

# ONSITE installer™

PROMOTING WASTEWATER TREATMENT QUALITY AND OPERATIONAL EXCELLENCE

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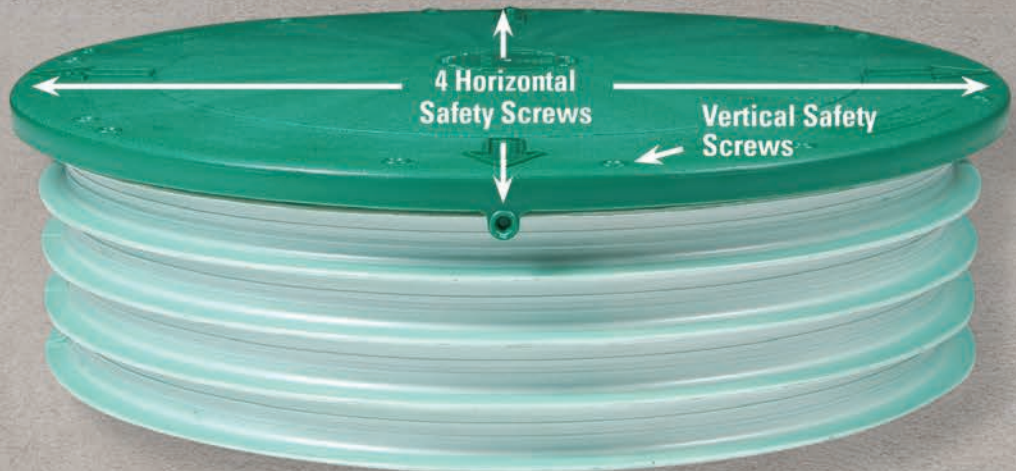


# 24" HEAVY DUTY MULTI-PURPOSE FLAT RISER LID

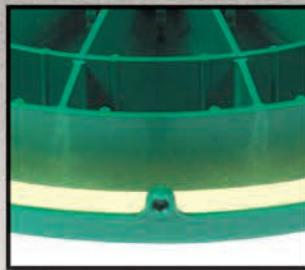
**Fits most commercially available:**

- Risers
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**LID MAY BE USED WITH OR WITHOUT CONCRETE CENTER**



Secured by 6 Vertical and 4 Horizontal Safety Screws. Screws Included.



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## 4" Effluent Filter and 4" T-Baffle™

86 ft. of 1/16" filtration area.

Increases time between filter cleaning.



EF-4 Combo 18

### 4" Effluent Filter EF-4

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

- Injection molded PolyPro
- Simple to install - Easy to clean

### 4" Sanitary Inlet/Outlet T-Baffle™

Injection molded T-Baffle  
 • Fits 4" Sch. 40 and SDR-35 pipe  
 • Simple to install

- **May also be used as Inlet & Outlet Tee**

## 6" Effluent Filter and 6" T-Baffle™

244 ft. of 1/16" filtration area.

Increases time between filter cleaning.



EF-6 Combo Includes Filter, Housing and Bushing

4" Sch. 40 & SDR-35

### 6" Effluent Filter EF-6

One-piece effluent filter fits in 6" T-Baffle™.  
 • Injection molded PolyPro  
 • Simple to install  
 • Easy to clean

### 6" Sanitary T-Baffle™

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



# The Clear Choice



## Complete Wastewater Systems

## RESIDENTIAL TREATMENT



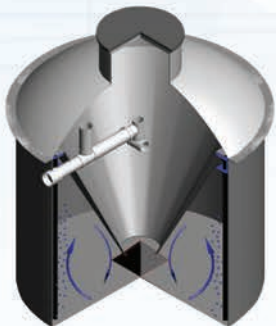
NSF/ANSI 40 & 245



NSF/ANSI 40

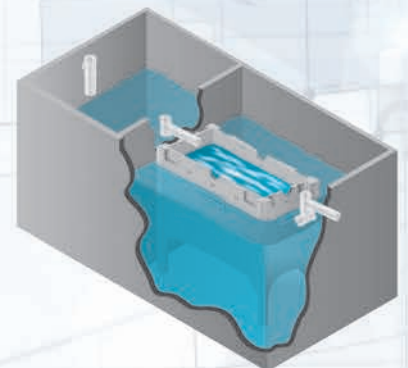
### Aerobic Wastewater Treatment Units for Residential Applications

- Treats wastewater quietly, efficiently, and with no odor.
- No inner tank filters, screens, or diffusers to service.
- Unit provides 99% reduction of viruses with disinfection.



### Fixed Film Aerobic Wastewater Treatment for Residential and Small Commercial Applications

- Completely submerged reactor treats wastewater quietly, efficiently, and with no odor.
- No inner tank filters, screens or diffusers to service.
- Ideal for residential systems with nitrogen reduction requirements





### INSTALLER PROFILE:

**Pooling Expertise**  
By Ted J. Rulseh

#### ON THE COVER:

Running a very small operation, Canada's Jesse Brown values networking with other contractors to get the work done. He is shown on a residential install project with rows of Eljen GSF modules ready to disperse effluent over a sand bed. (Photo by Taehoon Kim)

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# ONSITE installer™

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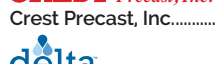




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### Enjoy this issue!

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



**Jim Kneiszel**



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

# Make 2023 the Year to Solidify Your Retirement Planning Strategy

Investing money wisely and preparing your business for future growth will ensure financial security in your golden years

**T**he average age of onsite installers is rising. While efforts are being made to attract young people into the decentralized wastewater industry, many of you have fewer working years ahead of you than behind you. Whether you are in that group or just starting out, now is the best time to take a more serious approach to retirement planning. Make a New Year's resolution for 2023 to get your fiscal house in order.

I have been an active stock trader for 40 years, both making my own investments and contributing to employer retirement programs. Whether you go it alone with retirement planning, work with a financial adviser or do a combination of the two like I have, the key to success is to getting started.

And starting as early as possible. Every year you wait is a lost opportunity to watch your retirement nest egg grow. This might seem silly to a 20-something equipment operator who can't imagine ever retiring and has many bills to pay for rent or a mortgage, vehicles, or a growing family. But every dollar you can set aside now is turbocharged over time through the power of compounding interest.

What do I mean by turbocharged? To illustrate, go to [www.investor.gov](http://www.investor.gov) and then to the compound interest calculator. I punched in this example: If you start at age 20 adding \$50 per month to an investment account with an average return of 9% (The average stock market rate of return since 1925 is 9.7%), you would have \$204,300 at age 60. You have only paid \$24,050 into the account over that time, but growth over time has worked in your favor to build the account dramatically.

So the lesson is to start young, even if you can only contribute a small amount to your retirement account. But even if you are older, you can still grow your money through regular investing, even in small amounts. Let me give you a personal example:

Back in 2004, I joined a group of five friends to start a stock club. We meet monthly to choose companies to invest our dues in. For most of the past 18 years, we each contributed \$50 per month, but that figure rose to \$100 a few years ago. Our spouses went along with our club dues, thinking we would each cash out the money some day and go on a nice vacation. However today we could probably make a trip around the world on first-class flights as we have each amassed close to \$50,000.

I am ecstatic with the return on our club investments. But you shouldn't read into this that I am any kind of investing or retirement expert. I would

**Financial advisors will not just guide you through the complexities and risks of investing for retirement.** Just as important, they will help you efficiently extract those retirement funds when you need them.

encourage you to rely on the professionals when it comes to your own retirement strategies. But as we look forward to another year of hard work, I will share a few ideas to consider as you inch toward retirement ... whether that time is coming into the view of your headlights or is 40 years down the road.

## **Build a relationship with a financial adviser**

Financial advisers will not just guide you through the complexities and risks of investing for retirement. Just as important, they will help you efficiently extract those retirement funds when you need them for your *golden years*. Monthly payout from a variety of retirement accounts comes with tax risk, and you probably want to shield Uncle Sam from your funds as much as possible — legally, of course. Your adviser will help you balance the draws from funds that will be taxed as normal income and those that have grown tax-free over the decades. Blended with Social Security payments and pensions, the goal is to enjoy the greatest retirement income, while paying the least amount of tax. And this accounting puzzle is probably more complicated than most of us want to handle on our own. Interview a number of advisers and find one you are confident can help you navigate this process.

## **Prepare for Social Security**

If you haven't done it already, go to the Social Security Administration website ([www.ssa.gov](http://www.ssa.gov)) and create a personal account. If you are married, have your spouse do the same. You can start this process whether you are 16 or 60 years old. The SSA tracks your annual earnings on a chart and updates the amount of your benefit for the minimum age of 62, the Medicare age of 65 and, your *full* retirement age, likely somewhere 65 to 67, and at the maximum benefit at age 70.

