

Fall Issue 2017

24th Annual Oregon Onsite Wastewater Conference

OCEANS OF OPPORTUNITIES

March 2 & 3, 2018

Seaside Convention Center, Seaside, OR

www.o2wa.org



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

INSIDE THIS ISSUE

Presidents Message

Q&A

Soils on the Horizon

Your Idea Can Become Law

Online Learning Academy

Search Engine Optimization

Program Reviews Early
Progress

Keep Your Trench Rock Clean

Dealing With FOG in Onsite
Wastewater Systems

Conference Registration Form

O2WA Officers

President
Trent Clinkscales
Secretary
Chris Rhodaback
Treasurer
Scott Davis

O2WA Board of Directors & Volunteers

Septic Tank Pumper
Trent Clinkscales
Engineer
Dennis Boeger, P.E.
Manufacturer
Larry O'Connor
Soil Scientist
Brian Rabe, CPSS, WWS
Installer
Perry Dunlap
Sanitarian
Robert F. Sweeney, REHS
Tank Mfg.
Doug Dilley
O&M
Dustin Kenton
County Regulator
Claudia Hill, REHS
Industry at Large
Pat McVay
DEQ Exofficio
Randy Trox, REHS
Executive Director
Belinda Rasmussen, CMM
Lorry Clinkscales,
Newsletter Editor
Robert Sweeney, Leg. Chair

Orenco® Onsite Products

Built to work together. Built for the job. Built to last.



Lids, Risers & More

- Lids that don't warp or collapse
- Risers that don't deform
- Riser safety grates
- Riser/tank adapters
- Adhesives and dispensing guns
- All parts watertight
- Standard and custom sizes

Tank Adapter for Watertight Joints



Filters & Pump Vaults

- Filters that go longer between cleanings
- Pumps that last for decades
- Pump vaults for any kind of tanks
- Complete pumping systems



Controls

- Complete panel kits with floats
- Touch-safe controls
- Name-brand parts
- Resettable breakers
- Long-lasting contactors, millions of cycles
- UL, UL-C, CE listings; UL Type 4X rating

Orenco®
S Y S T E M S

814 Airway Avenue
Sutherlin, OR 97479 USA

800-348-9843 • 541-459-4449

www.orenco.com

Orenco® Onsite: *Why trust your job – or reputation – to anyone else?*



President's Message - Trent Clinkscales

Here I am again.....

Astute readers will notice that I am not Doug Dilley. Doug was offered a job outside of the industry which he took. This made him ineligible to be an O2WA board member, therefore he had to resign as president. This is where I come in. Our Executive Director extraordinaire, Belinda Rasmussen, sent me a simple text: "Call Me". I did and she filled me in on the news and subtly hinted that the O2WA needed a president ASAP and none of her other calls had gained the results she was looking for. I accepted the position.

I want to thank Doug for his service as a board member and as President. He took the job very seriously and was passionate about improving our industry through the association. He knew the O2WA needed a continuous flow of ideas and those come from people. He reached out to our members and brought in Perry Dunlap and Pat McVay as new members to the board. He also brought back Scott Davis. All three bring different experiences and ideas to the group.

This is a great start. What I hope to be able to do is inspire some of you to volunteer your ideas. This doesn't mean you have to sign up for a board seat. It can be as simple as helping out on a committee for a special project. It may be that you have a great idea for a project that you'd like to see take place. Maybe you can help sell raffle tickets at the conference. Maybe you can solicit donations for the scholarship auction. One donation is a HUGE help. An hour a month, an hour a quarter, an hour a year. It all adds up and it all helps.

We're a volunteer organization. We NEED volunteers. We thrive when we have new people and new ideas.

Doug, thanks again for all you have done for the O2WA and the industry, you will be missed!

Trent Clinkscales



Q&A by Brian Rabe, CPSS, WWS

Question: I have a steel septic tank that was installed when my house was built in 1979. I recently had it pumped and the pumper said my tank has a lot of holes rusted through it. Do I need to replace it?

Answer: I am afraid so. Steel tanks are notorious for rusting through, especially along the water line (where the air space meets the scum layer). The holes can allow sewage to seep out of the tank in into the groundwater beneath the tank as well as allow shallow seasonally high groundwater to enter the tank. Both conditions compromise the proper function of the tank and could adversely affect the downstream components. The corrosion will eventually weaken the structure, increasing the risk of collapse. A corroded tank represents a significant safety hazard as well as a potential environmental hazard.





In a previous column, I discussed the capping fill which is a prescriptive system whereby a limited amount of specifically approved soil is imported to provide the some or all of the backfill for a drainfield. There are circumstances where additional fill may provide an opportunity to improve the conditions on a site that was previously denied and create a condition that is approvable. These are often referred to as an “engineered fill” and can be up to three feet thick or more.

There are no prescriptive standards for “engineered” fills but the same principals as a capping fill apply with some additional considerations, careful planning being the most important. Unfortunately, I have witnessed some fills that were not planned very well. One example several years ago involved some property owners on the coast. Their lot was denied as a result of evidence of a temporary water table too close to the surface. An excavation contractor told them he could bring in some fill. About a year after the fill was placed, they applied for a new site evaluation. The site was denied again. When I met with them to evaluate the situation, a careful assessment revealed a few fundamental problems. First, the site was not adequately prepared prior to fill placement. Second, the imported soil was very different than the native soil (and the materials were not blended at the interface). Third, the size and shape of the fill was not conducive to an effective layout for a system.

