

December 2017

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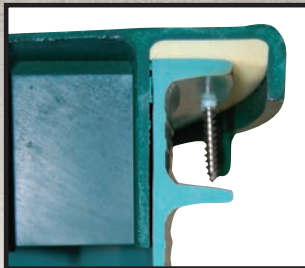
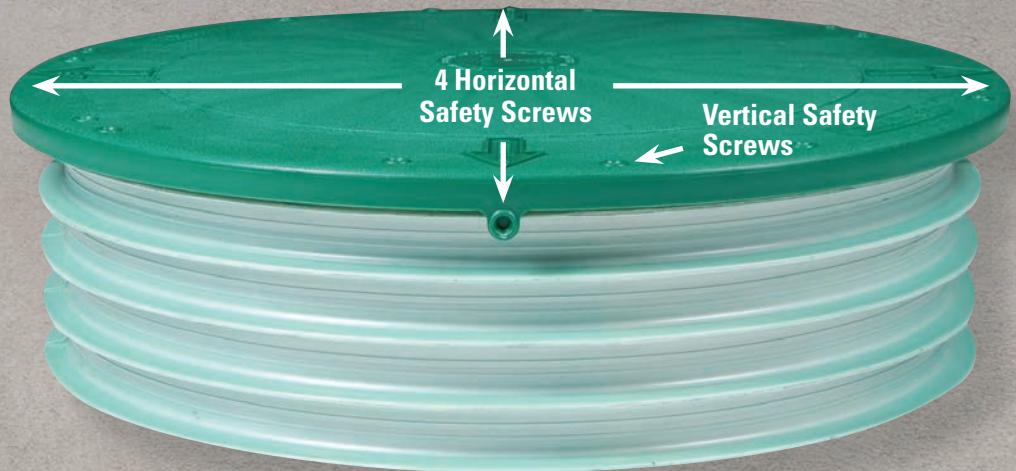
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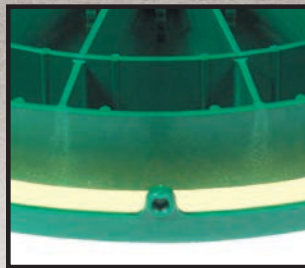
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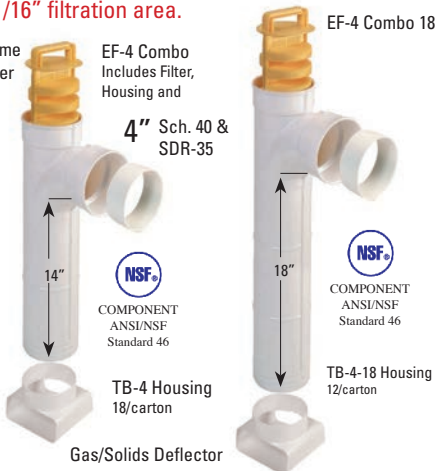


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Injection molded T-Baffle™.

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INSTALLER PROFILE:

It's in the DNA By Scottie Dayton

ON THE COVER:

Three generations of the Stewart family have made sure septic systems keep working right for their neighbors around Bluemont, Virginia. Jerry Stewart Jr. and his sons, Dylan (left) and Austin (right), are shown on a work site with a Bobcat excavator. (Photo by James Robinson)

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articles through our Letters to the Editor.

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How Do You Get Homeowners to Remember Maintenance?

Use educational tools, proactive service tools to coax your onsite system customers to call for crucial annual O&M service

If you install advanced onsite systems, you may need to find a memorable way to promote annual service — a customer prompt or special offer as a way for homeowners to remember the importance of regular maintenance.

It's pretty obvious why this is a critical step for you as the service provider. First, one of your main missions is to find the most affordable route to safe, clean and effective wastewater treatment for your customers. Second, you want to make sure homeowners are following the maintenance interval rules set forth in their state's regulations. You don't want to feel responsible for your customers being in violation of the law and facing fines for inadequate care of their systems.

WHOA, AUNT GINNY!

And probably most importantly, ensuring maintenance follow-through protects your hard-earned reputation as a wastewater professional. There's nothing like the premature failure of an expensive household system to draw complaints from customers or worse ... those customers telling friends and family their broken septic system is your fault.

Imagine this conversation as the whole family is gathered around the holiday table later this month:

Uncle Buzz: "So why is your backyard all tore up? Is there something wrong with the septic system you had installed a few years ago?"

Aunt Ginny: "Yes, I spent \$15,000 for that fancy new system and it just stopped working. That #\$\$%&# at XYZ Septic never told me I had to have the thing serviced every year. How do they expect me to know how it works? I just flush the toilet."

Cousin Frank: "So I guess I shouldn't call XYZ when I need my septic replaced in a few years? Pass the turkey."

You get the picture. A single unhappy customer can have a devastating impact on a business that lives and dies on a reputation for good service. Word may spread from that holiday dinner table like wildfire as Cousin Frank tells the horror story to all the guys at work, Uncle Buzz takes the opportunity to share with his morning coffee group at the local café. And Aunt Ginny, well she's going to call and make your life miserable off and on for the next several years.

MAKING A POINT

One way to avoid these troubles is to make sure your customers don't gloss over the maintenance component of system care after the installation. As I'm sure you have experienced many times, homeowners can become overwhelmed or distracted when you explain about their new system and its limitations. You sit them down and share what can and can't be put down the drain and the many ways to spread out usage to stay within the parameters of daily flow limits.

While you are carefully explaining how waste travels through the system and effluent is distributed, here's what Aunt Ginny is thinking to herself:

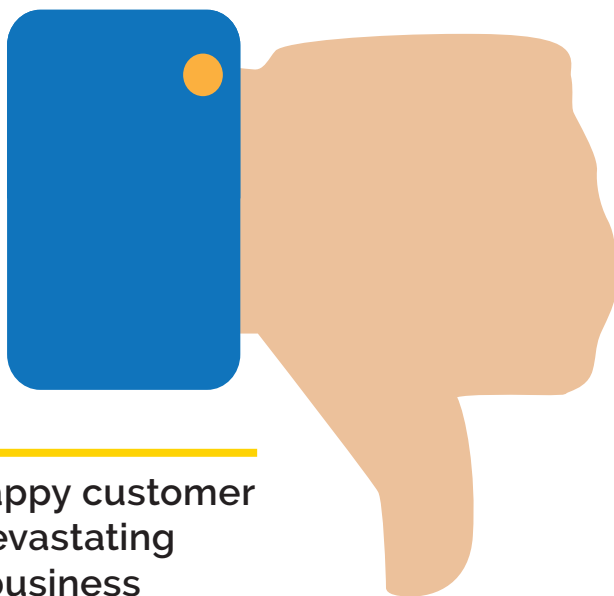
"This is awesome. Now that I have a new system, I don't have to worry about the kids' long showers anymore and I can wash all the laundry at once. Boy, I'm so happy I won't have to think about that stupid septic tank for another 20 years. Hooray!"

So now you understand the challenge — putting a mechanism in place that ensures optimal performance ... and zero callbacks. Here are a few ideas:

Get them thinking about making maintenance routine.

Talk to your customers about their lifestyle, and look for

A single unhappy customer can have a devastating impact on a business that lives and dies on a reputation for good service.



obvious triggers to call for necessary system maintenance. Do they host a big family event every year where visitors may tax their onsite system for a few days? If so, tell them to add septic system inspection to the checklist of pre-party planning and call you a month before the big event. The change of seasons is also a big trigger to get any type of home maintenance done. Tell them when they're cleaning leaves from the gutters in the fall to think about calling you for an appointment. Or when they thatch the yard in the spring, it's a perfect time to have their system checked.

Better yet, offer to remind them when service is needed.

If you don't already have a sophisticated scheduling program for customer service reminders, get on that right away. Tell customers that part of your comprehensive customer service plan is to automatically notify them when required or recommended service intervals are reached. You can make specific service recommendations based on each customer's unique usage situation — for example, more conservative monitoring intervals if they experience heavier than typical usage during certain periods.

Or partner with a pumper, and turn the task over to them.

Maybe your company doesn't have a maintenance division and can't or don't want to provide that service. Find a pumping contractor you trust, and create a partnership that is beneficial to both companies. First, when a system is in the ground and operating properly, turn that homeowner's contact and system information over to the pumping professional for follow-up. Be sure your partner will continue to promote annual inspection and maintenance to protect your customer and your reputation as an installer. In return, ask the pumper to recommend your design and installation services should one of his customers need a system replacement in the future.