# PREMIUM PRODUCTS at wholesale prices

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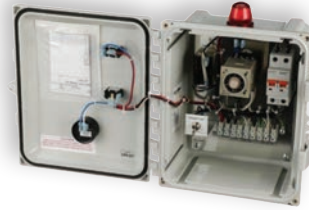
## HIBLOW 60/80 REBUILD KITS

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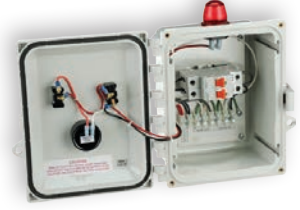
## WATER TANK FLOAT SWITCHES



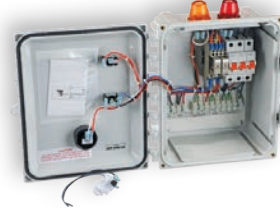
SJE-RHOMBUS  
FLOAT  
SWITCH



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The benefits roughly grow 8% a year between age 62 and 70, and a sliding scale shows you the benefit at any month between the minimum and maximum to help you time precisely when you want to start collecting. For small-business owners and employees who typically don't receive a pension, Social Security is a critical fixed benefit you can count on. It truly gives *security* as it balances the risk and reward of 401k or other retirement accounts that can fluctuate dramatically.

### Balance your portfolio regularly

Review your various investments regularly or have periodic conversations with your financial adviser about where your money is being placed. Some stocks and funds are more growth oriented: They are riskier but also can provide greater reward. More conservative stocks or funds with an income focus won't fluctuate quite as dramatically. Basically, think more growth (or risk) when you are young, and think more conservative as you get older. This is because young investors have time to weather economic downturns, while those closer to retirement want to protect gains and will need access to the money sooner. Also, while retirement plans for someone in their 20s or 30s might be 100% invested in the stock market, or equities, those nearing retirement might diversify with bonds or high-dividend stocks to provide more reliable income.

### Roth IRA

If you have any money left after expenses, consider funding a Roth IRA (individual retirement account). For 2022, most workers (there are income limits) can put up to \$6,000 (\$7,000 if you are over 50) into a Roth account. At this writing, Congress is considering a proposal to boost that number to \$10,000 for 2023. Unlike pre-tax money sheltered in your typical employer retirement account, money in a Roth IRA can grow and be paid out tax-free.

Tapping these funds after retirement is a good way to bring down your taxable income. And the money you contributed to the Roth can be accessed anytime for any reason. However you can't touch the earnings until you reach 59 ½ years old. Also, Roth funds can be invested the same ways as any retirement account.

### Add value to your business

Here's something you might not think of as a retirement investment — but you should: Regularly spend money on improving your equipment, marketing, and training and benefits for your crew. The tendency of many owners of installing and excavation companies is to slide toward retirement by using older, paid-for equipment and cutting back on staff and workload. While it may be your mindset to work less and avoid debt, this strategy will only lower the value of your business when it comes time to sell.

First of all, you can slow down a little on the day-to-day workload without devaluing your business.

This is a vibrant industry and we are only seeing the demand growing for your services. You have banked all these years on the upside of decentralized wastewater treatment, so this is no time to back down. Find a strong right-hand man or woman to help you manage the crews. Update your equipment regularly rather than run rusty, unreliable machines. Employ social media and other technologies to sell your service and work more efficiently.

Building your business even as you get older may end up being your smartest retirement play. The payoff from selling a successful, forward-looking company — combined with personal retirement savings — can put you in a great position when you eventually drop the shovel for the last time. ◻

# GAG SIM/TECH FILTER

## The Last Line of Defense for Pressurized Distribution Systems

### NO VAULT PUMP FILTER

- » 41% open area (139 square inches of open area on the 6" x 18" screen model)
- » Fits most turbine pumps (also known as deep well pumps)
- » Adds only 1/4" of height to pump making it easy to retrofit to existing systems
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- » Disassembles for thorough cleaning if needed
- » Easy to clean surface
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- » Self adjusting seal
- » Very light in weight so it does not make pump insertion or removal difficult
- » Screen available from 18" to 42" long
- » Also available with 316L stainless steel screen



### THE STF-100 SERIES PRESSURE FILTER WILL:

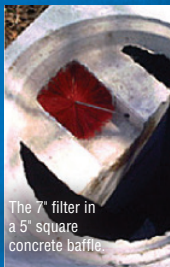
- » Lower total suspended solids (TSS)
- » Protect with low head-loss (.5002 ft)
- » Extend the life of the distribution field
- » Filter to .062", .024", .007", or .004"
- » Pass up to 83.8 gallons per minute @ 1 PSI
- » Allow for easy installation and service
- » Protect from improper system maintenance
- » Protect from system abuse
- » Satisfy your customers

Can be used in a manifold to handle almost any flow-rate

US Patent# 5,885,452  
CAN Patent# 2,237,751

### GRAVITY FLOW BRISTLE FILTERS FOR RESIDENTIAL OR COMMERCIAL SYSTEMS, SEPTIC TANKS, ONSITE SYSTEMS OR EVEN YOUR POND!

Very effective at filtering tissue, hair, lint, and other solids common to waste water. And flexible enough to fit just about anywhere, most common applications are standard "tees" and square concrete baffles as shown below.



Sizes:  
4" yellow  
6" white  
7" red  
8" blue  
Patent# 6,811,692

The 7" filter in a 5" square concrete baffle.



### ORIFICE SHIELDS

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- » Sturdy design for all applications
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- » Will not fill with gravel in any position
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- » No tangled wires
- » No float hang-ups
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- » Easy pump repairs
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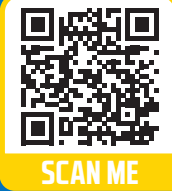
### BLAME IT ON THE ALCOHOL Alcohol's Effects on Septic Systems

Distilleries are popping up from across the U.S. with over 2,200 locations in 2022. Depending on the size of the distillery and its location the volume may not be appropriate for a septic system, and this waste may fall under different regulations since no human waste has entered the stream. The University of Minnesota did a small study to see what the alcohol

portion may be adding to the wastewater stream. Check out their findings in this online article. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

### Weekly News Roundup

We recently updated our e-newsletters in order to share more industry news from around the country, along with the regular dose of articles featured on OnsiteInstaller.com. If you're not subscribed yet, sign up on our website. You can also view past issues in the online archive. Scan the QR code to check them out. >>>



### DESIGNED WITH THE USER IN MIND Ergonomic Tools Increase Productivity

Not too long ago a tool's impact on its user was not given much thought. Today, manufacturers take the time to observe and understand the user's experience to find new ways to enhance tool ergonomics. If you are considering swapping out older tools for newer ergonomically designed ones, think about the various benefits spelled out in this article. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)



### TIME IS MONEY Mitigate Unplanned Downtime

Business owners strive to use their time wisely and productively, serving clients, developing their teams, and adding to the bottom line. Any unplanned downtime can disrupt this rhythm of productivity, potentially setting off a chain of undesired impacts. While unplanned downtime happens to all businesses sooner or later, here are a few simple strategies your company can employ to keep this downtime to a minimum. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

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# On Par with Precast

## Golf Course Chooses Precast for New Treatment System



Photos courtesy of Unit Precast

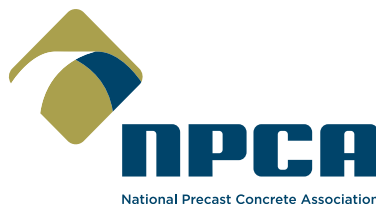
**Challenge:** When it came time to upgrade the septic system at a Canadian golf course, ownership needed to replace it during a short construction window following the end of play for the season but before the frigid Canadian winter started. Crews had to work within a small footprint to avoid disturbing the surrounding greens and a nearby lake.

**Solution:** The contractor chose a precast concrete solution that was designed to treat nearly 8,500 gallons of wastewater per day. The system features eight tanks, which were manufactured in sections to make delivery and installation easier for the contractor. The project was finished in just more than a month, thanks to precast concrete's local availability and hassle-free installation.

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Learn more at [precast.org/onsite](https://precast.org/onsite)

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**Affordable and Available Now:**

Precast tanks are available NOW in all 50 states with no waiting or backlog, at prices often more affordable than alternatives. Precast tanks provide value and peace of mind.

**Resilient:** Precast concrete's exceptional strength and durability enhance the longevity of each treatment system and help protect this valuable infrastructure from the effects of both natural and man-made disasters.

# POOLING EXPERTISE

New to the onsite industry, Jesse Brown relied on two experienced pros for advice. He still considers them integral to his operation.

By Ted J. Rulseh

**C**ustomers hiring BC Septic Pro for onsite system installation don't just get the expertise of owner Jesse Brown.

They also get the combined 60 years' experience of system designer Steve Warren and mechanical engineer Burt Telder. Brown tapped into their industry knowledge when he founded his business just three years ago. He still relies on them for advice when designing and building systems amid the challenging conditions of soils and steep slopes in his service area.

"Their experience is priceless," Brown says. "The three of us working together come up with better systems. Three brains are better than one. We really push to get the very best system for the homeowner without charging them exorbitant amounts."

Brown also relies on a contractor, H&H Excavation, for all his earth-moving tasks. Brown doesn't own any such equipment; he prefers not to bear the costs to finance, store, insure, maintain and repair machinery. Chris McLaughlin, his only full-time team member, helps with installations.

BC Septic Pro designs or installs 60 to 70 systems per year in areas of coastal Southwest British Columbia: the narrow 100-mile-long Okanagan Valley, and the Sunshine Coast, a 40-mile-long peninsula within Vancouver served by just one north-south highway.