Since shallow water tables are a common reason for filling a site, it is important to make sure that it is not a jurisdictional wetland before getting too far along in the process. The next step in determining whether a site is a good candidate for an engineered fill is to imagine (or conceptually model) how water will move through the modified site after the fill is in place. Make every effort to work with the natural conditions so that the finished product fits in as much as possible. It is important to stake out the drainfield with due consideration of the current conditions. The staked elements will guide the dimensions and depth of the fill. The goal is to end up with a site that meets the criteria for an approval. Even though appropriate fill material can be hard to come by and expensive to prepare, haul, and place, it is best to have a little extra rather than come up short when it is time to seek approval. It is important to seed the fill to establish a grass cover crop to aid in the redevelopment of soil structure and protect the surface from erosion. It is also common to monitor the shallow groundwater with piezometers after the fill is installed for documentation of conditions prior to seeking a favorable site evaluation.

Many engineered fills end up going through a Formal Variance to gain approval. However, that is not necessarily required. Engineered fills that have been carefully planned, prepared, and installed, can be (and have been) approved by the local agent. The authority for such approvals is contained in OAR 340-071-0220(1)(f), which states “The site has not been filled or the site has

not been modified in a way that would, in the opinion of the agent, adversely affect functioning of the system.” The intent of the engineered fill is to enhance functioning of the system, and so long as that is adequately demonstrated to comply with the applicable criteria, approval should be granted. Most sites with engineered fills will end up with an alternative treatment technology system, so the effluent quality going into the drainfield will at least meet treatment standard 1 and many will require treatment standard 2.

As eluded to previously, engineered fills can be quite expensive so not every lot will be a good candidate from a financial perspective. Many factors need to be considered when deciding if an engineered fill is a good option for a particular site. If the difference between the current value as a lot that is not buildable and its likely value as a buildable lot is substantially greater than all the costs associated with designing, installing, monitoring, attaining an approval, then it is a good candidate for weighing the risks versus the potential rewards.

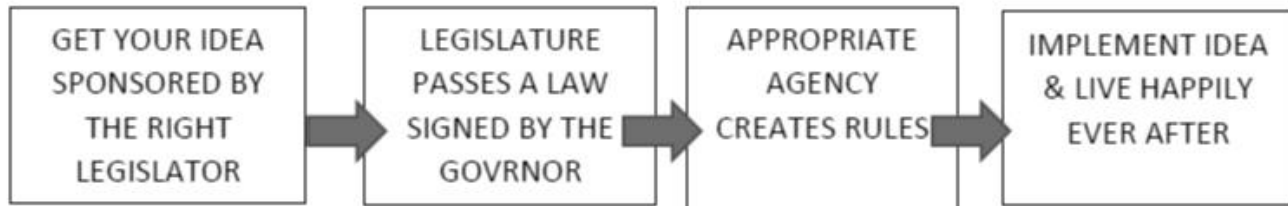
That is it for now. Remember, Soil Rocks!



Your Idea Can Become Law - Bob Sweeney, REHS

We swim in an ocean of laws and regulations. Without these, you wouldn't have a business or job in the Onsite Industry. Everyone says they want to protect the environment, but we know there are those who will dump waste until caught and made to feel the pain. We need effective laws and regulations.

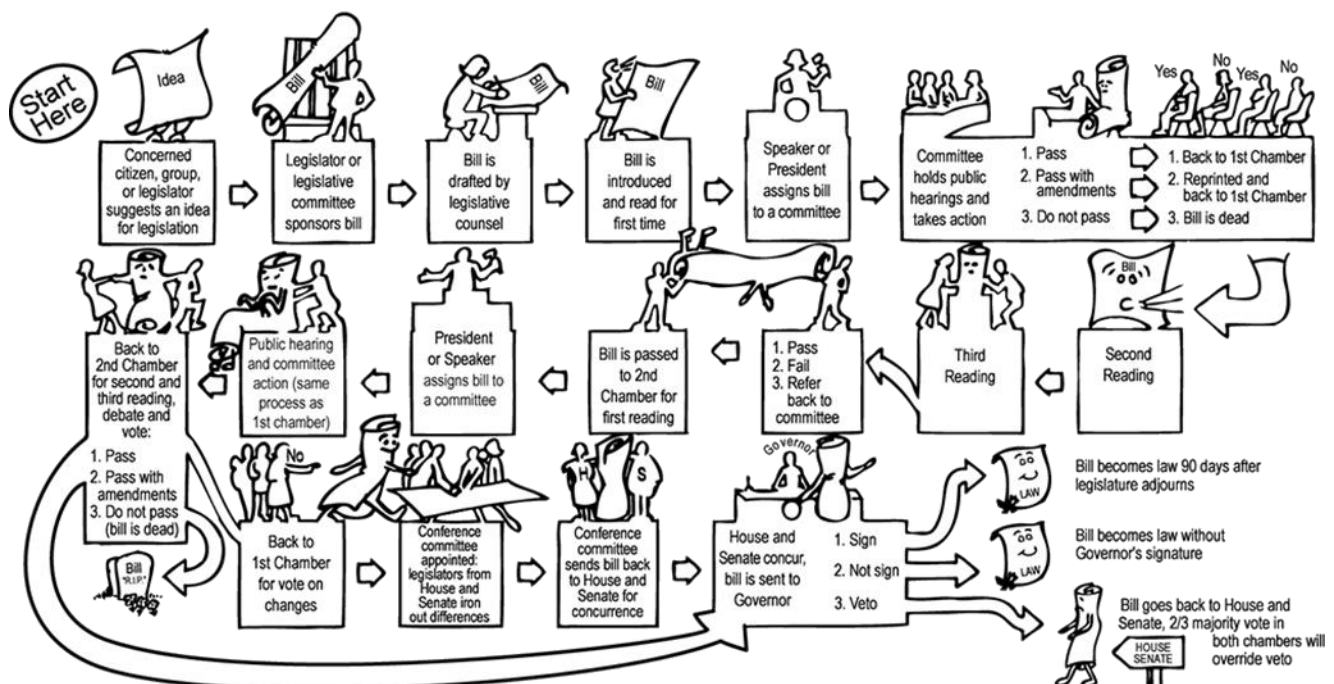
Where do the Rules Come From that shape our lives, require clients to call our number and impel us to act in certain specified ways? Its deliberately complicated. Laws and rules come from people like you who don't like the status quo. People who show up and voice their opinions. You can't change the world by yelling at the TV. (No, the box can't hear you (well – not yet, in most cases).