CUSTOMER EDUCATION TOOL

Encouraging an appropriate maintenance schedule is half the battle. Ongoing consumer education is just as important in the war for trouble-free operation of the septic systems you install. And a Michigan State University video — now posted on the MSU College of Agriculture and Natural Resources YouTube channel — may be a helpful tool for onsite service providers.

The video, titled "Septic Systems: Out of Sight, Not Out of Mind," can be found here and shared with your customers: www.youtube.com/watch?v=ZtpgvPLOCU&feature=youtu.be.

The main message homeowners will take away from the video is that preventive maintenance is not a difficult challenge and it's the right thing to do for the environment.

Prepared by the Michigan Onsite Wastewater Recycling Association and the MSU Extension and Biosystems and Agriculture Engineering programs, the video explains that an estimated 1.2 million households in Michigan, and about 25 percent of state residents, utilize onsite systems for wastewater treatment. For the good of all, many of these systems should be inspected annually, according to Eckhart Dersch, a professor emeritus at MSU.

"Septic system maintenance is not rocket science. It's really common sense, but people need to know what they're doing," Dersch says in the video. "They have to know they have a septic system and not ignore it."

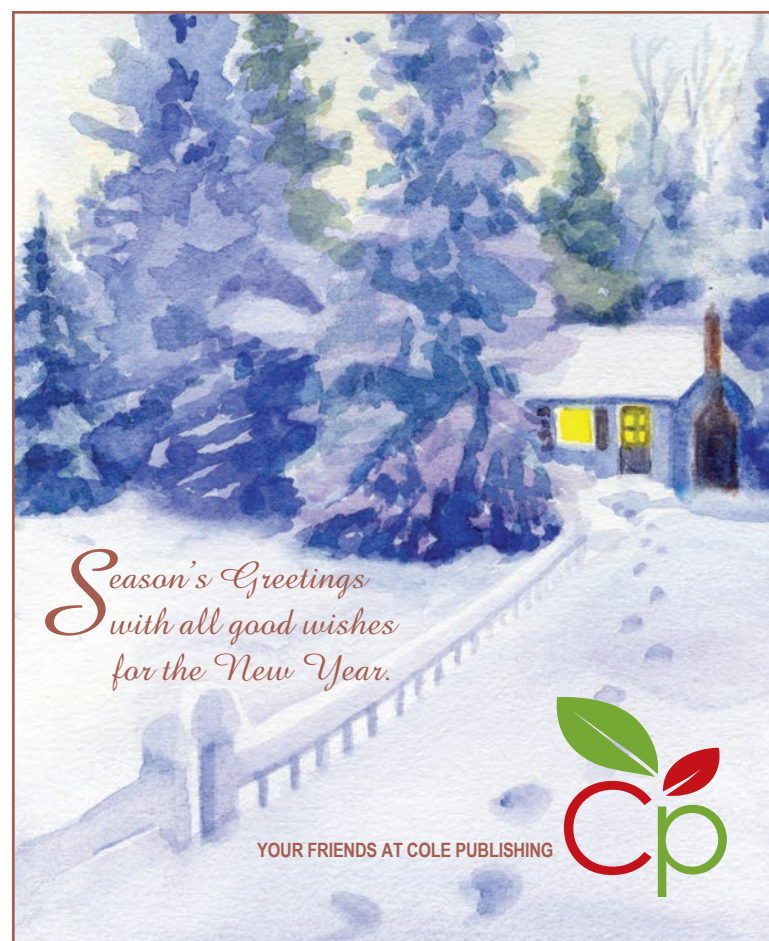
But continuing education is a constant challenge, reflects Terry Gibb, a natural resources and government and public policy educator at MSU.

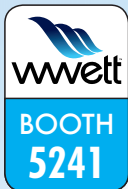
"We have a lot of people moving from the city and sewers to the rural areas and on septic, and they had no clue that they were totally different systems and they had to ... maintain them and protect them," she says. "People think they can put anything and everything down them, and that is the surest way to get into trouble."

IT AIN'T OVER TILL IT'S OVER

You may get tired of repeating the basics of septic service care, but power through that and get reenergized. Customer education is one of the most important tasks for an installer. This positive message will reap happy and loyal customers and is an important public health service. Without it, poor water-use habits continue and maintenance failures threaten a homeowner's pocketbook and the environment surrounding all of us. ▣

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





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SMALL CHANGES, BIG RESULTS

Daily Improvements

Have you ever met a small-business owner who was constantly tweaking, refining and seeking new opportunities for process improvement? The term for that continual search is called kaizen

and it represents a business philosophy that's oriented toward continuous improvement and personal efficiency. Here's how you can implement it at your company. onsiteinstaller.com/featured

Overheard Online

"Doubling down on safe work conditions can be a powerful tool in employee retention and overall morale."

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INSTALLER HANDBOOK

Guide to COD

COD provides an index to assess the effect discharged wastewater will have on the receiving environment. Learn when and how to analyze it and how COD impacts onsite systems in this tutorial.

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EBB AND FLOW

Navigating Business Cycles

Most businesses have ups and downs and the onsite industry is no different. You'll have seasons where business tapers off a bit — in some cases, more than you're comfortable with. However, there are some things you can do to skillfully maneuver those cycles.

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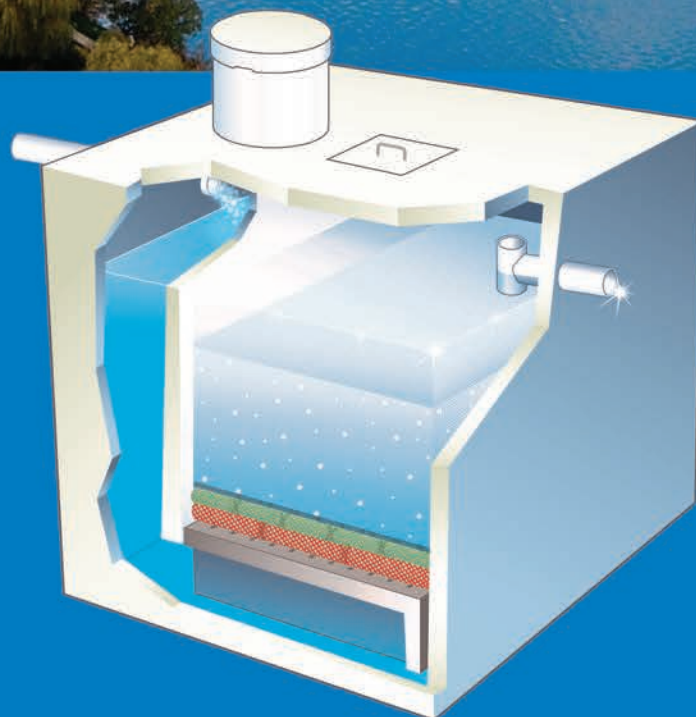
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INSTALLER PROFILE



IT'S IN THE DNA

Three generations of the Stewart family keep, maintain, and build septic systems for their satisfied neighbors in northern Virginia

By Scottie Dayton

Dylan Stewart's apprenticeship began as a toddler riding with his father and young siblings as the company pump truck rolled out of Herndon, Virginia. When Jerry Stewart Jr. was unable to take his three boys along, they climbed up beside Grandpa Jerry Lee Stewart in his pump truck.

The brothers were following a family tradition. Jerry Lee and his wife, Nancy, formed Stewart's Septic Services in 1964, and Jerry Jr. was in the passenger seat as soon as he could stand. By age 14, he was helping pump tanks. Dylan was equally fascinated with what his father did. "In high school, when everybody was talking about which college they wanted to attend, I knew my

career lay with the family business," he remembers.