"The three of us working together come up with better systems. Three brains are better than one."

**Jesse Brown**

## CHANGE OF DIRECTION

Brown's path into the onsite sector is unique: He was previously an osteopath, offering a manual form of therapy that emphasizes the relationship between the structure and function of the human body. He entered that career out of a desire to help people. While studying for that profession, he worked with an uncle who had an excavation business and installed septic systems.

After 18 years in a health care clinic, Brown was looking for a change. "I couldn't stand working inside anymore," he recalls. "An older gentleman was doing septic system engineering for my house. I was fascinated watching him doing perc tests and grabbing soil samples, and chatting with me about flows.

"I'm very close to the ocean at my house, so it seemed like he was exceptionally careful. I kept picking his brain. One day he said, 'You seem really into this whole thing. Why don't you go back to school and become a septic designer?' When I looked into it, I saw that it was really quite manageable."

Most of the schooling was online; he completed the required courses, passed his exams, and was on his way. Now he works outdoors almost every day. Along the way, Brown also completed three years of studies at the Building Biology Institute in Santa Fe, New Mexico, to become a building biologist.

That helps him take a holistic approach when designing systems for homeowners. Building Biology is about building homes and developing properties to be as healthy as possible, such as by using natural materials,





During an install, Jesse Brown, left, confers with Shaun Nuttall, a pump consultant with Suncoast Waterworks, in a bed of Eljen GSF treatment modules. (Photos by Taehoon Kim)

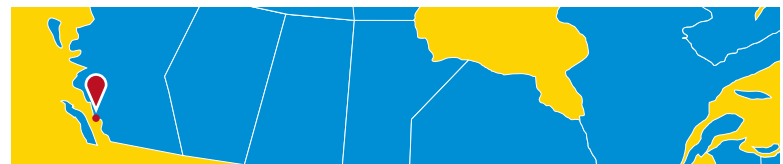
minimizing chemicals and providing ample ventilation. “A properly functioning septic system is vital to that,” says Brown.

### **BUILDING THE TEAM**

As Brown ramped up his onsite business, he accepted an offer from designer Warren, who wanted to retire, to take over his clientele. Rather than buy him out, Brown engaged him as a consultant. He then did the same for engineer Telder, who was also retiring.

Their advice was valuable because simple septic system designs are uncommon in the area. “It’s not like putting systems in a nice grassy farm field,” says Brown. “The properties are on bedrock, on mountain slopes, right close to the ocean, very close to a lake.

“The beautiful thing about both these guys is that they mentored me. They really wanted to help me get up and going. When I get a job where I don’t know what I should do, I call them up, and they get a consultation fee. They didn’t push for that, but I did. I wanted to make sure their hard work over the years wasn’t for nothing — that they could pass on their knowledge and experience to someone still wet behind the ears.”



## **BC Septic Pro** **Sechelt, British Columbia, Canada**

- Owner:** Jesse Brown
- Years in business:** 3
- Employees:** 2
- Service area:** Okanagan Valley and Sunshine Coast
- Services:** Onsite system design and installation
- Business volume:** 60-70 systems per year
- Associations:** British Columbia Onsite Sewage Association, Western Canada Onsite Wastewater Management Association
- Website:** [www.bcsepticpro.com](http://www.bcsepticpro.com)



» Jesse Brown delivers Eljen GSF modules for a residential system.

## IN PURSUIT OF VALUE

While working in health care, Jesse Brown kept his rates low in the interest of helping as many people as possible. He started BC Septic Pro taking a similar approach.

Then he took a weekend business course in Toronto that changed his thinking.

“His whole idea was to bill and charge according to how I saw the value of my service, not how other people saw your value,” Brown recalls of the consultant.

The consultant challenged Brown to increase his pricing significantly. At first he resisted: “I said, that’s a nice idea but it’s never going to fly. I have to be competitive.” Nonetheless, he agreed to try the higher rates for a month and see how many customers he lost as a result.

What happened surprised him: “I didn’t have one contractor or homeowner say, ‘That’s too much.’” He stayed with the higher pricing, while acknowledging that in the bargain he needed to demonstrate value.

“If you’re just trying to compete with the next guy, your work isn’t going to be valued, and you’re going to be struggling,” Brown says. “As opposed to being the highest-quality installer I can possibly be, and having homeowners and building contractors be excited that they used Jesse Brown, BC Septic Pro.

“Customers are involved with the whole process. They want to understand why it’s more money, why they can brag to their friends about it. I present it to homeowners as a system that’s zero maintenance, that’s good for the environment, that uses recycled materials like coconut husk.”

In turn, he encouraged his two consultants and his excavating contractor to take the same approach to their business and increased his payments for their services.

Now Brown earns the same money as before while working less, leaving more time for his pastimes, which include upland bird hunting with his Weimaraner dogs, as well as fishing, snowboarding and “spending as much time outdoors in the most beautiful part of the world.”

The most challenging terrain is on the Sunshine Coast, where the vertical separation is usually limited to 18 to 24 inches. Both consultants urged Brown to favor gravity flow over pressure distribution as more affordable for homeowners. “As one of them said, gravity never fails,” Brown observes. “Pumps, alarms, gauges and mechanical parts will at some point fail, so if you can get away with gravity, go with gravity.”

### ADOPTING TECHNOLOGY

On sites with small vertical separation, Brown relies on Ecoflo biofilter systems (Premier Tech), which use passive filtration through natural coconut husk media. “That’s my go-to,” Brown says. “TSS and BOD levels are so low coming out of the filter that I can put it on very small vertical separation. The great thing about the Ecoflo systems is that I can put them right on the ground. I don’t need to excavate to sink them in.”

He also uses some Eljen GSF treatment modules, which are made up of geotextile fabric and a plastic core material that work together to provide vertical surface area and oxygen transfer. The system applies treated effluent to the soil, increasing its long-term acceptance rate. A sand layer provides more filtration. He recently began using BIOROCK compact and non-electric residential wastewater treatment systems.

In the Okanagan Valley and to some extent on the Sunshine Coast, steep mountain slopes create challenges. “I often run into 15- to 30-degree slopes, so there’s quite a bit more excavation and leveling,” Brown says “We’re regulated on the amount of fill we can use to put a septic system in.

“That’s where Ecoflo and Eljen mats come in handy. They keep the area of infiltration very small,”

he continues. Brown can fit an infiltration bed in 250 square feet to serve an average three-bedroom, 2,000-square-foot home with a flow of about 320 gpd. Native plants help stabilize the slopes that have been disturbed.

High bedrock at times calls for blasting to create an opening for septic tanks. “Then we have to blast to install the effluent lines and lift the effluent up to near the house, where you might get a little bit flatter bench for a gravity drainfield,” says Brown. He uses Goulds pumps for most applications. Provincial standards of practice require an effluent filter on each system; BC Septic Pro uses Polylok filters.

### ON THE JOB

As for drainfields, the high bedrock often calls for a bed of C33 mound sand and washed three-fourths-inch crushed rock. Provincial regulations limit the depth for building up a treatment bed. “With the sand we get excellent bacterial growth,” says Brown. “The amount of surface area in it is massive. The drain rock also provides great surface area along with excellent drainage. I add the C33 sand first and then the crushed rock on top of the sand.

H&H Excavation digs the holes and helps set the tanks. Brown’s two consultants advised him that finances would work better if he focused design and installation and left the excavation to a specialist.

“So far it makes sense,” says Brown. “Marty knows what he’s doing. He is a registered installer. I can design the system, but when we get to the site and start working on it, we may discover that the design isn’t quite right. Marty knows how to make it work. I can leave the job site; he can finish it off and I know that it’s done properly.”

### TOUGH REGULATION

That’s important because the British Columbia government strictly enforces environmental regulations. “For pretty much anything related to septic systems, the owner has to work with a Registered Onsite Wastewater Professional,” says Brown. A perc test and soil samples are required. The local health department must sign off on the design.

When the system is complete, the ROWP sends the health department a letter certifying that it was installed according to the design. If the design was changed during the install process, new drawings must be submitted with an explanation why the change was made.

“It’s not like putting systems in a nice grassy farm field. The properties are on bedrock, on mountain slopes, right close to the ocean, very close to a lake.”

Jesse Brown

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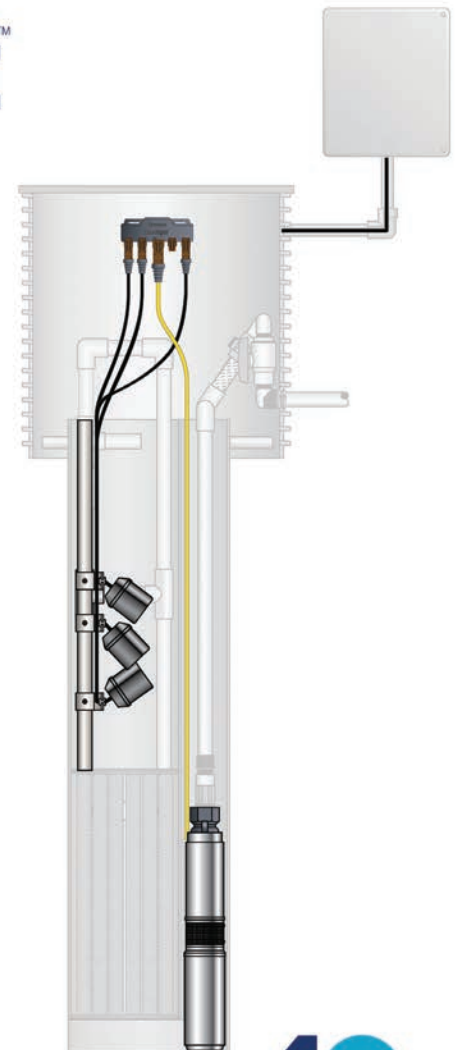
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◀◀ Jesse Brown, left, frequently works on projects with Kyle Super, of H&H Developments. They are shown on a work site with Super's Hitachi Zaxis 60 excavator.