One of the greatest strengths of our legislative process is that most ideas don't become law. Imagine if every hair-brained idea changed the laws and regulations! Each session, the Oregon Legislature is besieged by thousands of ideas. Last session, the legislature created a 158-page, dual column index of titles of measures considered. Fortunately, only a few of these ideas become bills and fewer pass both chambers. A very small number make it past the Governor.

When challenged to untie the Gordian Knot, Alexander the Great simply chopped it in half with his sword.

Like the Fabled Gordian Knot, the path of a Law is paved with many de-tours. It can seem like a tangled mess, from the time it is just an idea, to the time it arrives at the Governor's desk for approval. For an idea to become law, it must be passed by both houses in the identical form. This is achieved through the step-by-step process outlined below.



The Gordian Knot of Legislation (Simplified).

Politicians are folks like you who got tired of sitting at home yelling at the TV and hoping for change. They got involved. Often, their start was as a committee member and grew to include running for office. Once elected, they went to the legislature seeking to drain the swamp or at least to make a difference.

We ask: "What happened to them?" They got swamped by an avalanche of bills, resolutions, and other measures. Never-the-less, these legislators want to have bills to sponsor. Most feel that the more bills they sponsor – the more they are doing their job. To get re-elected, they need to respond to their constituents. Legislators actually want your ideas, so they can create bills to sponsor. Innovative ideas are their tickets to success. They will help you get your idea enacted. Then what?

The new law can't be implemented, because the language is too broad. This too is by design. You surely wouldn't want your legislator to specify how big the drain rock or backhoe bucket should be! They can't. So – these laws then need to go to the appropriate agencies to develop Oregon Administrative Rules. Our main agency is the Department of Environmental Quality (DEQ), which works under the review of the Environmental Quality Commission (EQC). The DEQ & EQC solicit comments and hold meetings for public processes to obtain advice. Rules seem to undergo revisions about every 5 years. Last major change was 2014, so the time to start thinking about what we want is now.

What's your big idea, gripe, suggestion or comment? Do you want a change in the Law or Rule? Perhaps you think changing the world is hard. Yes – the legislative & regulatory rule processes are complex and daunting. Unless you're Alexander the Great, you'll face an uncertain and tangled web. You need help. Working in concert with like-minded folks makes all the difference.

O2WA Board members worked with the folks at Craft3 and developed a bill to provide low interest loans to repair septic systems. Senators and Representatives overwhelmingly supported the bill. There were no negative votes!

Success like this comes from Developing Relationships with Legislators, their staff and folks who share your goals. That success can be the tip of the iceberg of our effectiveness. We understand the need to do this constantly, especially between sessions. When the Legislature is in session, they are bombarded with over 3,000 bills every regular session. We have learned that if you wait until the session, you're already too late to make things happen. We are resolved to get our members ideas in front of these allies early and often. This can take time, but one key is Not Taking "NO" for an answer. Legislators want to see their constituents (people who can vote for me!).

O2WA wants your ideas and can help you develop ways to improve & streamline processes, so you can better serve your clients, make more money and make a difference in this world. We will be asking for your ideas at the annual conference and anytime you want to offer them.

If you have an idea for improvement in the Laws, Rules or Policies affecting O2WA members, send it to me at: bob@envmgtsys.com



Online Learning Academy New! A Convenient New Option to Get the Education You Need

Whether you are new to the onsite/decentralized industry or continuing your professional development, you have come to the right place! Taught by experts in the industry, NOWRA's Online Learning Academy offerings cover the fundamentals of the profession as well as advanced training in multiple topics.

NOTE... These classes have not been approved for CEUs. O2WA is working with NOWRA to have them approved.

In the meantime for more information go to <http://www.nowra.org/content.asp?admin=Y&pl=28&sl=28&contentid=362>

Search Engine Optimization: Better Branding, More Leads and Long-Term Returns

By Joseph Hummel August 7, 2017

Keeping up to date with the latest SEO trends can be overwhelming, but the effort is worth it to grow your business

Earlier this year, I had the privilege of hosting a seminar called “Know Your Role in SEO” (search engine optimization) at the WWETT Show in Indianapolis. During the seminar, we went over some tactics that PROs can use to boost their business presence online. From social media marketing to digital content creation and competitive analysis, there was a lot of valuable information up for grabs.

