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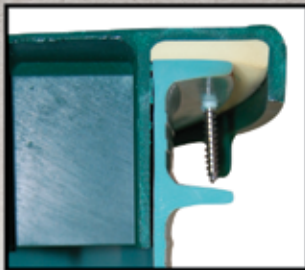
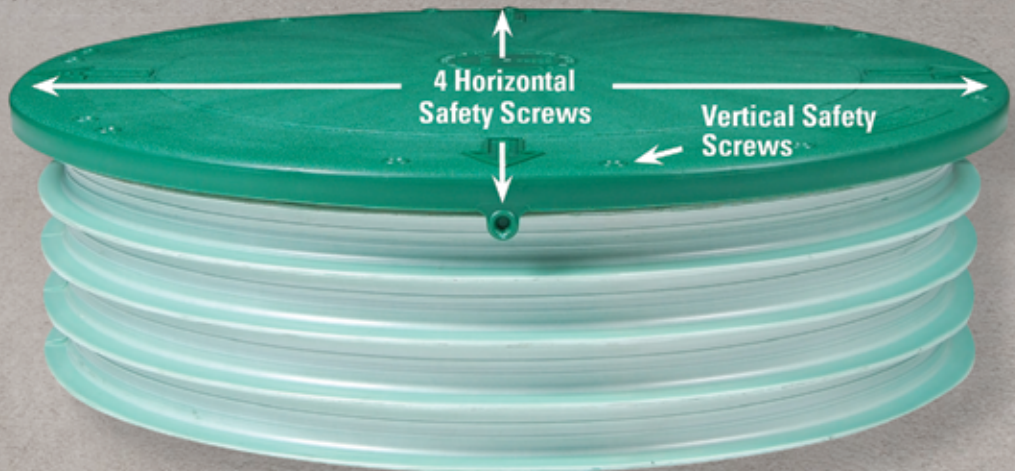


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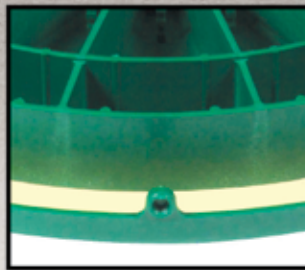
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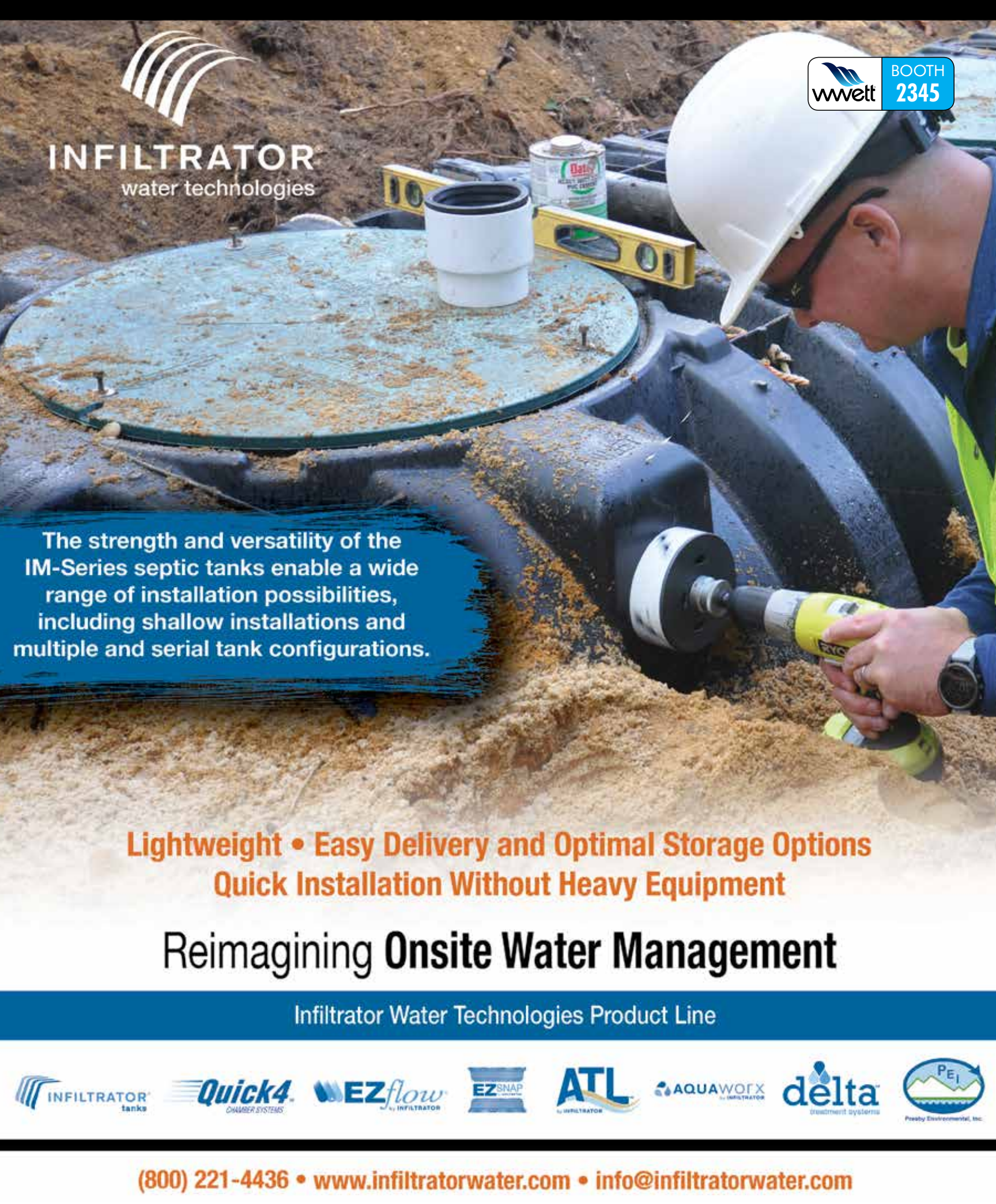
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INSTALLER PROFILE:

My Kind of Town

By David Steinkraus

ON THE COVER:

Jordan Johnson, owner of Countryside Plumbing Sewer & Septic in Antioch, Illinois, is shown with employee Dylan Bishop and a Caterpillar excavator at a work site. (Photo by Michael McLoone)

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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.





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

Fledgling Alabama Program Replaces Failed Onsite Systems

Manufacturers and volunteer tradespeople make a growing contribution to improve wastewater treatment in Black Belt region

Five years ago, I introduced you to a few determined folks in south-central Alabama who recognized an abundance of failed septic systems — or homes without septic systems at all, just a straight pipe that dumped waste in the backyard — and wanted to do something about it.

These concerned citizens teamed with the Alabama Onsite Wastewater Association to build a septic system for an elderly woman, Willie Mae Spivey of small town Tyler, located in a 17-county area known as the Black Belt because of the area’s dark, impermeable clay soils. The AOWA donates onsite systems to those in need every year, and this modest project was certainly a good-news story for our industry.

I’m excited to report the project to help Spivey has grown into something much bigger. It spawned a new nonprofit group, the Black Belt

Unincorporated Wastewater Program, or BBUWP, which has installed more than 100 septic systems, recently formed a board of directors and secured a \$500,000 gift from an area plastics manufacturer, SABIC Inc. And \$2.1 million in American Rescue Plan Act funds were made available last fall to residents of Fort Deposit, Alabama, in Lowndes County, to improve water and sewer services.

The organization recently trained eight high school students to perform audits of the plumbing systems for applicants for wastewater system improvements, with an ultimate goal of encouraging young people to enter the plumbing trades. For Sherry Bradley, a director, and Perman Hardy, the BBUWP president, the program has been a dream realized to help poor people in the region secure safe drinking water and wastewater treatment others across the country have always taken for granted.

A BIG PROBLEM

Hardy received a donated septic system right after Spivey, and it has made a huge difference in her life. Money was so tight that for many years, Hardy says she had to choose between pumping her failing system and providing for her grandchildren. All of her grandchildren suffered from asthma, which she attributed to the poor sanitation conditions they suffered under. And they were constantly dealing with the odors from waste surfacing in the yard.

“Once it started failing, I had to figure out a way to keep the sewage out of the house,” she says. “My grandchildren understood the sacrifice I had to make. I couldn’t buy Christmas presents for my grandchildren because I was putting my money into the septic system.”

