking the property line," Tambourine says.

> "I also visit job sites and talk to the guys so they know they are appreciated and not taken for granted. As Dad always said, 'A company's biggest asset is its employees.'"
> Coleman Lyttle Sr.

To allow the three inhabitants to stay home, the crew worked backward from the replacement drainfield, built on a sand mound with a 2:1 slope. They lined 10 trenches of varying lengths with wicking geotextile to disperse equal, 60-gallon doses along the trenches five times per day.

"After the drainfield was inspected, a gully washer eroded the topsoil on the bottom edge," Tambourine says. "We fixed it and installed a riprap channel to divert future runoff."

The crew also extended the concrete storm drain via an adapter collar and 12 feet of corrugated plastic pipe. "We bedded the pipe in No. 57 stone and backfilled with compacted No. 10 screenings (rock dust)," Tambourine says. "We needed 12 inches of screenings to support the force main, which went on top." The job used a combined 223 tons of soil, sand and fill.

The septic tank and settling tank were under a slate patio that the owner cut to allow access. After exposing those tanks and the nearby dose tank, they were cleaned. "It took 18 cubic yards of cement to fill them, all of it pumped uphill," Tambourine says.

BACK TO THE BASICS

SELCO always uses the best available products and materials, which increases the client's upfront cost. "We don't scrimp on anything, because quality saves money in the long run," Lyttle says. "Furthermore, the state has one-year construction warranties. We explain that $750 pumps are built better, operate at lower rpms and last longer. Homeowners are lucky if a $300 pump lasts two years. [Homeowners] get it, which is why we prefer dealing directly with them."

Quality components ensure satisfied customers. If a problem occurs later because of something SELCO did, it is repaired free of charge. The approach is effective, retaining many customers since the 1950s. Some write complimentary letters or notes, but mostly they give word-of-mouth referrals.

Because the state Health Department enforces the septic code, the repair and rehabilitation market has remained strong. However, Lyttle sees a problem in that septic maintenance companies have become a commodity. "Robocalls have made it a lot more competitive. In addition, companies use software to create that personal-touch feeling," Lyttle says. "We're losing humanity behind the keyboard. Staying old school with our customers has helped."

Meanwhile, Lyttle has found another positive to downsizing — rekindling relationships with developers, builders and former customers. "I get a kick out of business development, scouting for new work as we catch up over beers," he says. "I also visit job sites and talk to the guys so they know they are appreciated and not taken for granted. As Dad always said, 'A company's biggest asset is its employees.'"

Personal relationships remain SELCO's hallmark. "Texts and emails can't resolve conflicts when negotiating change orders," Lyttle says. "Whenever they are about extra money for unknowns, the two parties must sit at a table and talk face to face. That art is being lost in today's world of social media and keyboarding."

After years of running a $13 million "rat wheel," Lyttle believes owning a company that size today is crazy. He dislikes the term "downsizing," preferring to say he is rightsizing the company to establish a solid foundation for the next generation. The heir apparent is Coleman Lyttle Jr., 27, a SELCO field superintendent and project manager. And yes, his father is coaching him in the fine art of the personal touch. ◻

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U.S. DEPARTMENT OF LABOR HIRE Vets 2019 PLATINUM AWARD

New York Lawmakers Want to Eliminate Income Tax From Septic Grants

By David Steinkraus

A New York representative has introduced a bill in Congress to remove the federal tax on grants that help people repair or upgrade their onsite wastewater systems.

Rep. Thomas Suozzi, whose 3rd District covers the northwestern section of Long Island, introduced HR 7280 in mid-June. The bill would allow people to exclude from taxable income any subsidy from a state or local government for "any waste management measure" at their home, say news reports. The bill would also allow people to amend their 2020 tax returns for grants received in 2019.

One Suffolk County resident who talked to a local newspaper says her tax bill would increase by thousands of dollars because she received a $10,000 county grant and a $15,000 rebate from her town government, and both were deemed taxable income. More than 1,300 county homeowners have enrolled in the program. Suffolk County occupies the eastern end of Long Island.

To reduce water pollution along its Atlantic Ocean shore, the county for several years has been pursuing an extensive program to replace more than 300,000 cesspools. Onsite system upgrade grants have been part of that, as have ordinances requiring nitrogen-reducing systems.

The opinion on taxation of grants came from the IRS and was issued last year at the request of John Kennedy, county comptroller. He sent out tax forms to people who received the grants, and at the time, he was running for county executive against Steve Bellone, who won reelection and has been a driving force behind the water pollution control program.

Suozzi, a CPA and attorney, sits on the Ways and Means Committee that deals with taxation and the federal budget. Two other New York representatives co-sponsoring his bill are Lee Zeldin and Peter King.

* * *

Also in New York, two regional banks have pledged $2.5 million in no- or low-interest loans to help homeowners and business around Lake George with onsite system upgrades. Adirondack Trust Co. of Saratoga Springs and Glens Falls National Bank say their loan program would be coordinated through the FUND for Lake George, a nonprofit formed to protect the quality of the lake, reports *The Daily Gazette* of Schenectady.

The 32-mile-long lake is in the southeastern corner of New York State's Adirondack Park and spans 6 million acres. It is protected for its recreational and ecological assets and is a major component of the state's tourism economy. Yet in the past dozen years, Lake George and other bodies of water in the area have suffered increasing water-quality problems. There are about 6,000 private onsite systems around the lake, and one study of a group of those found at least one-third were beyond their life spans, with another third of unknown age.

Missouri

Pike County revised its onsite ordinance with two major changes.

First, properties of any size must now have a wastewater system permit and inspection from the county Health Department. Previously, only commercial properties and properties of less than 3 acres were required to have inspections and permits.

Second, the bond for installers has been increased from $10,000 to $20,000. This change was made because of the cost of advanced treatment units, reports the *Webster County Citizen*.

