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**EDITOR'S NOTEBOOK:**  
Raising Onsite Awareness p. 6

**SYSTEM PROFILE**  
Treating Winery  
Wastewater p. 24



**PUMPS  
DIRECTORY**  
p. 22

## THINKING OUTSIDE THE D-BOX

While delivering excellence in basic onsite services, Aeration Septic looks for progressive solutions to water-related issues in communities **p. 10**

**PRODUCT FOCUS**  
Pumps p. 34





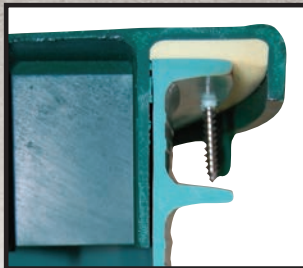
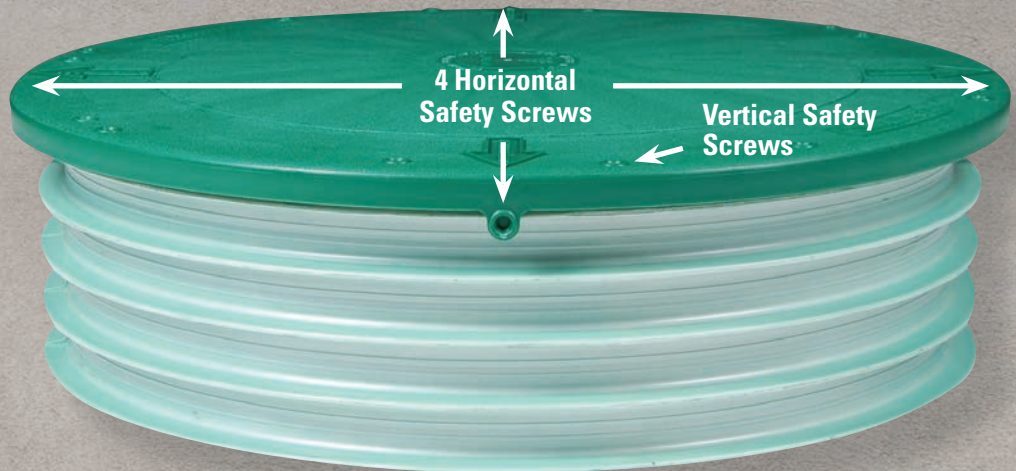
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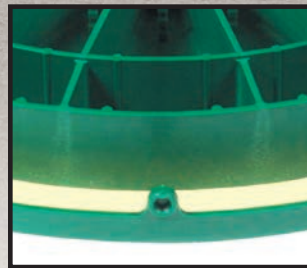
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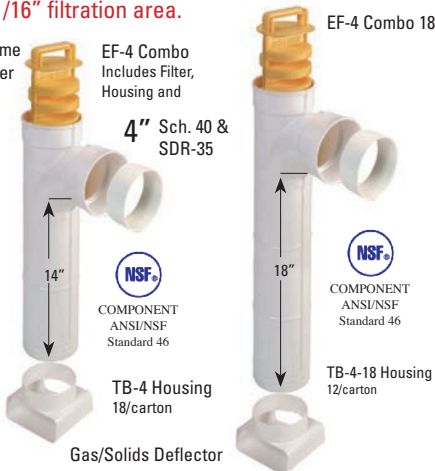


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### INSTALLER PROFILE:

#### Thinking Outside the D-Box

By Ted J. Rulseh

#### ON THE COVER:

Looking to return home to Ohio, lawyer Krista Gesaman bought Aeration Septic Inc. in 2012. Since then, the company has grown and expanded into many areas of wastewater services. Gesaman is shown with one of her company's service vehicles. (Photo by Amy Voigt)

### 6 Editor's Notebook:

#### Raise Onsite Awareness, One Person at a Time

As long as the public continues to spread misinformation about septic systems, our industry needs to open a dialogue with friends and neighbors.

By Jim Kneiszel

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Be sure to check out our exclusive online content.

### 18 States Snapshot:

#### 'We're Always Busy, No Matter What'

Modern excavators, new technology can make the job easier for installers and pumpers, better for homeowners and businesses that utilize decentralized wastewater.

### 22 Pumps Directory

### 24 System Profile:

#### Raise a Glass to a Complex Winery Wastewater Treatment System

A large-capacity and expandable membrane bioreactor design will keep California's Castello di Amorosa in production for many years to come.

By David Steinkraus

### 28 Rules and Regs:

#### Oregon Considers New Onsite Rules Featuring an Expiration Date on System Approvals

By David Steinkraus

### 30 Basic Training:

#### Three Quick and Easy Methods to Test for Soil Saturation

Installers don't always have time for long-term monitoring to find wet conditions at a build site. If you're in a hurry, follow these alternative methods to identify suitable drainfield locations.

By Jim Anderson and Dave Gustafson

### 32 Associations List

### 34 Product Focus:

#### Pumps

By Craig Mandli

### 38 Industry News

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## ADVERTISER INDEX

September 2019

<b>ALTA</b>	
Alita Industries, Inc.	31
Ashland Pump	7
<b>BIO MICROBICS</b>	
BioMicrobics, Inc.	29
<b>Seal-R</b>	
BrenLin Company, Inc.	23
Clarus Environmental	13
Crane Pumps & Systems	19
<b>CREST Precast, Inc.</b>	
Crest Precast, Inc.	21
<b>eljen</b>	
Eljen Corporation	21
Franklin Electric	15
<b>FujiClean USA LLC</b>	
Fuji Clean USA	27
<b>INFILTRATOR</b>	
Infiltrator Water Technologies, LLC	3
<b>Jet</b>	
Jet Inc.	33

Meaty-Delivery	33
<b>NPCA</b>	
National Precast Concrete Assoc.	39
<b>POLYLOK</b>	
Polylok, Inc.	40
<b>PEI</b>	
Presby Environmental Inc. (PEI)	5
<b>Roth</b>	
Roth North America	31
<b>SALCOR</b>	
SALCOR	9
<b>SPI</b>	
Septic Products, Inc.	21
<b>SIM/TECH</b>	
Sim/Tech Filter Inc.	27
<b>Simple Solutions</b>	
Simple Solutions Distributing	33

<b>SJE RHOMBUS</b>	
SJE-Rhombus®	17
<b>T&amp;T TOOLS</b>	
T&T Tools Inc.	23
The Shaddix Company, Inc.	33
<b>TUF-TITE</b>	
TUF-TITE, Inc.	2
Wholesale Septic Supply	8
<b>WIESER CONCRETE</b>	
Wieser Concrete	31
Classifieds	33

## Enjoy this issue!

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





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

# Raise Onsite Awareness, One Person at a Time

As long as the public continues to spread misinformation about septic systems, our industry needs to open a dialogue with friends and neighbors

I see constant reminders in the media that the general public is tragically misguided about onsite wastewater issues. When it comes to property rights or environmental concerns, the level of vitriol in public discourse is heightened and septic systems too often receive the brunt of unfair criticism.

At the same time, there is sometimes a glimmer of hope that people are reaching an understanding about the importance of our industry. Every now and then someone embraces the idea of working with installers and health department regulators to improve our wastewater infrastructure ... and therefore making our world a cleaner, safer place to live.

Here are a few recent examples:

## Another crazy letter to the editor spreads misinformation.

Diane Wilerton, in *The Columbian* newspaper of Vancouver, Washington, made fun of local government officials for requiring septic inspections, saying the exercise was unnecessary. And apparently she should know. Why?

"After three and a half decades of maintaining my septic system without assistance, in 2015, in response to yet another 'nanny' law, I had my system professionally inspected. It didn't 'need' to be pumped, just as it hasn't needed it in the last three and a half decades. (How much poop can a couple produce?) ... Earlier this year, we attended a Clark County Health Department class on how to poke poop ... and were endowed with the power to poke our own poop ... with the blessing and recognition of local government (Be still my beating heart)."

Dear Diane: Rather than bragging about not maintaining your system for 35 years, maybe you should step back and recognize you don't know as much about your onsite system as a professional with many years of experience. Nobody, and I mean nobody, in the wastewater industry would recommend you wait 35 years between proper inspections and pumping.

I've said it before: Washington state allowing self-inspections is ill-advised, and homeowners who sit in a class for an hour are not qualified to inspect any septic system when a source of clean water hangs in the balance. Your cocksure attitude and ignorance about septic systems may cost you dearly in a drainfield replacement one day.

## The importance of clean water is starting to sink in for Florida real estate pros. Is it too late?

For a long time, it seemed like real estate agents were turning a blind eye to failed septic systems as a way of preserving quick and pain-free home sales.

Rather than bragging about not maintaining your system for 35 years, maybe you should step back and recognize you don't know as much about your onsite system as a professional with many years of experience.