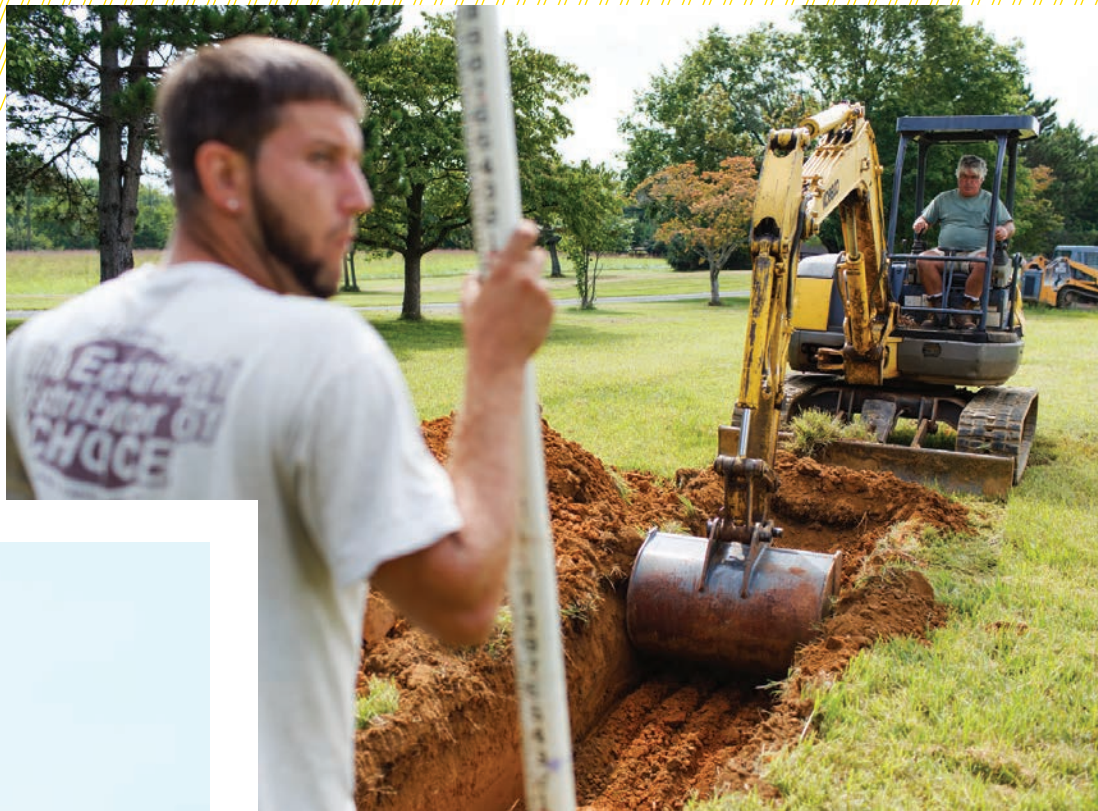
The field was Dylan's classroom, and his main focus throughout high school was learning the world of pumping and onsite installations. While a freshman and sophomore, he worked weekends and after school with his father. As an upperclassman, the high school's work-study program released juniors early to work every other day, and seniors worked two full days per week.

"Everything I learned, including how to communicate, came from listening to my dad, my grandfather, and my older brother Austin," says Dylan, 23, a licensed conventional onsite installer. "Youth is my biggest problem. People look at me and hesitate to believe that I'm qualified to diagnose their septic problems. I grew a beard, hoping it would make me look older, but it hasn't helped."

▲ The Stewart's Septic Services crew includes (from left) Danny Franks, Bobby Kraft, Austin Stewart, Dylan Stewart, Jerry Stewart Jr., Sue Pescitani and Brian Doucharme. The truck is a Mack built out by Imperial Industries with a National Vacuum Equipment Challenger pump. (Photos by James Robinson)

➤ Jerry Stewart Jr. carefully digs a drainfield trench while Bobby Kraft looks on.

✓ The crew unloads a Kobelco excavator at a job site. Left to right are David Allen, Austin Stewart and Bobby Kraft.

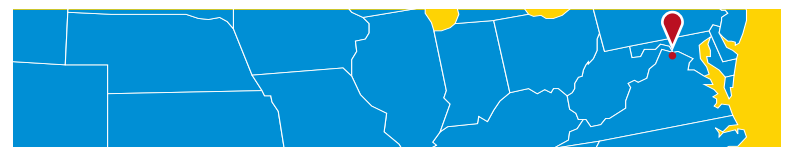


THREE GENERATION

In 1987, Jerry Jr. officially joined the company and took over pumping and installing in Loudoun County. His parents did the same in Fairfax County from their home in Herndon, 45 minutes from Bluemont. When Austin turned 18 in 2007, he worked exclusively with his grandparents. “Grandfather had colon cancer, but he worked every day until he couldn’t anymore,” Dylan says. “He passed away in August 2011, and Austin ran the company until grandmother turned it over to Dad in January 2016.”

The transition from being in command to second in command was difficult for Austin. With time and patience, the family found their places and once again made team decisions and worked closely together. Austin, 28, specializes in Fairfax County systems, which require alternating pumps and duplex control panels. Dylan and his dad service the western end of the state, covering Loudoun, Clarke, Warren, Frederick, and Shenandoah counties. Most onsite systems there — if they aren’t gravity flow — have one pump.

The brothers are now modernizing the mostly paper-based company. “Dad’s 51, and moving him onto the fast track has been our biggest struggle,” Dylan says. “So far, we’ve replaced the scheduling board in the office with a Google app on our smartphones and taught Dad how to use it. He’s



Stewart's Septic Services

Location: Bluemont, Virginia
Owner: Jerry Stewart Jr.
Years in business: 53
Employees: 8
Services: Residential septic pumping and repairs
Territory: Northern Virginia
Associations: Virginia Onsite Wastewater Recycling Association
Website: www.stewartseptic.com

becoming more comfortable with the technology. Mom now works on a computer in our home office. The next step is hiring a website developer who understands our business and how to sell services.”

The family also employs Danny Franks, who has been their vacuum truck driver for more than 20 years; Brian Doucharme, a driver who started in 2013; along with laborer Daniel Johnson, who assists Dylan. Austin’s helper, Ben Forbes, was hired three years ago. “They’re part of our family,” Dylan says. “No one feels more important than anyone else, except for Dad. He gives the orders, yet we’re all comfortable suggesting ideas. We’re a team focused on a single goal — doing the very best for our customers.”

"When you are passionate about a subject and know it backward and forward, explaining it and answering questions is second nature. Sharing knowledge and helping people to understand are the biggest things we can do to extend the lives of their onsite systems."

Dylan Stewart



NEVER STOP EDUCATING

Unless it's winter, Jerry Jr., Austin and Dylan Stewart of Stewart's Septic Services in Bluemont, Virginia, each perform two to three point-of-sale inspections daily. Inspections include pumping the tank, excavating the distribution box, and evaluating drainfield laterals. Owner and father Jerry Jr. has a reputation for honesty and quality work among real estate agents.

"We treat everyone like we want to be treated," says youngest son Dylan. "If we find an issue, we show it to the Realtor, explain how we'll word the problem in our report, and describe how we'll repair it. Communication is about being patient and explaining each scenario in detail."

Always keen on customer education, Dylan developed a point-of-sale inspection PowerPoint presentation two years ago. It introduces new real estate agents to the process and serves as a refresher course for seasoned agents. "The program covers what our inspections include, what the components look like and their function, how systems are designed, and why they fail," he says. "We know the common questions Realtors ask, so I took pictures of everything related to them."

Public speaking was never Dylan's strong suit, but as his knowledge of the business developed, so did his confidence to articulate it. "When you are passionate about a subject and know it backward and forward, explaining it and answering questions is second nature," he says. "Sharing knowledge and helping people to understand are the biggest things we can do to extend the lives of their onsite systems."

TWISTS AND TURNS

The company generates 60 percent of its revenue by pumping about 200,000 gallons annually. They run two vacuum trucks year-round, both Mack R600s. The 1986 chassis has a 3,500-gallon steel tank with K1200 pump (both Transway Systems), and the 1998 chassis has a 3,000-gallon steel tank (Imperial Industries) and Challenger F360 pump (National Vacuum Equipment). A 2006 International 4000 truck with a 2,500-gallon steel tank (Lely Tank & Waste Solutions) and Challenger F367 pump serves as a backup or travels to properties with restricted access.

A third Mack R600 truck with a 4,800-gallon steel tank (Imperial Industries) and Challenger F360 pump functions as a transfer vehicle when colder temperatures arrive. "The smaller trucks off-load into it," Dylan says. "If we pump in Loudoun County, septage goes to the Loudoun Wastewater Reclamation Facility. If we pump in Fairfax County, we discharge at the Upper Occoquan Service Authority."

Topography and distance limit the volume of pumping. Narrow, winding roads in the Blue Ridge Mountains on the west side of Loudoun County range in elevation from 180 to 1,900 feet above sea level. Drivers prefer reversing into most jobs since it's easier to come

◀ Austin Stewart checks the slope measurements for a system using a Sokkia laser level.

▶ Dylan Stewart operates a Kobelco mini-excavator in tight quarters at a customer's home.

out forward with a full load. This often means navigating tight turns on marginal, steep, gravel back roads enclosed by trees.

"Since 2012, new tanks must have risers, but most of the systems we pump haven't been updated," Dylan says. "We recommend risers to homeowners and explain pumpouts cost less with them, but the incentive doesn't always work."

