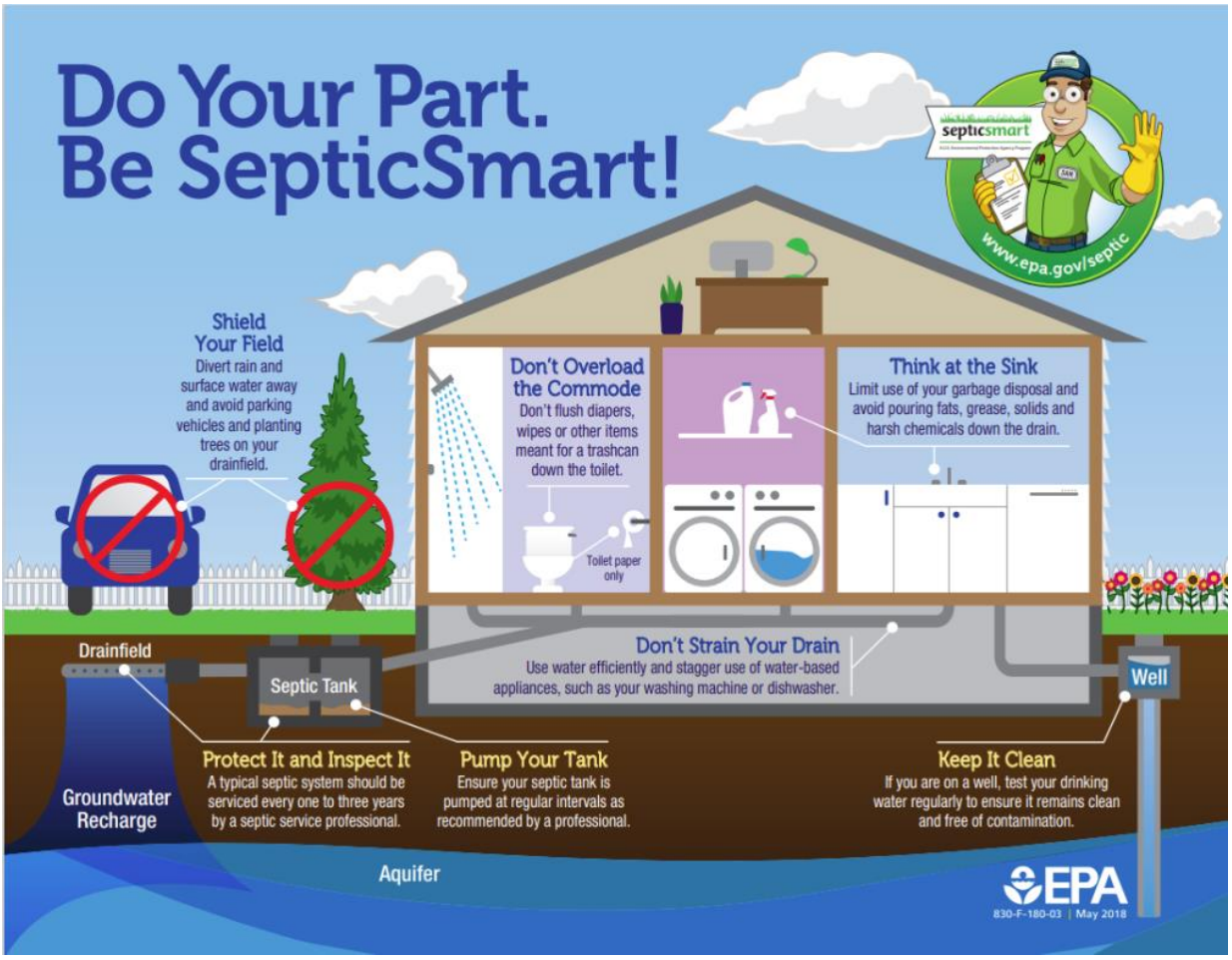
O2WA
Oregon Onsite Wastewater Association

I.N.F.O. Industry News for Oregon

Summer Issue 2021



70 SW Century Dr.
Suite 100, #353
Bend ,Oregon 97702
(541)389-6692
O2WA.org
info@O2WA.org

INSIDE THIS ISSUE

Statements and opinions expressed in these articles are solely those of the author or authors and may or may not be shared by O2WA.