**Nobody, and I mean nobody, in the wastewater industry would recommend you wait 35 years between proper inspections and pumping.**

When the Florida Legislature mandated onsite inspections several years ago, real estate folks led the lobby to stop any oversight of septic systems, and they won. Their prize was an increasing problem of toxic algae blooms having a negative impact on valuable waterfront property. It looks like they're starting to change their tune, coming out in support of regulation when combined with a government program to share in the cost of septic system upgrades.

Cheryl Lambert, president of the REALTORS Association of Citrus County, recently shared her support for an incentive program to pay installing professionals up to \$10,000 to add nitrogen-reduction systems to existing onsite systems in several counties impacted by worsening water quality.

"The Florida Legislature realized that upgrading or replacing your current septic system is going to cost money, so they set aside funds for a new incentive program that encourages the enhancement of conventional septic systems by adding advanced features," she writes in the *Citrus County Chronicle*. "This is a great way to update your septic system now so you can help protect our local environment by reducing excessive nutrients in Citrus County waterways."

I criticized the Florida real estate community in the past for fighting onsite system monitoring. I thought they, and many uninformed members of the state Legislature, were doing a disservice to consumers by casting mandatory inspections and pumping as unnecessary. I appreciate the turnaround, and I hope it's not too late to help polluted waterways recover and preserve so many previously neglected septic systems.



### Don't damn all use of decentralized wastewater treatment.

In a recent letter to *The Post and Courier* in Charleston, South Carolina, reader Byron White made the common mistake of broadly criticizing use of decentralized wastewater systems and assuming that municipal sewer service is the magic answer to clean water.

"Let's be clear: There should be no septic tanks on waterfront property. Zero. ... If we really care about the Lowcountry, we should demand that all septic tanks be prohibited on waterfront property. Waterfront homes and businesses should be connected to municipal treatment facilities," White writes. He further points to the state's list of contaminated rivers and creeks, saying many of them are in the local watershed, and makes the point that the tourism industry depends on clean waterways for crabbing, fishing, paddling and surfing.

"With the extensive development that we are experiencing, we cannot continue to allow our coastal zone to become a public sewer," he continues. "Please join me in demanding that the South Carolina Legislature ban septic tanks on waterfront property."

This gentleman is a perfect illustration to show we as an industry are not doing enough to educate the general public about the critical role decentralized wastewater plays in smart development. First, he is not aware that it isn't economically feasible to bring the big pipe down every road in watershed areas. Many parts of this country will never be served by municipal sewer systems, and he has to realize that's OK.

Secondly, someone should sit down with White and explain the great advances we've made in wastewater treatment. He needs to know that the effluent coming out of today's advanced systems is often cleaner than the water in the stream flowing past his house. The onsite industry is quietly and methodically improving the infrastructure of onsite systems in many regions across North America.

### A FINAL WORD

Suppliers of onsite systems and the network of regulators who monitor modern treatment systems are allowing the environmentally safe development of more rural properties than ever before. And they're presenting economical wastewater treatment options for property owners and taxpayers alike. Judging from the messages from these writers, it's a story that is too seldom told and we need to change that. ■

## DROP US A LINE

Have a comment about an article you've seen in *Onsite Installer*?  
An experience from a job that you'd like to share?

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### PUMP TROUBLESHOOTING When the Motor Doesn't Run

When a septic pump will not start, there are three main areas to check for problems: the electrical system, the pump itself and the controls. This exclusive online article outlines the steps to follow to diagnose the problem when the pump isn't working.  
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### THINK OUTSIDE THE BOX

#### Foster Creativity

In the septic system installation business, the ability to think creatively and embrace new ideas is one of the secrets to ongoing success. Sometimes, an unconventional approach can have a profound impact for the better. Read more about how these installers think outside the box. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

### KEEP OUT Products to Avoid

There are many products your customers use in their homes and commercial properties that can harm the bacteria in a septic system. This article discusses five key toxic ones to tell them to avoid in order to keep the bacterial community as healthy as possible.

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# THINKING OUTSIDE THE D-BOX

While delivering excellence in basic onsite services, Aeration Septic looks for progressive solutions to water-related issues in communities

By Ted J. Rulseh



Jeremiah Rothwell takes water samples during an inspection of a lift station in Orrville, Ohio. Fred Rothwell, left, looks on. (Photos by Amy Voigt)



**A**eration Septic Inc. (ASI) services some 2,500 contract customers with advanced onsite treatment systems in northeastern Ohio and performs a growing number of installations. That's not nearly enough for owner and CEO Krista Gesaman and her 12 team members.

They've branched out into areas as diverse as installing wastewater lift stations for municipalities and selling onsite treatment products and other goods online. They're looking to expand into stormwater management, and a growing line of business is maintaining larger decentralized systems for nursing homes, mobile home parks and other facilities that require a licensed operator. There's no telling what will come next: If it's related to water, ASI is interested.

"Water is the future," says Gesaman, who has owned the business since 2012. "It's a finite resource. Water is confronted with a lot of issues. I wanted to be in an environment with progressive-thinking people working on solutions for many of the water-based issues we see in our communities."

### GROWING WITH GUSTO

Gesaman came to the onsite business in a less-than-conventional way. After earning law degrees from Ohio Northern University in 2007 and American University Washington College of Law in 2010, she went to work in Washington, D.C., for a major corporation, dealing with issues around high-performance buildings and green

building construction techniques. As part of that, she learned about the importance of water.

In 2011, she moved back to her roots in Ohio to be closer to family. She was still practicing law, but then learned that a business called Aeration Septic was for sale. At the time, it had a staff of three and a core business of about 500 onsite system maintenance contracts. She bought part of the business in 2012, partnering with owner Jeff Oyster, who founded the company in 1989.



▲ Technician Ken Saltz uses a Sludge Judge (Nasco Whirl-Pak) to measure solids in a residential tank during an onsite maintenance call.

## Aeration Septic Inc. (ASI)

Canal Fulton, Ohio

**Owner:** Krista Gesaman

**Founded:** 1989 (purchased by current owner 2012)

**Employees:** 13

**Service area:** Residential, northeast Ohio; commercial, all of Ohio and beyond

**Specialties:** Onsite system maintenance and installation, municipal/commercial lift stations, e-commerce

**Website:** [www.aeration-septic.com](http://www.aeration-septic.com)



» Technicians Chuck Hoagland, left, and Eric Mann, add piping to plumb a USA Precast Concrete chamber for a commercial pump station.

“He retired in 2014, and at that point I purchased the business outright,” Gesaman says. “We’ve had a variety of growth ever since. We have a group of smart, creative people who want to think outside the box and do things differently. We’ve got pretty aggressive aspirations, and we’re excited about that.” The team includes:

- Fred Rothwell, projects manager, a 28-year wastewater professional with a Class A wastewater operator license.
- Doug Nickas, commercial manager, with a 21-year background in the plumbing and wastewater industry.
- Ryan Wallace, residential manager and holder of a Class A wastewater operator license.
- Tricia Staples, office manager, with five years of business accounting experience.
- Eric Mann, commercial service professional; and Ken Saltz (Class A), Zak Harpley (Class A), Jeremiah Rothwell and Chuck Hoagland, service professionals.
- Jennifer Brockmeyer, office coordinator; Josh Ferro, marketing director; and Kylie McCarthy, office administrator.

## DIVERSE OFFERINGS

The company’s growth got a boost when the Ohio Health Department began mandating the consistent servicing of advanced treatment systems. The ASI team deployed “every means imaginable” to market maintenance

“I wanted to be in an environment with progressive-thinking people working on solutions for many of the water-based issues we see in our communities.”

**Krista Gesaman**

contracts: cold calling, mailers, postcards, educational forums and others.

“Growing a business has its basic fundamentals,” Gesaman says. “It starts with creating a plan and holding ourselves accountable to it. Every year we craft a very detailed outline of how we plan to grow the following year. If we stick to those commitments, we’ve always exceeded our growth expectations.”

To service systems, ASI uses a diverse group of vans and 1/2- to 3/4-ton pickup trucks. “We’re making a move over to service vans,” Nickas says. “Each van carries equipment to service every variety of ATU that we take on, along with common items that tend to wear out and need replacing. That way, we can address things as we see them. In many cases, after the routine service, we send one of our service professionals out the next day to make necessary repairs.”

The company uses the GPS-enabled Smart Service routing software system (My Service Depot) with the iFleet mobile function. Team members carry iPad tablets that communicate with the office database and QuickBooks accounting software. They can exchange messages with the office and with other service personnel in the field.



## JUMPING INTO E-COMMERCE

Not many onsite installation companies jump into e-commerce. Aeration Septic Inc. (ASI) has done so in a big way and not just with products related to onsite systems.