The average 1,250-gallon concrete tank is often so far downhill that it takes two to three 40-foot hoses to reach it. By then, the truck pump doesn't have enough vacuum to lift the septage, requiring a WT40 Honda gasoline trash pump connected in the middle of the run to boost the load. The trip to the wastewater plant can take an hour or more depending on distance.

Besides septage, the company used to pump the Loudoun County Public School grease traps until the reclamation facility stopped accepting grease in 2016. "We had to quit because we're too small to compete with grease-hauling contractors," Dylan says.



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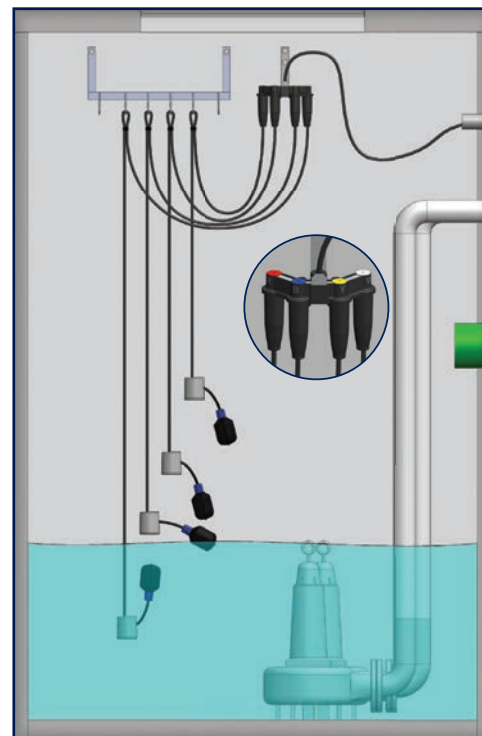
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➤ Austin Stewart, center, along with David Allen, left, and Bobby Kraft work on a drainfield.

INSTALL CHALLENGES

Pumpouts include a visual inspection of the system, and while technicians see their share of wet spots in drainfields, the most common repairs involve broken tees and distribution boxes. After homeowners sign a repair application, a county inspector visits the site to approve the work and then returns to check that the repair was done properly. Minor repairs comprise 60 percent of the company's repair work. "We install plastic distribution boxes if the depth is above 30 inches," Dylan says. "Anything deeper must be concrete, and we use concrete boxes exclusively in areas with horses and cattle."

The company averages 12 system replacements annually since most drainfields are stone and pipe with a 30-year life span. "Even those from the 1980s are mostly functioning well, which is why designers prefer them," Dylan says. "Occasionally, they'll specify EZflow by Infiltrator or their leaching chambers in combination with alternative systems, but mainly it's stone-and-pipe trenches. On the rare occasion when we do replace an ATU, the engineers usually specify MicroFast from Bio-Microbics."

The septic code requires properties to have a replacement drainfield area. However, not all homeowners understand or want to remember the reason for the open space in their yard. Such was the case for a three-bedroom home with a conventional gravity system and ponding drainfield in Fairfax County. The replacement area in the back of the 500-foot-long, narrow lot had a building on it. The 400-by-40-foot-wide drainfield with four trenches on 9-foot centers was sandwiched between the main road, a property line, and the driveway. A pipe from the house discharged regeneration water from a water softener directly on top of the first trench.

The design engineer had no choice but to reuse the existing drainfield site. "Excavating the tank holes and house lateral trench was difficult because there was barely any room to maneuver the Kobelco 45 SR mini-excavator and the Mustang MRL 20 skid-steer loader," Dylan says. ME Concrete Products Co. set the 1,500-gallon septic tank 10 feet from the pumped 1,000-gallon tank, as Dylan and Johnson replaced the cast-iron house lateral with



"No one feels more important than anyone else, except for Dad. He gives the orders, yet we're all comfortable suggesting ideas. **We're a team focused on a single goal — doing the very best for our customers.**"

Dylan Stewart

4-inch PVC pipe. For the next three months, they pumped the septic tank every seven to 14 days while waiting for the loamy sand in the drainfield to dry sufficiently for further excavation.

On the appointed day, the quarry trucked in 90 tons of stone and stockpiled it along the driveway as Dylan and Johnson removed 36 inches of native soil from the existing drainfield and deposited it in two Chevy 4500 dump trucks — one with a 7-cubic-yard McClain Galion box and the other with a 6-cubic-yard Dejana Truck and Utility Equipment box.

"Daniel and I installed the first two trenches with 4-inch perforated corrugated HDPE black pipe, then had them inspected and backfilled before installing the other two trenches," Dylan says. "It was the only way we avoided encroaching on the drainfield."

REGULATIONS DRIVE MAINTENANCE

Alternative systems only became a major player for the company after Loudoun County passed its onsite inspection ordinance in 2012.

continued ➤



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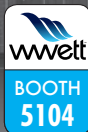


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The inspection is separate from the maintenance agreements required by ATU manufacturers. Since the county has 40,000 onsite systems, the health department sends inspection-due letters in March to more than 1,400 random ATU owners. Conventional system owners are on a five-year inspection cycle, and the department sends postcards to 20 percent of them annually.

The Loudoun County website provides a list of licensed operators, of which Austin is one. However, most homeowners wait until the July 1 deadline is almost upon them before requesting an inspection, making it difficult for the Stewarts to stay abreast of other work. Furthermore, they never ask customers to sign service contracts, which would expedite scheduling.

"We prefer to develop friendships instead. That way, both parties are free to part if things don't work out," Dylan says. The company performs 150 inspections annually and 90 percent are repeat customers.

For inspections and diagnostics, technicians use three RIDGID K-1500 SeeSnakes and a K-50 sectional machine, two Spartan Tool SparVision 200 sewer cameras, and a Spartan Warrior trailer-mounted sewer jetter. They also use a Sokkia laser level for taking measurements in the field.

The company has a barn for storing supplies and material, and concrete pads or gravel parking lots for the equipment, which includes a Bobcat E35i compact excavator with leveling trenching bucket and a New Holland 565 skid-steer loader and 55E backhoe. Jerry Jr.'s wife, Sue, manages the office in the home.

Dylan enjoys belonging to a family-owned business, even if working six days a week leaves only Sundays to be with his wife and children, who are still too small to accompany him in the truck.

"I see myself advancing customer education, building our workforce, and expanding our territory while maintaining the company's reputation for quality," he says. "Dad will probably never retire, but now that Austin is with us, Dad is finally taking some time for himself. It's been good for him and for us." □

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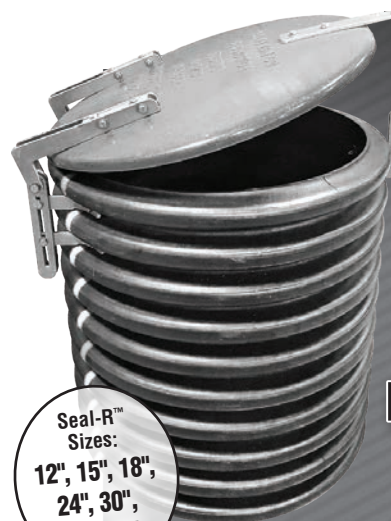
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Keep Your Trench Rock Clean

Dirty rock can contribute to closing the voids that keep effluent moving through your conventional trenches

By Jim Anderson and David Gustafson

A colleague of ours at the University of Minnesota often said it was hard to get people to fund research on the most basic onsite systems. And yet, it was easier to make a case and get research grants funded for new systems or ideas that were often much more complicated and expensive than our basic technologies.

He said everyone thought they knew how those elaborate systems worked, while there were still a lot of unanswered questions about how the gravity-fed rock-and-trench system functioned. This was not a knock on the research done on new technology; he just highlighted that there was — and still is — a lot we don't know, and it would good if there could be another comprehensive look at simpler systems to improve our knowledge about how to better site, install, and manage them.

This was brought to my mind by a short paper that was provided at the WWETT Show and done by a company in Canada that manufactures early-alarm systems for sewage treatment systems, among other things. They instrumented a conventional gravity rock trench system. What they found was extremely interesting, and I think it highlights why we as an industry need to continue to research and look at our most basic treatment solutions.

IMPEDING FLOW

The company installed its monitoring devices in three locations within the treatment trenches. They found areas within the trench that were ponded to depths that were close to failure (surfacing), while other areas within the trench showed no evidence of ponding at all. Since the trench bottom was level, this did not make sense. If the liquid could flow unimpeded through the rock, it should spread gradually across the bottom of the trench, forming a biomat and ponding above the biomat to a somewhat uniform level.