PRSRT STD
US POSTAGE
PAID
BEND OR
PERMIT NO 473

Not a member?
Join US Online at https://conta.cc/3uiirU7

Members receive a discount for conference & online training…

Live online CEUs

2021 Fall Onsite Wastewater
Virtual Mini Conference
Friday, November 12th
9:30am – 3:30pm
Register online @ www.o2wa.org

BUYERS GUIDE—THANK YOU TO OUR VENDORS AT THE 2020 CONFERENCE…

Bancorp Insurance	**541-536-1726**	**bancorpinsurance.com**
Davis Sales	**503-522-8239**	**ashlandpump.com**
Ferguson Waterworks	**541-225-2095**	**ferguson.com**
FMI Truck Sales & Service	**503-286-2800**	**fmitrucks.com**
GT Gordon & Associates	**360-566-1470**	**gordonandassoc.com**
HD Fowler Co	**503-969-1635**	**hdfowler.com**
Infiltrator Water Technologies	**860-577-7030**	**infiltratorwater.com**
Lowridge Onsite Technologies, LLC	**425 750-4922**	**lowridgetech.com**
Matzke Sales, Inc.	**253-872-2029**	**matzkesales.com**
Affordable Septic Systems	**541-928-5074**	**affordableseptics.com**
Orenco Systems, Inc	**541-459-4449**	**orenco.com**
Pap'e Machinery	**541-463-2900**	**papemachinery.com**
RepCoSalesAgency	**503-720-7186**	**RepCoSalesAgency.com**
Roth North America	**315-579-3326**	**RothMultiTank.com**
Spartan Tool	**800-435-3866**	**SpartanTool.com**
Trade Tool and Supply Corporation	**503-221-8665**	**tradetoolsupply.com**
Willamette Graystone	**541-727-7666**	**willamettegraystone.com**

For all approved Onsite Wastewater Treatment Products— https://www.oregon.gov/deq/Residential/Pages/Onsite-Products.aspx

PRESIDENTS MESSAGE by Dennis Boeger, PE, CWRE

Greetings from the President's desk. I would say this has been a very quick 3+ months since my last message. Is anyone else ready for some cooler weather? I know dry weather allows for more septic installations (at least west of the Cascades) but I'm ready for a bit of rain.

Here we are about 1 year since the fires broke out last late Summer, yet there is still plenty of efforts trying to re-build homes and their septic systems. I keep in touch with regulators in some of the counties hit by those fires and it's a similar story – a considerable amount of their time is spent evaluating fire sites and determining how to install a new septic system to meet code (which they often don't completely).

I also find it interesting that Covid has wreaked havoc on many aspects of our society, but the onsite world seems to be chugging along at a hectic pace. It seems everyone that's involved with septic systems is as busy as they've ever been. This "business" actually crosses into many aspects of construction. And then there's the lack of folks to do the work at times as well as a challenge getting the materials on time. But what's the value is things being too easy?

OK, I'll chill out a bit and share a few things I see happening with Board activities. One item of note is agreement with the DEQ on upgrading the installers certification program. This is a big deal that's been in the works for a long time. Only from the efforts of many folks (including the DEQ) did this happen. Now that the paperwork is done, it's time to do the real work to revise the class content from 8 to 12 hours and get that established. This will include efforts to review online information before the class, so students are better prepared and ready to hear the good stuff on installations! Another achievement is O2WA signing a memorandum of understanding (MOU) with NOWRA (National Onsite Wastewater Recycling Association). We now have access to a number of online courses as well as other benefits, which are now available to all O2WA members.

We also have our Fall Conference coming up on Friday, November 12th. This one will be virtual like last year due to the current environment. I'm seeing some great classes being considered and I feel this will be well worth "attending". The funding program for residential needs was also approved by the legislature recently, which will continue to help folks repair their septic systems. And allow me to put a plug in early for our next annual conference to be held in Seaside, OR next March. This one is currently set to be in person! The hope is by then we'll have Covid more controlled and can actually see each other. I believe there will still be an option for remote access.

I have to say that I'm continually impressed with the many onsite vendors involved in our industry from all disciplines. You folks are working hard under some challenging conditions to meet the needs of the public. I wish you all a safe and productive Fall season, and don't forget to take a few minutes for yourselves as we get ready for the holidays. Christmas is right around the corner . . .