Looking back on the seminar, I’m glad we got to go over the “how” for SEO, but now that we’re nearing the end of the summer, I want to go over the “why.” Long story short, more people than ever are spending hours per day online, and the internet is showing no signs of slowing down. While digital technology is moving forward, I’ve noticed a scary trend: some sanitation companies aren’t necessarily keeping up. For the record, I’m guilty of this, too, so don’t feel bad.

One of the biggest problems in today’s world of SEO is that it’s a moving target, making it more overwhelming to tackle. Every few months, major search engines are re-programmed to do a better job at reading your website’s content and find out how you should rank online. As a sanitation company, you obviously try to focus your website and social media to reflect your business’ purpose. Unfortunately, unless you constantly read up on digital marketing or internet trend forums, you can quickly lose track of how to optimize your web presence. Sometimes, it feels like a waste of time to sit and read “patch notes” on upcoming changes to Google’s search algorithms. However, you kind of have to — and here’s why:

Today, search engine optimization is as much concerned with the quality of the content itself as with the technicalities behind the scenes.

Not only do you have to keep up with trends, you have to make the content you’re producing relevant. The days of keyword loading and stock photography are over. Think of it this way: You could own all of the best sanitation equipment the market has to offer, but if you don’t use it, it’s worthless. Similarly, you can pay thousands of dollars for a fancy website, but if you don’t add good content and relevant keywords, it’s a waste of money. In “real life” you try to solve your customers’ problems; your website should do the same thing for your web visitors.

To step up to the challenge, I’ve found that many sanitation companies are hiring third-party web developers or maintenance teams to help them with their websites — blogging, photography, coding, etc. There’s absolutely nothing wrong with this, as long as you stay on top of the work they’re doing in regards to SEO.

The “technicalities behind the scenes” refer to how your website, embedded links and social media all work together. The World Wide Web is exactly that: a connected web of information. Now, imagine that Google is the spider, crawling around to check on everything. If you’re not optimized, you’re a loose strand of web that doesn’t look relevant, even if you run a successful business. On the other hand, if you have an awesome web team, but they’re

adding content your customers don’t care about, your website still won’t rank well. Be sure that no matter what you do, your customers’ problems are being solved. That will always lead to longer website visits and more potential leads.

Let’s say you’re already incredibly successful or you operate your business in an area where people don’t use websites or social media. You can still add another tier of visibility advertising called organic search by implementing digital SEO practices. Are you willing to ignore hundreds (sometimes thousands) of website visits because you didn’t create fresh content for your website? Large or small, I’m sure you want your business to grow, or at the very least, get noticed by potential customers.

Have you ever found yourself online, wondering, “How did I wind up on this website?” When you type words into a Google search (don’t feel bad Yahoo, we know you’re important too ... sort of), their programs pull up any website even remotely related to your search. You may not have been searching for a specific website, but you landed there anyway. Why? Because of organic search — you organically found a website or company without prior knowledge or specifically searching for that site. More people are likely to find your company online if you have those relevant keywords, phrases, photos and other content. It’s sort of like fishing with a net instead of a line and hook. Blogging is a pretty simple way to begin this process.

Don’t expect your website to explode with traffic right away. It’s normal for your efforts to take six to nine months before you notice any major differences. It can be tough to take or find high-quality photos to add to your website. It’s time-consuming to create grammatically correct, keyword-filled webpages that are easy for web users to find. However, if there’s one thing I know about the sanitation industry, it’s that no one gives up because something is hard. In fact, most of the PROs I know try even harder in the face of adversity. Apply that same type of grind-it-out attitude to SEO and you’ll be pulling in website visitor numbers that you never imagined. Even a small percentage of website visits to converted customers is better than none.

Subscribe: If you don’t want to bring your iPad into the bathroom, we can send you a magazine subscription for free!

If you need help getting started, want to know how/what to communicate with your web developers, or want to take on the challenge yourself, check out some of these resources.

moz.com/beginners-guide-to-seo
searchenginewatch.com/2016/01/21/seo-basics-22-essentials-you-need-for-optimizing-your-site
tools.seobook.com
white.net/10-free-google-tools-everyone-use
www.entrepreneur.com/article/288079

About the author: Joseph Hummel is the marketing manager for PolyPortables.

PROGRAM REVIEWS EARLY PROGRESS

Randy Trox - DEQ

Program reviews have been long sought from the onsite industry wanting the same rule book to be applied equally across jurisdictional lines. The first year of DEQ reviewing local program are wrapping up. Our goal for this year was reviewing nine DEQ or county offices and provide them with feedback. We are two-thirds of the way to meeting our goal and taking it down to the wire. In keeping with the 'thirds' theme, the goal is to do program reviews on a three-year cycle, or one-third per year. It's been a positive learning experience for me and for the local offices reviewed, too.

Here are two examples that I observed that can be fixed by all involved. The first example is the agent accepting poor quality site plans in an application. This may be beneficial for a customer initially but results in either extra work for an inspector (extra trips to the site or the inspector drawing a better site plan), or they opt to use what was submitted and the inadequate site plan submittal becomes a poor construction plan and finally a poor as-built. The option they select is based on how busy they are. These records become important over time as properties change hands and future owners need to know where the system is.

The other example are inspectors are doing final inspections without as-built drawings submitted by the installer. The inspector then withhold final signoff until they get the paperwork. Files pile up on their desk while waiting for the as-builts. Results are sloppy as-builts, no as-builts or sometimes the permit expires and no Certificate of Satisfactory Completion has been issued, which is a mess in the future. The rules require that an inspection occur AFTER the installer provides a complete as-built drawing and materials list in a document titled Final Inspection Request and Notice.