Tricia Staples, office manager, notes that online sales began with a Fresh Lemon Blue enzyme-based septic system treatment product. "We started selling that on Amazon," Staples says. "It's a product that users put down a different drain every month. People tend to buy a one-year supply of 12 packets. It has a very nice scent when they apply it. Then we asked: What other products can sell on Amazon?"

Next came plastic septic tank risers and lids (Polylok and TUF-TITE). A more recent addition is a line of stainless steel and silicone drinking straws — reusable alternatives to plastic straws. "We want to help eliminate disposable plastics because that is a big-picture issue in the water industry," Staples says.

As of early 2019, the company had about 20 products on its Amazon store. "We have a goal by the end of the year to have at least 100 products online," Staples says. "We are consistently looking for new products and developing relationships with vendors. All the products will be essentially water-related. We carry a variety of pumps including Hiblow, Blue Diamond Pumps, Nitto Kohki, Secoh and Gast."

Another step in evolution was to develop a new trade name, The Water Owl, and to eventually move the products from Amazon to ASI's own Shopify store. The goal is to generate revenue that can be shared with water conservation organizations.

Staples observes, "Once we start seeing those profits come through, we'll be able to give back not only to our local community, but on a global level as well and really make an impact on the water industry."

# EXTEND SYSTEM LIFE WW1 FILTER

The WW1 Effluent Filter helps prolong the life of an onsite system by filtering solids which may cause harm to downstream components such as drain fields. Screens effluent in residential applications with flows up to 1,500 GPD.

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▲ Ryan Wallace uses an Echo WP1000 fluid pump to clean an upflow filter.

▼ Krista Gesaman, center, leads the Aeration Septic Inc. team, which includes (back row from left) Fred Rothwell, Josh Ferro, Jeremiah Rothwell, Ken Saltz, Eric Mann, Doug Nickas, Ryan Wallace, Zak Harpley and Chuck Hoagland; (center row from left) Tricia Staples, Jennifer Brockmeyer and Avery Brockmeyer.



## DEMAND FOR INSTALLS

The onsite system installation business was a natural extension of service contracts. “As we serviced systems, we came across some that had hit the end of their life cycle, and customers asked us who we would recommend,” Gesaman says. “Some who had been with us for a long time were asking, ‘Can you install it?’ That led to Fred finally saying, ‘Heck yes!’”

Aerobic systems are common in ASI’s territory because hydric soils are prevalent. The company favors Jet Inc., Singulair (Norweco) and Aqua Safe (Ecological Tanks) ATUs and installs about half a dozen per year. For the installations, Rothwell rents trackhoes (typically Caterpillar) and tracked loaders. The company’s own knuckle-boom trucks transport and place concrete tanks.

ASI takes pride in quality work and places high priority on customer education. “In essence, people have a hole in the yard that they’re putting money into,” Rothwell says. “We think they need to know exactly what they’re paying for. We want homeowners to understand what’s going into the ground and that they need to take care of and maintain it.”

An ASI technician visits six months after the installation to ensure everything is operating as designed. Systems are designed for serviceability, and each customer receives an accurate as-built drawing for service personnel to follow. Each system comes with an audible or visual alarm to alert owners to call ASI for assistance.

## RIGOROUS PROCESS

Ohio regulations require a rigorous process for the design and inspection of onsite systems. ASI works with a few soil scientists to perform soil evaluations after the digging of a test pit. The results are shared with the

continued >>



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"In essence, people have a hole in the yard that they're putting money into. We think they need to know exactly what they're paying for."

**Fred Rothwell**

property owner and submitted to the county health department, which then performs the site evaluation and writes recommendations for the installation (or repair/replacement).

After that, ASI provides a cost estimate and, if the homeowner approves, proceeds to a detailed design plan indicating property lines, contours, elevations, pump calculations and other specifics for the health department's review. Once the design is approved, a permit is issued and the system is installed and inspected.

For drainfield media, Rothwell rejects rock-and-pipe systems for their high labor costs: "I like to be flexible. We use chambers now, but we also use the EZflow product (both from Infiltrator Water Technologies)." The choice is determined by ease of access to the site and the distance it needs to be carried.

## GOING COMMERCIAL

While the residential side grew, ASI looked to opportunities in the municipal and commercial sectors. "For the first two years, we were just doing rehabilitation of lift stations," Nickas says. "That has evolved into maintenance, rehab and installation of a variety of lift stations. This year we are on track to install six to eight new stations."

The size range extends from about 4 feet in diameter by 10 feet deep on up to 8 feet in diameter and 20 to 25 feet deep, with flow capacities up to 400 gpm. Most serve wastewater collections systems in cities, villages and towns, although some are for private entities. "We're looking for really nice, high-quality installs, and the local governments we work with expect that from us," Nickas says.

To that end, in 2015 ASI formed a sister company, USA Precast Concrete, that supplies structural components for the lift stations. "The aim is to facilitate one-stop shopping," Gesaman says. "We have the concrete; we can do the installation and maintenance. When Doug is bidding projects, he can have the process in hand from start to finish, including the structural creation of the products he is selling." USA Precast also makes septic tanks.

## NEXT IN LINE

Now ASI is looking to enter the market for stormwater management. "People neglect to realize the impact stormwater has on our environment," Rothwell says. "Locally, stormwater regulators are enforcing things more. We see more stormwater control units being installed, and that gives us an opportunity in monitoring, operating and servicing those units."

Also in development are technologies that enable ASI to track pump and other device performance using cellphones and other mobile and desktop tools. Nickas observes, "Just recently we completed a number of installations for a village that not only monitors their water levels and pumps, but



▲ Jennifer Brockmeyer works in the front office at Aeration Septic Inc.

also their on-site generators and backup power. It gives them peace of mind at night to know everything is OK."

At the same time the company is testing a proprietary liquid product designed to consume sludge and help prevent its accumulation in systems. "It's water-based but breaks down carbon chains," Gesaman says. "It is safe enough that it can be used as a makeup remover. We can use it in some filtration elements of our residential and commercial systems."

## WELCOME RECOGNITION

ASI's progressive nature hasn't escaped notice: *Smart Business* magazine last March presented the company with a Smart Culture Award. "We were honored along with some huge organizations, such as the Cleveland Clinic and Vitamix — a lot of sectors and sizes of business," Gesaman says. "It was really an honor."



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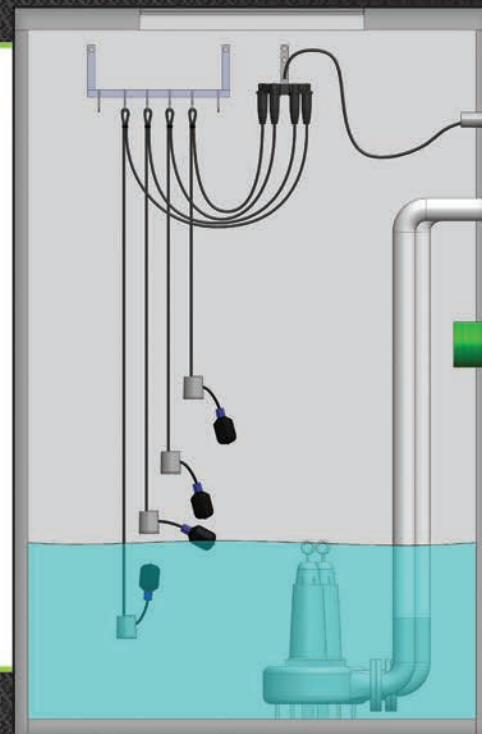
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Looking to the future, ASI aims to hire five new team members before the end of this year.

Historically, new people have come to the company through recommendations from existing staff. "We have a culture here that people aren't afraid to bring their family and friends into," Gesaman says. "Because of the positive environment they are in, they're anxious to bring people into the organization.

"We cultivate an atmosphere where people feel confident in their abilities. We like people who can make their own decisions, be comfortable in that and know the organization backs them and is supportive."

In addition, plans are in the works for a brand-new building with ample space for team members' offices, the company's e-commerce operation and

"We cultivate an atmosphere where people feel confident in their abilities. We like people who can make their own decisions, be comfortable in that and know the organization backs them and is supportive."

**Krista Gesaman**

the service vehicles. The plans include a gym, in line with a company focus on health and wellness. Groundbreaking was scheduled for mid-2019.

What might be the next items for ASI? Rothwell says: "Call us in a month." □

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# 'We're Always Busy, No Matter What'

Modern excavators, new technology can make the job easier for installers and pumpers, better for homeowners and businesses that utilize decentralized wastewater

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 Rhode Island Independent Contractors and Associates.*



**Paul Mumford Jr., co-owner with father, Paul Mumford Sr.**

**Business:** Mumford Services, North Kingstown, Rhode Island

**Age:** 36

**Years in the industry:** I've been in the industry 20 years, but for the company and my dad, it's been 45 years.

### Association involvement:

I've been in the Rhode Island Independent Contractors and Associates for about 15 years. I sit on the board of directors.