Dennis J. Boeger, PE, CWRE , President, O2WA

SEPTICSMART WEEK - Septic Systems Outreach Toolkit

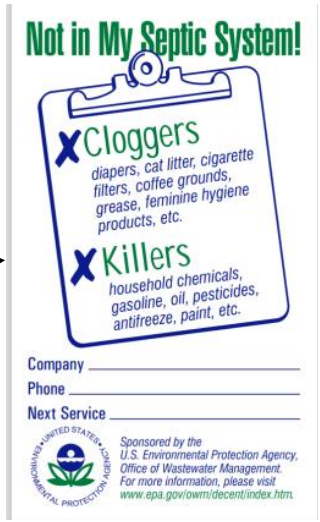
Across the country, local environmental groups, health departments, and governments face challenges posed by improperly maintained and failing septic systems. EPA assists these local agencies in promoting homeowner education and awareness.

Oregon Onsite Wastewater Association (O2WA) members are dedicated to providing high quality design, installation, maintenance, repair and regulation of the thousands of systems across the state. Thank you!

The Outreach Toolkit contains materials targeted to homeowners that can be downloaded from this web site and printed. These materials show how many organizations have launched successful homeowner education programs.

Not in My Septic System! Magnet
A magnet that septic tank pumpers can distribute to customers. It lists items that homeowners should not dump down the drain and provides a reminder of the next service date.
Order magnets from the National Service Center for Environmental Publications.

Go to https://www.epa.gov/septic/septicsmart-week for more information and how to order materials to give out to your customers…



Soils on the Horizon by Brian T. Rabe

I have been working in the onsite program for over 35 years and have participated in various capacities on several rule-making efforts. In the mid-1990's the rule revision committee was directly charged by the Director of the DEQ at that time to look at everything. Rules are made by people and no one person (or group of people) can know everything, now or into the future. We were asked to question current code language and determine if it was arbitrary or outdated. For example, the separation between trenches in a drainfield. The standard at the time, and remains today, 10 feet on center. Why is that? Some states use 8 feet on center. Some use a formula that accounts for the trench width to establish the width of undisturbed soil between trenches. There is no hard and firm "science" behind this standard. Honestly, the installer on that particular committee (Bruce Johnson) surmised that it was probably based primarily on having enough space between trenches to stage the excavated material so that trenches could remain open for inspection.

We couldn't anticipate at that time was the alternatives to the standard rock-and-pipe trench that would arrive a few years later. Manufacturers anticipate selling their products throughout the national and international marketplace. However, variations in code requirements makes this especially challenging. This extends beyond alternative drainfield products to all manner of equipment and supplies. For example, Oregon code language requires distribution boxes have 2 inches of drop from the inlet to the outlets, whereas drop boxes have 6 inches of drop from the inlet and overflow to the outlet for the trench or trenches being served. Prior to the mid-1990's, the rules included diagrams to help people visualize what the code language was saying.

Specifically, the configuration of a drop box was to enable the overflow pipe to be positioned such that the trench being served by that drop box was fully utilized before sending water to the next trench. We call that "serial distribution" which has a different meaning elsewhere. A recent article in Installer by Jim Anderson and Dave Gustafson took issue with what they call "serial distribution" in Minnesota while favoring "sequential distribution." They made excellent points and, as it turns out, what they call sequential distribution is what we call serial distribution. What they call serial distribution is what we used to allow an alternative where trenches were configured in a serpentine arrangement using "up and overs" such that all the effluent flowed <u>through</u> the first trench on its way to the second trench. The problem with that approach being the disproportionate accumulation of suspended solids in the first trench that will ultimately result in a lower long term acceptance rate and an increased risk of premature failure.

All of this rambling background is to say that things change and we continue to learn from our experience. We need to be open-minded enough to make sure we first meet the intent of the rules even if we can't necessarily meet the letter of the rules. One recent example has to do with the relationship between drop boxes and the trenches being served. The most important relationship is between the invert of the inlet and overflow pipes and the bottom of the trench or trenches served by the outlet(s). Whether rock-and-pipe, EZ flow, or chambers, our standard media depth is 12 inches. Therefore, the drop box needs to be set such that the invert of the inlet/overflow must be 12 inches above the excavated surface of the trench in order for the flow dynamics to function as intended. This will put the outlet feeding the trench 6 inches above the excavated bottom of the trench. The potential issue arises with the header pipe between the drop box and the trench being served. The rules require that the header pipe be level. This is achievable with rock-and-pipe (installer workmanship) or chambers (pre-established cut-outs on the end cap), but can be an issue with EZ flow. Despite the manufacturers best intentions, it is nearly impossible to maintain the pipe in the bundles such that the required 6 inches is consistently achieved. If you try to keep the header pipe level, the EZ flow will likely be suspended off the bottom of the trench (for at least a few feet) and will then be distorted during backfill. I contend that the most important factor in that part of the system is maintaining an excavated trench bottom that is level (the rules define that to mean plus or minus 1 inch). The reality is the effluent will flow down the pipe to the first lowest hole or holes in the perforated section and then drop down through the media. From there the effluent will follow the path of least resistance along the bottom of the trench. So it really does not matter if the header pipe is level. It can slope slightly away from the drop box. However, the drop box does need to be at the correct elevation, set on a stable base, and level in both directions to function as intended.