The first round of program reviews are a first step that will improve the program over time. Local agents have welcomed the reviews and has been illuminating where DEQ can do better, not only the local office. I look forward to keeping it up in 2018 to get the second third completed...or said another way, be 'two turds' done.

WHAT YOU NEED WHERE AND WHEN YOU NEED IT



**competitive prices.
unmatched value.
quality products.
added service.**

We are positioned to take
your project to the next level
with the industry's best
products and know-how.

Discover how we can work
together to get it done for your
business at: www.hdfowler.com

HD Fowler Company is the oldest and largest independent, family-owned distributor of
waterworks, irrigation, pumps and wastewater treatment equipment
in the Pacific Northwest, and one of the largest in America.



OREGON	
Eugene	541-607-0081
Medford	541-770-4432
Redmond	541-923-2090
Wilsonville	503-783-3490

WASHINGTON	
Bellevue	425-746-8400
Bellingham	360-734-8400
Bremerton	360-377-4507
Marysville	360-651-2400
Olympia	360-459-7300
Pacific	253-863-8600
Pasco	509-545-0255
Spokane	509-568-8400
Vancouver	360-574-9377
Wenatchee	509-886-8804
Yakima	509-248-8400

IDAHO	
Boise	208-846-8366
Hayden	208-772-9060
Idaho Falls	208-522-3466
Twin Falls	208-734-8838

MONTANA	
Bozeman	406-388-1169

over 100 years strong

**H.D. FOWLER
COMPANY**

much more than pipe, valves, and fittings

Keep Your Trench Rock Clean

By Jim Anderson and David Gustafson Basic Training December 2017

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

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

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

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

IMPEDING FLOW

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

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

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

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

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

MATERIALS MATTER

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

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

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

FOG in excessive amounts interferes with aerobic biological processes and leads to decreased treatment efficiency

FOG (fats, oils and grease) is a constituent of sewage, typically originating from food stuffs (animal fats or vegetable oils) or consisting of compounds of alcohol or glycerol with fatty acids (soaps and lotions), usually measured in mg/L.

Sources of FOG

Fat found in onsite wastewater treatment systems is animal fat, oil from vegetable and cooking oils, and grease from petroleum-based soaps. FOG is generally treated in onsite wastewater treatment systems by separating them from the wastewater stream. At high temperatures, FOG is in a liquid state, but as the temperature cools, the fats component will solidify (see table below). FOG can be trapped in pretreatment components, such as septic tanks and grease traps, where it typically floats to the top of tanks. FOG is less dense and lighter than water.

It is important to try to contain FOG early in the system because it can accumulate inside pipes and lead to clogging of downstream components. FOG also contributes to BOD5 and TSS concentrations. FOG in excessive amounts interferes with aerobic biological processes and leads to decreased treatment efficiency. The expected levels of FOG concentration must be considered during wastewater treatment design.

FOG in domestic wastewater will generally originate in the kitchen or bathroom. Kitchen FOG usually comes from disposing of animal- or vegetable-based food scraps and liquids down the sink. Households using garbage disposals will have 30 to 40 percent more FOG than households not using garbage disposals. Bath oils, suntan lotions, hair conditioners and moisturizing creams are bathroom sources of FOG that enter the wastewater stream. An increased use in cooking oils, lotions and hair conditioners will directly increase the FOG concentration in the wastewater. Low FOG, although not considered a problem, could be the result of not using the kitchen or of higher than normal flows entering the system. Low FOG can also be attributed to the use of bar soap instead of liquid soaps.

Impact of FOG on systems

Fat - Animal fat is relatively easy to hold in a tank because it's quite sensitive to temperature. It becomes a solid at 80 degrees F, and wastewater temperature is usually cooler than that. Animal fat will break down in the soil, but it takes four times more energy to break down than the organic matter typically measured by BOD5. Fat is added to the system from cooking, cleanup and dishwashing, so commercial systems will typically have higher levels of fat than residential systems. If a system is supplied with a lot of animal fat, it will typically stay in the septic tank. If it is contained in the septic tank, it may not be observed in FOG measurements in downstream components.

Oils - Vegetable oil is not as sensitive to temperature as fat and can pass through the system. Oil can also be broken down through a biological process, but it takes 12 times more energy to break down oil than the organic matter typically measured by BOD5. There are many different types of oils used, but vegetable oil is the most common. Vegetable oil is often used in liquid form, but it can also be solid shortening. The liquid form is harder to hold in a tank.

The table below lists several different types of fats and oils that are commonly used and lists their physical properties. The ability of the oil to separate is influenced not only by temperature, but also by how the oil was generated and used. Free oil will rise to the wastewater surface and be easily separated when the mixture is allowed to become quiescent. Emulsified oil has been broken up into very small droplets and occurs either by mechanical or chemical action. An example of mechanical emulsification is when extremely hot water from a dishwasher is mixed with the oil. Given time and a decrease in temperature, this oil can be separated. Chemical emulsification occurs when detergents or cleaners produce a mix of oil and water. Degreasing compounds can generate dissolved oils, in which discrete oil particles are no longer present. Chemically emulsified oil will take a longer time to separate, increasing the risk of carrying it to downstream components unless long quiescent periods are available to allow separation.