Bradley, who has served as director of Alabama’s Bureau of Environmental Services for many years, was there from the start, advocating for Spivey, and then looking at ways to develop the program to where it is today. She feels for many residents of Lowndes County, part of the 17-county Black Belt, who have either rudimentary onsite systems that don’t work in these difficult soils, or simply have pipes that run to the back of their properties and dump waste on the ground.

One system at a time, things are improving, Bradley says. The BBUWP is buoyed by installer volunteers and manufacturers who donate onsite components to build new systems like Spivey’s and Hardy’s, which utilize technology from FujiClean USA and Infiltrator Water Technologies.



▲ Representatives of SABIC Inc., far left and right, present a \$500,000 check to Lee Salter, of the state health department, and Perman Hardy, president of the Black Belt Unincorporated Wastewater Program. (Photo courtesy of BBUWP)

Recently, IWSH, International Water Sanitation Hygiene, the foundation arm of the International Association of Plumbers and Mechanical Officials, or IAPMO, has pledged to pitch in with the labor necessary to grow the program. And LIXIL, parent company of plumbing fixture manufacturer American Standard, pledged \$100,000 in water-efficient products to help reduce flow in areas with problematic soils.

GOOD JOBS

Then came the \$500,000 gift from SABIC, located in Burkville, Alabama, which Bradley says will pay for the organization to set up an office and fund the training program for ongoing plumbing inspections at applicants' homes. The program to train high school students and promote careers in the trades is especially gratifying for Bradley, who says plumbing skills could lead to good jobs for young people in this poor region.

"What we have is a generational problem if they grew up in a house with a straight pipe all their lives, they think that's normal. But it's not normal. We'll show them different installations of onsite systems," she says. The youths will learn about the well-paid tradespeople involved in the construction industry, from the plumbers to the electricians and equipment operators.

"It takes a lot of people to do the job right. They need to see that, and it may pique their interest and one day they will say, 'I can do this.' Young people — that's going to be the lifeline of this thing. We want to spark their

"A lot of young people in the past have looked down on the trades and I think that's a mistake. Lowndes County has had a lot of economic hardship. Anything that can give these people a chance to improve their lives is great."

Mike Webster

interest; they need to know if you do good work, you get paid," she continues. "I'm all for taking the young people and working with them. It's easy to bend a tree when it's young. Maybe we're looking at future home builders and plumbers."

The folks at LIXIL heard about the program and knew part of the problem was ineffective sewage treatment in the ground, but also that part of the problem was inside the house with inefficient plumbing fixtures sending too much water into ground that doesn't percolate. The Black Belt soils are notoriously bad when it comes to leaching wastewater, says Mike Webster, LIXIL senior project manager — new product development.

"We felt if we could reduce the amount of water going into the septic system, it would certainly make the situation better," he explains. So the

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company is shipping fixtures and fittings to a warehouse in Alabama to handle ongoing demand when applicants are accepted by BBUWP. These include low-flow toilets, kitchen faucets and shower heads.

PROMOTING THE TRADES

Knowing what materials are needed is the reason for the student inspectors. The young people are being trained to look for plumbing leaks, inefficient fixtures and other problems. Their reports will go to LIXIL, then the products will be put in the hands of volunteer plumbers for installation.

"It's a wonderful idea to get more people involved at a younger age," Webster says. "A lot of young people in the past have looked down on the trades and I think that's a mistake. Lowndes County has had a lot of economic hardship. Anything that can give these people a chance to improve their lives is great."

Hardy says she never thought she'd see the day when the issue of failing septic systems would be addressed. Few people in the region have the funds to pay for a new septic system, so it's heartening to see manufacturers, installers and plumbers getting together to help this cause. She was especially bowled over by the SABIC donation and hopes there is ongoing support until every home has a proper wastewater system.

"I got so emotional, I thought I was going to pass out," she says of receiving the SABIC gift. "This was a dream come true to expand a lot of things down there."

KEEP IT GOING

The synergies realized in the BBUWP program are great on so many fronts, from helping the disadvantaged to training a new generation of wastewater workers. I hope the enthusiasm doesn't begin and end in Alabama. The issues of inadequate rural wastewater treatment and a dwindling number of tradespeople are pervasive in many corners of North America.

I'm certain that no matter where you are while reading this column, you know of people who are struggling to pay for system repair or replacement. And I'm just as certain you are aware of the shortage of good installers. I'll bet just about every company that receives a copy of *Onsite Installer* would be happy to hire the next good recruit who walks in the front door. □

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3 KEYS

Proper Pump Installation

Proper installation of a pump and discharge assembly requires three specific features to assure the pump will work properly and be serviceable. It must be accessible, replaceable and properly controlled. Check out this online story for a guide to meeting those requirements.

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SCAN ME

STAYING SAFE Training Your Competent Person

Small companies in the decentralized wastewater industry do not typically have an employee assigned specifically to oversee safety. That means that the supervisor or crew leader is often the competent person, according to OSHA standards. This online story dives into how to choose and train your company's competent person.

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CHECKED OUT Quiet Quitting

You've no doubt heard the term "quiet quitting." But what is it, exactly? And how does it affect small-business owners? Columnist Amanda Clark takes a closer look at this important concept and its implications for employers.

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MY KIND OF TOWN

Chicago-area installer Jordan Johnson finds plenty of work in suburban and rural system replacements

By David Steinkraus

>> Jordan Johnson operates the excavator on a residential work site in suburban Chicago. (Photos by Michael McLoone)



When Jordan Johnson moved back to northeastern Illinois and started a plumbing business, he was told the region needed septic system installers. He gave it a try, and soon his new installation business pushed the plumbing business aside. And he's happy about that.

Johnson owns Countryside Plumbing Sewer & Septic based in Antioch, Illinois. It's 60 miles northwest of downtown Chicago and right up against the Wisconsin border, yet Antioch and surrounding Lake County are very much part of the Chicago metro area. Some of the county's 700,000 residents live in the urban strip and wealthy communities along the Lake Michigan shore, but many are inland where subdivisions are many but municipal sewer systems are few and limited.

INDUSTRY RELATIONSHIPS

"I'm the youngest contractor in Lake County. I'm 41," Johnson says. When he first received his installing license, he says, he reached out to other contractors and told them he wanted to form relationships. "The reaction I got was, 'Thank God because we need contractors.'"

"I don't really personally believe in competition, and I tell my customers that, too," Johnson says. "They're making an investment in their property, and they need to make sure that investment is done with somebody who they think will do a good job. Hire me because you want us to do the job, not because we're going to be cheaper than the next guy."

Relationships also bring in business. Because Countryside tops Google search results, people often call asking for a pumpout without understanding what the company does. Johnson's voicemail greeting includes the phone number of a local pumper who is happy to repay the favor by referring repair work to Countryside.

This year Johnson added service from DocuSign, which allows people to electronically sign documents instead of printing out, signing and mailing a PDF. With DocuSign, he says, he typically has a signed contract within 24 hours, and customers have told him the convenience of the electronic contract tipped their choice in his favor.

Countryside has about 50 aerobic systems under maintenance. Income from that is about 5% of total revenue. As time goes on that will increase because it's common for system installers to receive maintenance contracts, Johnson says.



Operating a Caterpillar excavator, Johnson digs holes to place a Clearstream aerobic treatment unit and Infiltrator Water Technologies tank. Dylan Bishop looks on.

CAREER MOVE

Johnson grew up in Minnesota and moved to Illinois to attend Lake Forest College, about 25 miles from his current home. There he studied sociology and anthropology. He graduated in 2003, but found a poor job market. “There was nothing unless you had a master’s degree,” he says.

He had worked construction jobs to pay for his college education, and with job prospects dim, he joined AmeriCorps in Lake County where he built 13 homes with Habitat for Humanity. “My boss was a general contractor in the area, so he taught me how to build houses from the ground up because we did everything except plumbing and electrical on the inside, but we did our own sewer work on the outside. It was a fantastic experience, and he was a good mentor.”

Johnson met his wife in Lake Forest, and the pair decided to escape Midwestern winters by moving to California. He started a remodeling business in Redondo Beach, southwest of Los Angeles, on the coast.