The same principals apply to distribution boxes, except the critical relationship is between the top of the media in the trench (expected to be the same as the top of the inlet pipe) and the outlet invert of the septic tank – the operating liquid level in the septic tank must be at least 2 inches above the top of the media in the trench(es) so that the entire trench volume is utilized before backing up in the tank.

That's all for now. Remember, Soil Rocks!

Q&A by Brian T. Rabe

Question: A plumber recently asked whether the discharge from a water softener could go into a septic system.
Answer: This is a topic that has not a very clear answer in the past. As it turns out, the question was asked following a variance hearing where a representative from the county as well as the DEQ were present. The DEQ representative indicated this had been a recent topic of discussion at a program level. The rules clearly state that "water softener brine" is prohibited from being discharged into an onsite sewage treatment system. What the rules don't say is where such brine can be discharged. Brine is most often a concentrated salt solution that is used to regenerate the exchange sites in a bed of resin-based media that removes iron, manganese, calcium, and magnesium ("hardness" minerals that stain, form scale, and/or affect the color, odor, and/or taste of potable water) and replaces those minerals with sodium (in most cases) or potassium. Sodium can affect the permeability of soils with a higher clay content. In addition, if the brine is discharged into the septic tank, it is denser than water and can displace sludge at the bottom of the septic tank and cause solids to leave the tank adversely impacting the downstream components (treatment system and/or drainfield). The as yet unofficial guidance for the disposition of the brine is to discharge it into a shallow open trench to allow it to soak into the soil. A subsurface trench is considered a Class V underground injection control well and is not considered an acceptable alternative.

Not all water treatment systems use salt. In this instance, the plumber indicated that iron was the primary constituent of concern and they were installing a system that injects air to oxidize the iron. This system still backflushes periodically but the discharge only contains potable water and iron particles that will settle out in a septic tank. The primary issues with this being discharged into the septic tank are volume (about 70 gallons) and frequency (about every 3 days). Depending on the timing, the volume could send a time-dosed system into alarm. The additional flow through the system would be about 25 gallons per day, or an increase of about 10% above the anticipated average flow for a single family dwelling. If a surface option is available, that would still be preferred. However, as the plumber noted, water treatment system are often one of the last elements installed during new construction, or are a retrofit after the home is occupied and water quality issues are experienced by the residents.

Congratulations Scholarship Recipients

O2WA awarded a total of $11,500.00 in scholarships.
Thank you to our members who have participated in the annual auction and raffle.
Scholarship Committee: Claudia Hill, Chair, Lisette Hamer-Richardson, & Kevin Armstrong

- **Isabella Waite - Oregon State University - Major Course of Study Sports Marketing**
- **Maggie Rasch - Washington State University - Major Course of Study Architecture**
- **Kennedy Buss - Chemeketa Community College - Major Course of Study Nursing**
- **Jack Stoddard - Oregon State University - Major Course of Study Environmental Engineering**

Jack wrote us a letter of thank you -
"Thank you so much. It means a lot that you chose me to get the scholarship. I look forward to my college experience as well as to do you proud. Again thank you tons! "

Scholarship program available to current O2WA Member (Individual or listed Corporate Member) in good standing as of May 31 of the preceding year planning to study or currently studying in any field of higher education.
Learn more @ o2wa.org!

Resources for Managing Your Business

National Onsite Wastewater Recycling Association (NOWRA)
3 Part Easy to Review online - Marketing your business...
How's business for you? Hopefully it's good, or at least improving, but if you aren't getting the results you want, you might wish to take a look at how you're marketing your services. Perhaps it's time to shake things up a bit.

There are a number of ways to approach how you market your business. In fact, there are so many they are really beyond the scope of a single column, a 3-part series of marketing tips for onsite industry businesses.