Pike County is on the Mississippi River, about 100 miles northwest of St. Louis.

Montana

A public hearing on revisions to the Ravalli County onsite code didn't go very far when some citizens objected to being in a meeting that didn't match safety guidelines for the COVID-19 pandemic. On the agenda was a first reading of proposed changes to the 10-year-old rules.

The meeting room was beyond capacity under state pandemic guidelines, but other attendees say the guidelines inhibited their right of freedom of assembly. After trying to find some way to accommodate all the people, Jeff Burrows, chair of the health board, said the matter would be returned to the working group that has been reviewing the code for about two years.

Burrows says most public comments refer to only a couple of sections of the proposed new code, but he says some people also don't understand the proposed changes, reports the *Ravalli Republic*.

In part, he says, code changes were driven by homeowners who wanted a replacement system and discovered their permits didn't include changes such as rental homes or added bedrooms. When county officials checked real estate listings against permits, he says there were some great discrepancies between what was permitted and what was in place.

Ravalli County is in western Montana near Missoula.

Washington

Island County has increased the cost for septage dumped at its treatment facility by 80%. The change is due to the increased cost of disposing of biosolids, reports the *Whidbey News-Times*. Each gallon of septage will now cost 27.9 cents instead of 15.5 cents.

The county cannot find a local farmer willing to accept land spreading, so solids must be hauled to Whatcom County, says Bill Oakes, Island County's Public Works director. Island County is on Whidbey Island, about 50 miles north of Seattle. Whatcom County is another 90 miles north on the Canadian border.

Minnesota

Grant limits have been expanded for the septic replacement program of the Pipestone County Soil and Water Conservation District. The program aids low-income residents with replacing troubled onsite systems.

The district is increasing grant amounts to cover 50% of the cost of a new system up to $7,500 for low-income residents and 75% of the cost up to $10,000 for very-low-income residents.

Grants are funded by the Minnesota Pollution Control Agency, and the county is still spending its 2018 money, reports the *Pipestone County Star.*

"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.

SYSTEM PROFILE

Happy Campers

Expanded Orenco AdvanTex system provides much-needed wastewater capacity for a popular RV park near California wine country

By David Steinkraus

It was clear the Vineyard RV Park in Vacaville, California, needed help. When the campground started, one Orenco Systems AdvanTex AX100 pod was installed to handle wastewater. Then the campground owner began expanding.

Technicians went more often to pump tanks, and it became obvious the system was overloaded, says Scott Noble, operations manager of Frank's Septic Services of Vacaville, which maintains the system.

"We said to the owner, 'You see us over here more often than we should be. You should think about adding more treatment,'" Noble says. The owner agreed.

System Profile

Location: Vacaville, California
Facility served: RV park
Designer: Campi Engineering, Fairfield
Installer: Frank's Septic Services Inc., Vacaville
Type of system: Orenco Systems AdvanTex AX100
Site conditions: Flat, clay loam
Hydraulic capacity: 5,000 gpd

Vacaville is on the west side of California's Central Valley, near the state's wine country. Sacramento is about 34 miles to the northeast, and San Francisco is about 55 miles southwest. Most campground customers are skilled workers who come for construction jobs or similar work with contracts that last a few months, Noble says. He's seen auto license plates from Texas, Wyoming and Nevada.

The solution for the Vineyard RV Park consisted of two more AX100 pods, plus equipment to equalize and handle larger flows from the growing operation.

From the preexisting lift station (installed by another company) with duplex pumps and 2-inch pipe, wastewater flows into a 25,000-gallon Xerxes fiberglass tank. This provides initial settling and surge protection for the AX units downstream.

From the big tank, water flows by gravity into a pair of Xerxes 5,000-gallon fiberglass tanks — one of which is new — that dose the pods and also serve as recirculation tanks. A 12-inch Orenco filter on the outflow keeps debris out of the pods.

Effluent from the pods runs into another pair of 5,000-gallon Xerxes tanks — one of which is new — that dose the dripfield. First effluent is pumped through a Hallett UV system (UV Pure Technologies) for additional disinfection. Dispersal is done in 17,580 feet of dripline divided into 12 zones behind campsites.

Work around the campers

The Hallett system replaced another system with UV lamps inside a tank that was not well sealed. Noble says he frequently had to replace boards and other components damaged by moisture leaking out of the UV tank. The Hallet system houses lamps in long tubular housings that water is pumped through.