### Benefits of belonging to the association:

Education is a big benefit and staying informed about new regulations and things that may be coming down the pipeline. It offers training, which is key to getting some of the licenses. And, most important, it's the networking and talking to other individuals in or around the industry.

### Biggest issue facing your association right now:

It's very difficult to get members now. The younger crowd just isn't there. It's very easy now to get answers to questions, whereas years ago you didn't have the internet so if you had questions, you had to make phone calls. You'd call some of the members or the president or someone who was in the loop around the state Department of Environmental Management to get answers. Now you can just go on the DEM website and find out basically any information on laws and ordinances. Even for some licenses where we need continuing education, years ago you needed these organizations for that. You'd go on weekends and nights to sit in on classes, and now we just take them online while we're sitting on our couch. You print the form and mail it in with your license application, and that's the end of it. We do advertise and have annual events to try to recruit people. We send out monthly mailers. And if you're going to get an equipment operator license, which is very difficult, we offer weekend classes on that before you take the actual test.

### Our crew includes:

Family makes up a lot of it: myself; my father; my mother, Toni; my wife, Andrea, who runs the office; and my brother-in-law, Herbie Myers. Then we have about 10 drivers and laborers.

### Typical day on the job:

I usually arrive about 6:30 a.m. to make sure everybody shows up and gets out of the yard. Then I go and install septic systems.

### The job I'll never forget:

An installation job in Narragansett that had no access for trucks. We had access for one machine, which we ran across a beach from another property, but other than that, we did everything with cranes and blower trucks — the type of trucks that can blow material, like sand and mulch, through a pipe. The crane was mounted on a large tri-axle truck that sat up on the main road all day. The crane operator took the tank and equipment off trucks sitting in the road and lowered them over a wall down into the main property, which sat about 15 feet below the road right on the beach, and then everything was carried by hand. We had to use fiberglass material — a fiberglass tank, an AdvanTex (Orenco Systems) unit. That made for a tough job, very labor intensive.

continued >>



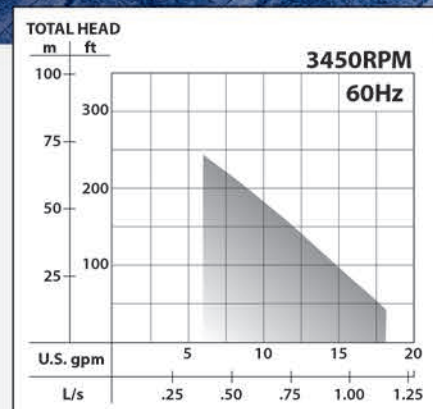
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### My favorite piece of equipment:

I like the excavators. We've got four of them — a Kubota K008, Bobcat E35, Caterpillar 308 and Caterpillar 312. Having 360-degree versatility and being able to do that over what we used to do with a backhoe has really helped the industry. They've made things a lot quicker, safer. You can dig crushed stone out of a truck, spin 180 degrees and put it in the hole. The backhoes just don't have that capability.

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

We did a project in North Kingstown where we had a very high water table. We actually had to install drains to keep track of the tank. We set the tank and when we came back the next day, the tank was completely submerged underwater. We installed two big French drains on the side just to lower the water table so we could find the tank again. Because of that, we were supposed to put in a pump chamber and pump up a hill to a drainfield, but the DEM did not let us put the pump chamber in because they were afraid of flotation, so we had to put a pump unit inside the septic tank.

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

After we've put in a new septic system, I've had people say, "So now I pump this, what — every 20 years?" And you have to educate them on that. And we get a lot of questions asking us if we can retrieve jewelry that's gone down drains. Every week you get some sort of question that makes you sit there and roll your eyes.

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

Most of our septic people and excavators are Class I designers, which means we can do anything residential six bedrooms or less. We can't do commercial or industrial and, most important, we can't design any alternative technology denitrification systems. I think if we as Class I could do that, it would really be a big thing. At the present time, if we want to use any of that technology, the homeowners have to get civil engineers involved to do the permit and design, then we do the installation. But with the very good economy, the civil engineers are stretched to the limits on new construction and big projects, so trying to get them to do those little jobs takes a long time. If we could do it, like we do all the conventionals, it would speed it up and you would see more of that technology used. The cost of that stuff has come down, and we can do them quicker than the conventionals now. I think there are a lot of sites where we could design and use the technology and it would be just as cost effective as some of these large mound systems or large septic systems. But since we can't, we end up designing very large conventional systems. We have tried to get that changed, but it's never gained any traction with the state.

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

"Run cash-positive, debt-free." Here in the Northeast, you're very busy and things are really going well in the warmer summer months, but then you start getting into winter and things really slow down. You probably do 50% to



▲ This Mumford Services vacuum truck is a 2009 Mack GU713 built out by Com Vac Systems with a 5,000-gallon steel tank and a Utile 825 pump. (Photos courtesy of Mumford Services)

►► Paul Mumford Jr. and daughters Jenna, Kaylie and Savannah.

70% less business, but you still have all the same trucks and payments. So if you can run debt-free and have the trucks paid for, it makes those four months of winter a lot easier.

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

Probably be in some sort of construction. I like running the machines and driving the big trucks, so I'd probably be doing some sort of trade like that. I'm not the type of guy to sit inside a building for eight or 10 hours a day. It's bad enough when I've got to do it for two or three hours designing a septic on the computer.

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

Around here it's a very booming, growing industry. We don't have any sewer systems, really, unless you get into the inner cities. Most of these new homes and even the repairs are now getting these alternative systems requiring a lot of maintenance and upkeep. It's a recession-proof industry. We're always busy no matter what; it's just we get paid a little better when the economy is doing well. □







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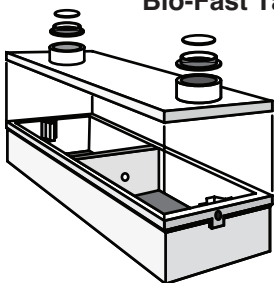
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## SYSTEM PROFILE

# Raise a Glass to a Complex Winery Wastewater Treatment System

A large-capacity and expandable membrane bioreactor design will keep California's Castello di Amorosa in production for many years to come

By David Steinkraus

**T**he Castello di Amorosa winery opened in Calistoga, California, in 2007 with a series of large septic tanks and a pressurized distribution system of trenches with rock and pipe to handle its wastewater flows.

"I don't know how long it really lasted," Sheldon Sapoznik says. He owns the Wine to Water Sales Group and was called in to help the winery when its original wastewater system failed. "I believe that leachfield lasted only five to seven years."

The new system, designed by R.E.B. Engineering and installed by Sakai General Engineering, is designed for 9,000 gpd and to handle highly variable wastewater flows with high BOD. It also provides the flexibility of not running every component all the time. Part of the system can be shut down when seasonal flows decrease.

### The system

The design retained the old septic tanks for primary treatment and settling solids. From those tanks, water flows to the new system through a 4-inch Schedule 40 PVC pipe. First stop is a concrete distribution box with three 4-inch outlets. Each pipe feeds one of three 3,000 gpd BioMicrobics BioBarrier membrane bioreactor treatment trains that operate in parallel. On each outlet is a valve to control the flow through the pipes, and it is these valves that allow



## System Profile

**Location:** Calistoga, California  
**Facility served:** Castello di Amorosa winery  
**Designer:** R.E.B. Engineering, St. Helena  
**Installer:** Sakai General Engineering, Calistoga  
**Type of system:** Membrane bioreactor  
**Hydraulic capacity:** 9,000 gpd

part of the system to be shut down. To restart one of the trains, mixed liquor is piped in from a nearby operational tank.

Before the D-box is a flowmeter to measure the total flow. (There are also flowmeters on the outlet pipes of each bioreactor tank.) And before the D-box is a chemical feed for nitrogen and phosphorus. When grapes are crushed at the beginning of the wine-making process, and during racking when wine is moved from one barrel to another, BOD can reach 12,000 mg/L, Sapoznik says. Despite all the organic matter, nitrogen and phosphorus are significantly



◀◀ The completed wastewater treatment system for Castello di Amorosa winery shows only the Orenco Systems and Xerxes risers and vents on top of the Xerxes 22,000-gallon tanks. Any of the treatment trains can be shut down for maintenance or when wastewater flows are low. Restarting a train requires moving mixed liquor only a few feet from an operating train. (Photos courtesy Wine to Water Sales Group)

✔ Reza Shams (center) with BioMicrobics; Bruce Sakai (right), installer; and a technician lower a BioMicrobics BioBarrier membrane assembly into a tank at Castello di Amorosa winery. Each treatment tank used four double-stack membrane units. Below each stack was an aeration grid that helped supply oxygen and keep the membranes clean.