National Association of Wastewater Technicians (NAWT)
Pumping Code of Practice
Learn more at https://www.nowra.org/library/resources-for-industry-professionals/managing-your-business/

Ensuring Proper Septic Tank Access for Future System Maintenance
By Sara Heger, Ph.D. February 06, 2020 Installer Magazine
Compliments of Cole Publishing, Inc.

Tanks must be reasonably accessible to facilitate inspection and maintenance activities after installation is complete.

Before the tank is covered, take photos related to the tank access. Risers and lids may be used to elevate access to a point closer to finished grade. If lids will be subject to vehicular traffic, they should conform to the American Association of State Highway and Transportation Officials H-20/HS-20 standard (wheel load of 16,000 pounds on a tire contact area of 8 inches by 20 inches).

Risers that are integral with the tank are optimal to achieve and maintain a watertight connection. Concrete risers may be cast into concrete tanks with a "cold joint." The riser itself is produced separately and allowed to cure. It is then placed into the tank (or tank lid) form and the structure is poured. This cold joint may require further sealing (mastic or other appropriate sealants) to ensure watertightness. Polyethylene, polypropylene and PVC risers can also be cast directly into concrete tanks. Because of concerns regarding an effective bond between concrete and some of these materials, supplemental seals are typically used to ensure watertightness.

Note that cast-in-place risers are the best choice in high-groundwater conditions and in cold climates where frost heave might otherwise cause separation of a riser that was added after the tank is produced. Risers with a smooth external wall are the best choice in frost-prone areas as well to minimize frost heaving. Cast-in-place risers must be protected during installation. If damage occurs, it is difficult if not impossible to repair.

Instead of being cast in place, risers may be attached to tanks on site. Make sure that the tank-riser seam, as well as any seams between riser sections, is made watertight to prevent infiltration of water. When concrete risers are attached to a concrete tank after it is made, a tongue-and-groove connection in combination with mastic or other appropriate sealant is more likely to remain undisturbed and watertight compared to a mortared seam. If additional concrete riser sections are added, these should also be made with tongue-and-groove joints and sealed with mastic. Wrapping seams provides additional protection, especially in high water table areas and freezing-thawing soil conditions.

Polyethylene and polypropylene risers are typically connected to a precast tank using an adapter ring cast into the tank. Another option is to mechanically attach a flange to the tank top using butyl rubber and stainless bolts. The riser is then sealed in place using appropriate adhesives per the manufacturer's recommendations.

There are varied opinions about whether riser lids should be accessible at the surface or buried under a few inches of soil. Some homeowners object to the aesthetic appearance of exposed lids. Unless the lids are of heavy concrete or have childproof or locking fasteners, they can pose a safety or vandalism hazard. There are devices that can be used to locate lids buried under a few inches of soil. Small screw-type markers can be installed flush with the ground or fastened to the lid. These can later be located with a metal detector. However, in practicality, there is no substitute for safe access at grade. The presence of risers provides the homeowner with a constant reminder of the location of the tank and may trigger more frequent maintenance. Ideally, risers should extend to the final finished grade (or 1 to 3 inches above) or comply with local regulations. Other safety precautions such as an interior grate or netting may be required and are recommended.

Tanks must be vented to prevent accumulation of gases. Venting also minimizes accumulation of hydrogen sulfide gas that may be converted to sulfuric acid in the head space of tanks, which can cause corrosion in concrete tanks. Most residential systems are designed to vent through the tanks and out the plumbing stack, but additional vents may be included at the tank and these may include a filter to deal with odor issues.

6 Wastewater Hazards That Can Compromise a Healthy Onsite System
By Jim Anderson and Dave Gustafson Compliments of Cole Publishing, Inc.
September 2021 Issue Installer Magazine

Design and monitor systems to stop these common pollutants from endangering humans and animal health

Sometimes you take for granted that everyone working in the industry knows why our systems are so important to the environment and human health. During the last few months, we have had some questions about what is in wastewater and why it is a problem. This is where we start our basic sewage treatment workshops. We thought it would be helpful to go back to the beginning and discuss pollutants and potential problems. We will follow up these discussions over coming months looking at some specific ways to address the concerns.

Professionally designed, sited and installed conventional onsite sewage treatment systems effectively reduce or eliminate most human health and environmental hazards. This is accomplished through physical, chemical and biological processes in the septic tank, in the biomat and in the unsaturated soil zone beneath operating soil treatment trenches.