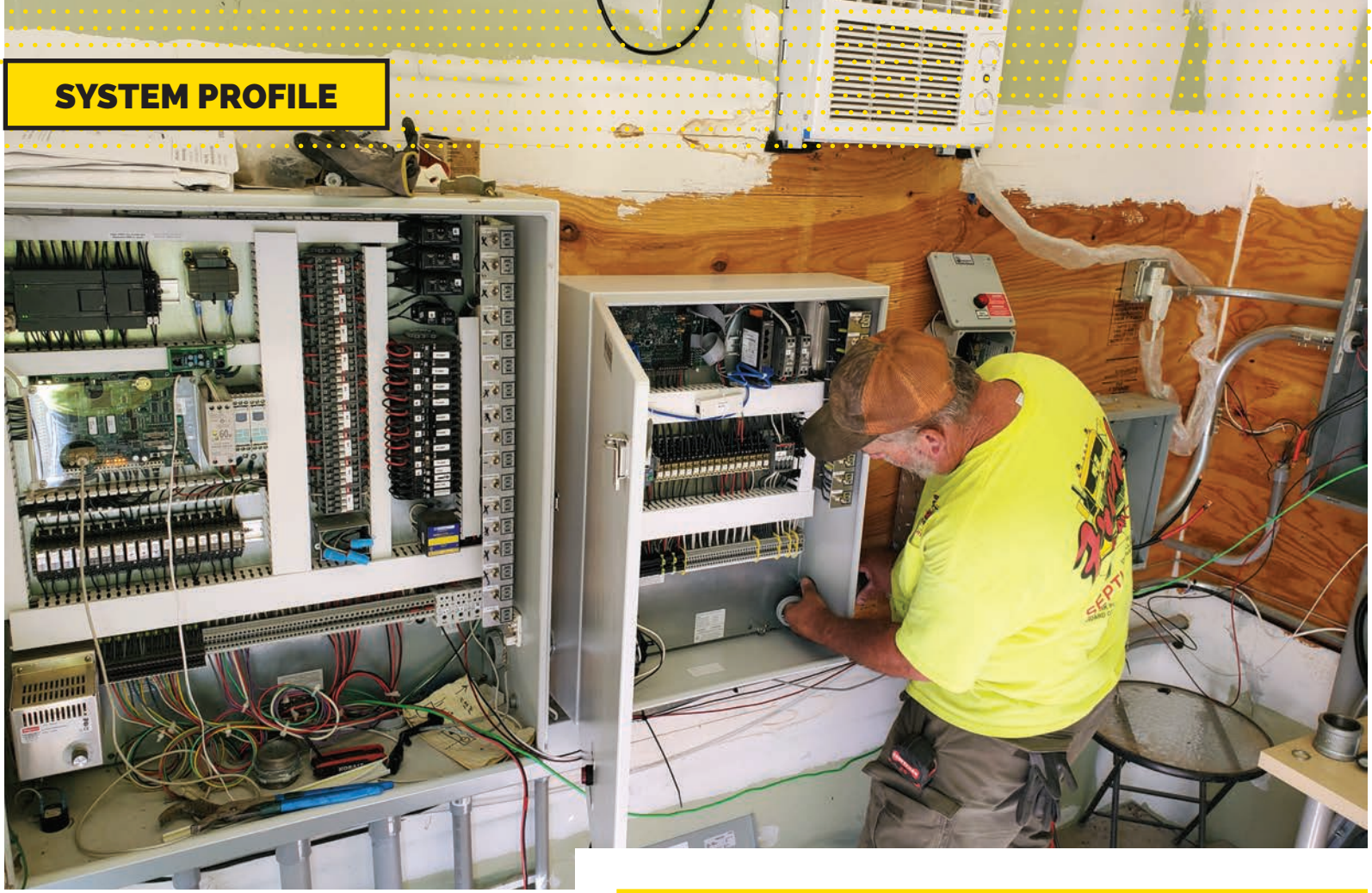
Noble added an additional panel for the new UV and the added zones for the dripfields. All controls are contained in a shed erected when the first pod was installed. Pumps, panels, risers and other equipment were provided by Orenco.

» O'Reilly brings in another load of fill for the onsite system at the Vineyard RV Park. He's using a compact Toro Dingo TX 1000 to work in the restricted space.

» This 25,000-gallon fiberglass tank from Xerxes provides surge protection and initial settling for influent from the Vineyard RV Park campsites in California. Trench boxes were employed for safety during installation.

« The crew from Frank's Septic Services sets one of the new AdvanTex AX100 pods (Orenco Systems) to handle wastewater at the Vineyard RV Park. Pictured are Sean Bonifacio on the JCB backhoe, Chris Naylor, Noah O'Reilly, Freddie Palomares and Ricky Alvarez. (Photos courtesy of Frank's Septic Services Inc.)

SYSTEM PROFILE



Scott Noble works on combining and expanding controls for the new AdvanTex AX100 pods (Orenco Systems) installed at the Vineyard RV Park.

Because of tight space inside the control shed, the Hallett UV system (UV Pure Technologies) at the Vineyard RV Park was installed outside. This modified stainless steel storage cabinet was fitted around the UV system to keep it at operating temperature on cold nights. A thermostatically controlled 400W Hoffman heater and 1-inch hard insulation panels were added later to ensure the unit functions in winter.

"We kept everything online as much as possible, **and no one was forced to relocate while we worked."**

Scott Noble

The Xerxes tanks were all set with a crane. The Frank's Septic Services team used a backhoe to set the AX100 pods. They used a Toro Dingo TX 1000 loader, Takeuchi TB016 mini-excavator and JCB 215 backhoe to get the job done.

Because many campsites weren't developed when the system was expanded, there was no difficulty in working around campground customers, Noble says. All treatment components and the shed holding controls are within a triangular space, about 100 feet on a side, and with campsites along each side. The owner shut down three campsites to provide access for technicians and equipment.

"We kept everything online as much as possible, and no one was forced to relocate while we worked," Noble says.

The crew was there for about a week to install components, and then Noble went alone for about two weeks to finish small jobs, start the system and make sure it was working properly.

Installation went smoothly, Noble says. It was what happened later that posed a challenge.

Insulate the UV enclosure

Because space in the control shed was tight, the Hallett UV system was placed on the outside to allow space for access and maintenance, but the unit needs an air temperature of about 70 degrees F to operate efficiently. As winter approached and the days grew colder, the unit's alarms tripped often as its efficiency decreased, Noble says.

The 2-inch force main from tank No. 1 to tank No. 2 followed the contour lines at the bottom of the hill.

The solution, Noble says, was to build some kind of enclosure and mount a small heater inside it that's like the heaters used to keep onsite system control panels operating in cold weather. Aaron Skinner of Skinner Welding, who works on projects at the Frank's Septic Services shop when needed, started designing an enclosure. But on a trip to a store, he saw a stainless steel storage cabinet that was almost perfect. He modified the cabinet, and he and Noble installed 1-inch hard insulation panels inside. They fitted it around the UV equipment and fastened the cabinet to the side of the equipment shed.

Noble hung a thermometer inside, and he says heat from the UV unit has been enough to keep the inside of the cabinet at the proper temperature. But Noble says he took another precaution: He added a thermostatically controlled Hoffman 400W heater. If the weather turns very cold and the UV unit's heat isn't enough, the heater will turn on.