◀ Working in less-than-desirable weather, Jesse Brown rakes a sand bed during a residential installation in Sechelt, British Columbia.



“Ecology is everything. We all live on this planet. It’s our home. The biggest pollutants that come out of a house are from the septic system. We’re guardians of each person’s property. We’re wardens of people’s homes and we’re responsible for the environment in our own little way. By using the best standards and keeping things as clean as possible, we’re doing our part to keep our planet and our homes as clean as possible.” ◻

“We are our own inspectors.  
We are held to a pretty high standard.”

**Jesse Brown**

Health departments do not inspect the systems. “We are our own inspectors,” says Brown. “We are held to a pretty high standard. If a system fails, or water gets polluted, and they trace it back to your system, you are in hot water.”

About 90% of the company’s systems are sold through building contractors, for whom the two consultants provided connections. Brown also relies on word of mouth and on leaving business cards and brochures at building supply stores. He adds, “The biggest marketing technique I’ve learned is just to answer my phone.”

Brown encourages installers to reach out to experienced professionals for advice and to compensate them fairly: “It will save a whole lot of hassle and lawsuits if you work with people who have been there and done it.”

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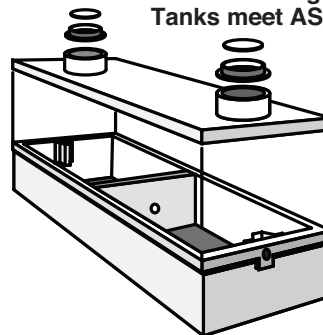
2- 38,000 gallon septic tanks, 20,000 gallon pump tank,  
5 each 20,000 gallon recirculation tanks  
and 3 each 7,700 gallon pump tanks were installed

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# Trade Association Work Slows as Colorado Contractors are Overwhelmed

Unfortunately, there's little time to advocate for wastewater industry advances as installers and pumpers are stretched to their limits

Compiled by Betty Dageforde

*In Snapshot, we talk to a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we visit a member of the Colorado Professionals in Onsite Wastewater.*

## Association involvement:

I've been a member of the Colorado Professionals in Onsite Wastewater for six years. I served on the strategic planning committee for two years and am now serving on the board of directors as the director of membership/marketing.

## Benefits of belonging to the association:

For the county regulators, the CPOW membership, classes and certificate ensure that installers are being taught installation standards from the same organization and have a vested interest in quality installations. And I personally like to hear what new materials and supplies are coming down the pipeline.

## Biggest issue facing your association right now:

It's simply just time. Every member of our board of directors is slammed. We all realize plenty of work is a good problem to have but we're all so busy that projects and initiatives get pushed off. The Colorado Front Range has seen double-digit growth in new home starts. Repairs are on the rise as COVID-19 increased at-home employment, and this continues to stress onsite wastewater treatment systems. This all leads to increased designs, permits, installations and inspections. We are all feeling the increased workload demand and our time becomes scarce.

## Our crew includes:

Matt Walters, field supervisor and backfill operator; Noah Gregg, field technician; Debbie Britt, office manager; Paul Sorensen, P.E., design engineer (contracted); Travis Britt, materials delivery and field technician.

## Typical day on the job:

Every day is hectic and controlled chaos. From 5:30 to 7:30 a.m. I'm usually working in AutoCAD on designs and as-builts. My brain works best in the morning with coffee and quiet. Around 7:30 a.m. I'm text-communicating to staff on the goals for the day, or communicating with suppliers on delivery of needed materials. I'm also working on emails to prospective clients, our engineer or county regulators, and completing proposals. From 8 a.m. to 3:30 p.m., I'm typically at job sites, excavating and



## Clint Britt owner/operator

**Business:** The Britt Company, doing business as TBC Septic, Elizabeth, Colorado

**Age:** 46

**Services we offer:** We are licensed in seven counties to do septic design, installation, inspection and repair, as well as soils testing.

**Years in the industry:** For my own company, six years. I also worked for my dad's engineering firm as a soils engineering tech for eight or nine summers from middle school through college.

setting tanks. Since we are not big enough to have a full-time estimator, I do all estimating and bidding from 4 p.m. to 6 p.m. No two days are the same.

## The job I'll never forget:

We were awarded a contract to install (expand) a system for a large dog kennel in a rural area in Watkins, Colorado. The system was designed to be installed next to the outside play yard which was about one acre and fenced. The OWTS was a large timed-dose, dual pump, pressure system with 12 125-foot trenches with an additional 2,500-gallon tank and a new automatic distribution valve. When I bid the job, there were no dogs in sight. I could hear dogs barking in the large kennel building, but it was a muffled bark.



Upon arrival on the first day, there were still no dogs in the yard. But the second my backhoe teeth touched the soil, she released the hounds and now there were 75-plus dogs barking, jumping and snarling at us. We couldn't even hear each other. We had to use sign language (which we don't know). Our heads started throbbing on day two. By day three, all we heard was dogs barking in our heads on the drive home. And by day five, it was 24 hours of barking — in our sleep, eating, in the shower. I don't know how kennel owners do it.

### My favorite piece of equipment:

This is not real exciting but operators will understand. After years of hauling just a single piece of equipment to jobs (often having to make two or three trips), we finally invested in a Landoll 950 50-foot drop-deck trailer. No more manually lifting heavy ramps or being worried about weight. This thing has two automatic ramps and can haul two-plus pieces of heavy equipment. It saves tons of time — and my back.

### Most challenging site I've worked on:

This was for a repair. I should have planned this one better — so, my fault. The homeowner was in a hurry. In the week leading up to Christmas we had to install a high-level treatment system in a small corner lot. It was engineer-designed to be one foot off the old failed soil treatment area (that was full), exactly 20 feet off the house (per regulations), exactly one foot from a live gas line on the street that fed the entire neighborhood, 16 inches from the power line that supplied power to the house, and 18 inches from a fiber optic line on the adjacent street. We didn't have the time or budget for a hydroexcavator. This led to plenty of hand digging in the cold with frosty soil. Tons of stress. We miraculously fit it in and didn't hit anything. I aged 10 years that week.

### Oops, I wish I could take this one back:

We had to install a system for a repair in Black Forest, Colorado. And, yes, it was in a forest. The owner was emphatic he didn't want any of the pine trees removed. I was young and hungry so I agreed and thought I could do it. Big mistake. We managed to install the system; however, I banged into several pine trees, damaged all my tractors (broken lights/mirrors/doors), aggravated my staff — and the delivery truck got stuck. To make matters worse, the owner had no sympathy and thought we did a poor job.

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

Here are some of ours. "How does this tank then connect to the sewer?" "Why is my tank always full?" "Can't I just share a system with my neighbor?" "Can I bury our connection box and use it as a tank?" "Why can't you just connect me to the sewer?" (city was 45 miles away). "Can't I just pump the tank into that old creek?" "My dad dropped his diamond wedding band into the sink. Can you please find it in the tank?"

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

Regarding double-casing mainlines. Due to the installation procedure, we believe it can cause more problems than the good it does.

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

"Don't try to be all things to all people" — said to me by my dad. I try to offer helpful solutions to every client — which generally gets me into trouble,

even today. I'm practicing remaining focused on what I'm good at and can control and staying away from challenges that are out of our wheelhouse.

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

Hopefully be a pro baseball player. But aside from that, it would be something in the athletics arena, whether as a scout, sports agent, general manager, coach — heck, even a grounds crew foreman. I always enjoyed sports at the highest levels.

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

I think the industry will continue to evolve with advances in technology for advanced treatment units, dosing requirements, graywater recycling. Costs will come down. I believe counties will continue to push for advanced technologies as well as professional certifications and education. I think it's a good time to get into onsite wastewater treatment. □

### 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](mailto:editor@onsiteinstaller.com).

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## SYSTEM PROFILE



# Alabama Installers Build a Supplementary Onsite System for Nonprofit Group

Contractors and suppliers join forces to help Exodus House realize addition of five bedrooms at an antebellum mansion

By Tim Dobbins

◀ The first trench is filled with Infiltrator chambers, while workers dig the second and third trenches in series. (Photos courtesy of Geiger's Septic Services)

Each year, the Alabama Onsite Wastewater Association picks several projects as part of its Helping Hands Across Alabama to donate new septic systems. One of the recipients in 2022 is the Exodus Ranch, a charitable organization that houses at-risk children.