California regulates onsite work under its plumbing licenses, so when Johnson trained for that license, he received an automatic introduction to



Countryside Plumbing Sewer & Septic Antioch, Illinois



- Owner:** Jordan Johnson
- Founded:** 2012
- Employees:** 2
- Service area:** Lake County, Illinois
- Services:** Installation, inspections, plumbing, onsite system maintenance
- Associations:** Onsite Wastewater Professionals of Illinois
- Website:** www.countrysidesewerandseptic.com



◀ Johnson is at the controls of a Caterpillar excavator, placing a pair of tanks from Infiltrator Water Technologies.

onsite systems. Eight years later, in 2012 and after the birth of their oldest son, they moved back to the Midwest to be close to their families.

LOADS OF WORK

In Lake County, the health and building departments are in the same place, and Johnson heard from county staff about a lack of onsite contractors. “They started telling me, ‘Oh, you’re a plumber. You could pass the septic license exam for Illinois. You should take the exam.’”

At first he was apprehensive because of the investment he would have to make in equipment. So he asked about the future of installing in a big suburban county.

“I said, ‘I don’t want to start this business and have you guys extend municipal sewer.’ And they looked me in the eye and said, ‘In unincorporated Lake County, there will never be municipal sewer.’”

SELF-CLEANING EFFLUENT FILTERS

As Jordan Johnson worked on onsite systems, he thought a lot about effluent filter maintenance. People have to clean them by hand, he says, and the dirty filters can cause backups if they’re not cleaned regularly.

In 2022 Johnson, who owns Countryside Plumbing Sewer & Septic, filed for a patent on a self-cleaning effluent filter. “We kept hearing about people who bought a house, and then they didn’t know they had an effluent filter, and then it clogged, and then (the system) backed up,” he says. “I thought, there’s got to be a way to get this thing to clean itself.”

He had the idea and found a patent attorney through a chance conversation while picking up pipe. From start to finish the process took about a year.

A patent search found only one other design for a self-cleaning filter. It used a comb that moved across the filter as liquid levels rose and fell in a lift station, not an idea that would work in a gravity-flow system, Johnson says.

His idea uses a slow pump turned on by a high-water alarm. The pump backwashes the filter, and solids are collected in a large basket outside the pump chamber. Emptying the debris basket can wait until a technician has time to visit the site, so backups and emergency calls are avoided, he says.

“I don’t really personally believe in competition, and I tell my customers that, too. ... Hire me because you want us to do the job, not because we’re going to be cheaper than the next guy.”

Jordan Johnson

He took the license exam. “The first year we did septic work and plumbing, it turned almost immediately into 75% septic work. And a year later it’s like 99% septic work. It absolutely took off. We’ve had 35% annualized growth year in and year out since we started.”

And he bought that equipment, which he and employee Dylan Bishop use regularly on the job:

- 2004 Caterpillar 304CR mini excavator
- 2018 Caterpillar 239E compact track loader
- 1999 Ford F-350 dually, mainly to haul equipment
- Ford 2002 E450 KUV service van with toolboxes on the outside and a 7.3L International diesel engine
- General Pipe Cleaners GenEye camera
- Two sewer rooters, one a General and the other from RIDGID used to clear septic backups

continued >>



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◀ Johnson lays a pipe and inspection port for a mound system at a home in suburban Chicago.

▼ Bishop uses a chisel plow attachment on a Caterpillar skid-steer to create the base of a modified mound for a replacement system.



“The people who are in this industry are a group of the happiest people I’ve ever had the pleasure to work with. And I am happier than I’ve ever been in my life.”

Jordan Johnson

GLACIAL TILL

As part of the training for his license, Johnson took a course in soils and learned about the land on which his business depends.

“We had two glaciations,” Johnson says. The first one roughly sculpted the Great Lakes. The second, which ended about 11,000 years ago, left widespread deposits of silt, gravel, sand and clay.

“That’s what we’re fighting is very, very dense clay, no infiltration capability at all,” he says.

He learned that hills in his part of the country are not built of soil but are glacial moraines. These form when a glacier stops and melts, dropping the sand, gravel, rocks and other debris it scraped up as it moved.

In western Antioch there’s a massive gravel pit, he says. This leftover from the last glaciation has provided material for Lake County, where he lives, and Cook County, where Chicago is located. “And the reason it’s there is because that’s one of the places the glacier stopped and didn’t make it any farther south.”

MOSTLY REPLACEMENTS

Johnson does plumbing now only when needed to make an onsite system work well. For instance, in one house they relocated a washer, dryer and kitchen drain so it discharges flow into the pipe leading to the onsite system.

Almost all of his work is system replacements. Only in the last few months Johnson received his first contract since 2012 for a new construction system.



Replacements have their own challenges because of the lack of record keeping. “Anything pre-1975 or so, there’s no record out there. People just put it in the ground and hoped it worked,” he says.

Immediately to the west of Antioch is a chain of heavily developed large lakes surrounded by houses. “That’s our major challenge because you’ve got floodplain, you’ve got tiny lots, you’ve got houses that were built right next to each other, you’ve got wells that are 15 feet from the septic tank. And then you have all these systems that are failing because they were built for cabins, and then people did an addition, and an addition, and an addition, and now they’re living in them full time.”

Because of conditions in his area, most of the systems he installs use aerobic products such as those from Clearstream Systems. Johnson says he’s pushing NSF 350 equipment because effluent is cleaner. He uses as many Infiltrator chambers as possible, and he urges customers to add UV equipment (not required by the county) to protect their drinking water and their neighbors’ water.

“People are leaving Chicago in droves, and they’re buying up every piece of property around the chain of lakes,” he says. “Antioch’s a far

suburb. I have a farm field at the end of my drive. To people who grew up in Chicago, this feels very out there. It's not out there, really."

He's been invited to do commercial work, but Johnson says he's reluctant because of the complexity of those systems, reduced lot sizes and the possibility that a property owner will overload the system with some unexpected future use, for example hosting weddings.

GOOGLE RULES

For marketing Johnson depends primarily on Google searches. "I would say 75% of our calls come from our Google standing."

His website designer promised he could put Countryside at the top of Google search within six months. Try it. Type "septic installers Antioch Illinois" into Google, and Countryside tops the featured results box at the top of the screen. Making use of modern computer technology is important because it's how people today find the services they need, Johnson says.

"What's faster? You're at work, and you get on your phone, and you Google 'I have a gurgling toilet' or 'septic in my yard,' or are you going to go to church on Sunday and talk to 15 people and say, 'Hey, can I get a recommendation?'" he says. Many people are new to his growing area and don't have a circle of friends to ask for recommendations, he adds.

"The first year we did septic work and plumbing, it turned almost immediately into 75% septic work.

And a year later it's like 99% septic work. It absolutely took off. **We've had 35% annualized growth year in and year out since we started.**"

Jordan Johnson

Networking with other pumpers provides some business, as does an agreement with an environmental health practitioner who does real estate transfer inspections. The inspector refers business to Johnson, who returns the favor with his own referral.

GOOD LIFE BALANCE

Johnson says he and Bishop work well together, and they do this with plenty of communication and with the right mindset. For Johnson this process begins well before work.

He wakes about 5:30 a.m. His wife Shannon takes care of the two younger boys — Finn, 2 1/2, and Kai, 9 months (they also have 9-year-old Jax) — while Johnson goes downstairs, works out, and meditates for a half hour. He and Bishop meet at 9.

"The first thing we do is set an intention and a goal," he says. While loading pipe and equipment, they talk over the day's jobs and consider

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» Johnson and Bishop replace a leaking concrete septic tank with a new one from Infiltrator Water Technologies.

what could go wrong and how problems could be addressed with the least stress.

They work from 9 a.m. to 5:30 p.m., later if needed. The later start time works for customers who need to shower before the installers arrive, but the schedule is primarily formed around Johnson's time for his family and himself.

He and Bishop do the very best they can during the day and handle any emergencies, and they don't worry about the rest. "The phone's always ringing, somebody always has an emergency, we're always going into a situation where the customer's very stressed out, and if that flows into us, how are we going to effectively do our jobs?"

Bishop, 20, joined Johnson right out of high school. He's interested in a plumbing apprenticeship, which means he could take over Countryside when Johnson is ready to retire. With a license, Bishop could also run a crew to help with the company's growth.

"In the next few years, we're going to have to grow exponentially and bring on more crews, or stay small, and people are not going to be taken care of," Johnson says.