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Jim Anderson, Ph.D., and David Gustafson, P.E., 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. Readers are welcome to submit questions or article suggestions to Jim and David. Write to ander045@umn.edu.

There's Nothing Baffling About Tank Inlet and Outlet Features

Keep ease of maintenance in mind during the wastewater flow design of the next septic tank you install

By Jim Anderson and David Gustafson

A colleague of ours sent us a photo of the inlet baffle in a septic tank and commented that the baffle design will lead to plugging and sewage backups into the house. While this was good for his pumping business, it meant he got to deal with unhappy homeowners, which is not a good thing.

Baffles are defined as any device installed in a septic tank to retain solids. Often, these are sanitary tees at the inlet and effluent screens at the outlet. In early days, both inlet and outlet baffles were often tees or — as in this case — a baffle built into the tank.

Traveling around the country, we still find states or areas where septic tanks are not equipped with inlet baffles. Usually the comment is made that "inlet baffles are not needed because the wastewater flows directly into the tank."

This contractor-submitted photo shows an inlet baffle that is located too close to the inlet pipe, which could lead to plugging with solids or toilet paper, as well as a customer call to the pumper for emergency service.

INLET AND OUTLET

Inlet baffles perform an important function in the operation of a septic tank. They direct wastewater received from the house downward to the level of the clear zone, dissipating the energy of the incoming flow to prevent turbulence and disruption of the segregation of the scum and sludge layers in the tank. Along with the outlet baffle, the inlet baffle prevents inflow from short-circuiting flow through the tank, allowing time for solids to settle and to maintain the clear zone. Finally, baffles prevent accumulated floating scum from plugging the inlet or outlet.

Sanitary tees operate well at the inlet. They direct flow downward and through the tank and are less subject to plugging with toilet paper or the wipes people aren't supposed to flush.

Outlet baffles today consist of a sanitary tee fitted with effluent screens to ensure larger solids from either the sludge or scum layers are not allowed to move from the tank downstream to impact soil treatment units. Excessive solids and BOD can cause soil treatment trenches to grow excessive biomat and, in some cases, physically plug the soil's ability to accept effluent.

Several other design and operation criteria are important to consider or incorporate when planning a system. Baffles must be resistant to corrosion or decay: They will not function if they are resting in the bottom of the tank.

In the past, a variety of materials were used that did not stand up to the corrosive environment in the tank. Different metal or other materials with metal fasteners did not prove to be durable. There was a strong movement to use cast-in-place baffles in concrete tanks; but due to several factors, they sometimes did not stand up to corrosion. Today what we see most are either cast-in-place or installed sanitary tees.

The baffle distance above or below the sewage surface is critical for proper operation within the tank in terms of holding the scum layer back and for solids to settle as sludge and provide a clear zone for effluent to be delivered to the soil treatment area. The inlet baffle must extend at least 6 inches below the surface, but not more than 20% of the total liquid depth in low-profile tanks. They should also extend at least 6 inches above the operating surface in the tank. This allows the baffle to do its job of directing flow downward into the tank and to keep any developed scum layer away from the inlet.

The outlet baffle must extend a distance equal to 40% of the liquid depth for rectangular tanks or 35% for cylindrical tanks. For a rectangular tank with an operating depth of 60 inches, the baffle should extend 24 inches. This ensures liquid being delivered to the next component is coming from the clear zone. Similar to the inlet, the baffle should extend at least 6 inches above the liquid surface. This is to keep the scum layer from floating over the top of the baffles, causing plugging or potentially being delivered to the soil treatment area.

MAINTAIN PROPER VENTING

In the case of cast-in-place inlet baffles as shown in the photo, it is important to have enough space between the inlet pipe and the baffle. The space needed to avoid plugging with toilet paper or other solids is 6 to 12 inches. Anything less and there will be a lot of service visits to unplug the baffle after sewage has backed up into the house.

Sanitary tees operate well at the inlet. They direct flow downward and through the tank and are less subject to plugging with toilet paper or the wipes people aren't supposed to flush. The bottom line is that sanitary tees reduce plugging problems when compared to the cast-in-place baffles.

A final important note: For proper venting of the tank back through the house vent, there should be at least 1 inch between the tops of the baffles and the underside of the tank cover. If the gases are not vented properly, there will be corrosion in the concrete around the outlet baffle and the underside of the cover, resulting in the baffles deteriorating and the cover being structurally unsound.

The National Precast Concrete Association has tank design and manufacture standards that should be followed.

SNAPSHOT

Decentralized Wastewater Systems Make Sense in Alberta

'With a well-trained professional organization of contractors and maintenance professionals, our industry can provide environmentally and socially responsible solutions to wastewater treatment'

Compiled by Betty Dageforde

In States Snapshot, we talk to a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we visit a member of the Alberta Onsite Wastewater Management Association.

Kraig Rakowski
operations manager

Business: **Rockyview Aqua,** rural area in Calgary, Alberta

Age: 38

Services we offer: Our main operations are running vacuum trucks for maintaining residential septic systems. We also haul from residential and commercial holding tanks, do system maintenance and repairs on components (pumps, floats, alarms, etc.) and perform real estate septic system inspections.

Years in the industry: I started helping my father when I was a boy, about 30 years ago, and moved into it full time after university 16 years ago.

Association involvement:

I've been on the Alberta Onsite Wastewater Management Association board of directors for seven years and sit on various committees within the association.

Benefits of belonging to the association:

I have been involved directly with industry feedback requests of the association by various levels of government. Staying ahead of and informing/influencing regulations is important to our industry, our membership and the public at large. The support of our association to our members and students is also incredibly valuable. Through the training we provide, we create the high-caliber contractors of tomorrow, and the continuing education keeps our industry at the leading edge of onsite science.