When they looked at the rock, they reported that it was excessively dirty. They speculated that with the rock being dirty, biomat bridged across the void spaces, effectively blocking off part of the trench from liquid. This is a plausible explanation when we consider that with gravity distribution in 4-inch pipe, effluent will run out just a couple of the half inch holes, so effluent essentially dumps out in one place without using most of the distribution piping.

In our view, this is evidence that rock used in sewage treatment trenches or beds must be clean. Another way dirty rock can impact system performance is as the effluent moves around the rock, washing off the finer particles and depositing them in the bottom of the trench. This action physically seals off the soil infiltrative surface, reducing the ability to accept effluent. For pressure distribution systems where rock is used in trenches, mounds, or at-grades,

Contractors should make sure they get clean rock delivered to the job site.

This means ensuring the supplier is not providing pit-run gravel, which will generally have a large percentage of fine material.

avoiding this action is important to maintain system longevity.

Criteria used to define clean rock is specific: No more than 5 percent by weight should pass through a 3/4-inch sieve, and no more than 1 percent by weight passing a No. 200 sieve. These criteria ensure that the rock used is smaller than 3/4-inch in diameter, which prevents the use of pea gravel as a rock media. Pea gravel is subject to plugging due to biomat formation across the voids between the rock. It also ensures the rock doesn't have a lot of fine soil particles, which can be subject to washing over time and plugging the soil infiltrative surface.

In terms of rock size, on the high side it should have no more than 5 percent by weight larger than 2 1/2 inches in diameter. Specifying an upper limit means the rock is workable during installation and has a large volume of void spaces. Since the two primary purposes of drainfield media are to hold the sides of the system and provide space for effluent to be stored, using larger rock makes it more difficult to work and doesn't provide as much storage space.

MATERIALS MATTER

One final comment on rock criteria: It needs to be durable, so it should be crushed igneous rock or similar insoluble material. If rock is not durable, it will break down over time, sealing off the infiltrative surface. An example of unsuitable rock is crushed calcite limestone.

From an installer point of view, contractors should make sure they get clean rock delivered to the job site. This means ensuring the supplier is not providing pit-run gravel, which will generally have a large percentage of fine material.

Once the rock is delivered, it is up to the installer to keep it clean. This means being careful about where and how it is stockpiled so soil is not picked up and deposited with the rock in the trench bed. If you are going to pay a premium to have clean rock, keeping it clean only makes sense. ■

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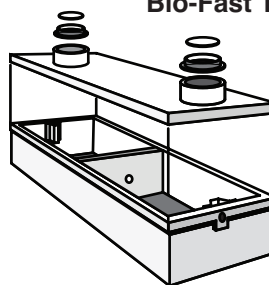
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Wastewater Pros Play a Critical Role in Water Resource Protection

Statewide licensing, better-informed customers top Kansas Small Flows Association member Tim Lubbers' list of changes that will support our important industry

Compiled by Betty Dageforde

In States Snapshot, we visit with a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we learn about a member of the Kansas Small Flows Association.



Tim Lubbers, president - installer, maintainer

Business: Lubbers Excavating, Andale, Kansas

Age: 59

Years in the industry: 31

Association involvement:

Member of the Kansas Small Flows Association for 10 years.

Benefits of belonging to the association:

The main benefits are the classes they put on for continuing education.

Biggest issue facing your association right now:

Membership is probably the biggest thing. They just can't get people to join. A lot of people think they're too busy to take a day or two off. And nobody takes the wastewater industry seriously like they should.

Our crew includes:

I have one crew member, Max Greep. And my wife, Lynne, does the books.

Typical day on the job:

You plan one thing, and then you get three phone calls and everything changes. We install and maintain septic systems, about 30 percent of which are alternative systems. So we generally start out loading equipment and pipe and everything for the day, making sure we have all the parts and pieces on the truck that we're going to need for that particular job for the day. And making sure you've got your DOT inspections and everything's ready to roll down the road – the lights work, brakes are good, tires are good. But calls might change where you're headed. It might be an emergency that we have to drop everything and go, or when you go home, you might have to stop by and look at a job, or this or that.

Helping hands - indispensable crew member:

My wife, Lynne, who does the books. She makes sure the bills get paid and that people pay their bills. That's not a big fight anymore, getting people to pay their bills.

The job I'll never forget:

On a job last spring, we had done some preliminary digging to see where the water table was, and it was down about 7 feet. We put a system in and then got a lot of rain and the water table rose to within about 2 feet. It just started coming up out of the ground. I had to convince the customer that there was nothing I could do until it quit raining and the water table went down and everything would be fine. It took about 2 1/2, three months, but finally the water table went down and everything's working fine now. But I kept running over there, convincing this 87-year-old woman that it wasn't sewer water coming up out of the ground. I checked to make sure the tank was sealed and had no leaks, which it didn't. It was just a matter of waiting out Mother Nature.

My favorite piece of equipment:

My mini-excavator (John Deere 50G). It's a good piece of equipment to get into small yards. There's been some jobs I've done that you just couldn't get in there and get the job done with a regular tractor/loader backhoe. With this

equipment, I've been able to bid on more jobs because I can get into yards and get the job done in tighter places.

Most challenging site I've worked on:

We just finished a job that was in a small yard with a lot of trees. It was a big lateral bed, and there was no place to put the dirt. So, we had to dig half of it and put it in, get it inspected, and then cover that and dig the other half. This was a traditional system — rock and pipe. There wasn't any place to put the rock. We'd have to bring a couple loads in, use them up, and then have them bring a couple more in because there wasn't even enough room to stockpile the material.

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

"Why should I pump my tank? My folks lived there for 30 years and never pumped their tank."

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

I'd like to see statewide licensing. Right now, every time you go to a different county or city you've got to get licensed there, and everybody's got different rules and regulations — over here you can do this, but over there

you can't do it. I'd like to see them all go to statewide licensing and following one code.

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

I don't remember where I heard it, but "work smart, not hard."

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

Be farming. I always wanted to farm.

This is my outlook for the wastewater industry:

I think some counties are looking ahead as far as the alternatives. I'd like to see them all get out of the Stone Age with gravel-and-pipe and the attitude, "We did it this way for years and it worked." I think everybody needs to do a little better as far as treating the effluent because I think — and it might not be in my time, but I think it's going to be in my grandkids' time — water is going to be in great demand. ☐

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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Flooding Is Always a Threat for a Riverside RV Park

Securing the replacement wastewater system for California's River Bend RV park was a major design challenge

By David Steinkraus

Located in the heart of California wine country, the River Bend RV park needed a new wastewater system to serve 50 recreational vehicle sites. But, the park is also on the shore of the Russian River, which empties into the Pacific Ocean. That means the property is prone to flooding.

After 10 years, the previous system was failing. The old leach lines had collapsed.

"It sounded to me as if those alluvial soils — sand and silt — migrated into those drainfield trenches," says Peter Lescure, principal civil engineer

of Lescure Engineers Inc. in Santa Rosa. His firm was hired to design the new system.

The owner had land intended for the repair system, but as they did the survey work, Lescure and his staff found the property's boundaries were not as clear as the owner thought. They took another look at the RV park property and realized there was just enough space on a high point, next to the road, for a wastewater system using Orenco Systems AdvanTex AX100 modules.

PUMPS AND DRIPLINE

Wastewater enters the system at a receiving station, a 2,000-gallon concrete tank near the river and at a lower elevation on the property. Then, wastewater is pumped uphill through 250 feet of 1 1/2-inch Schedule 40 force main by a pair of Orenco PFEF4011-B pumps. On the uphill end are three 2,000-gallon, concrete septic tanks connected in series and placed on high ground next to the public road that runs past the park. The last tank in the series is equipped with an Orenco effluent filter.

Water flows by gravity through the septic tanks and into a pair of 2,000-gallon, concrete dosing tanks. A pair of Orenco PF500712CV-10 pumps doses one AdvanTex AX100 unit. Effluent from the tanks is split, with 80 percent going back to the dosing tanks and the other 20 percent flowing to a pair of 2,000-gallon pump tanks.



◀◀ Near the AdvanTex (Orenco Systems) units are its recirculation tanks and the dosing tanks for the dripfield. Because these are typically only one-quarter to one-third full, they were covered with 12-inch-thick concrete anti-floatation slabs to hold them in the ground during floods from the nearby Russian River. Carl Van Dyke & Associates worker, center back, and Carl Van Dyke, right, finish up work. (Photos courtesy of Peter Lescure)

➤➤ Keeping controls and the air blower dry at the River Bend RV park was easy. Everything was placed on this platform. It was already in place when the project began and is where electric power enters the park and where the main switch panel is located.