SNOWBIRD INSTALLER

Johnson dreams of taking Countryside interstate — sort of. In Florida, he says, onsite work falls under the general plumbing regulations.

"I'm a scuba diver. I love the reef. I was very interested in this issue in Biscayne Bay (near Miami), red tides, all those things. And I thought, if things are frozen and slow here, why not go down there for a few months?"

One county he called said they're always in need of contractors. The need didn't sound as great as it is where he lives, but it also didn't sound as if it would be too difficult to have a wintertime business there, he



says. "My main motivation would be to get into design and get involved in whatever to help protect the reef."

Occasionally people question his career choice given that his degree is in anthropology. He doesn't see any disconnect.

"That college, it was 100% about how to process information and come up with your own conclusions from research." Also at Lake Forest College is the Lake Forest School of Business Management, he says, so everything taught is geared toward the professional world and applying the information you find.

Above all else, his career makes him happy. He can watch his business grow and help protect public health.

"The people who are in this industry are a group of the happiest people I've ever had the pleasure to work with," Johnson says, "and I am happier than I've ever been in my life." □

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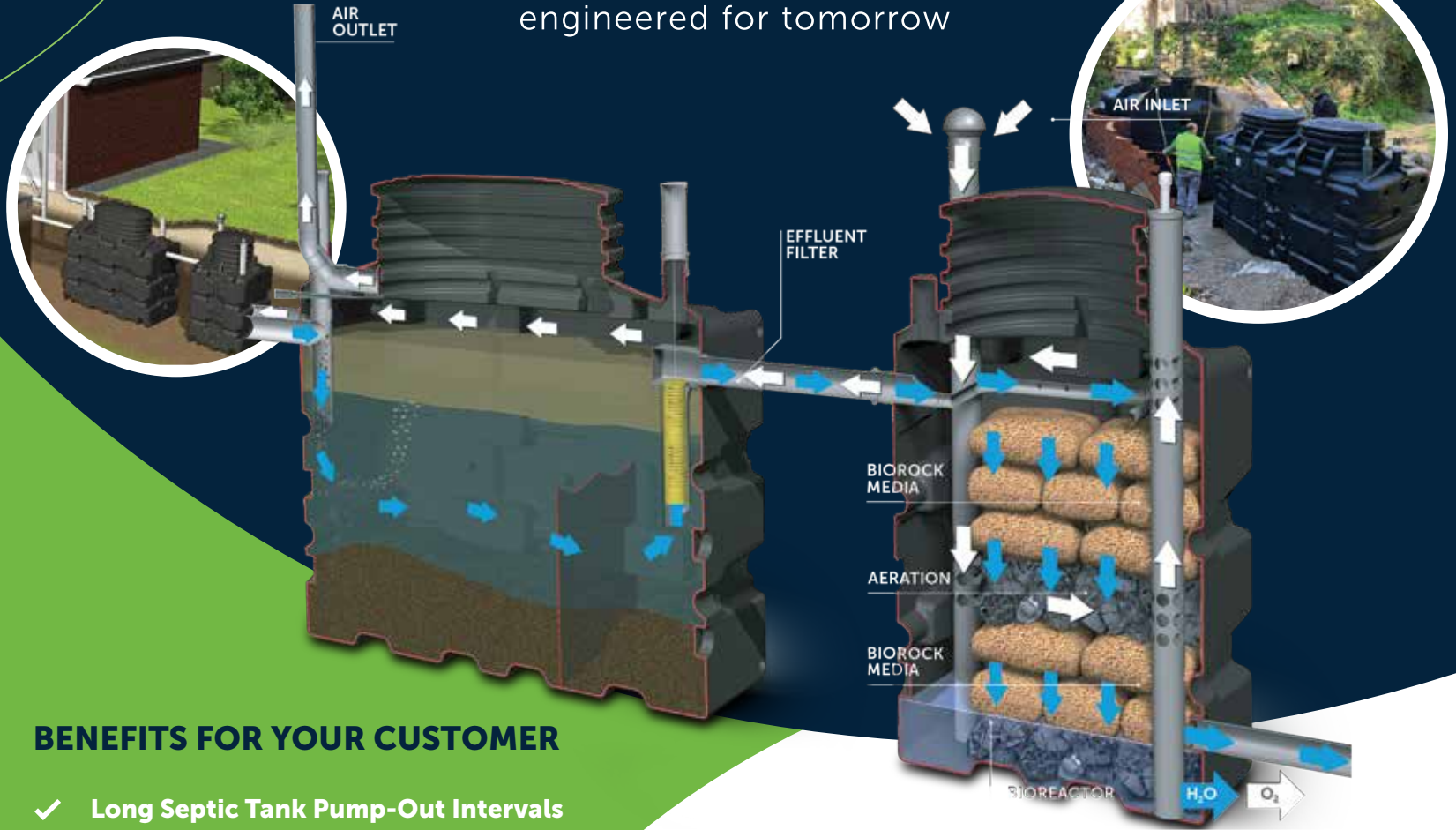
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▲ Mike Cowper and Kris Magaellous worked for two weeks to hammer out this 20-by-8-by-10-foot-deep excavation. The pretreatment tank with three White Knight Microbial Inoculator Generators (Knight Treatment Systems) is in front of the Fuji Clean USA aerobic treatment unit. (Photos courtesy of Mark Noga)

Failing Commercial System Traced to Coffee Shop Wastewater

A microbial inoculator generator column is employed to solve longstanding treatment woes at a Hawaiian business complex

By Scottie Dayton

Only 18 months after a small, two-story commercial building opened in October 2017, its 1,000 gpd drainfield failed. The building held offices and retail spaces in Haleiwa, Oahu, Hawaii.

Samuel Morton of Gecko Enterprises pumped the septic tank every other day for six months, while system designer David Bills, P.E., of Bills Engineering in Honolulu, assessed alternatives. His solution increased the chambered drainfield from 1,200 to 1,700 square feet and its depth from 4 to 8 feet.

In June 2019, Mike Cowper, the original installer and owner of Cowper Construction in Haleiwa, saw-cut the asphalt parking lot over the field and rebuilt it. “The expansion used up all the available space, as the first install included an underground stormwater containment system next to the drainfield,” he says.

By 2020, the drainfield had failed again, Morton returned weekly to pump, and for two years Toru Kumagai, P.E. of Laulea Engineering in Honolulu, and Cowper networked for answers. They eventually became aware of a 2010 study by MFH Design Consultants. Conducted for a major coffee franchise, the 170-page report analyzed wastewater from four quick-serve restaurants on septic systems with a high rate of premature failure.

➤ Cowper, left, and Magaellous lower a White Knight WK-200 microbial inoculator generator column into a 1,500-gallon tank.

▼ Cowper, left, and Magaellous attach an inoculant packet of IOS-500 microorganisms to a 1/2-inch pipe.



Researchers learned the franchise required brewed coffee to be discarded every 18 minutes to keep the product fresh. Eastern Analytical, an independent laboratory, did the field testing, which showed septic tank effluent BOD averaged 863 mg/L, but reached 1,045 mg/L at the distribution box. Effluent acidity averaged 5.1 pH, low enough to kill beneficial microorganisms (6.5 to 7.5 pH is normal).

In conclusion, the study recommended pretreating the high-strength wastewater with an aerobic treatment unit before discharge. “Everything made sense now because one tenant was a coffee shop,” Cowper says. Kumagai specified a Fuji Clean USA ATU and White Knight Microbial Inoculator Generators to help rejuvenate and maintain the drainfield instead of replace it.

System components

- Existing 1,500-gallon dual-compartment concrete septic tank (Jensen Precast) with a White Knight WK-200 MIG column (Knight Treatment Systems)
- 1,500-gallon single-compartment IM-1530 pretreatment tank (Infiltrator Water Technologies) with three WK-200 columns and 8-inch Biotube (Oreco Systems)
- HP-200 linear air pump (Hiblow USA)
- 1,000 gpd Model CE10 Fuji Clean USA, FujiMAC 150RII blower, alarm panel (Fuji Clean USA)
- M-20 T Mega Wolverine vent odor filter (SimpleSolutionsDistributing)
- MIG control panel (SJE Rhombus)

System Profile

Location: Haleiwa, Oahu, Hawaii
Facility served: Commercial building
Designer: Toru Kumagai, P.E.,
Laulea Engineering, Honolulu, Hawaii
Installer: Mike Cowper, Cowper Construction,
Hale'iwa, Hawaii
Type of system: Combination treatment and dispersal
Hydraulic capacity: 1,000 gpd

System operation

Kitchen and sanitary wastewater gravity-flow 20 feet through the existing 4-inch sewer to the septic tank. The MIG column in the tank's second compartment is inoculated with IOS-500 microorganisms. A 9-inch-diameter fine-bubble membrane diffuser in the base of the column oxygenates and circulates the wastewater to accelerate consumption of organic matter.