➤ Inside each tank is a series of aeration grids driven by FPZ blowers. Grids produce coarse bubbles that provide oxygen for biological treatment.

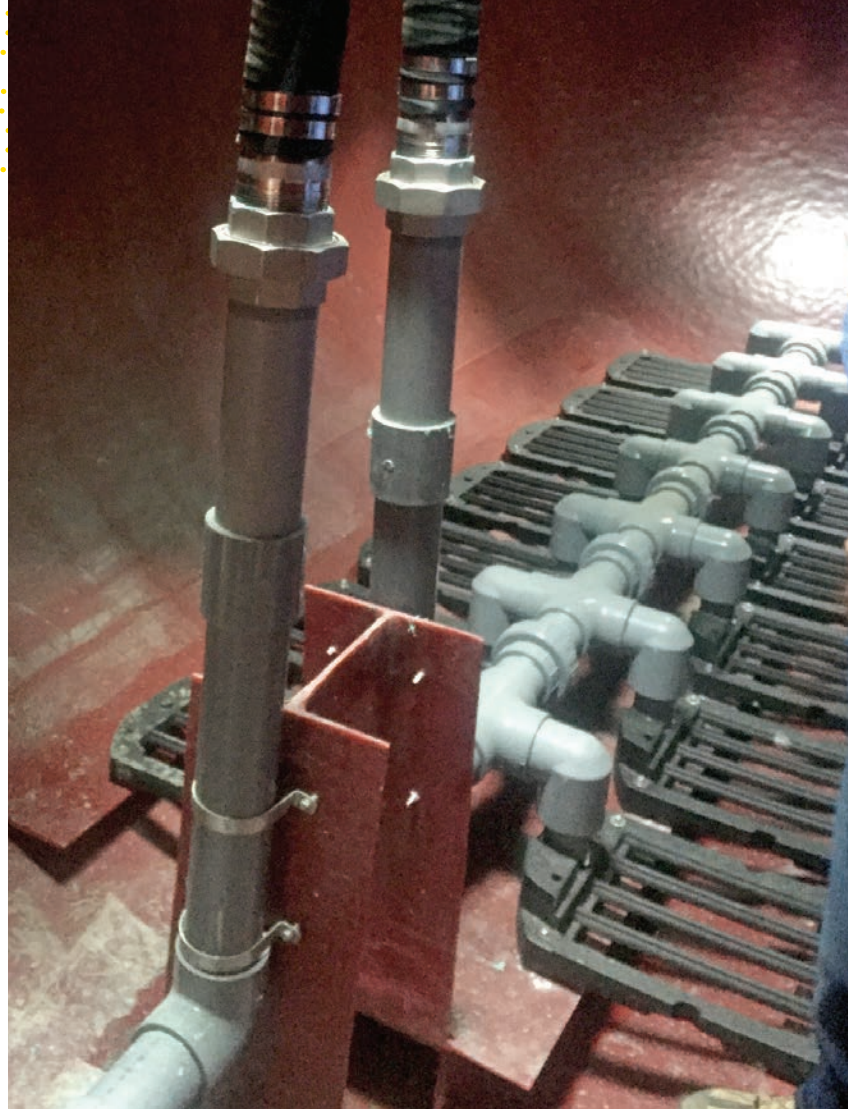


lower than is necessary for bacteria to grow and digest waste efficiently, so supplementation is necessary.

Each 4-inch pipe from the D-box enters a Xerxes 22,000-gallon bioreactor tank. There are no baffles inside, but there are two aeration zones covering the first two-thirds of the tank length. Each zone is comprised of 14 molded plastic grids bolted to platforms on the bottom of the tank, and each zone is fed by a 10 hp FPZ regenerative blower. Grids produce coarse bubbles — not the fine bubbles common in package plants — thereby reducing maintenance requirements on the aeration system, Sapoznik says.

Four BioMicrobics BioBarrier double-stack membrane units occupy the other end of the tank. An ITT Goulds Pumps 1/2 hp pump installed in a small vault outside the tank provides suction to draw treated water through the membranes. Each treatment train draws about 6 gpm.

The bioreactor tank size provides the necessary time for microorganisms to digest waste as well as pH buffering, equalization and sludge storage for one year.



“The winery can dump all 9,000 gallons in 20 minutes if they want. The system has the ability, in the volume of that tank, to take that large amount of wastewater in a short period of time without disrupting biological treatment or adversely affecting the function of the treatment system. The system will catch up over the next several hours and return to normal operating levels,” Sapoznik says.

## On to irrigation

Beneath each membrane stack is another aeration grid. All four air grids have a single manifold fed by a 4 hp FPZ blower. Grids turn on when the membrane suction pump turns on and provide scouring of the flat sheet membranes, and they also turn on for 30 minutes every two hours to keep membranes clean and add additional oxygen to the treatment process.

“Most wineries do not have dedicated maintenance people on staff to run a typical package plant. So we wanted to build in design parameters to provide enough volume so they can store sludge within the treatment process for at least a year, simplify the process by not having a lot of moving parts, and make operation and maintenance easier,” Sapoznik says.

At startup, the ideal BOD concentration is 500 mg/L. When BOD reaches about 10,000 mg/L, it's time to pump out some sludge. The suggested pumping removes only 60% to 70% of the mixed liquor in the tank, leaving a sludge concentration for operation. A float maintains about 6 1/2 feet of water in a 10-foot-diameter tank.

After treatment, clean water flows into an underground sump tank of about 1,200 gallons. A duplex pump system sends water into aboveground 50,000-gallon tanks that feed the vineyard irrigation system.



## SYSTEM PROFILE

» A group from the Castello di Amorosa winery and Napa County (California) Land Use gathers to learn about the new wastewater system. Shown in the photo are Sheldon Sapoznik; Tim Dexter, winery maintenance supervisor; Randy Bryant, R.E.B. Engineering; and Napa County Planning, Building & Environmental Services staff.

A BioMicrobics panel runs the system. Orenco Systems risers and lids were used for air lines and inlet access, while 36-inch Xerxes risers and 42-inch bolted lids were used above the MBR units.

“With our system, they are surface-irrigating the vineyard with the treated water. This completely removed the need for any below-ground dispersal and provided the beneficial reuse desired by the winery,” Sapoznik says.



### Challenges

About once a year, maintenance workers perform a clean-in-place of the membranes. During installation, a pipe was installed on each membrane unit for the introduction of a low-chlorine bleach solution for an overnight soak. Every three years, the membranes must be removed and soaked overnight in a bleach or citric acid solution for a deeper cleaning.

Flows through the membranes are measured with the outlet flowmeters and vacuum gauges. When membranes are clean, the vacuum gauge attached to each pump will show minus 6 to minus 10 and flows are about 6 gpm. If the membranes are clogged, vacuum will climb to minus 16 to minus 20 and flows will drop by 50% or more at the same time.

“Those cleaning processes never interrupt the winery’s operation,” Sapoznik says. The vacuum and water flow numbers tell maintenance workers whether the system has enough capacity to handle the high BOD load when grapes are crushed.

“You obviously have to design a system for what the peak flows and loading are, but you don’t want to run a winery system at its peak all the time because a winery operation is so highly varied, and full capacity is overkill for a good portion of the year,” Sapoznik says.

If the winery decides to expand at some time, it would be easy to expand the system to 12,000 gpd by adding another treatment train next to the existing trains. Wineries typically know what their long-term plans are because increased capacity also requires more space for processing and fermentation tanks, he says.

One advantage in working with Castello di Amorosa was the existence of a previous system and wastewater flow data. As a result, many of the design parameters for the new system were known. “A lot of our customers are doing new construction, and we do best-guess estimates based on industry standards and years of experience working with wineries,” Sapoznik says.

Factors such as the total amount of wine produced, how many varieties of each wine will be produced and when grapes are harvested all affect flows through a system.

### Handling large BOD loads

Sapoznik spent 20 years as a regulator before going into business for himself. What he saw in those 20 years were systems that people thought could handle high-strength waste or highly variable flows but couldn’t.

“You obviously have to design a system for what the peak flows and loading are, but you don’t want to run a winery system at its peak all the time because a winery operation is so highly varied, and full capacity is overkill for a good portion of the year.”

**Sheldon Sapoznik**

An advantage of membrane systems is that they were originally designed for large municipal and commercial uses so they can handle the larger BOD loads common in wineries, he says. Membrane technology also provides some assurance that regardless of flow or BOD, only particles of a certain size will pass through a membrane, which provides better effluent quality and treatment than other technologies, he says.

Most of these systems have effluent BOD of less than 10 mg/L, and the same for TSS. Sometimes the treated water is so clean that a lab cannot detect BOD or TSS, he says.