Biggest issue facing your association right now:

The effects of the COVID-19 pandemic are testing every industry in the world, including onsite wastewater. It's nice to be part of the wastewater industry during these times, as we can still be valuable and contribute. Wastewater, whether residential or commercial, still requires treatment, so our industry is truly an "essential service." There are a lot of people hurting financially from these times, which will affect their financial priorities and their ability to pay for memberships or education. The association is creating payment programs and other creative options to continue to assist and support our members and the industry.

Our crew includes:

My father, Albert Rakowski, is the owner. And our two indispensable employees are Nicholas McIlhargey and Jonathan Cadotte.

Typical day on the job:

I jump between running the business from my home or shop office and doing work in the vacuum trucks or service trucks.

The job I'll never forget:

At the end of June 2013, southern Alberta got hit with unprecedented rains that flooded rivers and watersheds, which then poured into the surrounding towns. Calgary's downtown was completely flooded. Waste and water treatment plants were overwhelmed with floodwater. Floodwater was entering residences and businesses through their septic and sewer systems. It was pandemonium. Anyone with a vacuum truck, water truck, access to pumps or generators was running ragged helping out who they could. There were many days on end where we would run on minimal sleep. Everyone running vacuum truck equipment lived in their rigs until things became a bit more manageable. It was an unforgettable time that affected a lot of people.

My favorite piece of equipment:

Operating our four vacuum trucks is the lion's share of what we do, so keeping them in their best shape and operating them safely and efficiently is our pride. Enough time spent in your truck and you can feel, hear — sometimes even smell — what's going on with them.

Most challenging site I've worked on:

The most difficult sites are the systems that are in a bad state of disrepair or have failed. We often have to walk the line of doing the best possible job given the conditions and circumstances while considering both the wants of the homeowner and any possible environmental and health/safety consequences. Sometimes the solution is working with a homeowner to improve a system (or their use of it) with knowledge, maintenance or components; sometimes it can be informing customers of the need for a new system and pointing them in the direction of a designer or installer. It can be a challenge to deal with a homeowner who isn't prepared financially or otherwise for a large potential expense when they may not consider their onsite system to be as vital of a utility as we know it to be.

Oops, I wish I could take this one back:

We deal primarily with residential customers doing small-scale service jobs, and we do a large volume of tanks. With that high volume of personal interactions, you occasionally deal with conflicts, whether it be unreasonable requests, payment issues or even mistakes made by someone on site. I try not to let the 1% that are negative interactions take away from or interfere with the 99% of positive ones.

The craziest question I've been asked by a customer:

I have 10 vats full of homemade wine downstairs that turned into vinegar. Can I dump them into the tank?

If I could change one industry regulation, it would be:

I'd like to see some changes in the regulations from Alberta Environment regarding land application of residential wastewater. We have lots of room here for land application on agricultural land, but some of the regulations are quite restrictive. The Alberta Onsite Wastewater Management Association has had the privilege and opportunity to give industry feedback and work with the Alberta government to assist in and inform some of these regulations. We've been putting a lot of effort into trying to educate and make science- and evidence-based arguments to achieve reasonable criteria, which we feel would be of great benefit to the industry, environment and public.

Best piece of small-business advice I've heard:

It's pretty simple but important: "You take care of the business, and the business will take care of you." My father said it just in passing years ago, and it always stuck with me.

If I wasn't working in the wastewater industry, I would:

I have a degree in geology from the University of Calgary, so I was heading in that direction before I smartened up and went into wastewater.

Crystal ball time – This is my outlook for the wastewater industry:

I am a big proponent of decentralization in the wastewater industry. Large-scale facilities shed all of the water and nutrients outside of their environment of origin. This makes for an easy "flush and forget" culture, but it is not a long-term solution in many situations. These centralized facilities require massive budgets for capital, operations and maintenance and are often undersized even from the start. They can also be a larger environmental risk when failures do occur, such as the Calgary flood of 2013. There are constant technological advances in the onsite industry, making them more scalable to community levels. With a well-trained professional organization of contractors and maintenance professionals, our industry can provide environmentally and socially responsible solutions to wastewater treatment in an ever-increasing variety of ways. ◻

Would you like to see someone in your state or provincial wastewater trade association profiled in Snapshot?
Send your suggestions to Jim Kneiszel at editor@onsiteinstaller.com.

System Repair/ Drainfield Rejuvenation

By Craig Mandli

AERATION SYSTEM

Geomatrix Systems SoilAir

SoilAir from **Geomatrix Systems** intermittently aerates the drainfield/leachfield and surrounding soils rather than constantly aerating wastewater in a tank. This process allows rapid rejuvenation of failed septic systems, extends the life span of new leachfields and enhances treatment, according to the maker. Systems can serve single-family and multifamily homes, as well as challenging and high-strength waste streams found at restaurants, hotels, marinas, laundromats, health care facilities, grocery stores, food processing facilities and convenience stores. **888-764-5247; www.soilair.com.**

ATUS

Anua BioCoir

The **BioCoir** recirculating media biofilter from **Anua** is designed to be simple to install and easy to operate. It provides stable treatment across a broad range of applications, with no constantly running, noisy blowers or motors, according to the maker. It uses a coconut coir media housed in a preassembled pod. Coir refers to the fibers that make up the thick husk of a coconut fruit. The coconut fiber is low cost, an upcycled resource and high in lignin content, which results in a durable material. Pretreated effluent is time-dosed over the media using specially designed helical spray nozzles to provide uniform distribution. Treatment is optimized by recirculating effluent through the media multiple times. It is certified to NSF/ANSI Standard 40, Class I and third-party tested to reduce nitrogen by more than 50%. Residential and commercial configurations are available. **336-547-9338; www.anuainternational.com.**