Effluent and proprietary bacteria then gravity-flow to the pretreatment tank to mix with microorganisms from the additional MIGs. “By the time effluent enters the Fuji Clean, high-strength BOD and TSS levels have been reduced to residential strength or less, and total nitrogen has been reduced by 50% or greater,” says Noga. The MIGs also seed the ATU with IOS-500 microbes.

The oxygenated, enhanced effluent gravity-flows from the ATU, through the distribution box, and into the approximate 38-by-22-foot-wide drainfield. Offgas from the three tanks vents to a granulated

SYSTEM PROFILE

activated charcoal filter in the bottom of a HDPE manhole (Advanced Drainage Systems) filled with wood chips to trap residual odor-laden moisture to provide further air purification.

Installation

After years of dormancy, the biomat in the drainfield had dried up.

In January 2022, Cowper and helper Kris Magaellous blocked off half the parking lot and turned an adjacent vacant property into auxiliary parking for uninterrupted access to the building. “What complicated this install were all the buried utilities, but since I’d done the building’s site work, I sort of knew where everything was,” Cowper says.

The team saw-cut the concrete to expose basalt boulders slammed tightly together by alluvial wash. Cowper used a hydraulic jackhammer on a Komatsu PC88 MR-10 tracked crawler excavator to excavate the tanks’ 20-by-8-by-10-foot-deep hole. “Basalt is harder than granite but fractures easily if hit on the grain,” he says. “Although that happened 80% of the time, we hammered for two weeks on the hole and pipe trenches.”

“What complicated this install were all the buried utilities, but since I’d done the building’s site work, I sort of knew where everything was.”

Mike Cowper

Tenants and customers had a respite from the noise and vibrations whenever Cowper made the short trip to deposit spoils in his shop yard. He drove a Kenworth T800 dump truck with a 15-cubic-foot K&H rock box.

Maintaining gravity fall in the trenches was a nail-biter because of the route. After intercepting the waste line at the septic tank’s outlet, the new 4-inch pipe ran to the pretreatment and ATU tanks, then circled back around the tanks to the distribution box. “The depth of the D-box at 5 feet saved us; otherwise, the elevation for the field would have been off and we’d need a pump,” Cowper says.

After bedding the tanks on 6 inches of gravel, the team installed the HDPE manholes (Advanced Drainage Systems) on the pretreatment tank, plumbed both tanks, then backfilled and compacted the rock.

Because this was Cowper’s first experience with MIG units, Kumagai specified that a company representative supervise the installation. Mark Noga, president of Knight Treatment Systems, answered the call. “It was extremely helpful to watch Mark assemble the pieces because he knew the shortcuts,” Cowper says.

The next day Cowper and Magaellous hand-dug 20-feet of shallow trench in a landscaped area from the building to the septic tank for the air line, with three spurs to the pretreatment tank. While an electrician wired the alarms, the team installed the air pump and triplex 2-inch air vent pipes to the odor control filter.



▲ New concrete hides a pretreatment tank with White Knight Microbial Inoculator Generators (Knight Treatment Systems) and a Fuji Clean aerobic treatment unit. Cast-iron manhole lids cover the risers. The odor filter and wood chips are in the HDPE manhole (Advanced Drainage Systems) against the wall.

In mid-February, they tied the systems together during a two-hour bypass with Morton pumping the septic tank twice. To restore the parking lot, Cowper and Magaellous laid rebar, poured a 6-inch-deep concrete slab over it, and inserted cast iron manhole covers above the risers. “We haven’t had to pump once since the system went online,” says Cowper. “The MIG columns are doing their job.”

Maintenance

Gecko Enterprises holds the maintenance contract and Cowper replaces the inoculant packets every three months. □

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Onsite Regulations Causing Conflict Across the Western U.S.

Local governments want to balance the need to improve decentralized wastewater infrastructure with rising costs to property owners

By David Demaree

In Deschutes County, Oregon, the Board of County Commissioners adopted regulations in 2008 that required residents to connect their homes to sewer or upgrade their septic systems to advanced treatment systems by 2022. The commissioners were concerned because some areas had shallow groundwater, soils with high infiltration rates, and the population had grown almost 54% from 1990 to 2000.

The following year in a special election, residents voted for the regulations to be remanded. The residents felt the cost of the upgrades were unjustified since the water from their wells looked, tasted and smelled clean. This is one event in decades of political conflict.

The Deschutes County conflict is not unique, there are political conflicts over nitrate from septic systems across the Western U.S. I became involved in these political conflicts in La Pine, Oregon, (in Deschutes County) and Laramie, Wyoming, while I was completing my Ph.D. work at Oregon State University. I created a map because the residents I spoke

to in La Pine and Laramie wanted to find other communities with septic system issues, to compare themselves to other communities. The map only includes communities up to the county size and does not include states with stricter septic system laws such as Colorado.

Conflict Over Nitrate and Septic Systems in the Western US



Legend
■ Septic System Nitrate Conflict
■ Septic System Nitrate Interest

0 75 150 300 450 600 Miles

Created by David Demaree
 Environmental Science PhD,
 Oregon State University
https://library.oregonstate.edu/onlinecom/graduate_thesis_or_dissertations/2715161/00041041

« This map created by the author shows areas of conflict over nitrate and septic systems in the Western U.S. Red indicates septic system nitrate conflict. Green indicates septic system nitrate issue interest.

Though there are conflicts over groundwater contamination from septic systems across the U.S., **at the end of the day residents, the government and onsite wastewater treatment businesses all want to do right by each other.**

NITRATE PRIORITY AREAS

It was harder to find places with septic system nitrate issues since; it was overshadowed by other issues, the area affected were often the size of a neighborhood or town and many of the documents are not searchable online. However, it was easy to find a few high-profile cases like the Enhanced Management Areas around Puget Sound, Washington, that are often mentioned in the Rules & Regs section of *Onsite Installer*.

In many of the areas marked on the map, conflict was minimal and nitrate from septic systems was only mentioned in passing. For example, Nitrate Priority Areas were delineated by the Idaho Department of Environmental Quality but the source of nitrate was not identified so common nitrate sources were listed which included septic systems. Another example is the Central Valley in California, where the main source of nitrate is from agriculture, so the focus is on agricultural practices or finding new water sources instead of septic systems.

In some areas the government took a softer approach to septic system nitrate often through the use of funds or planning. For example, in Teton County, Wyoming, funding was provided through a U.S. Environmental Protection Agency grant for septic system pumping and inspection. Planning comes in two forms: voluntary guidelines (plans) on the location of specific types of development like in Albany County, Wyoming and minimum lot sizes (often more than 5 acres) to dilute the effect of septic systems on groundwater like Washington County, Utah.

In areas like Deschutes County, the conflict is often over actions taken by regulators that would radically change the septic system landscape.

Besides advanced treatment systems and sewer connection, other controversial actions include sewer construction/expansion, halting development, development moratoriums and stricter development regulations.

GOOD AND BAD OF REGULATIONS

Conflicts can cause regulations to shift from year to year as regulators take different approaches on the issue. The volatility of the regulations can cause delays and misunderstandings. In one instance charges were brought against a septic system installer because the company was constructing onsite systems without a permit. The installer's counter argument was that they had sent in the paperwork over a year ago and contacted the government multiple times without a response. Other areas that have experienced septic system conflict include: Laramie, Wyoming, Los Osos, California, West Marin/Sonoma County and Yucca Valley, California, Seeley Lake, Montana and Reno/Carson City, Nevada.

The politics of nitrate from septic systems is both good and bad for onsite wastewater treatment businesses. The good is that there is more business if the law requires more inspections or funds are available for septic construction and maintenance. Also, advanced treatment systems require more frequent inspection and maintenance. The bad is that pumpers can lose business if residents are forced to connect to sewer or lose potential business if development is halted. Fluctuating rules add more steps and delays to any project.