Septic tank effluent typically moves into and through soil toward groundwater and final discharge through three zones. The infiltration zone (biomat), unsaturated soil zone (at least three feet are necessary) and a perched saturated zone or slowly permeable horizon. Treatment processes are ongoing in each of these zones and contribute to reducing or eliminating pollutant loads when final discharge to groundwater and surface water occurs.

Here is a summary of pollutants of concern and why they can be a problem:

Total suspended solids (TSS)
If discharged directly to surface waters, TSS can negatively impact aquatic organisms in a couple of ways. Sediment can smother bottom dwelling organisms such as mussels and clams and fish eggs. Solids remaining suspended in water can block sunlight from penetrating, harming aquatic plants and reducing oxygen available in water for other organisms. If drinking water has suspended solids it can interfere with disinfection and treatment.

Biological Oxygen Demand (BOD)
BOD depletes dissolved oxygen in surface waters when organisms breaking down the organic waste consume oxygen from the water. This is harmful to not only aquatic plants but fish and other organisms.

Pathogens
Parasites, bacteria and viruses can cause communicable diseases through direct or indirect body contact or consumption of contaminated water or shellfish. They are a threat to humans and animals. Direct movement to surface waters (lakes, streams) can occur when sewage surfaces in the yard, provides potential for direct human or animal contact or is washed directly to a surface water during times of heavy precipitation. With a direct discharge to groundwater, pathogens can travel long distances, particularly in aquifers within creviced bedrock.

Nitrogen and phosphorus nutrients
Nitrogen in surface waters can contribute to eutrophication and dissolved oxygen in surface waters. In freshwater systems, nitrogen is usually not the limiting nutrient but can still contribute. In saltwater and coastal estuaries, nitrogen is the major nutrient of concern for large algal growth, including some toxic types that can cause great harm or even death if consumed by animals or humans. In areas where drinking water is obtained from groundwater, excessive nitrogen levels can cause methemoglobinemia (blue baby syndrome). Livestock (dairy cows) can also suffer health impacts and death from high nitrates.

Phosphorus is the limiting nutrient in freshwater systems for algal and weed growth. Similar large toxic algal blooms can result if levels are high enough, and of course there are the aesthetic problems and corresponding lakeshore property value loss where algae blooms — even non-toxic ones — occur.

Household cleaners
Toxic organic compounds are present in household chemicals and cleaning agents. These cleaners can interfere with the biological operation of our treatment systems, reducing their ability to treat wastewater. Transferred directly to groundwater, they can contaminate drinking water with potentially cancer-causing chemicals. If delivered directly to surface water they can harm aquatic organisms (fish, shellfish), and humans if they consume the fish and shellfish.

Heavy metals
Heavy metals can be introduced to the wastewater stream through household use. This is not a widespread problem, but human and animal health problems can result in areas with elevated levels of arsenic or other compounds in groundwater. Similarly, elevated levels of chloride and sulfates may create negative impacts on the ability of our systems to treat the effluent. This is also true when excessive amounts of sodium are delivered to the system. It can be harmful to soil structure and the ability of the soil to accept sewage effluent.

TAKING PRECAUTIONS

All these potential pollutants are found in a household wastewater stream. The good news is if we do things right in siting, design, installation and maintenance, soils will do a good job of removing or reducing levels so they are not a concern. Soil is not a perfect treatment system by any means. But it is very good, and we can improve conditions by educating our clients about their systems to provide the balance we desire between accepting the effluent generated from the household and providing adequate treatment. Our discussions of how to do things "right" contributes to protecting human health and the environment.

RepCo SALES AGENCY

(503)-720-7186
www.repcosalesagency.com
sales@repcosalesagency.com

Roth

SEPTIC TANKS

Champion Pump

EFFLUENT PUMPS SEWAGE PUMPS GRINDER PUMPS

JACKEL™

Trusted Since 1972

CHECK VALVES SEPTIC LIDS
SUMP BASINS SLIDE RAIL ASSEMBLIES

POLYLOK

SEPTIC FILTERS PUMP SYSTEMS
PRECAST PRODUCTS RISERS & LIDS

SPI

SEPTIC PRODUCTS INC

ALARMS FLOATS PUMP PANELS

GEOFLOW SUBSURFACE DRIP

WASTEFLOW DRIPLINE BIODISC FILTER HEADWORKS

WEBTROL

TURBINE EFFLUENT PUMPS

FUJIMAC

AIR PUMPS

STEPROS

SELF-CLEANING PUMP VAULTS