➤✂ The AdvanTex (Orenco Systems) units at the River Bend RV park in Forestville, California, were placed at grade. Even though the Russian River is at the park's edge and tends to flood, lids on the AdvanTex units are tight enough to prevent infiltration. During construction, the river flooded twice, and water was high enough to lap at the edge of the tanks.

Three Orenco UV units are placed at the inlet of the dosing tank. A pair of Orenco PF100511CV-20-FC pumps moves water to the dripfield.

The dripfield is 1,710 linear feet of Geoflow, but the tubing is divided into three zones. Each zone is further subdivided into four sections of varying width. Width depended on what would fit the space because each section is placed between the RV parking pads. These pads are on high ground in the park, above the river's usual floodplain. A HydroTech hydraulic distribution valve splits the flow to the three drip zones.

Near those zones is an area of land that could accommodate another 1,630 linear feet of dripline for future reserve to augment the primary field if it becomes stressed. This is also where the failed leachfield of the previous system was located. Lescure believes the fine, cohesionless alluvial soils migrated into the drain rock and leach line pipes of the old field and prevented effluent from entering.

The aeration fan for the AdvanTex units is located above grade — and above the river's flood level — on a platform that was already in place. It's where utility power enters the property and where the main switch panel for the park is located. The Orenco control panel running the system is on the same platform.

Orenco risers and lids were used throughout the project. Concrete tanks for the project were made by Salvage Concrete Products of Santa Rosa.

READY FOR FLOODS

The reality of flooding along the Russian River also caused Lescure to look at other potential problems. The system lies within the 10-year floodplain.

"You need an air intake for the AX100, so I put on a Wager air vent that is designed to block water from flowing in. I knew about it because of a water system I designed for a flood zone a couple of years ago, and I used the same vent on the well there," he says.

The site flooded twice during construction. The recirculation tank for the AdvanTex unit is typically only one-quarter to one-third full, so it can float. The dosing tanks for the drip system are also typically less than one-quarter full. Those tanks were covered with 12-inch-thick, anti-floatation concrete slabs located at grade.



System Profile

- Location:** Forestville, California
- Facility served:** 50-unit RV park
- Designer:** Lescure Engineers Inc.,
Santa Rosa, California
- Installer:** Carl Van Dyke & Associates,
Monte Rio, California
- Type of system:** Orenco AdvanTex with Geoflow
subsurface drip irrigation
- Site conditions:** Alluvial soil type with high
hydraulic capacity
- Hydraulic capacity:** 2,500 gpd

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By Scottie Dayton | Cover Story | March 2013

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▲ The receiving station for the River Bend RV park went in deep, as dictated by the collections system lines. The tank is located at a low point in the park and near the Russian River. Effluent is pumped uphill to the treatment chain. From left, Sterling Walstrum of Lescure Engineers Inc.; Carl Van Dyke, installer; Carl Van Dyke & Associates worker, and George Bertam IV, RV park owner, look at the finished product.

"We left the AX100 sitting totally above grade in this case. Its lid is fairly watertight. The water might rise 2 or 3 feet above it in a heavy flood. In the floods we had during installation, water lapped at the edge of the AX units," he says. The AX100 is bolted to a 12-inch-thick, anti-flotation concrete slab located at grade.

Originally Lescure designed the system with fiberglass tanks, but there was a delay in obtaining those and the equipment to handle them, so the owner opted to use concrete tanks that were immediately available.

"We left the AX100 sitting totally above grade in this case. Its lid is fairly watertight. The water might rise 2 or 3 feet above it in a heavy flood. In the floods we had during installation, water lapped at the edge of the AX units."

Peter Lescure

Lescure and his staff laid out the dripline sections, and allowed installer Carl Van Dyke & Associates the flexibility to lay some of the dripline a bit closer. Whether lines are 24 inches on center or 23 doesn't matter much in the end, Lescure says. And Carl Van Dyke had to compress the line spacing in one spot where there were some trees the owner did not want to lose.

Water from the driplines irrigates turf. "I don't know what he has in there — it's like Bermuda grass — but the owner says it grows like crazy," Lescure says. □

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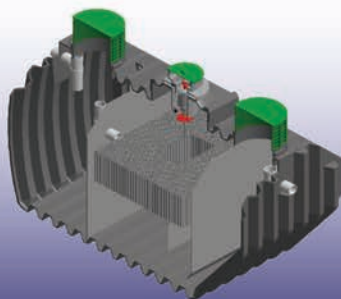
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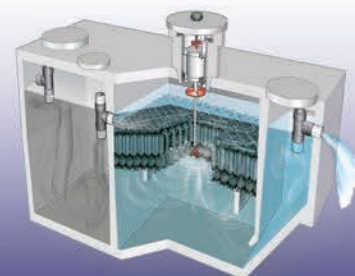
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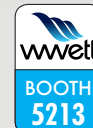
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Long Island Communities in New York Tighten Onsite System Rules

By David Steinkraus

Suffolk County, New York, has been pushing to replace common cesspools with advanced onsite systems that reduce nitrogen pollution, and now a couple of communities within it are going further.

The county occupies roughly the eastern two-thirds of Long Island and includes the Hamptons, known as a weekend retreat for very wealthy residents of New York City. The county also has a large number of cesspools and their accessory problems of poor water quality. About 360,000 homes in the county, or about 75 percent of all homes, use cesspools for wastewater treatment.

The town of East Hampton, located near the tip of Long Island, voted to become the first community in the state to require low-nitrogen wastewater systems in all new construction. Low-nitrogen systems will also be required if a building undergoes substantial renovation. Commercial and municipal properties must switch to low-nitrogen systems if they are presently connected to a large-capacity cesspool.

To help homeowners fund the transition to better technology, the town board voted to adopt a rebate program that will give homeowners in critical watershed areas up to \$16,000 toward the cost of a replacement system. People not living in critical areas may receive up to \$10,000 or 75 percent of the cost.

Homeowners may pair these rebates with a county program that provides grants of \$10,000 to \$11,000 per home. At the end of May, County Executive Steve Bellone signed the Reclaim Our Water initiative's Septic Improvement Program into law. The \$10 million grant program will pay for about 200 wastewater systems annually to be converted to advanced nitrogen-removal systems.

The East Hampton grants are funded by a 2 percent tax on real estate transactions. In the fall of 2016, voters gave the town permission to use up to 20 percent of the tax revenue for water-quality improvement projects.

East Hampton's new construction rules will take effect Jan. 1, 2018.

Suffolk County has approved four systems for installation: Norweco Singlair and Hydro-Kinetic, AdvanTex from Orenco Systems, and Hydro-Action.

On Shelter Island, which is on the north side of Long Island in a bay opening into Long Island Sound, officials are considering tightening the building rules in the same way.

The town board has asked its attorney to draft legislation that would require low-nitrogen systems for new residential and commercial construction as well as for any work that changes 50 or more percent of a building.

Michigan

Residents of the Detroit suburb of Southfield are complaining about letters from the city telling them to either have their onsite systems certified or face the possibility of a citation. The city mailed some 500 notices.

This is happening because of a 2009 city ordinance that requires people with septic tanks to have those tanks certified every three years. If the evaluation finds a tank that is inadequate, unsafe, or subject to failure, the owner must connect to the available municipal sewer. Residents complained they were not informed about the ordinance and may face the prospect of paying thousands of dollars to connect to the municipal sewer, according to *The Detroit News*.

City Attorney Sue Ward says state law gives cities the power to ask residents with onsite systems to connect to municipal sewer if the connection is within 200 feet of a home.

Pennsylvania

Some residents in Doylestown Township, about 24 miles north of Philadelphia, will be required to pay for a municipal sewer connection.

Township officials say onsite systems in the area show signs of failing, and in mid-August, the township's supervisors voted unanimously to approve the \$8.6 million project. The township is applying for a low-interest loan through the state, but it is the 252 affected homeowners who will pay the loan back. Supervisors say all taxpayers should not carry the cost when the project will affect only a small section of the community, according to *The Intelligencer*.

Lifelong township resident Audrey Ervin says she thought it unfair for homeowners to face an estimated cost of \$34,000 each when only a few septic systems are failing. The town had engineers look at onsite systems in 1998 and 2008, and their report says the observations "found a significant amount of malfunctioning (septic systems) in the area."