Marc Geiger, owner of Geiger's Septic Service in Opelika, Alabama, is the representative for District 9 of the AOWA and an advocate for its programs. He has been involved with Exodus Ranch for the past eight years, pumping their tanks and performing routine maintenance.

"They take in homeless children, administer them, home-school them, have them do community service and everything they can to help give the kids a healthy start," Geiger says. "It's such a great program and recently, the house added on making room for more kids."

The Exodus Ranch house, also located in Opelika, is a large antebellum mansion which previously had six bedrooms, three and a half bathrooms, a laundry room and kitchen that houses 12 to 20 children. The addition includes five bedrooms, three full bathrooms and a large laundry room containing three washers, dryers and a large laundry sink, thus requiring further wastewater capacity.

The ranch reached out to Geiger during construction, and he took over from there. "I said, 'let me see what the association can do, and let's see if we can get all this material and time donated,'" he says.

### Helping out

The efforts from Geiger and the AOWA paid off. It didn't take long for companies and local businesses to come forward and provide what they were able.

"Infiltrator Water Technologies donated 720 feet of their Quick4 Plus Chambers with help from Habitat for Humanity," Geiger says. "And two local businesses, Mitchell Concrete and Wells Septic Service, each donated a 2,000-gallon precast concrete septic tank, And a local plumbing supplier, Thompson's Supply, donated pipe, fittings and filters."

When all material and supplies were accounted for, multiple installers donated their time and equipment to build the Exodus Ranch septic system, which would have cost the ranch approximately \$30,000 if not for the gifts.

Along with Geiger's services, Davis Concrete provided an installer and an excavator, Williams Grading volunteered an installer/operator, Morgan Backhoe Service and Zellner Backhoe Service provided a



◀ A technician formerly with Geiger's Septic Services lays the PVC pipe from the septic tanks to the dispersal field.

▼ Andrew Pugh (left) and Chris Sims, technicians from Geiger Septic Services, installing the Infiltrator Quick4 Plus chambers with the Exodus Ranch home and Kubota excavator in the background.



backhoe and workers to install pipe in the septic tanks, and Hovey's Precast Concrete provided some 4-inch pipe and safety lids for septic tanks.

Geiger also used the project to help volunteer installers. "I got with the AOWB (Alabama Onsite Wastewater Board), who handles all of our licenses and regulations, and they gave us permission to give the guys involved continuing education credits for volunteering their time," he says.

Alabama requires continuing education credits every year for installers depending on what license they hold. "These guys would rather be digging in dirt to get their credits than sitting in a classroom," Geiger says.

### Site conditions and installation

The existing septic system was left in place and is still being used to support the original part of the home. The new system is installed on the opposite side of the house to serve the addition. The existing drainfield is located at the southwest corner of the house, with the new drainfield running parallel pushed further away from the house.

"At the time COVID hit, they had 17 children and the executive director and her husband living there," Geiger says. "With being quarantined and home-schooling the children, the existing septic system was having to be pumped quite often. They have since shifted a large portion of their water usage to the new septic system."

Soil type around the house is sandy clay loam, and according to Geiger, heavy on the clay in areas. The project was delayed a few weeks due to rain, but once conditions were dry, the crews were able to break ground and complete the task efficiently.

"We set the tanks and piped those in in one day, and the next day we did the disposal field," Geiger says. "It took about three days total because we had some grading to do after installing everything."

## System Profile

**Location:** Opelika, Alabama

**Facility served:** Exodus Ranch house addition

**Designer:** Adams Construction & Associates

**Installer:** Geiger Septic Service,  
Davis Concrete, Williams Grading,  
Morgan Backhoe Service,  
Zellner Backhoe Service

**Type of system:** Precast concrete septic tanks with  
Infiltrator Quick4 Plus Chamber  
disposal field

**Site conditions:** Sandy clay loam

**Hydraulic capacity:** 1,800 gpd

The quick install was thanks to the many hands that came to help and Geiger's supervision. "I had two companies come out one day and help set the tanks and pipe the house into the tanks," Geiger says. "And the others came out the following days and helped me install the drain field. Several of these companies help every year with our Helping Hands projects."

## SYSTEM PROFILE

“With being quarantined and home-schooling the children, the existing septic system was having to be pumped quite often. They have since shifted a large portion of their water usage to the new septic system.”

Marc Geiger



Equipment was in abundance as many of the volunteering installers brought machines. A Caterpillar 420F backhoe was used to dig the holes for the septic tanks and Geiger used a Bobcat T190 skid-steer and a Kubota KX057-5 excavator for clearing the trenches. Other equipment included a pair of John Deere 60G excavators and a Kubota SLV75 skid-steer which was used to help with final grading.

### System operation

Plumbing exits the new addition via 4-inch Schedule 40 PVC pipe with a 4-inch clean-out installed before the first septic tank. After the clean-out, 4-inch PVC flows by gravity into the first septic tank located 30 feet away from the house.

The first tank is a 2,000-gallon precast concrete tank with no internal baffles. A 4-inch pipe connects the first septic tank to a second, 2,000-gallon concrete tank. The second tank is baffled and contains a 6-inch TUF-TITE effluent filter at the exit. Both septic tanks were equipped with Polylok riser safety screens and lids.

“Every year it seems we lose three or four kids to falling in septic tanks,” Geiger says. “Any time we install a septic now, we are putting safety screens on.” After exiting the second septic tank, wastewater travels another 35 feet through 4-inch PVC before entering the first of four drainfield trenches. Trenches are positioned parallel and run 180-feet long and are spaced approximately six feet apart with crossovers between trenches installed every 60 feet.



▲ Eugene Poe, truck driver for Mitchell Concrete, setting the other 2,000-gallon septic tank, which they donated, using a Western Star truck with Heila 45-ton crane.

◀ Many hands make light work of the 180-foot parallel trenches that make up the dispersal field. Geiger’s technicians set Infiltrator Quick4 Plus chambers in one trench, while operators from Williams Grading prepare the next ditch.

“In Alabama, if you go more than 100 feet in a run, it’s required to cross over at least twice,” Geiger says. “This system uses serial distribution. Well basically, it’s a combo system. The first two lines are level, then from the second to third line, and from the third to fourth line is serial distribution.”

With this arrangement, effluent fills the first two rows simultaneously. When they have reached capacity, effluent flow from the second line into the third, and if that fills to capacity, effluent will drain out of the third line into the fourth.

Infiltrator Quick4 Plus Standard Chambers were used and buried on average around 30-inches deep.

Now completed, the Exodus Ranch is equipped with a septic system to handle its growing size and residency.

“The folks at Exodus Ranch do an outstanding job of taking in homeless children,” Geiger says. And with all the good they do for the kids in need, Geiger and the long list of volunteers and donors were happy to lend a hand. □

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# Cape Cod looking at nitrogen treatment upgrades

By David Steinkraus

State regulations expected in early 2023 will apparently impose new nitrogen restrictions on some parts of Cape Cod.

The primary water quality problem on Cape Cod is nitrogen, said Martin Suuberg, commissioner of the state Department of Environmental Protection, according to the *Cape Cod Times*. And most nitrogen comes from onsite systems, which account for about 85% of wastewater flows into bays along the cape, he wrote in a letter to the town of Dennis.

To help fix this, the state proposes creating nitrogen-sensitive areas. These would cover watersheds draining into estuaries with a total maximum daily load for nitrogen. About 30 watersheds on the cape meet that criterion.

Towns in those areas would have to upgrade onsite systems to nitrogen-reducing systems within five years after the regulation is finalized. Towns would have to use the best available technology, but that could include non-traditional technologies such as permeable reactive barriers filled with wood chips to remove nitrogen as water flows through. Towns may also be able to apply for watershed permits, which would extend the deadline for upgrades to 20 years.

## South Carolina

The state is short of onsite inspectors, so it held rapid-hire meetings in the fall.

More than 20 positions are open, said a press release from the state Department of Health and Environmental Control. The jobs are natural resources technician III, which pays a salary of \$29,061 to \$53,769, and environmental health manager II, which pays a salary of \$43,030 to \$79,616. Because these are state jobs, they also qualify for other state benefits.

“The maintenance and upkeep of a septic system is the responsibility of the owner, but DHEC has an essential role in assuring these systems are properly permitted to begin with and that the permittees or owners have the information and resources they need to keep them functioning for years to come,” David Vaughan, director of DHEC’s Division of Onsite Wastewater, Rabies Prevention and Enforcement, said in the press release.

Jobs require a high school degree and relevant work experience, but an associate’s degree or bachelor’s degree in a related field is preferred.

## Michigan

Homeowners in Leelanau County will now be required to have their onsite systems inspected when their home is sold or transferred. County commissioners voted to create the ordinance.

The Benzie-Leelanau District Health Department will write the ordinance and will use the Benzie County ordinance as a model, reported the *Traverse City Record-Eagle*. The Benzie County ordinance has been in effect since 1992.

For about 30 years, county commissioners have been trying to pass such an ordinance, but it was regularly defeated by Republicans who held a majority on the commission. In May, the commission flipped to a Democratic majority.

Commissioner Rick Robbins, also a Republican, voted in favor of the ordinance. He said he had talked to many people and all township supervisors in the county. “We’re surrounded by water and in the middle [of the county] is a big lake,” Robbins said. “It only made sense. We’ve got to take care of our water resources.”