Though there are conflicts over groundwater contamination from septic systems across the U.S., at the end of the day residents, the government and onsite wastewater treatment businesses all want to do right by each other.

David Demaree graduated from the Environmental Science Ph.D. program at Oregon State University and is currently a postdoctoral fellow with the U.S. EPA through the Oak Ridge Institute for Science and Education in Athens, Georgia. His dissertation is on the science and political conflicts of nitrate contamination of groundwater by septic systems and can be found at the following link:

ir.library.oregonstate.edu/concern/graduate_thesis_or_dissertations/zc77sx16v?locale=en

Funding for the project was provided by the Deschutes County Citizens Action Group, Central Oregon LandWatch and the Casper Aquifer Protection Network. The views described in the articles represent the views of the author and do not represent the views of the affiliates. □

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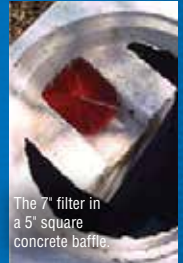
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Michigan legislator tries again for statewide onsite rule

By David Steinkraus

It's been almost four years since the Michigan Legislature attempted to pass a statewide sanitary code. That bill, defeated in December 2018, drew widespread opposition from local health departments and local governments who complained that it was crafted behind closed doors with minimal input from local officials.

Now state Rep. Jeff Yaroch, R-Richmond, is trying again for a statewide rule, but with a more narrowly focused idea. This one, reports Bridge Michigan, would require onsite systems to be inspected when a home is sold or transferred to another owner. Yaroch said this would allow buyers to negotiate repair costs. His bill had its first hearing before the Natural Resources and Outdoor Recreation Committee in the House.

Among the people speaking or registering in support of HB 6101 were representatives of the Michigan Environmental Council, District Health Department No. 10, Tip of the Mitt Watershed Council, and the Michigan League of Conservation Voters. Registering in opposition were people from Michigan Realtors, Michigan Association for Local Public Health, and Michigan Association of Local Environmental Administrators.

Michigan is the only state in the country without a statewide sanitary code.

Massachusetts

Barnstable County, which covers Cape Cod, is beginning the process of setting up a registered management entity to provide various services for decentralized wastewater systems.

A press release from the county says the RME program will provide advice to homeowners on the best technologies to use when an onsite system needs replacement, and will provide assurance about design, installation and maintenance. The RME would also collect performance data and keep municipalities informed about the effectiveness of systems.

Funding for the program consists of a \$1.15 million grant from the Southeastern New England Program of the U.S. Environmental Protection Agency, and \$100,000 from The Nature Conservancy.

The county posted a job opening for an employee to develop the program. It will be implemented over five years.

North Carolina

The North Carolina Coastal Resources Commission will consider rule changes that include setback and permit requirements for septic tanks.

Under the changes, the owner of an oceanfront property would have to acquire a permit to put a septic tank back in its original location after it has been displaced by a storm. Tanks would be prohibited seaward of the first line of vegetation.

Last fall, Hurricane Earl was 830 miles from Rodanthe, North Carolina, on the Outer Banks barrier islands, yet waves broke open a newly installed septic system, spilling untreated wastewater onto a beach.

"This is not an uncommon event, and it does not take a significant storm to cause these problems," said Dave Hallac, superintendent of the Cape Hatteras National Seashore, according to www.coastalreview.org. "This is a problem that is likely to become more significant. We are dealing with significant issues from sea level rise."

Idaho

Last fall, Kootenai County commissioners adopted a rule restricting septic tank use to one tank per 5 acres of land over the Rathdrum Prairie Aquifer. The aquifer covers about 250 square miles in northern Idaho around the city of Coeur d'Alene and Lake Pend Oreille. The 5-acre rule was adopted by the Panhandle Health District in 1977 and was scheduled to expire at the end of the current legislative session, reported the Coeur d'Alene/Post Falls Press. The aquifer is the only source of drinking water for most of the county.

Rhode Island

Eligible residents in Smithfield will be able to sign up for low-interest loans of up to \$20,000 to repair or replace failing onsite systems. The Smithfield Town Council approved a program last program in last fall that will make the town a co-signer on loans from the Rhode Island Infrastructure Bank. The council capped its backing at \$200,000.

If borrowers default on the loan, the town can file a lien against the property or seek a tax sale to recover its money, said Kevin Cleary, the town engineer, according to the *Valley Breeze & Observer* of Lincoln, Rhode Island. To begin the process, a state-certified system inspector must declare an existing system either failed or substandard.

Hawaii

A former Maui County official and a businessman pleaded guilty in federal court in connection with a scheme to steer more than \$19 million in wastewater contracts to a single company.

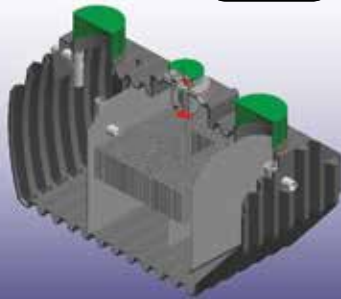
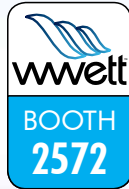
Stewart Olani Stant, 55, former director of the Maui County Department of Environmental Management, pleaded guilty to conspiracy to deprive the public of their right to honest services. Milton J. Choy, owner and manager of H2O Processes LLC and Central Pacific Controls LLC, pleaded guilty to bribery of a federally funded program, according to news reports.

From October 2012 to December 2018, Choy paid Stant \$2 million in

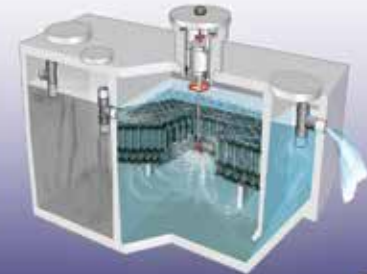


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cash, trips and other compensation to send sole-source contracts to Choy's company, according to a plea agreement. Choy reportedly paid \$424,987 in travel expenses for Stant, who traveled and gambled with Choy over the course of their 30-year friendship. Court records say Stant cashed \$183,000 in Las Vegas casino chips that he did not purchase.

Stant faces up to 20 years in prison. Choy faces a prison term of up to 10 years.

Last summer, J. Kalani English, 55, former majority leader of the state Senate, was scheduled to start a 40-month prison term because of his ties to Choy. Federal prosecutors said English accepted \$18,305 in cash from Choy in exchange for managing legislation so Choy's company would benefit from the state's cesspool replacement program.

Also involved is former state Rep. Ty Cullen, who is scheduled to be sentenced. Cullen pleaded guilty to failing to report alleged bribes on his legislative disclosure report. Choy allegedly gave him more than \$22,000 in casino chips and access to the high-rollers' room at a New Orleans casino. Choy also allegedly paid Cullen \$23,000 in cash over several months.

After the bribery case broke open, a number of public officials returned political contributions from Choy. □

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Septic Tank Myths Linger

Even a so-called septic system expert may make a peculiar recommendation to homeowners about onsite maintenance

By Jim Anderson and Dave Gustafson

Every so often we have homeowners or even septic professionals ask us what needs to be done to enhance or improve bacterial action in the septic tank. Most often these questions arise either around startup of a new system or after the tank has been pumped. As a septic professional we're sure you also get these questions — along with legitimate questions about the long-term operation of the system you install.

It is always interesting to us how some of the myths or misinformation gets incorporated or discussed right along with best practices, making it hard sometimes to sort out the facts from the fiction. Recently we saw a video broadcast on local TV stations where a wastewater professional discussed how homeowners should protect and maintain their septic tanks.

The video started with the professional highlighting that it was important to have your septic tank checked on a 3-5 year basis. He stated the tank should be pumped and inspected on a regular interval. This would remove the solids and offer the opportunity to inspect the structural condition of the tank, such as for the presence of cracks or corrosion. He mentioned downstream problems due to restrictions or blockages that may be present and the importance of having and maintaining the effluent screen at the outlet baffle. So far, so good! All items we would all agree are important.

SAY NO TO GARBAGE DISPOSAL

The next topic covered was that extra water delivered to the septic system can cause it to be overloaded. It was rightly pointed out that leaky toilets or faucets can deliver a lot of water over time, which just may be enough to push a system into failure. This is an area where the homeowner can really help by making sure leaky fixtures are repaired or

Leaky toilets or faucets can deliver a lot of water over time, which just may be enough to push a system into failure.