Utah

A broken septic line fouled part of Jones Hole Creek in Dinosaur National Monument and led the National Park Service to ban fishing, hiking and swimming along 4.25 miles of the stream. *The Salt Lake Tribune* reports the break was in a wastewater line at the Jones Hole National Fish Hatchery. Bacteria counts were almost six times higher than the level that triggers health warnings from the state. The Dinosaur Quarry and visitor center remained open, but the park service closed the hatchery and its parking lot to block visitor access to certain trailheads.



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Washington

After a contentious election in which county commissioners were turned out of office because of a septic system monitoring fee, the new Thurston County board is looking at its options for complying with state law.

The county surrounds the state capital of Olympia on the south end of Puget Sound. Under state law, all 12 counties bordering Puget Sound must formulate a plan to inspect septic systems and replace failed systems. There have been concerns for some time about damage to the waters of Puget Sound and its shellfish beds from failing onsite systems.

In 2016, the previous county board voted to impose a \$10 fee on about 42,000 onsite systems to pay for the cost of monitoring them. The fee drew strong opposition. Proponents say it was a cheap way to protect Puget Sound. Opponents say they are capable of caring for their systems by themselves. The present board removed the fee but kept the rest of the plan in place.

Now, the Thurston County commissioners have been given three options by county staff, reports *The Chronicle* in Lewis County. They may continue with the present plan, rescind it or develop a new plan focused on the watershed for Puget Sound or on high-priority areas.

Continuing with the current plan would provide better service to onsite system owners, the staff report says. Targeting high-priority areas would charge fees only to people in affected areas. Rescinding the plan would impair the county's ability to locate failing systems.

Montana

About 18 months after a leak from a wastewater storage pond, the state and the Yellowstone Club have agreed on a penalty. The club will pay \$288,788 for an environmental project of its choosing, and it must submit

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that project for state approval. If it and the state cannot agree on a project by August 2018, the club will pay \$192,525 or a prorated portion. State guidelines say requiring environmental project payments encourages violators to further reduce the risk of pollution and improve public health.

The club has already paid the state \$29,564 for the cost of investigating the spill and a penalty of \$64,175.

The spill happened in 2016 when 30 million gallons of treated wastewater flowed from the club's storage pond into the Gallatin River. State engineers believe a buildup of ice dislodged a 24-inch pipe that enclosed two smaller pipes. Water flowed through gaps in the 24-inch pipe and into the river. Water from the pond is used for the club's golf course.

Ontario

Mandatory septic inspections are coming to the township of Algonquin Highlands in 2018, and to educate residents about the program, the township and its engineering consultant planned a septic social. Onsite systems are reportedly the leading source of phosphorus in Ontario lakes, and that leads to algae blooms. The inspection plan will affect about 900 septic tanks, and each year, technicians will visually inspect them.

British Columbia

A festival to celebrate restoration of the Gorge Waterway in Victoria on Vancouver Island was interrupted by fecal contamination. Provincial officials say the contamination came from the illegal dumping of septage and a disinfecting chemical into a creek that leads to the waterway.

The Gorge is a channel connecting Victoria Harbor to a tidal inlet. Sewage and industrial waste severely degraded the water quality by the 1940s, and the damage was reversed by cleanup work that began in the 1990s. □

System Inspection and Maintenance

By Craig Mandli

BACTERIA - SEPTIC



Bionetix International BIOBOOST Tablet 1T

BIOBOOST Tablet 1T from Bionetix International is designed to be an effective, natural treatment for septic tank maintenance and aftershock treatment. It relies on a high-density, 1-trillion-count blend of bacteria with biological nutrients and stimulants to naturally biodegrade paper, oils, greases and waste. It is efficient for treatment after toxic shock from the use of strong bleaches or other harmful chemicals, such as root killers for removing roots from pipelines, according to the maker. The tablet nourishes and replenishes bacteria in the septic tank to biologically digest waste and reduce sludge buildup. Results of this treatment include reduction of odors and methane, prevention of pipe and drain blockage, and decrease of septic tank pumping frequency, the manufacturer says. Use two tablets in the startup month, followed by one tablet per month for maintenance. 514/457-2914; www.bionetix-international.com.

Cape Cod Biochemical Co. CCLS

CCLS from Cape Cod Biochemical Co. was originally formulated for municipal waste treatment facilities, and the technology has been miniaturized for onsite septic systems. It provides the same primary treatment required by treatment plants including BOD and COD removal, solids settling, solids digestion, and odor control, according to the maker. 800/759-2257; www.septiconline.com.



Ecological Laboratories PRO-PUMP Bio-Remediation Super Kits

PRO-PUMP Bio-Remediation Super Kits from Ecological Laboratories are designed to recover flow in fouled and ponding absorption fields. PRO-PUMP/HC (High Count) is a mixture of select, live vegetative bacteria that will break down and remove slow and difficult-to-degrade compounds, according to the maker. PRO-PUMP/SA (Sludge Away) is a natural humus soil science product that's designed as a biostimulant to speed the bioremediation process.



PRO-PUMP/OX (Powered Oxygenator) is a calcium peroxide/hydroxide mix that's used as an oxygen source for the bacteria. The kits combine select cultures with enhancement technology that rapidly break down and degrade organic compounds that reduce absorption flow recovery, the manufacturer states. 800/326-7867; www.propump.com.

Scienco/FAST - a division of Bio-Microbics Inc. 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 Bio-Microbics Inc. 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.



DRAINLINE INSPECTION

CUES MPlus+ XL

The CUES MPlus+ XL push system is designed for easy operation with an all-in-one setup and flexibility by quick removal of the control unit to be used separately. It includes a coiler configuration and pan-and-tilt camera for mainline and larger pipeline applications up to 500 feet. It integrates video observation coding, observation coding interface and digital recording into an easy-to-use package. The lightweight system includes large and durable wheels for portability and a balanced footprint for stability. It is manufactured to handle rigorous field use. 800/327-7791; www.cuesinc.com.





Ratech Electronics Elite USB with Wi-Fi

The Elite USB with Wi-Fi from Ratech Electronics lets users record pipe inspections directly to a USB flash drive and wirelessly via an app to an iOS or Android device while taking live video and digital still photos, which can be immediately uploaded to YouTube. The Wi-Fi interface is available on any current or existing Ratech Electronics systems in the field. It's available with a sun-readable, 10-inch LCD monitor and a self-leveling camera, ultramicro camera or pan-and-tilt push camera. Systems come in cable lengths of 100 to 400 feet. 800/461-9200; www.ratech-electronics.com.

ELECTRONIC LOCATORS

Subsite Electronics UtiliGuard

The UtiliGuard utility locating system from Subsite Electronics uses ambient interference measurement to automatically scan the surrounding area for noise and recommend the best frequency among its 70 options. To help users make more accurate locates of obstructed utilities, it measures distances (depth) both horizontally and vertically to the utility. The system has an intuitive, six-button, multilanguage operator interface and a high-contrast LCD display to ensure visibility in all conditions, including direct sunlight. A dual-output feature allows users to connect the transmitter to two utilities at once, and the system is Bluetooth-enabled to simplify data transfers. Its rugged housing with an IP65 rating protects against dusty, dirty, and wet conditions, and it has 100-hour transmitter and 30-hour receiver battery life. 800/846-2713; www.subsite.com.



Vivax-Metrotech Corp. vScan utility avoidance tool

The vScan utility avoidance tool from Vivax-Metrotech Corp. was designed to make buried utility detection a simple and cost-effective process. It offers seamless data logging and a compass line direction indicator standard. Options include GPS, Bluetooth and a buried metal cover mode. Main features and operational controls are in line with industry standards, so minimal training is required. 800/446-3392; www.vivax-metrotech.com.



HAND/POWER TOOLS

Crust Busters agitator

The hand-held power agitator from Crust Busters has an 80-inch shaft and two- or three-blade propeller designed to mix a 1,000-gallon septic tank in five minutes. Options include 2-, 4-, 6- and 9-foot extensions and a short three-blade shaft that adapts to the two-blade unit. 763/878-2296; www.crustbusters.com.

T&T Tools Mighty Probe

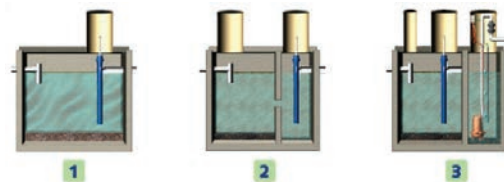
The Mighty Probe from T&T Tools has a 3/8-inch hex rod (approximately 20 percent stiffer than a round rod) or a 7/16-inch hex rod (approximately twice as stiff as the standard round rod). Stiffer hex rods bend less to make the probe easier to push into the ground, especially when probing at deeper depths. Lengths are available from 36 to 78 inches in 6-inch increments. When the probe is combined with a slide adapter, an integrated mini slide-hammer probe is created, allowing the technician to pound through difficult spots. 800/521-6893; www.mightyprobe.com.