Leelanau County is part of the tourism and recreational area around Grand Traverse Bay in the northwest Lower Peninsula.

## Georgia

Grants are available to people in Northwest Georgia to repair or replace failing onsite systems. Eligible systems are in the watersheds of South Chickamauga Creek, Salacoa Creek, Holly Creek and Lookout Creek.

Money is being distributed by the Limestone Valley Resource Conservation & Development Council. It received \$243,000 from the federal government for the work. Another \$166,597 is coming from landowners and other local sources.

Homeowners will pay contractors for work and will be reimbursed once the state Department of Public Health verifies that work was done according to state standards.

For more information, see the council’s website about the project: [www.limestonevalley.org/septic](http://www.limestonevalley.org/septic). □

# ONSITE INNOVATIONS

**Competent contractors in the onsite industry demand quality products.**

**See how these partnerships ensure success in this special Onsite Innovations section.**



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## Retrofit Parts Extend the Useful Life of Septic Tank

**A**fter pumping a 41-year-old septic tank, a pumper had observed that there was no inlet or outlet baffle in this old single-compartment tank. The pumper had informed the homeowner of this condition. The homeowner, stunned at the cost of a new tank and possibly a new leachfield, then asked “what is my other choice?” The pumper replied that he would not feel good about letting it go as-is. He knew Polylok had some great retrofit parts that just might work here. The pumper and homeowner decided to use the much lower cost option of extending the useful service life of both the tank and the field.

The pumper opted to use a Polylok Extend & Lok at both the inlet end and outlet end of the tank. Because the inlet pipe was made of cast iron, this made an easy decision. After breaking off the deteriorating pieces of the cast iron pipe, and somewhat cleaning the inside of the pipe, the 4-inch Extend & Lok was simply hammered inside the exposed end of the pipe. This provided a perfect PVC 4-inch Schedule 40 pipe surface to glue on a Polylok PL-68 tee for an inlet baffle.

This same installation procedure was done on the outlet side as well; the difference being that the outlet pipe was already a 4-inch Schedule 40 pipe (as there must have been some type of previous repair done). However, it was too close to the inside of the tank wall to solidly glue on a tee or filter housing. Fortunately, the Polylok Extend & Lok is designed for all 4-inch pipes. It was hammered into the end of the outlet pipe to extend it away from the inner wall. A PL-122 filter and housing was then glued to the Extend & Lok.

The project was finished off using Polylok adapter rings, risers to grade and covers. Typical cleaning of this septic tank and filter was performed approximately every three years. Polylok covers and risers made that a simple task. The last inspection on this tank occurred in



August of 2020. Upon inspection, everything was still in perfect working order. That was 16 years later, and who knows how long the life of this tank and field have been extended for?



Polylok Inc. is an international supplier of plastic injection-molded products for the precast, drainage and wastewater industries. Unlike the majority of our competitors, we design our products in-house, and manufacture in the USA. We have two manufacturing facilities in Connecticut, and one in Indiana. In addition, we hold more than 75 patents and produce more than 200 different products. We are constantly striving to develop new and innovative products. [877-765-9565](tel:877-765-9565) | [sales@polylok.com](mailto:sales@polylok.com) | [www.polylok.com](http://www.polylok.com)

## Tuf-Tite's New Look

Years ago, Tuf-Tite invented the first riser safety pan, allowing a concrete safety lid to be cast into a plastic riser system that could be placed anywhere in the column of risers. It's a design so innovative, it remains an industry standard.



Now the company is innovating once again. Tuf-Tite took the next step to make the first plastic internal safety lid for protection.

Tuf-Tite engineers knew that the original web design was extremely strong in the riser, but what about out of the riser? What if the internal safety lid was damaged in the field? Could it be reused? Others were using a similar web design, but Tuf-Tite moved in a new direction.

Tuf-Tite's new internal safety lids sit in the riser on four ledges. The solid safety lid features an inspection port, screw or bolt holes to fasten the lid to the riser and concrete keepers that can hold 40 pounds of concrete. This design has proved to be one of the strongest safety lids on the market, in the riser or out of the riser, according to a company spokesperson.

Tuf-Tite requires that the internal safety lid be screwed or bolted down to the ledges on the riser below. For added safety, the Tuf-Tite Safety Lid can be filled with concrete, adding an additional feature unique to Tuf-Tite.

Every Tuf-Tite Riser Lid and Safety Lid comes with all the screws, including the horizontal safety screws for domed and flat lids.

Tuf-Tite manufactures a full line of patented septic and drainage products, which are among the best in their respective industries. From the innovative distribution boxes that have become an industry standard, to the patented effluent filters that prolong the life of septic fields significantly, each of Tuf-Tite's products are engineered and manufactured to exceed expectations in both performance and longevity.



Tuf-Tite produced its first product in 1984. Years of polymer formulation experience and field testing have strengthened the full line of products the company produces today. Tuf-Tite is an American-owned and -operated company and all polymer products are manufactured in Lake Zurich, Illinois, where the modern and highly automated manufacturing, warehouse and shipping areas are all contained under one roof in a 165,000-square-foot facility. The company is fully capable of servicing any and all demand for Tuf-Tite products. Its automated supply chain capabilities provide customers with seamless on-time deliveries. 800-382-7009 | [sales@tuf-tite.com](mailto:sales@tuf-tite.com) | [www.tuf-tite.com](http://www.tuf-tite.com)



# ECOPOD Offers Simple Operation and Robust Treatment for AutoCamp Glamping Facility Wastewater Treatment System

**A** new AutoCamp glamping facility just outside the west entrance to Joshua Tree National Park in San Bernardino, California, required a wastewater treatment system that could handle daily flows from the 55 Airstream campers estimated at 100 gpd per Airstream. Located in a sensitive environment that included large, mature tree growth, the system also needed to provide minimum disruption to the landscape and visual impact to guests.

## CHALLENGE

San Bernardino County wastewater treatment regulations require NSF245 treatment. The system is also in the Joshua Basin Water District, which requires <10 mg/L TN effluent on top of the San Bernardino County requirements due to the sensitive area.

## SYSTEM DESIGN

An ECOPOD staged denitrifying system in Jensen Precast Tanks was selected based on the simple operation, minimal maintenance and robust treatment it could provide. Wastewater is piped to the 5,500 gpd ECOPOD treatment system from each of the Airstream locations and from a main building structure that houses a craft brewery, restaurant and food commissary. The large precast concrete tanks were shipped to the job site. The 15,000-gallon BOD and Nitrifying ECOPOD reactor was battery style with three 5,000-gallon battery units, which were assembled at the job site. The ECOPOD reactors were installed inside two concrete tanks. One

5,000-gallon primary setline tank with an effluent filter and a second 3,000-gallon flow equalization tank with duplex time dosed pumps. Following installation, the top to the tanks were sealed. It then travels to a stone and pipe dispersal field.

## WHY ECOPOD?

Delta ECOPOD Commercial Advanced Wastewater Treatment Units offer treatment capacities from 1,500 to 250,000 gpd in preengineered treatment plants for commercial or decentralized wastewater treatment needs. ECOPOD units are engineered to treat a wide range of wastewater flows and characteristics offering exceptional cBOD and TSS treatment. The system is designed to meet each project's individual treatment goals. It can be built to serve as the complete treatment system or in conjunction with another technology to provide secondary or tertiary treatment. Additionally, the system can be configured to work with virtually any dispersal method or direct discharge.

## RESULT

The owner and engineer were happy because Infiltrator proposed a robust and easy to operate system that required minimal maintenance and was designed to achieve the effluent total nitrogen requirement of <10 mg/L. The project engineer was Kimley Horn, and the contractor was Advantage Septic Systems located in Hemet, California.



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## Singulair Green Tank Enables a Variety of System Options

**N**orweco's Singulair Green is the most durable and reliable high-density polyethylene tank in the onsite industry. The newly expanded Singulair Green tank design features the capability for system expansion. The new and improved Singulair Green rib pattern includes interlocking capability for adding capacity to the inlet or outlet of the Green tank. This new development opens up more opportunities for system applications.

The newly expanded Singulair Green tank's cutting-edge features include an optional connection point on the outlet wall of the clarification chamber for attaching additional tankage. This new design allows for a 520-gallon pump tank to be installed downstream of the Singulair Green system.

An optional connection point on the inlet wall of the pretreatment chamber is available for attaching additional tankage. If the job requires a larger-sized system, additional tankage can be added upstream of the Singulair Green system. A modified rib pattern provides interlocking capability to allow for the integration of additional tankage upstream and downstream without compromising structural integrity.



Additional transfer ports inside the tank allow for modification to the Singulair Green system to meet specific application needs. This highly engineered Singulair Green tank design is just the latest example of Norweco's dedication to continuous product improvement. We look forward to expanding your market with these exciting new options.

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## System Provides Treatment and Dispersal in Same Footprint

The Geotextile Sand Filter, GSF for short, is distributed from Australia to Europe, with greater use in the U.S. Since the first installations, this product is versatile and proven. It is 100% passive in gravity-dosed designs. However, more complicated sites employ a pump for pump-to-gravity and pressure-dosed configurations.