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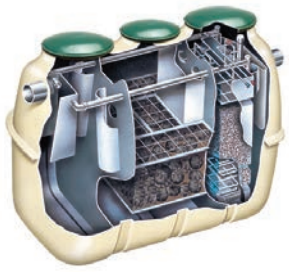
Both the **RetroFAST** and RetroFITT-ee (energy-efficient version) units from **BioMicrobics** are designed to be a simple upgrade to enhance a conventional septic system or renovate a biologically failed septic system. A unit can be installed directly in an existing tank to create an optimized treatment environment using submerged, fixed-film media for microbial growth with an energy-efficient aeration system. It constantly sends effluent that's rich in dissolved oxygen to the drainfield. Where sites and regulations allow, it can be used in new installations. It is designed to immediately deliver high levels of treatment to help ensure clogging layers never form. **800-753-3278; www.biomicrobics.com.**



Clarus Environmental Fusion

Clarus Environmental's Fusion systems are drop-in wastewater treatment units designed for decentralized applications where effluent quality must meet or exceed secondary treatment standards. They are designed for residential, commercial and small community applications and are available in 450- to 4,000-gpd treatment capacities. All models up to 800 gpd are NSF/ANSI Standard 40 certified to produce effluent quality of 9 mg/L CBOD5 and 9 mg/L TSS. The design enables installation without a pretreatment tank, making it suitable for sites with limited space. Effluent disposal options include conventional trenches, dosed systems, drip irrigation or disinfection with direct discharge. **800-928-7867; www.clarusenvironmental.com.**

Delta Treatment Systems ECOPOD

The **ECOPOD** for advanced wastewater treatment from **Delta Treatment Systems** is a series of products that are easy to install, low maintenance and effective in reducing levels of nitrogen, BOD and TSS. The unit is simple in design and can treat 500 to 1,500 gpd for residential systems and is NSF/ANSI 40 and 245 certified. The intratank bioreactor can be inserted into an average-sized round or rectangular concrete, fiberglass or plastic onsite wastewater treatment tank or vault. It uses a fixed-film process that is stable, reliable and robust. It is customizable for individual residential installations, cluster designs and small- to medium-size commercial applications. Fixed film is a preferred treatment process in many areas for onsite wastewater treatment systems, according to the maker. The odorless, quiet system is FHA- and VA-acceptable and is suitable for intermittent usage. Minimum sludge production reduces pumpout frequency and cost, and a remote monitoring system is available. **800-219-9183; www.deltatreatment.com.**

NextGen Septic technology

Treated water exiting **NextGen Septic** technology meets higher water-quality standards than treated water leaving a typical centralized wastewater treatment plant. The system is suitable for sites traditionally requiring costly drainfield construction due to size restrictions and/or hilly, rocky, clay or sandy soil conditions. It is approved for surface discharge in Kentucky, and it uses a combination of anoxic treatment of the raw wastewater followed by aerobic degradation of the contaminants. An ultrafiltration membrane is used to further treat the water, before being disinfected using ozone. Treated water has less than 15 mg/L of BOD_5, less than 2 mg/L ammonia, less than 1 mg/L phosphorus and no TSS. Ozone decomposes to oxygen, which increases the dissolved oxygen level in the discharged water. This treated water can be used for irrigation or to resurrect a clogged leachfield. **513-673 3583; www.nextgenseptic.com.**

Norweco Singulair R3

The **Singulair R3** water reuse system from **Norweco** reduces water consumption, reuses treated effluent and recycles water. It provides a solution to chronic water shortages and reduces energy costs associated with water and wastewater treatment, according to the maker. The system quietly, efficiently and automatically treats all incoming wastewater to a high level for restricted indoor and unrestricted outdoor use. It exceeds the effluent requirements of NSF/ANSI Standards 40, 245 and 350. It qualifies for Green Building credits under both the LEED rating system and the National Association of Home Builders ICC 700 National Green Building Standard. By using the R3 system and following local building code, a homeowner can expect to dramatically reduce water usage. **800-667-9326; www.norweco.com.**

Orenco Systems AdvanTex AX-RT Series

The **AdvanTex AX-RT** Series of advanced wastewater treatment systems from **Orenco Systems** is designed for system repair and rehabilitation. All interior components are installed, plumbed and adjusted at the factory. Units can be shallowly buried for use between a functional, watertight septic tank and a functioning drainfield. The design includes recirculation, treatment and discharge in a single unit to simplify installation and eliminate the need for additional tanks, basins, risers and lids. The system can be maintained with an annual service call. Filters and textile media are accessible and cleanable, and control panels are touch safe. No blower is needed for the passively vented system. An optional UV disinfection unit is available. **800-348-9843; www.orenco.com.**

Presby Environmental Advanced Enviro-Septic

Advanced Enviro-Septic (AES) from **Presby Environmental** is a passive onsite wastewater treatment system for residential, commercial and community use that's designed to remove 99% of wastewater contaminants. It requires no replacement media or additives and no electricity or mechanical devices. The NSF 40 Class 1-certified system treats effluent efficiently, providing long system life and protecting the environment, according to the maker. It quickly and naturally establishes multiple bacterial treatment environments throughout the system that break down and digest wastewater contaminants that leave the septic tank. Following the filtering of suspended solids, it releases highly purified wastewater to the soil, recharging the groundwater and preventing soil and groundwater contamination. It is BNQ certified for secondary and advanced secondary treatment. **800-473-5298; www.presbyeco.com.**

SeptiTech STAAR filter systems

SeptiTech STAAR (Smart Trickling Anaerobic/Aerobic Recirculating) filter systems are designed for residential and commercial properties with minimal operator oversight while delivering consistent treatment during peak, low or intermittent flows. Using an unsaturated, engineered textile media to treat wastewater that meets strict permit limits, the commercial filter system provides a simple, automatic equalization and clarification process for 500- to more than 150,000-gpd flows. The biological trickling filter technology also maintains low levels of Nitrate-N, with all below-grade components that fit in watertight concrete, plastic or fiberglass tanks. Smart technology allows the system to go into a sleep mode to achieve lower operating costs and power requirements. Systems are ETV-EPA verified and NSF/ANSI Standard 40/245 certified. **800-753-3278; www.septitech.com.**