SEPTIC FILTERS

Bio-Microbics SaniTEE

SaniTEE wastewater screens from Bio-Microbics are available in 4-, 8-, and 16-inch



sizes and are designed to provide consistent retention of wastewater solids for applications up to 20,000 gpd. Installation consists of dropping it inside a standard septic tank outlet tee. No tools are required. To clean, simply move the swab handle up and down to pass the swab through the center screen. Swabbing action will dislodge debris trapped in the angled slots. Additionally, its keyhole weirs help to attenuate surge flows, delivering a more consistent flow for further treatment or dispersal and helping extend drainfield life, reduce the clogging of orifices in effluent disposal systems, and allow use of different types of effluent pumps. If inspection is required, it can be removed by lifting the screen out of the outlet tee. 800/753-3278; www.biomicrobics.com.

Clarus Environmental WW4

The WW4 effluent filter from Clarus Environmental is mounted in the outflow of the septic tank to provide protection from solids moving out of the tank into the dispersal area. A secondary screen provides continued protection during servicing. When the primary cartridge is removed to be cleaned, the secondary screen blocks any solids from sloughing off and traveling to the dispersal area. After the primary cartridge is cleaned, the secondary screen can be removed and cleaned without the threat of solids settling into a leachfield. It can handle up to 4,000 gpd and can be assembled on site in a multifilter configuration for larger flows. 800/928-7867; www.clarusenvironmental.com.



Polylok Inc. / Zabel PL-250

The PL-250 effluent filter from Polylok Inc. / Zabel is designed to handle up to 3,000 gpd with 250 linear feet of filtration. According to the maker, PL-250 and its other filters are easy to install and are designed for functionality and longevity. 877/765-9565; www.polylok.com.



Sim/Tech Filter pleated filter units

Pleated filter units from Sim/Tech Filter provide gravity effluent filtration in septic tanks and turbine pump filtration in pump tanks. The filtration size is 3/32 inch in two dimensions. Flow channels in the pleated material result in increased longevity. All filter types start at over 2,000 square inches of filtration area. The 45 percent open area (over 900 square inches) is equivalent to 800 linear feet of 3/32-inch slots. Various configurations and larger units are available. 888/999-3290; www.simtechfilter.com.



SMOKE LOCATORS

Superior Signal Co. 5E Electric Smoker

The 5E Electric Smoker from Superior Signal Co. is designed to connect to any clean-out or inspection port to smoke test an entire system in a few minutes. Smoke testing can be an effective technique for finding the sources of odors and many other faults throughout a building's plumbing, laterals, the septic system and leachfield. The unit gently pushes smoke throughout the system to find cracks and leaks and quickly identify problems. The unit sets up and shows results quickly, and it comes with an 8-foot industrial-grade flex hose. 800/945-8378; www.superiorsignal.com.



TURBO FOG Division of Kingscote Chemicals M-45

The TURBO FOG Division of Kingscote Chemicals M-45 is a versatile, lightweight, portable, self-contained smoke generator that's capable of producing dense, voluminous white smoke using leak-proof liquid smoke cartridges. Each cartridge can be replaced in seconds, allowing for easy replacement even while the unit is operating, for uninterrupted smoke production. No additional smoke bombs or pump garden sprayers are needed for additional test time. The Briggs & Stratton-powered turbine-type blower weighs 45 pounds and creates a discharge velocity of over 75 mph and 2,000 cfm. It continues to work under pressure in up to 5.75 inches of water. It is available with a plumbing conversion kit. 800/394-0678; www.turbo-fog.com.



VACUUM TRUCKS/TRAILERS

Imperial Industries MRK

The MRK aluminum tank series from Imperial Industries is offered in stock units of 6,000-, 6,300- and 7,500-gallon aluminum trailer units. The vacuum-style trailer unit is available with vacuum pumps or blowers mounted on the driver's side or a pump rack on the bottom of the trailer unit. It includes a Ridewell suspension with Holland running gear, retractable ladder, 14-gallon secondary, 4-inch air line, 20-inch rear manway and an optional OSHA handrail. Trailer units are in stock and can also be built to custom specifications. 800/558-2945; www.imperialind.com.



Pik Rite 3,600-gallon vacuum unit

The Pik Rite steel, 3,600-gallon vacuum tank is designed for strength and reliability. Its 3-inch internal plumbing keeps the exterior clean and simple. The vacuum pump mount is attached to both frame rails and supports pumps from any of the major pump manufacturers. Four sight eyes indicate waste level. The tank interior is equipped with walk-through baffles and a 20-inch rear manway for easy clean-out. The LED running light kit is installed with a fully molded wire harness. Work and strobe lights are mounted on the top-rear lighting bracket. Polished aluminum hose trays, the tank sides and the low hose hooks are coated with protective super liner. 800/326-9763; www.pikrite.com.

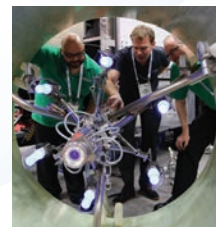
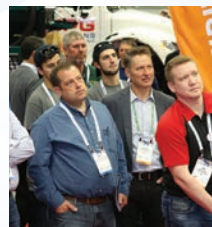


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CASE STUDIES

Additive used to treat blockage in drainfield line

Problem: North Carolina homeowners called J.C. Johnson Plumbing & Septic when they saw water surfacing into the drainfield area. Technician Jim Sparrow ran a camera through the line exiting the tank and quickly determined the line was almost completely full of sludge.

Solution: Sparrow installed a clean-out on the outlet end of the tank and then poured **bioForce Maxx** from **Chempace Corp.** into the line. The septic tank was also pumped down to make sure no water would be going into the field for a week. After approximately one month without incident, a camera was put down the clean-out to inspect the line. The first 30 feet had gone from being full of sludge to only about a 1/4 inch on the bottom. The line was treated again with another 5-gallon pail of bioForce Maxx.


Result: To date, there has been no further surfacing water in the drainfield. 800/423-5350; www.chempace.com.

Vent filter eliminates septic odors

Problem: After installation of a new septic system, a homeowner in Lake Mohawk, New Jersey, complained of odors in his yard. The contractor installed residential vent odor filters on the tank and roof vents. The filters improved but did not eliminate the problem. The contractor reviewed the situation with Simple Solutions Distributing and determined the problem was that tank vent airflow exceeded typical levels. The home is built into the top of a hill, and the holding tank is located at the bottom of the hill. The discharge pipe is approximately 75 feet long and drops approximately 15 feet. The modules are located on the side of the house above the holding tank. Water was running into the tank either from one of the home appliances or from feed lines when the discharge pumps were turned off.



Solution: Simple Solutions Distributing recommended the contractor replace the vent filter on the discharge tank with a larger, solar-powered **Super Wolverine** vent filter. The Super Wolverine can eliminate odorous airflows up to 10 cfm, and the solar fan actively vents the tank, reducing accumulation of sewer gas.

Result: The odor problem was eliminated, and the customer can enjoy his lake home without nuisance odors. 866/667-8465; www.industrialodorcontrol.com. 



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Wastewater Association;
www.arkowa.com

CALIFORNIA

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Wastewater Association;
www.cowa.org; 530/513-6658

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www.cpow.net; 720/626-8989

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www.cowra-online.org;
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DELAWARE

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

FLORIDA

Florida Onsite
Wastewater Association;
www.fowaonsite.com;
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GEORGIA

Georgia Onsite
Wastewater Association;
www.onsitewastewater.org;
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Georgia F.O.G. Alliance;
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Association of Idaho;
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www.ksfa.org; 913/594-1472

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www.mapss.org

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www.nowwa.org; 402/476-0162

NEW HAMPSHIRE

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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
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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;
888/294-0084

OREGON

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

PENNSYLVANIA

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.psmna.net; 717/763-7762

TENNESSEE

Tennessee Onsite Wastewater Association;
www.tnonsite.org

TEXAS

Texas On-Site Wastewater Association;
www.txowa.org; 888/398-7188

Education 4 Onsite Wastewater Management;
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Virginia Onsite Wastewater Recycling Association;
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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

CANADA ALBERTA

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

BRITISH COLUMBIA

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

MANITOBA

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

SASKATCHEWAN

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

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