Designers enjoy the high flexibility of the system. Capable of use in trenches, beds and mounds, there is a system configuration that fits whether you find yourself on a sloping site or a site with a high-water table.

The GSF system is your tight lot, high-water table, and poor soil solution. Due to its flexible design, tight repair lots become dream lots, high-water tables become gentle sloping lots, and poor soils are just another soil. The system excels in intermittent-use sites like campgrounds and seasonal homes, as there are no startup procedures needed. Third-party testing shows treatment begins on day one.

The GSF's unique design provides treatment and dispersal in the same footprint, while keeping installations easy and maintenance minimal. Open air channels within each module support aerobic bacterial growth on the module's geotextile fabric, which provides increased surface area for biological treatment that greatly exceeds the module's footprint. The secondary treatment zone supports unsaturated flow into the soil and works to minimize clogging from anaerobic bacteria. It also protects the soil from compaction and helps maintain cracks and crevices in the soil, preserving the soil's natural infiltration capacity, which is especially important and fine textured soils where these channels are critical for long-term performance.

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## Advanced Enviro-Septic Solves New Residential Construction Space and Treatment Challenges

The first Advanced Enviro-Septic combined treatment and dispersal system permitted and installed in Lapeer County, Michigan, solved space and wastewater treatment challenges for the builders of a three-bedroom home on a sloping site. The 450 gpd system also left the maximum possible land available for the owner's horses and provided a learning opportunity for the contractor and area health officials.

### AREA CONSIDERATIONS

Local county or district health departments in Lapeer County determine wastewater treatment system sizing, and systems typically utilize large above-grade mounds which compromise the use of available land and require large amounts of sand fill. The aesthetically pleasing AES system blends in naturally with the site grading, eliminating the large hump associated with traditional above-grade systems. Highly purified wastewater is released to the soil, recharging the groundwater, preventing soil and groundwater contamination.



### SYSTEM DESIGN

The treatment capabilities of the AES combined treatment and dispersal system resulted in the Lapeer County system being permitted at only 25% of a standard mound system typical for a three-bedroom size home. The 1,500-square-foot AES system features three 70-foot rows of AES installed on top of 2NS sand at 24 inches on center and six inches of sand beneath the conduits which are backfilled to 3 inches above the pipe. A downslope side sand extension creates a basal area large enough to hydraulically accept the treated effluent. The contractor was able to install the AES system in one day without hauling in large quantities of sand and the owner benefited by significant cost savings over other solutions.



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Presby Environmental Inc. is an Infiltrator Water Technologies company. Infiltrator is a leading manufacturer of products for the decentralized water and wastewater industries.

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## ClickTight simplifies onsite system wiring

There's a better way to wire an onsite wastewater system! The ClickTight Wiring Connection System from Orenco connects a control panel, pump and up to four float switches with simple, quick-connect plugs. ClickTight can save hours of installation time by eliminating splice boxes and wire nuts, plus cut down on callbacks through the use of color-coded wires and terminals that help prevent common wiring errors.

Secure plugs connect float switch cables and a pump to ClickTight, allowing them to be replaced in one easy click. With ClickTight, techs can troubleshoot pump and float issues in minutes. And with a pump adapter, they can attach a wide variety of pumps. ClickTight also connects to a broad range of control panels, and Orenco includes



60 feet of direct-bury cable to help with that. Plus, ClickTight is potted and sealed to help prevent moisture and corrosive gas from reaching the control panel.

For a complete, integrated way to make fast, accurate, secure wiring connections with ClickTight, use the ClickTight Controls Package, which includes the ClickTight, control panel, up to four float switches, and an optional pump adapter plug.



Orenco designs and builds the world's best decentralized wastewater systems with pride in Southern Oregon. Their products help protect people, neighborhoods, and communities everywhere by protecting the world's water. Founded in 1981, Orenco has become an industry leader, with nearly 500 employees and some 330 points of distribution in North and Central America, Australasia, Europe and Africa. Their systems have been installed in more than 70 countries around the world.

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## Wholesale Pump Products Available

**A**shland Pump assembles a wide variety of pumps (2 to 20 hp grinders and solids-handling pumps) in Ashland, Ohio, and has a full-service testing lab to support all products. Ashland Pump officials say they are thoroughly committed to supporting the professional marketplace with a full line of sump, sewage, effluent and grinder pumps for the residential market.

That means customers will have a brand that is only sold into the plumbing wholesale channel. “And it means that you will have a partner that understands your business and customers and the importance of brand loyalty to you and the professional trade,” says a company spokesperson. “Ashland Pump is a brand you can trust to be honest, dependable and professional in everything that we do, from our products to our service — we are here for you!”



Ashland Pump is located in Ashland, Ohio, and manufactures a complete line of pump products for the residential wholesale market. It is a family-owned business with over 35 years of experience manufacturing pumps. The company says it's committed to offering a quality, dependable product with excellent customer service. To support that, it stocks thousands of pumps in its 130,000-square-foot warehouse because having inventory on hand for customers is important.

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- A sloping site with a small footprint
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- The project required replacing a failed old metal tank
- Dispersal would be into existing leaching pits

**Solution:** The designer used a lightweight and small footprint Fuji Clean Model CE5 (Design capacity 500 gpd) to discharge highly treated and oxygenated effluent into existing leach pit for

rejuvenation. Characteristics of the project included:

- Installation of a Fuji Clean Model CE5 (Design capacity of 500 gpd)
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- The system is lightweight (less than 400 pounds) making it easy to maneuver into location

Designer & Installer: Tyndall Septic Systems, Brewster, New York



Fuji Clean USA is a wholly owned subsidiary of Fuji Clean Co. headquartered in Nagoya, Japan; a leading manufacturer of onsite treatment systems. Fuji Clean USA offers a selection of one-tank treatment systems for both residential and commercial applications ranging in size from 500 up to 6,000 gpd, including its high-performing CEN

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## High-Strength BioBarrier (HSMBR) Winery

**B**ioMicrobics' specialized High Strength BioBarrier Winery assembly (pictured) is a preengineered membrane bioreactor system for boutique wineries. The winery system comes with membrane assemblies, controls and a BioRobic aeration system designed specifically for high organic loads associated with winery process waste. High Strength BioBarrier Winery is designed for flows of 1,500 to 9,000 gpd.

The MBR module is submerged in a tank full of aerated mixed liquor suspended solids, where the biological degradation of organic matter and suspended solids takes place. The ultrafiltration membranes filter out particles smaller than 0.1 microns, leaving the suspended biomass material — including disease-causing organisms — in the aeration tank. Robust aeration from the remote blower scours the surfaces of the membranes and provides oxygen to aerobic microbes; the High Strength BioBarrier Winery system uses additional aeration grids for high BOD concentrations. The resulting effluent is 99% free of contaminants such as BOD, TSS and fecal coliform. Depending on the design of the system, a high level of nitrogen and phosphorus can be removed as well.

BioBarrier holds NSF certifications for nitrogen reduction (NSF 245) and water reuse (NSF 350). The high-quality effluent drastically diminishes the drainfield size requirements, saving space and lowering construction costs. Depending on local regulations, the effluent may be able to be used for irrigation, dust settling and flushing toilets.



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## Keep Customers' Septic Tanks Secure and Safe with Seal-R Septic Products

**S**eal-R products from BrenLin Co. are designed to be installed as part of the inspection/maintenance opening to sewer tanks. These products were developed by experienced onsite installers who strove for a product that was not only simple to install, but also provided flexibility and safety.

The products were designed using corrugated dual-wall pipe for the riser material due to the benefits of limited joints and the ability to cut to the exact length in the field. Made from HDPE, Seal-R products offer

both durability and longevity. The Seal-R septic ring is designed to attach the riser to the septic tank while creating a watertight seal to prevent infiltration. The Seal-R septic lid is designed to be mounted on top of the riser at ground surface to provide an access point to the septic tank. Lids are green in color and are provided with the stainless steel hardware needed to securely fasten to the riser pipe. Lids can be customized to include company information.

Seal-R products also come with a few add-on options, including a hinge system as well as lids that can be installed on the inside of the riser for additional safety.



BrenLin Co. Inc. is a family owned and operated manufacturing business established in 1998. Specializing in heavy-duty plastic septic system products, the company designs all products in house and manufactures them in the USA.

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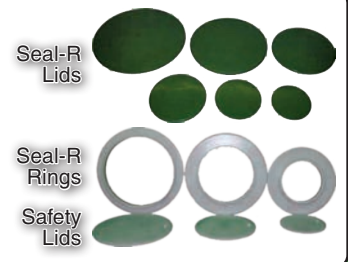
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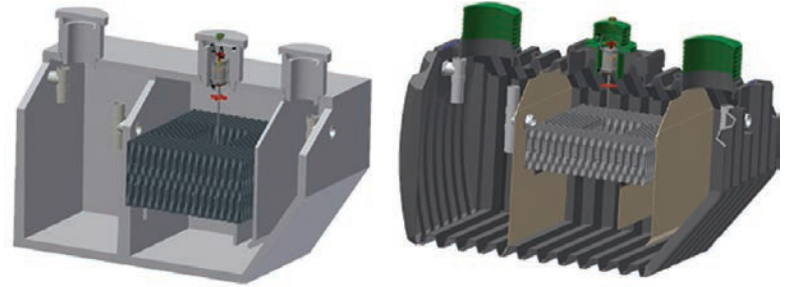


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Jim Anderson, Ph.D., and Dave Gustafson, P.E., are connected with the University of Minnesota onsite wastewater treatment education program. Dave is Extension Onsite Sewage Treatment Educator. Jim is former director of the university's Water Resources Center and is now an emeritus professor. Readers are welcome to submit questions or article suggestions to Jim and Dave. Write to [ander045@umn.edu](mailto:ander045@umn.edu).