What it all means for Castello di Amorosa and other wineries — and wine consumers — is years of environmentally friendly production. □

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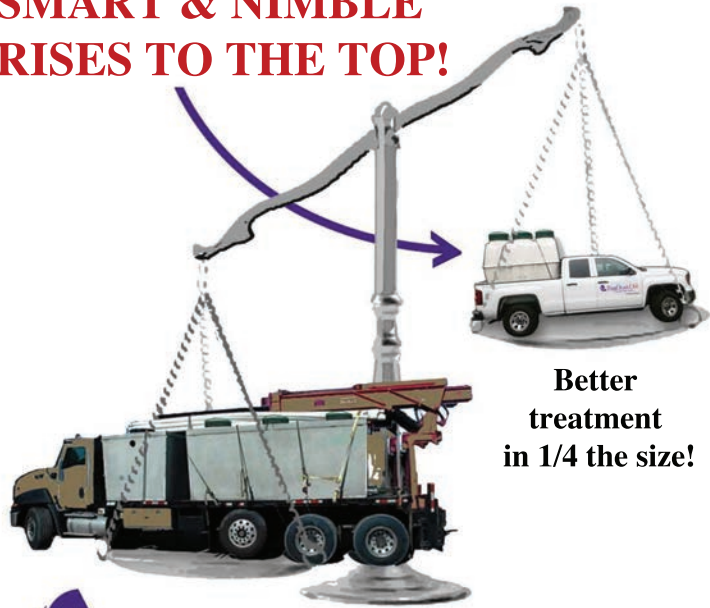
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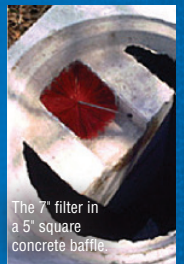
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# Oregon Considers New Onsite Rules Featuring an Expiration Date on System Approvals

By David Steinkraus

After six years with its current set of onsite rules, the state of Oregon is on the verge of revising them to allow more alternative technology options and change how they are used. The broadest change targets nitrogen.

“We’re adding more nitrogen reduction,” says Randy Trox, onsite program coordinator for the Oregon Department of Environmental Quality. “We have some data that show our minimum lot size for sandy soils with unconfined aquifers isn’t adequately protective.”

The DEQ proposal would increase the standard for rapidly draining soils. Instead of having one conventional system on each acre with such soil, the revised rule would specify no fewer than 2.5 acres. Current rules also allow a system such as pressure distribution or a sand filter on a half-acre property. Minimum lot sizes for other treatment systems would also change. In general, the new rule requires technologies that can reduce total nitrogen by 65%, Trox says.

The first 20 systems a manufacturer installs under this rule would have provisional approval and would have to be tested every other month, he says. If those tests show the systems meet the nitrogen standard, that technology would be added to the list of approved options.

The largest impact of this proposed change would be on many lands in central Oregon, most lands along the state’s rivers and many properties along the Pacific Coast.

Other proposed changes are less broad but would reduce headaches and costs.

Dispersal of treated wastewater is currently allowed only in 24-inch trenches, which includes chambers or EZflow by Infiltrator. Drip tubing — Geoflow and similar products — would become an option under revised rules.

“We had an evaluation for Geoflow, but didn’t have enough requests to complete the evaluation. But in looking around, a lot of other states have it, and no one is saying it doesn’t work. We think there’s a place for it here,” Trox says.

Major maintenance rules would change for the replacement of components such as distribution boxes. As long as a licensed onsite installer or certified maintenance provider does this work, there would be no need for a permit.

“The cost of the permit to replace a distribution box or drop box is almost equal to the cost of some work. A minor permit fee for replacing a tank or a drop box is probably around \$400,” Trox says.

A new rule would place an end date on site evaluations. These are required when applying for permits for onsite work, and at the moment,

evaluations are good forever. The proposed rule would place a 10-year expiration date on these, adequate time to develop a parcel of land, Trox says. If the rule is adopted, all existing evaluations would expire in 2030, and any evaluations after that would have a 10-year limit.

This came up during the last rule-making process, and the DEQ is proposing it again with more input, he says.

“You go back to the ’70s and some of the paperwork is pretty thin. Counties can’t find where the site work was done. Trees grow up and get cut down. Lot sizes change a little bit,” Trox says. “Our current rules say you may not get the system the site was approved for, but you will get a system; and people argued this was inconsistently applied in different jurisdictions.”

The current rule revision process began in the fall of 2018 with the department’s advisory group that includes county representatives, pumpers, installers and manufacturer, among others, Trox says.

For the latest information about Oregon regulations, check the website for the rule-making: [www.oregon.gov/deq/regulations/rulemaking/pages/ronsite2019.aspx](http://www.oregon.gov/deq/regulations/rulemaking/pages/ronsite2019.aspx).

The final proposed rules are scheduled for consideration at the November meeting of the state’s Environmental Quality Commission. New rules would take effect Jan. 2.

## Florida

The new South Florida Water Management District may be heading to stricter limits on pollution of the state’s waters.

Pollution in Lake Okeechobee is coming from somewhere, says Ronald Bergeron, one of the district board members appointed by Gov. Ron DeSantis in March. “We’ve got to get a hold on where it’s coming from, and we need to monitor and regulate it before it enters state waters.”

Removing pollution — especially nitrogen and phosphorus from fertilizer — is cheaper than cleaning it up later, he says, according to a report from the *Treasure Coast Newspapers*.

Earlier this year, a member of the board asked whether there is monitoring to prove whether best management practices on farms are working. Vanessa Bessey, environmental administrator from the state’s Department of Agriculture and Consumer Services, says farmers are not required to prove their practices are cleaning water before it leaves their land. If they implement a practice recognized by the state, there is an assumption that it meets standard, she says.

During the last few years, algae blooms have drawn much publicity, including a large bloom traced to water discharged from Lake Okeechobee.



Although one study faulted septic systems as the primary cause of algae blooms in the state, most other experts dismissed this idea. They say septic systems may contribute, but they point out that Lake Okeechobee discharges a large amount of agricultural runoff.

The district is one of five in Florida. It manages the water resources in 16 counties from Orlando to the Florida Keys.

## Michigan

Last spring, county commissioners in Kalkaska County — in the northwest corner of Lower Michigan — began debating whether to step out of a regional Health Department rule that requires onsite systems to be inspected when a property is sold. In the most recent development, the county board chairman says he wants to hear from township leaders before the board acts. Town representatives were invited to a special meeting.

Behind the board's discussion are complaints about the cost of inspections — about \$700, say news reports — and the additional cost to property sellers if they are required to upgrade a system. At the same time, some board members say they want a solution that doesn't restrict inspections to only times when properties are sold, and they say there are so many exemptions to the current rule that it is ineffective.

## South Carolina

An ordinance that could have required everyone in Charleston County to connect to municipal sewer pipes was put on hold by the County Council in May.

The ordinance began as a way to help residents of a community who wanted sewer service without being forced to annex their properties to the neighboring municipality. But as written, the ordinance looks as if it could force everyone to connect to sewer pipes and require the extension of pipes across the county.

That worried the local sewer utility, which didn't know about the issue until it was covered by *The Post and Courier* newspaper. Conservationists were alarmed at the prospect of the urban sprawl that would follow the spread of municipal sewer. And citizens were concerned about the cost of building all the pipes and making the connections.

## Minnesota

Chalk up a few points for the benefits of wastewater regulation — unless you like catching walleye. A recently published University of Minnesota study says a reduction in human water pollution is part of the reason for a long-term decline in walleye numbers in Mille Lacs, a large lake 100 miles north of Minneapolis.

The other factor cited in the report was the presence of zebra mussels. This invasive organism — native to the Black, Azov and Caspian seas in western Asia — reproduces prolifically and is a powerful filter feeder.

Less pollution means the water is clearer, and walleyes do not thrive in bright light. Water clarity in the lake increased dramatically in the 1990s, probably due to control of fertilizer runoff and improved onsite systems, says the report. Mussels weren't discovered in the lake until 2005. ■

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# Three Quick and Easy Methods to Test for Soil Saturation

Installers don't always have time for long-term monitoring to find wet conditions at a build site. If you're in a hurry, follow these alternative methods to identify suitable drainfield locations.

By Jim Anderson and David Gustafson

**W**e used two recent columns to define, identify and interpret redoximorphic features in soils to estimate occurrence of seasonally saturated conditions. We also acknowledged some instances where even though the soil is saturated, redoximorphic features do not form and identifying whether the features reflect the current or previous conditions can also be a challenge.

When redoximorphic features are not prominent or present, the occurrence of saturation and reduction must be determined by directly observing the conditions or by using long-term monitoring. Since most decisions we make about where to site and install systems do not afford the luxury of monitoring soil conditions for longer than a few days or weeks, there are some quicker methods used to determine whether a soil is saturated and will be a problem for the proposed soil treatment unit.