SEPTIC SYSTEM BACTERIA

Jet Inc. BIO JET 7

The **BIO JET 7** series of bacterial supplements from **Jet Inc.** offers biological aids designed to accelerate the degradation of FOG, proteins, tissues, soap scum and other organics in residential, commercial and municipal wastewater applications. Nonhazardous and nontoxic, it is a blend formulated to assist biological activity in septic systems, aerobic wastewater treatment systems, lift stations, lagoons and retention ponds. The supplements are effective for difficult startups, daily maintenance to meet system discharge requirements or when a system becomes unstable due to changes in flow, chemicals or increased organics, according to the maker. Continuous use can help reduce odor, maintenance and emergency line blockages, the maker says. It is available as ready-to-use, quick-dissolving, flushable dry packs; they are packaged as a one-year supply in a recyclable plastic canister. A liquid version is available in 1-, 5- and 55-gallon containers. **800-321-6960; www.jetincorp.com.**

Scienco/FAST - a division of BioMicrobics Mighty Mike U&F-BOOST!

Premeasured and pressed into a tablet, **Mighty Mike U&F-BOOST!** (Billion Onsite Organisms Sewage Treatment) tablets from **Scienco/FAST - a division of BioMicrobics** are designed to break down sewage. They contain a formulation of 25 billion per gram Class 1 bacteria with no *Salmonella*, *Shigella* or *E. coli* strains. They are safe for pipes, septic systems and tanks with no harmful chemicals, emulsifiers, added enzymes or surfactants. The tablet can be flushed down the toilet or tossed directly into a trouble area. The maker states the microbial population will double in number every 20 to 40 minutes, consuming its food source until all organic material is gone. They can function in both aerobic and anaerobic environments. **866-652-4539; www.sciencofast.com.**

SEPTIC DRAINFIELD RESTORATION

Arcan Enterprises Septic-Scrub

Septic-Scrub chemical additive from **Arcan Enterprises** is designed to help remove sludge that builds up and sticks to the stone in a drainfield, pit or sand mound to rejuvenate the drainfield. According to the maker, it works in the first 24 hours after application. It can serve as part of a maintenance program. It works with all types of systems, is safe to handle and is environmentally friendly. **888-352-7226; www.arcan.com.**

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System Repair/ Drainfield Rejuvenation

By Craig Mandli

Sand filter units suitable for small footprint lot

Problem: A fuel transfer station in Scott City, Kansas, needed a new septic system after the drainfield failed. The leachfield was saturated and not performing due to the heavy daily use, and excessive traffic had compacted the septic field. This is a fuel terminal site, and underground utilities were of great concern. Poor receiving soils and limited areas for a new system dictated the need for a treatment solution that would provide high-quality effluent in a small footprint. A conventional stone-and-pipe replacement system would not fit in the area.

Solution: Frank Penner of Frank's Plumbing designed and installed an above-grade 1,050-gpd system with guidance from **Eljen**. The system contains 60 **A42 GSF** (Geotextile Sand Filter) units in two laterals and is center-fed using time pressure dosing.

Result: The GSF units allowed the designer to choose an in-ground or above-grade system and work the layout to make it suitable for the limited site. The repair system was raised and protected from vehicle traffic and parking. The raised system was able to fit in the available space. **800-444-1359; www.eljen.com.**

Leachfield system replaces failing residential septic system

Problem: A Pittsford, New York, three-bedroom home septic system installed in the 1970s was failing. The owners needed a replacement but wanted to preserve their extensive investment in landscaping. The available footprint for a new system was limited and included steep slopes, high groundwater and non-percolating soils. The failing septic system used two concrete single-compartment septic tanks — one for blackwater and one for graywater — and both septic tanks discharged to the same leachfield. The naturally sloping site resulted in stormwater flowing toward the existing system and the proposed footprint.

Solution: A 540-square-foot **ATL** passive advanced treatment leachfield system from **Infiltrator Water Technologies** was selected for the 330-gpd replacement system. Installation began by abandoning the blackwater tank and then installing two Infiltrator IM-540 tanks. To meet regulations, one IM-540 was installed downstream of the graywater tank to provide a second compartment, and the second tank conveys settled effluent to the ATL system. The leachfield design has three 4-foot-wide-25-foot-long trenches. Due to the tight footprint and extensive landscaping, the installation of the shallow trenches proceeded as the crew worked themselves out of the area. Top-soiling and seeding of the system was completed, and a curtain drain was installed to convey stormwater away from the system. The system was engineered by Rosiek Engineering, and components were provided by Kistner Concrete.

Result: The homeowner was happy with the minimal impact to the landscaping. The system is operating well. **800-221-4436; www.infiltratorwater.com.** □

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Arkansas Onsite Wastewater Association; www.arkowa.com

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California Onsite Wastewater Association; www.cowa.org; 530-513-6658

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Colorado Professionals in Onsite Wastewater; www.cpow.net; 720-626-8989

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Delaware On-Site Wastewater Recycling Association; www.dowra.org

FLORIDA

Florida Onsite Wastewater Association; www.fowaonsite.com; 321-363-1590

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Georgia Onsite Wastewater Association; www.georgiaonsitewastewater.com; 706-407-2552

Georgia F.O.G. Alliance; www.georgiafog.com

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Onsite Wastewater Professionals of Illinois; www.owpi.org

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Indiana Onsite Waste Water Professionals Association; www.iowpa.org; 317-889-2382

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Iowa Onsite Waste Water Association; www.iowwa.com; 515-225-1051

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Kansas Small Flows Association; www.ksfa.org; 913-594-1472

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Maine Association of Site Evaluators; www.mainese.com

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Michigan Onsite Wastewater Recycling Association; www.mowra.org