This is an area where the homeowner can really help by making sure leaky fixtures are repaired or replaced.

replaced as soon as possible. Consistent hydraulic overloading is one of the quickest ways to cause system failure.

To check toilets, it was suggested that adding food coloring to the supply tank can indicate if the toilet is leaking if the homeowner raises the question. Again really good advice for a homeowner, particularly if they are new to septic systems.

A recommendation was made to avoid using a garbage disposal for all the reasons we talk about in our classes and column. More water is added, more solids are added to the system, some solids added are harder to break down and others are harder to settle — all of which leads to the need for more frequent maintenance and checking. The best way to avoid these problems is not to have a garbage disposal.

Next up was how important it is to make sure the bacteria in the tank are healthy and working to break down the organic waste material. The expert mentioned that repeated use of harsh chemical additives can upset bacteria in the tank, making it operate less efficiently again resulting in increased maintenance. Examples of harsh chemicals include drain cleaners, antibacterial products, medications, laundry bleach and other bleach-containing cleaning products. A big thumbs-up; very important! Keep those bacteria working.

WAIT FOR IT ...

Then the punchline came from the service provider being interviewed: "One of the best things a homeowner could do to promote the health of their tank was to add a quart of buttermilk to the tank every month." What? Where does this come from? It's one of those myths that somehow gets started somewhere and gets passed along word of mouth until it's so ubiquitous it must be true.

Think about this for a minute though. Let's just say we have a household that uses 300 gallons of water per day. Over a 30-day period, that is equivalent to 9,000 gallons of liquid. Adding a quart of anything just based on sheer volume of wastewater generated is literally like a drop in a bucket and will have no effect on bacteria in the tanks, especially since the suggestion was that it would provide necessary food for the bacteria. In 9,000 gallons of wastewater, there is plenty of food for the bacteria; they do not need any additions.

This fits in with a couple of other myths we still hear, but a little less often than in the past. "To start up a new tank, I should add some dead meat to provide something for the bacteria to eat until the tank starts to

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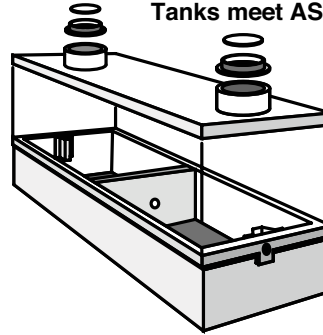
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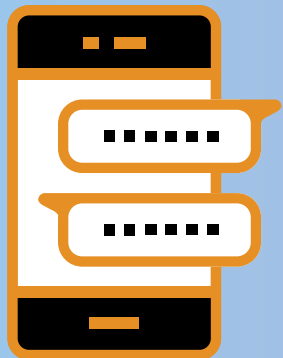
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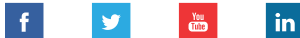
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work.” Dead meat could be in the form of chickens, leftovers from locker plants etc. The bottom line is bacteria present in sewage from the house will be more than enough to get the tank started.

Another myth is, “I should leave a few inches of sewage in the bottom of the tank when it is cleaned so the tank can get started again.” There are sufficient bacteria carried in the incoming wastewater and left over in the tank even after a thorough pumpout to get the tanks started again. However, the tank should not be washed or disinfected, a question some homeowners have asked their service provider.

We are sure you have your own set of myths you encounter, but there is no substitute for proper operation, inspection and maintenance of a tank to keep the system working as intended. □



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Helping Our Customers and the Environment in Kansas

Stricter statewide regulations are necessary to build onsite systems that last a long time and reduce pollution

Compiled by Betty Dageforde



▲ Clint McCammon and his son Bryson McCammon.

Association involvement:

I've been a member of the Kansas Small Flows Association since 2015 and I've been a board member for three years.

Benefits of belonging to the association:

The value is the network of people, the knowledge you get just from meeting people, and the training. A lot of people miss out on that. We all continue to learn. No matter if we're that 80-year-old person who's still installing systems, we should still be learning something.

Biggest issue facing your association right now:

Getting people together has been challenging because we get so busy. I also have a cow-calf operation and do farming. So it's hard to keep up sometimes on the association. But we've implemented some online training that's beneficial for the installers.

Our crew includes:

My son Bryson operates equipment and does installs. My wife Kendra deals with the office duties, permitting, and making sure everything runs like a well-oiled machine.

Clint McCammon

owner-operator

Business: Solid Ground Excavating LLC, La Cygne, Kansas

Age: 45. I sometimes work with contractors who are in their 80s. It's amazing.

Services we offer: I'm a licensed installer in four counties in Kansas and I'm an advanced system installer in Missouri. Most of the soils in the area don't allow for conventional systems so most are alternative systems. We also do repairs and maintenance.

Years in the industry: 24. I worked for Johnson County Wastewater for about nine years on the treatment side of things, where I became a Class 2 operator. I had worked for the construction company that built the plant and they liked the way I worked so they hired me. Then I was approached by Honey-Wagon Septic Service to run their truck and help operate their business, which I did for eight years. There were a lot of fun projects — the Kansas City Zoo, the Nelson-Atkins Art Museum. Then God opened the door for me to start this business in 2015 and we're able to support a mission in Guatemala where our pastor works for Rocsana's Hope which helps orphan girls transition from the orphanage to the real world.

Typical day on the job:

When I'm not installing tanks, I do bidding and estimating, meet with customers and set up projects with our supply houses to make sure we have the parts we need not just for today but for projects in the near future. It's been challenging getting supplies and making sure you're ahead of your feet far enough so you have enough material to keep working.

The job I'll never forget:

We were doing a tank replacement in Springfield and my employee at the time had a seizure. I called the ambulance. It was a scary thing for him and for me. I later found out he had seizures regularly and had run out of his medication. We had just set the septic tank and he was walking back to the truck to get a drink. At least he didn't fall in the tank hole.



◀◀ Clint and Bryson McCammon installing an Allied Concrete Products tank.

▼ A Roth North America plastic septic tank is installed using a Kubota KX121-3 mini excavator.



My favorite piece of equipment:

We have a rake attachment with “Dave’s Dirt Plane” written on it. I haven’t been able to contact him but the story is that he was a paralyzed man who lived in Liberty, Missouri, and he welded this attachment. It works wonderfully for backfilling, leveling dirt, and doing finish grade stuff. It speeds that process up tremendously. We also build lagoon systems and have a post driver called “The Hammer” (Danuser Machine Company). I can drive 8-inch wooden posts straight into the ground three feet. Very handy piece of equipment.

Most challenging site I’ve worked on:

We’ve had a few projects at a property in Shawnee, Kansas, called Black Swan Estates. It has horrible terrain, horrible rocks, very narrow roads, extreme drop-offs. Getting material in and out is very hard.

Oops, I wish I could take this one back:

I’m usually a “dot your I’s and cross your T’s” kind of guy but there was one project Bryson and another operator worked on for a tank replacement at a horse ranch. They missed an extra discharge line coming out of the house. We were able to go back and re-run the sewer line. But I don’t like going back and fixing things, so I try to do things right the first time. Lesson learned — make sure you flush everything after you install the tank.

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

I think every question is important. But we recently had a call from someone who needed a septic tank “down the slope from the house.” We went out to bid the job and the “slope” was about a 40-foot drop-off. It was more like a cliff. It was full of trees and the rocks were the size of Volkswagen Beetles. But we’re going to try to move forward with these customers and give them something.

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

In some of these rural communities, each county differs on codes and requirements for installers and inspectors. Some don’t have any — which is scary for our environment. That’s probably the main reason I’m on the KSEFA board, wanting to move in that direction. So I’m in favor of a statewide code for Kansas and training for all installers. We’ve been trying for years to get

that changed. People get scared of that because they don’t want to be told what to do but, unfortunately, I think the time has come where things need to change.

Best piece of small business advice I’ve heard:

I had a very wise businessman tell me years ago that the most important part of the business is customers, so building relationships with them is probably more important than what we’re doing, whether you’re a septic guy, a baker or whatever. I do value our customers and what they’re dealing with.

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

I’m a rancher, like my grandfather and my father, and now my son, so I would focus on that and our family.