**Installing monitoring wells or piezometers may be the easiest method to obtain and install, but it's perhaps more time consuming depending on site conditions.**

## THREE IDEAS

We will briefly describe some other methods soil and wetland scientists employ in the field to determine soil saturation and reducing conditions. With a little training and background information, these techniques can be used by site evaluators, installers and local regulatory authorities. The three field methods are use of a dye (alpha-alpha-dipyridyl) that changes color under reduced soil conditions, indicator of reduction in soil (IRIS) tubes, and monitoring wells or piezometers.

Use of alpha-alpha-dipyridyl involves preparing a 0.2% solution of the dye with ammonium acetate and water. When the solution is sprayed on a field-moist sample and a pink color occurs, it means that horizon or location has reduced iron and is subject to saturation.

There are some cautions for use. The dye should not be applied to soil that has been in contact with iron (soil augers, backhoe buckets, knives), has been exposed to direct sunlight after the dye was applied, or was tested for carbonates with hydrochloric acid. The dye can be harmful if inhaled or

absorbed through the skin. It can irritate eyes, the respiratory system and skin and can be toxic if swallowed. Therefore, it should be used with caution.

IRIS tubes are sections of 1/2-inch Schedule 40 PVC pipe painted with an iron oxide paint. The tubes are inserted into the soil during a period where the soils are expected to be saturated. In saturated conditions, some soil microbes deplete dissolved oxygen as they break down organic matter. Once the oxygen is depleted — which may take as little as a couple of days to a few weeks — the microbes use the iron oxide paint for their oxygen, which makes the iron soluble in water. It is removed from the tube, exposing the white color of the PVC pipe instead of the reddish paint. If more than 5% of the paint is removed, the soil is under reduced conditions.

Installing monitoring wells or piezometers may be the easiest method to obtain and install, but it's perhaps more time consuming depending on site conditions. Installation of wells and piezometers are very similar. Basically, a hole is bored in the soil to the desired depth, a pipe is inserted in the unlined borehole, the space around the pipe is packed with a granular material (sand) and the hole is sealed at the top using bentonite or similar material to prevent surface water from entering the hole along the pipe.

## DEPTH OF SATURATION

The pipe in a monitoring well will have perforations (holes) the length of the pipe from just below the soil surface to the bottom of the hole, where the pipe is seated on a sand base at least 1 inch thick. If there is a saturated zone anywhere along the length of the pipe, water will flow into the pipe and fill the pipe to the level of the saturated zone — even if the soil at the bottom of the pipe is unsaturated. If monitoring wells are used, the best approach is to install a series of them at different depths in the soil so the depth of saturation can be determined more accurately.

Piezometers have holes only at the bottom of the pipe, which is sealed above that point with bentonite before backfilling the rest of the way with sand and capped at the top with bentonite again. A piezometer will gauge whether saturation is occurring at the depth where the pipe is installed. Water will rise in the pipe to the top level of saturation in the soil profile, giving an accurate picture of the depth of saturation. Of course, multiple piezometers can also be installed if desired.

In both cases, it is best if they are installed during dry periods, although they can be installed when the soil is saturated. Although if you bore a hole and water runs in, your question about saturation should be answered and a monitoring period is probably not necessary. Otherwise they should be





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monitored during wet periods or seasons to determine seasonal saturated conditions.

One condition to be very aware of is when soils are slowly permeable. When a boring is conducted to determine if the soil is saturated, the hole should be left open a minimum of 24 hours and then checked to see if water is present. It takes that long for water to move out of the soil into the open borehole.

We hope this gives you some ideas to work out soil saturation questions with your local regulators. Of course, bringing in a soil professional may answer the question; or they might suggest using one of these methods if they are unsure. ❑



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[www.mspumpersassociation.com](http://www.mspumpersassociation.com);  
601-249-2066

## MISSOURI

Missouri Smallflows  
Organization;  
[www.mosmallflows.org](http://www.mosmallflows.org);  
417-631-4027

## NEBRASKA

Nebraska On-site  
Waste Water Association;  
[www.nowwa.org](http://www.nowwa.org); 402-476-0162

## NEW HAMPSHIRE

New Hampshire Association  
of Septage Haulers;  
[www.nhash.com](http://www.nhash.com); 603-831-8670

Granite State Designers and  
Installers Association;  
[www.gsdia.org](http://www.gsdia.org); 603-228-1231

## NEW MEXICO

Professional Onsite Wastewater  
Reuse Association of  
New Mexico;  
[www.powranm.org](http://www.powranm.org);  
505-989-7676

## NEW YORK

Long Island Liquid Waste  
Association, Inc.;  
[www.lilwa.org](http://www.lilwa.org); 631-585-0448

## NORTH CAROLINA

North Carolina Septic  
Tank Association;  
[www.ncsta.net](http://www.ncsta.net); 336-416-3564

North Carolina  
Portable Toilet Group;  
[www.ncportabletoiletgroup.org](http://www.ncportabletoiletgroup.org);  
252-249-1097

North Carolina Pumper Group;  
[www.ncpumpergroup.org](http://www.ncpumpergroup.org);  
252-249-1097

## OHIO

Ohio Onsite  
Wastewater Association;  
[www.ohioonsite.org](http://www.ohioonsite.org);  
888-294-0084

## OREGON

Oregon Onsite  
Wastewater Association;  
[www.o2wa.org](http://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; 409-718-0645

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

## VIRGINIA

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

## WASHINGTON

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

## WISCONSIN

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

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

## NATIONAL

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

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

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

## CANADA ALBERTA

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

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British Columbia Onsite  
Wastewater Association;  
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## 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;  
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# Pumps

By Craig Mandli

## AERATION PUMP

### Jet Inc. 700++ Aerator

The flood-resistant Jet Inc. 700++ Aerator is the only mechanical component in the 1500 Series BAT Media Plant and works in tandem with the BAT Media to provide complete biological processing. The aerator shaft spins and combines outside air with wastewater in the treatment compartment, flowing into the tank to provide oxygen for the treatment process. The dual-purpose foam restrictor protects the aerator by controlling foam created in the treatment chamber and also serves as a high-water alarm trigger. 800-321-6960; [www.jetincorp.com](http://www.jetincorp.com).



## EFFLUENT PUMPS

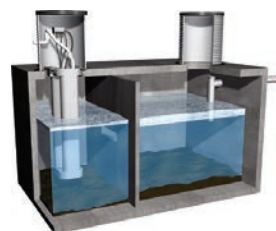
### Clarus Environmental Model 142

The Clarus Environmental Model 142 effluent pump has a low-flow design originally engineered for septic tank effluent pump applications in which the pump, protected from septic solids by a filtered vault, moves effluent directly out of the septic tank without the need for an additional pump tank. Higher-flow pumps in that environment cause agitation within the septic tank and disrupt the sludge and scum formations. It produces a maximum flow of 18 gpm at 5 feet of TDH and can reach 62 feet at shut-off. It is available in 115 volts, has a powder-coated, cast iron housing and is capable of passing 1/2-inch spherical solids. 800-928-7867; [www.clarusenvironmental.com](http://www.clarusenvironmental.com).



### Delta Treatment Systems ECOFILTER Pump Vault

The ECOFILTER Pump Vault tank filtration system from Delta Treatment Systems reduces biological loading and clogging and extends the life of downstream drainfields and STEP collection systems. Quick to install in new or existing tanks, the



completely integrated and customizable unit is suitable for pumping effluent from single- or double-compartment tanks. Featuring a dual-compartment housing for simplex or duplex applications, it draws effluent from the clarified zone of the tank to minimize suspended solids passing through the pump system. It is constructed of high-density polyethylene

with UV inhibitors for longevity, and the float stem bracket allows easy removal and adjustment of the float assembly. The easy-access design maximizes the filter surface area and simplifies filter inspection and maintenance by enabling filter cartridge removal without pulling the pump or vault. 800-219-9183; [www.deltatreatment.com](http://www.deltatreatment.com).

### Flygt - a Xylem Brand Concertor



The Concertor smart, interconnected wastewater-pumping system from Flygt - a Xylem Brand senses the operating conditions of its environment, adapts its performance in real time and provides feedback to pumping station operators. It offers energy savings of up to 70% compared to a conventional pumping system; it also reduces inventory by up to 80% due to flexible performance. Clog-free pumping operation and clean wet wells can save up to 80% in vacuum cleaning costs, according to the maker. Its compact design reduces cabinet size by up to 50%. It offers a wide performance field to choose the right operating point, simplifying fine-tuning. 855-995-4261; [www.xylem.com](http://www.xylem.com).