Michigan Septic Tank Association; www.msta.biz; 989-808-8648

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Minnesota Onsite Wastewater Association; www.mowa-mn.com; 888-810-4178

MISSISSIPPI

Mississippi Pumpers Association; www.mspumpersassociation.com, 601-249-2066

MISSOURI

Missouri Smallflows Organization; www.mosmallflows.org; 417-631-4027

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Nebraska On-site Waste Water Association; www.nowwa.org; 402-476-0162

NEW HAMPSHIRE

New Hampshire Association of Septage Haulers; www.nhash.com; 603-831-8670

Granite State Designers and Installers Association; www.gsdia.org; 603-228-1231

NEW MEXICO

Professional Onsite Wastewater Reuse Association of New Mexico; www.powranm.org; 505-989-7676

NEW YORK

Long Island Liquid Waste Association, Inc.; www.lilwa.org; 631-585-0448

NORTH CAROLINA

North Carolina Septic Tank Association; www.ncsta.net; 336-416-3564

North Carolina Portable Toilet Group; www.ncportabletoiletgroup.org; 252-249-1097

North Carolina Pumper Group; www.ncpumpergroup.org; 252-249-1097

OHIO

Ohio Onsite Wastewater Association; www.ohioonsite.org; 740-828-3000

OREGON

Oregon Onsite Wastewater Association; www.o2wa.org; 541-389-6692

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Pennsylvania Association of Sewage Enforcement Officers; www.pa-seo.org; 717-761-8648

Pennsylvania Onsite Wastewater Recycling Association; www.powra.org

Pennsylvania Septage Management Association; www.psma.net; 717-763-7762

TENNESSEE

Tennessee Onsite Wastewater Association; www.tnonsite.org

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Texas On-Site Wastewater Association; www.txowa.org; 409-718-0645

Education 4 Onsite Wastewater Management; www.e4owm.com; 713-774-6694

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Virginia Onsite Wastewater Recycling Association; www.vowra.org; 540-377-9830

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Washington On-Site Sewage Association; www.wossa.org; 253-770-6594

WISCONSIN

Wisconsin Onsite Water Recycling Association; www.wowra.com; 888-782-6815

Wisconsin Liquid Waste Carriers Association; www.wlwca.com; 888-782-6815

NATIONAL

Water Environment Federation; www.wef.org; 800-666-0206

National Onsite Wastewater Recycling Association; www.nowra.org; 800-966-2942

National Association of Wastewater Technicians; www.nawt.org; 800-236-6298

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Alberta Onsite Wastewater Management Association; www.aowma.com; 877-489-7471

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British Columbia Onsite Wastewater Association; www.bcossa.org; 778-432-2120

WCOWMA Onsite Wastewater Management of B.C.; www.wcowma-bc.com; 877-489-7471

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Manitoba Onsite Wastewater Management Association; www.mowma.org; 877-489-7471

Onsite Wastewater Systems Installers of Manitoba, Inc.; www.owsim.com; 204-771-0455

NEW BRUNSWICK

New Brunswick Association of Onsite Wastewater Professionals; www.nbaowp.ca; 506-455-5477

NOVA SCOTIA

Waste Water Nova Scotia; www.wwns.ca; 902-246-2131

ONTARIO

Ontario Onsite Wastewater Association; www.oowa.org; 855-905-6692

Ontario Association of Sewage Industry Services; www.oasisontario.on.ca; 877-202-0082

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Saskatchewan Onsite Wastewater Management Association; www.sowma.ca; 877-489-7471

CANADIAN REGIONAL

Western Canada Onsite Wastewater Management Association; www.wcowma.com; 877-489-7471

PRODUCT SPOTLIGHT

E-Z Treat system creates environment for bacterial growth

By Tim Dobbins

E-Z Treat recirculating synthetic media filter systems are designed to create the ideal setting for bacterial growth to flourish. They are manufactured to treat sewage across multiple applications and for flows of 100 to 100,000 gpd. Systems are engineered for a variety of wastewater situations, including multifamily residences, RV parks, campgrounds, schools, churches, restaurants and shopping centers.

"E-Z Treat is one of the two blackwater onsite systems that were tested and listed for NSF 350 through NSF," says Michael Stidham, vice president of E-Z Treat. "It is the first and only biological and nonchemical system approved for water reuse." NSF 350 means a more efficient use of water, as it certifies the effluent for reuse in nonpotable activities such as toilet flushing, car washing, greenhouse use, cooling towers and irrigation.

The system uses natural biological processes to break down waste. When septic-treated effluent first enters the recirculating chamber, it is dosed passively through an active film matrix. "The styrene media is very uniform, providing ample surface area for bacterial growth, and it is designed to accommodate optimum air and liquid flow for sufficient nitrification," Stidham says.

Through a series of bypass valves and recirculation pumps, the effluent is continuously circulated through the media, where it can exit through a bypass valve and flow into a gravity drainfield or into a pump chamber for dispersal options.

The technology has been used effectively for more than 20 years and is the result of years of research and development, according to Stidham.

"E-Z Treat was developed by direction of the U.S. Environmental Protection Agency's Onsite Wastewater Treatment Systems Technology Sheet 11 for advanced secondary treatment," Stidham says. "It is a simple, self-contained system with few components to include one or more E-Z Treat pods, a recirculation pump, control panel, floats and a bypass valve." **866-753-4770; www.eztreat.net.**

Scienco/FAST - a division of BioMicrobics receives NSF/ANSI Standard 61 certification

Scienco/FAST - a division of BioMicrobics announced its Scienco Systems product lines received NSF/ANSI Standard 61 certification for its SciCHLOR line of onsite sodium hypochlorite generators. To achieve certification, the equipment was passed through a seven-step process that was overseen by the NSF Drinking Water Additives Joint Committee. SciCHLOR treats water using only salt, water and power to generate an optimal 8,000-ppm, ready-to-use disinfectant on site and on demand.

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