# Take Erosion Control Requirements Seriously

We witnessed an installer's poor job with silt fencing and we didn't like it

By Jim Anderson and Dave Gustafson

**R**ecently we had the opportunity to observe a site being prepared for installation of an onsite system in a wooded area on a lakeshore. What we saw was disappointing for several reasons. First, the topsoil was scraped off and stockpiled on the site. More disconcerting was the silt fence installed to supposedly keep sediment and runoff from reaching the lake was woefully inadequate.

The purpose of a silt fence is to retain the soil on the disturbed site until the installation is complete and the site is revegetated and stabilized. Keeping the soil on site rather than letting it be washed off into lakes or streams prevents the degradation of aquatic habitats. Controlling erosion and runoff is required in these sensitive environmental areas.

## ENVIRONMENTAL PROTECTION

As an installer, it is your responsibility to install and maintain any erosion control measures required by the permitting authority. Silt fences are the most common required element. A silt fence is a temporary sediment barrier made of porous fabric. It's held up by wooden or metal posts driven into the ground, so it's inexpensive and relatively easy to remove.

The fabric ponds sediment and water runoff, causing sediment to be retained by the settling processes. If water flows over or around the fence it is not installed properly. This happens when they are not well designed, installed or maintained.

The three principal aspects of silt fence design are proper placement of fencing, adequate amount of fencing and appropriate materials. Placement is important because where a fence starts, runs and ends is critical to its effectiveness. Improper placement can make the fence a waste of time. The fence should be installed on the contour with both ends of the fencing higher than the top of the middle of the fence. The fence is wrapped upward on the ends so the fencing is curved. This prevents water from running around the ends of the fencing, defeating its purpose.

In general, silt fence is effective for areas of about one-quarter acre in size. This is an area of 10,000 to 11,000 square feet. For most residential septic installations, the area disturbed is less than this, so silt fences make sense as an erosion control measure. Where larger areas are involved, multiple silt fences or other control measures such as earthen berms may be required.

## SILT FENCE CONSTRUCTION

The silt fence on this site was installed poorly and will not retain water and sediment as intended. It appears the installer did not follow any of the required installation steps to allow the fence to work as it should. We have discussed in a previous column the steps in a good silt fence installation but here they are again.



⚠️ The silt fence is not likely to contain the disturbed soil on this work site. (Photos courtesy of Jim Anderson)

⚠️ Improperly installed silt fence will not pond water and hold back sediment.



**Do not be the installer who does a slipshod job taking care of erosion control measures.** As we look at this we must wonder if they didn't do a good job with this, how well are they doing the system installation?

## Easier Access to Distribution Boxes

The D-Plate from Septic-Direct.com is designed to give technicians easier access to new and existing distribution boxes. It allows the user to retrofit an existing distribution box with an access riser for preventive maintenance and monitoring. Any riser system can be fastened securely onto any existing buried concrete distribution box, providing easy access to the box from ground level, and allowing for problems to be detected before they arise. Made of 1/4-inch composite material, the 30-by-36-inch D-Plate is high in tensile strength and rigid. The composite material also allows for the trimming of excess material off. This can be done if you want to widen the opening of the when installing on a septic tank or trim the excess off around the circumference of a large concrete riser.



1 Dig a 4- to 8-inch-deep trench on the contour at the bottom of the slope. This can be done using a shovel, backhoe or trencher.

2. Hammer wooden or metal stakes on the downslope of the hill. The stakes (usually 2 x 2 inches) should be placed on the lower part of the trench. Use a hammer to drive the stakes 1 foot into the ground. Place stakes 3 to 5 feet apart and run the stakes across the entire length of the trench.

3. Place two stakes 1.5 feet (0.5 m) (45.72 cm) upslope on each end of the trench. These posts will be on the end of your fence and prevent the flow from bypassing the sides of the fence. Hammer these posts in like you did with the rest of the stakes. The fence should now look somewhat curved.

4. Wrap and staple the silt fence around the stakes. Unroll the silt fence fabric and wrap it across the stakes so that the bottom of the fabric rests in the trench. As you wrap the silt fence onto one side of the stakes, use a stapler to attach the fabric to the stakes.

5. Backfill the trench with the bottom edge of the fabric in the trench. Pack down the soil over the silt fence material so that the material runs underground. Continue along the length of the trench until the entire length is filled.

It may rain anytime for the duration of the project. After each rain event, the fence should be checked to make certain it is doing its job. After heavy rains it may be necessary to do some repair work on the fence and remove some of the accumulated sediment from behind the fence so it will continue to prevent sediment from washing into the nearby water body. If the fabric is ripped or torn, it should be replaced and any broken stakes replaced.

### DON'T CUT CORNERS

With proper placement and maintenance, silt fences provide a relatively inexpensive and easy way to prevent sediment from impacting the area being protected. It doesn't take a lot more time or effort to do this right. Do not be the installer who does a slipshod job taking care of erosion control measures. As we look at this we must wonder if they didn't do a good job with this, how well are they doing the system installation? In addition, not installing the silt fence correctly may bring additional regulatory scrutiny over the rest of the project. □



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## INDUSTRY NEWS

### Thompson Joins SJE as regional sales manager

Chad Thompson joined SJE as regional sales manager. He will be responsible for the Southeast region including North Carolina, South Carolina, Tennessee, Virginia, Georgia, Florida and Alabama after Tim Callander's retirement at the end of the year. Thompson has over 15 years' experience in the water industry, seven of which have been in sales. 



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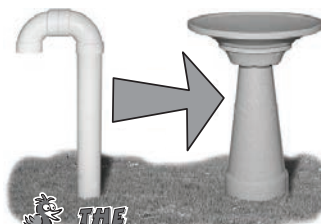
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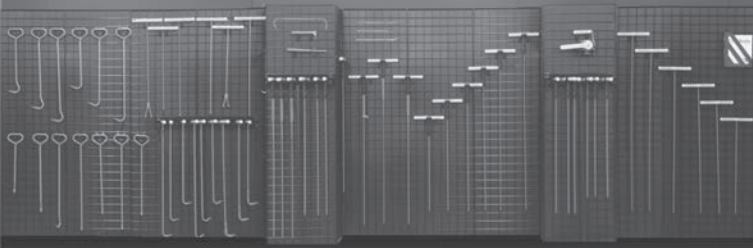


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## PRODUCT SPOTLIGHT

### Solar-powered septic system alarm allows convenient monitoring of remote tanks

By Tim Dobbins

An audiovisual septic alarm without the need for an electrician was the inspiration for Mark Hayes, founder and owner of Minnesota Geotechnical Services when developing the solar powered Nomad Tank Alarm.

For most areas across the U.S., holding tanks positioned near lakes or waterways are legally required to have an alarm to signal failure. "A homeowner may want an audio alarm, but to do that requires electrical hookup to the tank," Hayes says. "This can either be extremely expensive or impossible, depending on the lot dynamics."

After extensive research and development, the final product runs on a rechargeable 9-volt battery powered by two 12-volt solar panels, and uses a blocking diode. "The blocking diode is needed to stop the electrical leaching of the batteries overnight," Hayes says. "Not difficult to do, but it was a hard lesson to learn as to why my batteries were dead in the morning."

Users will also find the Nomad equipped with a weatherproof audio switch that can silence an alarm, but leave the visual light on. A voltage meter is also standard so owners can measure and ensure the batteries are holding a charge. "This is because the batteries are susceptible to extreme heat like in Arizona in the summer and extreme cold like that of Minnesota even though it is vented," Hayes says. "Also, the batteries are 100% recyclable."

Mounting the device is extremely easy with either a 4- or 6-inch inspection pipe. "It takes less than 15 minutes," Hayes says. "It can also be mounted to go through maintenance hole risers, but that does require some digging."

Any septic system requiring an audiovisual alarm, whether it is a holding tank or a lift station, is a fit for the Nomad. Hayes says it is even possible to wire an effluent filter into it by removing the ball float and hardwiring the effluent wiring directly into the Nomad.

Utilizing technology as it becomes available is par for the course for Hayes. In the past, sourcing sounders and lights compatible with solar technology and 9-volt rechargeable batteries was extremely difficult. But in the past seven years, he has seen vast advancements in that area. "That is why this is Nomad v6, and version 7 is on its way because of technological improvements," he says.

"Installers that have bought them are impressed," Hayes continues. "They particularly like the height because it would be exceedingly difficult to damage the solar cells or electrical box." 320-980-6218; [www.water-tech-5667.myshopify.com](http://www.water-tech-5667.myshopify.com) □



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