### Orenco Systems Biotube ProPak pump package

Biotube ProPak pump packages from Orenco Systems are complete, ready-to-install pump packages. They are used for filtering and pumping effluent from single- or dual-compartment septic tanks to gravity or pressurized discharge points. Pump vault technology eliminates the need for a separate dosing tank. Packages include a Biotube filter cartridge, which filters up to two-thirds of solids, so only liquid from the tank's clear zone is pumped. Filters are easy to remove and clean without pulling the pump vault. All components are designed to be quickly installed and easily maintained. The PF Series high-head effluent pump is field serviceable and field repairable, and pump controls are designed for specific packages. Multiple models are available. ProPak Select software is designed to provide fast, error-free hydraulic calculations and generate system curves, according to the maker. 800-348-9843; [www.orenco.com](http://www.orenco.com).





## GRINDER PUMPS



### Goulds Water Technology, a Xylem brand, AGS Series

The Goulds Water Technology, a Xylem brand, AGS Series submersible axial grinder provides suitable performance against the challenging solids, flushables and trash present in modern residential wastewater applications. With a semiopen impeller design, including an eight-hole cutter plate and three-blade axial cutter, the grinder reduces waste to a fine slurry. The lobe-lifting technology lifts material away from the low-pressure center and redirects it for cutting. Built with a stainless steel volute, cast iron impeller and hard-faced silicon carbide on silicon carbide mechanical seal, it is versatile for residential and tough wastewater environments. Heavy-duty, balanced handles simplify installation, and the 2-inch discharge allows for easy sewage pump replacement, minimizing downtime and service issues. The series is available in single-phase 1/2 hp (115- or 230-volt) and 1 hp (115- or 230-volt) options to fit a variety of residential sewage applications. 866-325-4210; [www.goulds.com](http://www.goulds.com).

### HCP Pumps of America GF Series

GF Series grinder pumps from HCP Pumps of America come in a 1.25- and 2-inch discharge and ranges from 1 to 10 hp. Their radial cutters have four blades instead of two. The internal capacitor motor design provides higher torque, and all single-phase grinder models are equipped with centrifugal switches. Standard accessories include an epoxy resin-sealed and water-resistant cable base, auto-cut thermal motor protector and triple-seal design. 251-943-8080; [www.hcppumpsamerica.com](http://www.hcppumpsamerica.com).



## SEWAGE PUMP

### Ashland Pump SWS50V1-10

The SWS50V1-10 sewage pump from Ashland Pump is constructed of heavy-duty cast iron and is designed with a vortex thermoplastic impeller. The impeller is built to pass 2-inch spherical solids. The pump is equipped with a vertical integrated float switch. The oil-filled, continuous-duty PSC motor is thermally protected, and the cast iron has suitable heat dissipation. The pump can reach 136 gpm and has a maximum lift of 22 feet. 855-281-6830; [www.ashlandpump.com](http://www.ashlandpump.com).



## SUMP PUMP

### Vertiflo Pump Series 800

The Series 800 immersion sump pump from Vertiflo Pump can be used for sump drainage, flood control and process drainage to meet U.S. Environmental Protection and Occupational Safety and Health Administration requirements. It offers heads to 230 feet, temperatures to 350 degrees F, pit depths to 26 feet and up to 3,000 gpm. It has a semiopen impeller, external adjustment and a standard NEMA C face motor. It is available in cast iron, 316 stainless steel fitted, all 316 stainless steel, alloy 20, Hastelloy or CD4MCu construction. 513-530-0888; [www.vertiflopump.com](http://www.vertiflopump.com).



## SUBMERSIBLE PUMPS

### Franklin Electric SSI Series

SSI Series submersible pumps from Franklin Electric are designed to be a cost-effective, high-flow option available in 6-, 8- and 10-inch models with flows from 85 to 1,300 gpm at a maximum 1,250 feet of head. The stamped, stainless steel pumps are fully serviceable and corrosion-resistant. I-Blade technology is designed to improve the structural integrity of the pump's internal components, pumping more water per horsepower and improving efficiency. Utilizing TIG progressive welding, the metal materials are mixed during the process, creating a stronger bond for durability in harsh environments. 260-824-2900; [www.franklinwater.com](http://www.franklinwater.com).



### Gorman-Rupp SF Series

SF Series submersible solids-handling pumps from Gorman-Rupp use single-vane impeller designs requiring lower horsepower with increased flow and head. The line of pumps is available on more than 24 models in 3-, 4-, 6- and 8-inch flanged discharge sizes and power ranging from 3 to 75 hp. These combinations will provide flows up to 3,400 gpm and heads to 170 feet. 419-755-1011; [www.grpumps.com](http://www.grpumps.com).





## Polylok PL-CPE5A

The PL-CPE5A from Polylok is a submersible 1/2 hp, 115-volt, single-phase effluent pump with a 2-inch NPT vertical discharge. It has a maximum head of 48 feet and a maximum flow of 64 gpm. It is designed with a 3,450 rpm, oil-filled, permanent split-capacitor motor and has an amp rating of 8.5 for 115 volts, cast iron housing and volute with a cast iron vortex impeller that passes 3/4-inch-diameter solids. The stainless steel shaft is supported by two single-row, oil-lubricated ball bearings.

The shaft seal is an inboard design with a secondary exclusion V seal. Construction materials are carbon for the rotating face and ceramic for the stationary face. All elastomers are Buna-N, and the hardware is 300 Series stainless steel. It has a 20-foot UL/CSA-listed power cable suitable for submersible service and fitted with a three-prong plug. It is supplied with an integrated clip on its piggyback mechanical float switch for automatic operation. 888-765-9565; [www.polylok.com](http://www.polylok.com).

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## PUMP CONTROLS

### Alderon Industries 2012G Check It Single Phase Duplex

The 2012G Check It Single Phase Duplex control panel from Alderon Industries operates two alternating lead pumps. It is suitable for 120/208/230-volt AC single phase, 60 Hz, up to 15-amp pump load applications, and it includes test/silence switches and a buzzer with a red-colored beacon to signal alarm conditions. The Check It board allows the user to select Alternate Lead, Pump 1 Lead or Pump 2 Lead settings. A switch lets the user check pump operation while in Auto to see the float status with red LED indicators. There is separate pump and control feed power to allow the alarm board to stay powered in the event of pump failures, causing the main pump feed circuit breaker to trip. Auxiliary contacts are available for remote alarm hookup. It has field-adaptable automatic/manual alarm reset options and labeled terminal blocks and float cables for easy wiring installation. 218-483-3034; [www.alderonind.com](http://www.alderonind.com).



### Septic Products 50B019-120-240DD

The 50B019-120-240DD control panel from Septic Products is a duplex time-dosing panel for use in residential or commercial applications. It can be used with 120- or 240-volt incoming power, and it accommodates two dosing pumps controlled by a repeat cycle timer. It has a durable, weather-resistant, NEMA 4X polycarbonate enclosure with SST latches; large, easy-to-access terminal block; circuit breakers for the pumps and control circuits; a rugged, externally mounted, UV-resistant alarm light; audible alarm and run-mute-test switch with UV-resistant sealing boot; definite purpose motor contactors; alternating relay; and pump hand-off-auto switches. Compressor hookups are available. Wiring schematic and detailed connection diagrams are provided, as well as mounting feet for the enclosure. It is UL listed. 419-282-5933; [www.septicproducts.com](http://www.septicproducts.com).



### SJE-Rhombus Xpert Alert Wi-Fi

The Xpert Alert Wi-Fi indoor alarm system from SJE-Rhombus helps protect a home from costly damage due to flooding, pump failure or freezing pipes. The system monitors and reports residential alarm condition by notifying locally (audible and visual alarms) and remotely via SMS text messages and/or emails. It uses an existing Wi-Fi or Ethernet network to send messages, meaning there are no monthly fees or contracts. The sleek design incorporates an LED alarm light ring that illuminates red for alarm 1 and amber for alarm 2. The red low-temperature indicator activates at 40 degrees F to alert about potential freezing conditions, but it can be deactivated for cold climates. It is CSA certified. 888-342-5753; [www.sjerrhombus.com](http://www.sjerrhombus.com). □







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## INDUSTRY NEWS

### Anua acquires Quanics

Anua has expanded its Clean Water treatment system options by acquiring Quanics. Integrating Quanics onsite water treatment and water reuse products into Anua's growing platform will provide customers with more flexibility and more options. Anua has acquired the AeroCell and BioCair treatment technologies, all regulatory approvals, all testing data, patents, trademarks, intellectual property, website domain, online store and other assets from Quanics. Quanics manufacturing will continue in the Crestwood, Kentucky, facility.

### Eljen expands to new offices, manufacturing space

Eljen completed a move to a new headquarters in Windsor, Connecticut. The 40,000-square-foot facility represents an expansion of Eljen's manufacturing and product development capabilities, as well as increased capacity for storage and output. The new facility's immediate focus will be on servicing demand for its geotextile sand filter, wastewater dispersal and nonaggregate prefabricated drainage products, which has grown to include markets in 30 states, Canada, Asia and Australia. The building has room to support future growth, and the company plans to add jobs in the coming months. □

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