Grease - Grease is petroleum-based and can be toxic to a system. Because grease is petroleum-based, it cannot be broken down, but it can be separated. Grease comes from lotions, hair products and soaps. Typically, there will be a higher percentage of grease in the FOG from residential systems when compared to most commercial systems. Grease can build up over time, coating components and inhibiting treatment of other constituents in the wastewater.

Dealing with FOG

- 1. Evaluate the facility to determine the sources of FOG.
- 2. Sample the effluent, whenever possible, within 18 hours of known peak usage from a pump tank (ideal) or septic tank effluent that is not in need of maintenance.
- 3. Work with the owner to reduce the levels if possible.
- 4. Install an external grease interceptor if possible with sufficient retention time (one to four days) in addition to septic tank capacity. This will need frequent maintenance to work properly.
- 5. Design a system that can handle the measured or anticipated levels.

About the author

Sara Heger, Ph.D., is an engineer, researcher and instructor in the Onsite Sewage Treatment Program in the Water Resources Center at the University of Minnesota. She presents at many local and national training events regarding the design, installation and management of septic systems and related research. Heger is education chair of the Minnesota Onsite Wastewater Association and the National Onsite Wastewater Recycling Association, and she serves on the NSF International Committee on Wastewater Treatment Systems. Ask Heger questions about septic system maintenance and operation by sending an email to kim.peterson@colepublishing.com.

50 Substance	Melting Point (°F)	Density (g/mL) @ 59-68 (°F)
Corn Oil	12	0.923
Olive Oil	32	0.918
Vegetable Oil	n/a	0.910
Canola Oil	14	0.92
Soy-bean Oil	3.2	0.92
Sunflower Oil	2	0.919
Cottonseed Oil	55	0.926
Shortening	115	n/a
Lard (Fat)	86	0.919

SAFE & PROVEN

SALCOR UV DISINFECTION

Since 1978

WE'VE MOVED, SEE US AT

www.salcor.com BOOTH 6533



**SALCOR
3G UV UNIT**

9,000 GPD
GRAVITY FLOW

**MODULAR BLOCK
DESIGN**



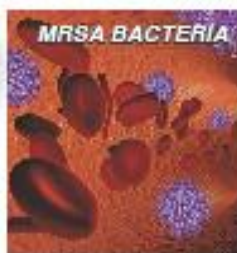
12 UV ARRAY

3G'S IN PARALLEL/SERIES
ARRAYS TO 100,000+ GPD

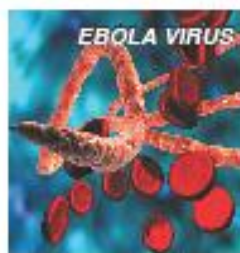


**DUKE'S OCEANFRONT RESTAURANT,
Malibu, CA**
Four 3G UV Units Parallel/Series Array
Disinfects Effluent Discharging into
Pacific Ocean Beach Sand.

**Protects Health/Environment
& Inactivates Deadly Viruses
and Bacteria "Super Bugs"**



MRSA BACTERIA



EBOLA VIRUS

**Survives Catastrophic Disasters
& Most Power Surges**



Hurricanes, Floods & Lightning

"3G" UV ONSITE UNIT PROVEN WORLD LEADER FOR 20+ YEARS SUCCESSFULLY TREATS:

Single & Cluster Homes, Small Sewage Plants, Schools, Hospitals/Nursing Homes, Churches,
Restaurants, Mobile Home Parks, Campgrounds, Nurseries/Cut Flowers, Houseboats, Etc.



Salcor UV's work everywhere!

SEWAGE PLANT, AK
Little Diomed Island
Salcor Unit with
Lifewater Engineering
Discharges into Bering Strait.



MUD RIVER PROJECT, WV
100+ UV Units w/ANUA
Disinfects Effluent
Discharges Directly Into
River Tributary.



UL TESTED
30-Day Underwater Proven
"FLOODPROOF" (NEMA 6P)

NURSING HOME, OH
2 Units in an Activated
Sludge Plant



Replaced Chlorine Chamber

- Residential/Commercial Uses to 100,000+ GPD
- Modular System - Less Costly Reliable Performance
- Expanded Arrays Reduce Spare Parts; Increase Flow
- Originator of "Revolutionary" Foul-Resistant Teflon® Lamp Barrier
- Most 3rd Party Tested: cULus Listed; NSF/WA State Fecal Coliform Tests, 6-Mo Each with 21 ATU's; Universities - U of Washington, UC Davis, Ohio State U, & U of Rhode Island
- Low Cost <30 Watts & Easy Install (Ground or Pump Tank) & O&M
- Chemical-Free & Clean Water Recovery & Reuse
- Reliable LED Visual Monitoring & Alarm Contacts
- 2-Year Warranty, Unit & "Long-Life" Lamp



**Made In
the USA**

SALCOR INC.

jscraver@aol.com

760.731.0745 F: 760.731.2405

Happy 2018!
O2WA wishes our
members a new year filled with prosperity!



24th Annual Oregon Onsite Wastewater Conference

OCEANS OF OPPORTUNITIES

March 2 & 3, 2018

Seaside Convention Center, Seaside, OR

www.o2wa.org

Join us for the 24th Annual Oregon Onsite Wastewater Conference.

ABOUT THE CONFERENCE: 12 Hours of Continuing Education are available at the two day conference. This conference is for industry professionals including public health officials, O&M service providers, engineers, consultants, installation contractors, septic pumpers, and others interested in onsite wastewater management. You will learn about the latest in onsite wastewater industry issues and approaches to onsite wastewater management.