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

I see the industry going to more alternative systems. And there’s going to come a time for those statewide regulations and training we’re trying to achieve. There will be a lot of other options other than conventional systems — better systems to get cleaner water. That’s the outcome behind why you want to put in a septic system — so we’re protecting our environment. I think regulations are going to get harder, and not just for highly-populated areas — and they need to as the population increases. □

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.

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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
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www.oasisontario.on.ca; 877-202-0082

SASKATCHEWAN

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By Craig Mandli

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E-Z Treat recirculating synthetic media filter serves multiple applications with flows of 100 to 100,000 gpd. It is engineered for a variety of wastewater solutions, including single and multifamily residences, RV parks, campgrounds, schools, churches, restaurants and convenience stores. It was developed by direction of the U.S. Environmental Protection Agency Onsite Wastewater Treatment Systems Technology manual for advanced secondary treatment. This technology is NSF 40/245/350 tested and approved. According to the maker, it is a simple, self-contained system that includes one or more E-Z Treat units, a recirculation pump, control panel, floats and a bypass valve. **703-753-4770; www.eztreat.net**



Eljen Geotextile Sand Filter

The GSF, or **Geotextile Sand Filter**, advanced wastewater treatment and dispersal system from **Eljen** is designed to provide treatment and dispersal in the same footprint, easy installations and minimal maintenance. It is used for commercial and residential applications. Utilizing a two-stage pretreatment process, the geotextile modules apply filtered septic tank effluent to the soil and increase the long-term acceptance rate. Open-air channels within the module support aerobic bacterial growth on the module's geotextile fabric, surpassing the surface area required for traditional absorption systems. The system is tested and certified by NSF to NSF/ANSI Standard 40. **800-444-1359; www.eljen.com**



VENT PIPE FILTERS

Pagoda Vent

Decorative **Pagoda Vents** come in 16-, 24- and 36-inch sizes. The original vents are bark (brown) or moss (green) color to blend into the landscape. The newest copper offering will add patina over time or can be maintained as a pristine copper landscape feature. All versions support the long life of system components by providing septic field microbes the oxygen they need to thrive, concrete tank gas release to mitigate microbial induced corrosion, and pressure relief for pumps. An optional odor filter cartridge uses concentrated media for years of odor control, according to the maker. **888-864-1468; www.pagodavent.com**



Simple Solutions Distributing WVI Inline

The **WVI Inline** activated carbon filter from **Simple Solutions Distributing** is installed in an attic or crawl space in-line of the current vent to remove septic odor. The filter comes in 4- and 6-inch sizes, with the smaller able to be bushed down to 1.5-, 2- and 3-inch sizes. It comes with 2 pounds of Sulfursorb Plus activated carbon, which is poured into the 2-inch fill port. The unit accepts an optional screw-in saturation indicator that changes color to indicate when carbon needs to be changed. It is suitable for extreme, cold climates, as it is enclosed in an attic or crawl space. It can be installed in any climate where septic or sewer vent odor exists and the roof vent filter needs to be hidden. **973-846-7817; www.industrialodorcontrol.com**



The Dirty Bird septic vent

The Dirty Bird provides an alternative to the standard septic vent required by many municipalities for new residential and commercial construction. It is an easy-to-install septic vent shaped like a birdbath. Meeting U.S. EPA septic-venting regulations, it controls odors through a replaceable charcoal filter and vents gases through holes at the bottom of the pedestal so nothing enters the septic system. Fade-resistant (UV stabilized), lightweight and recyclable, it is available in granite, sandstone and terracotta colors. It is constructed of 100% low-density polyethylene and stainless hardware. It is 32 inches high with a basin width of 23 inches and footprint of 12 1/4 inches. **866-968-9668; www.thedirtybird.com** □



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PRODUCT NEWS

PRODUCT SPOTLIGHT

Biofilm reactor kit treats effluent for cleaner drainfields

By Tim Dobbins

In the mid 1990s, Gig and Trina Drewery, owners of RioVation, were working in the onsite wastewater industry designing and manufacturing aerobic treatment units. They sought to help septic systems and drainfields that were failing due to biomat clogging.

“Traditional septic tanks only perform about 40% of wastewater treatment inside the tank,” says Gig Drewery. “So effluent is still 60% untreated when it flows into the drainfield, where the treatment continues



in the soil.” Using his background in design and manufacturing of NSF 40 aerobic treatment units, Drewery began looking into ways to treat effluent further before it enters the drainfield.

The result of his research is the BioMaze Fixed Film Media, a kit that can convert an anaerobic septic tank into a biofilm reactor, which Drewery says performs more than 90% of the treatment inside the tank. “This makes the effluent clear and odorless, thus better for the drainfield and the environment,” he says.

According to RioVation, BioMaze kits are currently best suited for the individual residential onsite wastewater treatment market and designed for easy installation into almost any state-approved septic tank. By converting the existing septic tank into a biofilm reactor, the effluent becomes high in dissolved oxygen, killing problem-causing microbes in the soil.

“The failing drainfield will be rejuvenated, brought back to life and protected against future failures,” says Drewery. “The drainfields, if clogged with biomat, will be recovered in a few weeks to a few months.”

Drewery says BioMaze can also be installed proactively to keep drainfields from clogging with biomat. It is currently offered in three kit sizes — the model BM2611 can treat up to 240 gpd, the BM2622 up to 400 gpd and the BM2624 will serve systems up to 750 gpd.

Making sure the product fulfilled its desired result took years of trials. Drewery says the product has been through extensive research and development as well as field and third-party testing. Drewery says installers and homeowners have been impressed with the quality of the effluent after installing BioMaze.

“One of our installers put a BioMaze BM2624 at a home with standing sewage that had surfaced above the failed drainfield,” he says. “He said upon returning to check on it after just a few weeks, the effluent was completely clear and odorless, and the standing water had already dried up.” 903-215-8855; www.riovation.com □

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INDUSTRY NEWS



Infiltrator expands Advanced Molding Facility

Infiltrator Water Technologies announced the expansion of its advanced molding facility in Winchester, Kentucky. Total investment in the Winchester Industrial Park facility is now more than \$140 million. Infiltrator has manufactured products at the plant since the 1990s. The expanded facility features 150,000 square feet of manufacturing space plus 14,000 square feet of office space. This site also includes 400,000 square feet of outdoor distribution and storage space.

PRIMEX holds second annual customer training

PRIMEX held its second annual customer training last September at its facility in Ashland, Ohio. The training included sessions on quoting capabilities, the ACCEL Panel Program, panel characteristics, understanding incoming power, level sensing, electrical troubleshooting, VFDs, configured controllers, Pump Watch Express, iON, iControl/SCADA, Arc Armor, Rapid Set and more. Attendees experienced hands-on product training with control panels, controllers and the KwikSwitch system, as well as a tour of the 50,000-square-foot facility.



EnviroZyme to acquire certain assets of Novozymes

EnviroZyme has entered into a binding agreement to acquire certain wastewater business assets from Novozymes. Novozymes is a provider of enzyme and microbial technologies to improve industrial performance while preserving Earth's resources. Subject to closing conditions and adjustments, the acquisition will be fully funded at the targeted close date during the first quarter of 2023. □

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Multi-Tank Precast System Overcomes On-Site Challenges

Challenge

A new temple and cultural center development in the Midwest needed an onsite treatment system, but the site posed challenges including limited access, confined drain field space and sensitive surrounding habitats.

Solution

To meet the area's treatment needs and protect the adjacent wetlands, designers chose durable precast concrete tanks for the three-step advanced treatment system. The precaster designed the tanks to fit the site's small footprint and maximize the limited drain field space. The precaster also installed piping at the precast plant to save installers time on the jobsite.



Photos courtesy of Wieser Concrete Products Inc.

Quality-Engineered: Precast tanks are designed and engineered to the latest industry standards, use quality raw materials and are manufactured in accordance with strict QA/QC programs, providing strong and durable solutions that stand the test of time.

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- COVERS
- SEALS
- GROMMETS
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- BAFFLES
- SANITARY TEES
- GAS DEFLECTORS
- EQUALIZERS
- ROTO FLOWS
- ORIFICE DIFFUSERS
- HYDROSHIELDS
- FLOW CONTROLLERS
- ODOR CONTROL
- VENTS
- BASINS
- PUMPS
- ALARMS
- EXTEND LOKS
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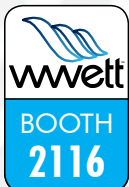
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