DATE: Welcome Reception and early check-in March 1st. Classes March 2nd & 3rd

LOCATION: Seaside Convention Center, 415 1st Ave, Seaside, OR 97138

LODGING: Lodging based on availability at the following locations:
Inn at Seaside OR River Inn at Seaside Call 1-800-699-5070
Rivertide Suites Call 1-877-8741-8433 or
Contact the Seaside Visitors Bureau

CLASSES: Enclosed is a draft class schedule.

REGISTRATION: Registration includes Sessions, session materials, Friday and Saturday Continental Breakfast, Friday and Saturday lunch. Only Full Conference registration includes all meals + Reception & Dinner on Friday. Space is limited - early registration is encouraged.

You may register online at <http://o2wa.org/main/conference-2/> or mail in the enclosed registration form. Please check off the classes that you are interested in taking.





24th Annual Oregon Onsite Wastewater Conference

OCEANS OF OPPORTUNITIES

March 2 & 3, 2018

Seaside Convention Center, Seaside, OR

www.o2wa.org

REGISTER ONLINE OR BY MAIL

For More Information go to www.o2wa.org

Registration includes classes, session materials, Friday and Saturday Continental Breakfast, Friday and Saturday lunch. Only Full Conference registration includes all meals + Reception & Dinner on Friday. Space is limited - early registration is encouraged.

Classes March 2 - Friday			
8:30 8:45	Welcome & Instructions		
8:45 9:45	Robert Barnes, King's Pumping - Success - How it is Defined		
0.1	What it is, how does one define it for their business, what things factor into the concept of being successful. For a business or a business owner to be successful means much more than the numbers on the Profit and Loss sheet. Yes it involves the dollars and cents but it also involves the motivations, emotions and interactions one has within them selves and the people they are surrounded with such as employees and their families.		
10:15 11:15	George Heufelder MS, RS, Director, MASSTC - Update on Study of Pharmaceuticals		
0.1			
11:15 12:15	Carl W. Thompson, P.E., Infiltrator - Onsite Wastewater Treatment Systems - Energy Usage, Cost, Groundwater Recharge, and Efforts by the National Onsite Wastewater Recycling Association (NOWRA) to Advance Wastewater Infrastructure		
0.1	Onsite wastewater treatment systems serve approximately 25% of the population of the United States and approximately one-third of all houses built in the United State last year. This presentation will review recent research on the cost and embodied energy of onsite wastewater treatment systems compared to centralized systems. The presentation will also include an analysis of the potential positive impacts of increasing the use of onsite wastewater treatment to limit groundwater depletion. The presentation will also cover the efforts of the National Onsite Wastewater Recycling Association to advance wastewater infrastructure.		
	Track 1	Track 2	Track 3
2:00 3:00	CCB / OSHA	Robb Barnes, King's Pumping	Mike McNickle, Clatsop County
0.1	CCB Residential License What you can and can not do without a CCB License. 30 mins with OSHA Confined space	ESER Round Table	City of Gearhart's 901 Ordinance dealing with short-term rentals and septic systems.
3:20 4:20	Brian T. Rabe, CPSS, WWS, Cascade Earth Sciences	Dennis Boeger, PE, Boeger and Associates	Jeremy Simmons, DOH
0.1	North Ridge Estates - The Many Challenges of Replacing Onsite Systems at a Superfund Site	Design with O&M in mind	Overview of the Washington state funded project to gather samples in 2 counties in Washington, one with strong oversight of their systems and one with less.
4:30 5:30	Scott Hammersmith, Orenco	Oregon Small Business Development Center Connections with Business & Industry	Lawrence (Larry) Brown REHS, DEQ Eastern Region - Water Quality Land Application
0.1	System Start Up - Common punch list for start up of a system	General overview of the services available to small businesses.	What Really Goes On Behind Site Evaluations - an Eastern Region Perspective - is a talk that discusses the Environmental Health Specialist; what they look for when conducting site evaluations and discusses the reasons why we are needing to protect public health.

Classes March 3 - Saturday			
	Track 1	Track 2	Track 3
8:30 9:30	Paula Hartland, ODOT	Doug Dato, Ridgid Tools	John Audley, Lobbyist & Robert F. Sweeney, MS, REHS, EMS
0.1	Motor Carrier Record Keeping - Buying the truck and hiring the driver is only the first step of many required to operate a CMV on highway. Here we will talk through all of the record keeping requirements for driver's files, drug testing, CDL's and vehicle maintenance.	Locating an existing system, tools, procedures, etc. How far to go without harming the system.	Successful legislative effort of the DEQ Loan Program. Legislation process. How Ideas Become Laws. Discussion of ORSs that pertain to OSSTS & Ideas for Change.
9:40 10:40	Paula Hartland, ODOT	Dan Buss	Kimberly Aldrich, Yamhill County
0.1	Motor Carrier and Driver Time Record Requirements - If you drive a commercial motor vehicle you may be subject to the Electronic Logging Device rule that went into effect 12/17/17. Non-compliance could result in out of service orders and citations. In this session we will cover all of the time keeping requirements and all exceptions from this ruling.	Math for Installer and Maintenance	Changes with Land Application Permits for Food Processing Wastewater or similar.
11:00 12:00	Paula Hartland, ODOT	George Heufelder MS, RS, Director, MASSTC	Dan Bush, REHS, Septic Technology Inc.
0.1	ODOT Q&A - Whether you have more questions regarding record keeping, Electronic Logging Devices, maintenance, load securement, etc. Whatever it may be, if it is ODOT related bring your questions.	Passive Nitrogen Reduction	Class for Designers and Consultants The purpose is to share with those which design, engineer and consult on the development of onsite wastewater systems, experiences with design, operation and construction elements which affect how a system functions and/or performs.
1:00 2:00	Perry Dunlap, Dunlap Septic	John Barrett, FMI	Robert F. Sweeney, MS, REHS, EMS
0.1	General Knowledge of Septic Installation Round Table	Maintenance on primaries, secondary's, scrubbers, vane pumps, right angle gear boxes, belt drive systems, hydraulic drives, PTO systems, vacuum/pressure relief valves. Repairing lever valves v. replacing. Heated valves/collars. On board jetters and their maintenance. Checking for leaks in the tanks, stress cracks, mounting issues. Differences in aluminum v. steel v. stainless steel and care for each one.	Basis of Design / Sizing Factors & Schematic Diagrams for OnSite Sewage Treatment Systems (OSSTS)
2:20 3:20	Mark McCollum, SJE-Rhombus/CSI Controls	Dennis Boeger, PE, Boeger and Associates	Aaron Dennis, REHS, Clackamas County
0.1	Basic Electrical Theory & Panel Troubleshooting Basics	Round Table - Troubleshooting infiltration/inflow into a septic system, which relates to stormwater	Soils for Installers. A\ presentation on septic test pit location as it related to topographical features. The presentation is intended to provide individuals preparing soil test pits, with some basic background information in selecting a proper location for preparing test pit. The presentation will be focused on reviewing project sites for all options as they relate to topographical features that can influence the soil conditions and design criteria.
3:30 4:30	Mark McCollum, SJE-Rhombus/CSI Controls	Pat McVey, Sporthaven Inc.	Steve Greenslate & Emma Eichhorn, EMS
0.1	Continue the Basic Electrical Theory & Panel Troubleshooting Basics	Open Round Table discussions. Hear others point of view and how they approach problems and deal with them, i.e. septic smell in home, possible under the counter vent that doesn't vent through roof. Remodel or island sink.	Wetlands, Surface Water & OSSTS. Recognizing, Avoiding & Dealing with Impacts. Erosion & Sediment Control for OSSTS. Best Management Practices are Always Required.

4:30 Conclusion

Program and Speakers subject to change without notification.

24th ANNUAL OREGON ONSITE WASTEWATER CONFERENCE

CONFERENCE REGISTRATION FORM

REGISTER ONLINE AT WWW. O₂WA.ORG OR COMPLETE AND MAIL THIS FORM WITH PAYMENT

TO: Oregon Onsite Wastewater Association 70 SW Century Dr., PMB #353, Bend, OR 97702

If you have any questions, please contact O₂WA Office (541)389-6692 or Email info@ O₂WA.org

Company or Organization _____

Address _____

City/State/Zip _____

Daytime phone _____ Email _____

In the case of an emergency please list a contact person: _____ Phone # _____

Attendee's Full Name _____

DEQ Installer Certification # / O&M Certification # / CCB # _____

Second Attendee's Full Name _____

DEQ Installer Certification # / O&M Certification # / CCB # _____

Third Attendee's Full Name _____

DEQ Installer Certification # / O&M Certification # / CCB # _____

PLEASE ANSWER THE FOLLOWING QUESTIONS:

- ☐ Dietary or special needs? _____
- ☐ Attending the THURSDAY NIGHT WELCOME RECEPTION?
- ☐ Signing up to compete in the Equipment Rodeo – No extra charge?
- ☐ Attending FRIDAY NIGHT BANQUET & Auction? Choose ☐ Steak or ☐ Salmon

2018 MEMBER DISCOUNTED REGISTRATION FEE:

- ☐ 2 Day Conference Registration # Attendees ____ x \$320.00 = \$ _____
- ☐ 1 Day Conference Registration # Attendees ____ x \$280.00 = \$ _____
- I will be attending ☐ Friday or ☐ Saturday

NOT A 2018 MEMBER - REGISTRATION FEE + MEMBERSHIP:

- ☐ 2 Day Conference Registration # Attendees ____ x \$415.00 = \$ _____
- ☐ 1 Day Conference Registration # Attendees ____ x \$375.00 = \$ _____
- I will be attending ☐ Friday or ☐ Saturday

GUEST / EMPLOYEE REGISTRATION AND MEALS - Guest Full Name _____

- ☐ 2 Day Not Earning CEU's Exhibition Hall # Guests ____ x \$180.00 = \$ _____
& All Meals Thursday, Friday and Saturday
- ☐ 1 Day Not Earning CEU's Exhibition Hall # Guests ____ x \$95.00 = \$ _____
Meals the day attending not including the Friday night dinner.
I will be attending ☐ Friday or ☐ Saturday
- ☐ Guests Friday Night Reception & Banquet # Guests ____ x \$ 55.00 = \$ _____
- ☐ Registrations after February 1st Late Fee \$20.00

TOTAL PAYMENT AMOUNT (calculated from above) \$ _____

METHOD OF PAYMENT: ☐ Check Enclosed or Charge My ☐ Discover Card ☐ American Express ☐ Visa ☐ MasterCard

Account # _____ Code _____ Expiration Date _____

Authorized Signature _____ Name as it appears on credit card _____

CANCELTION POLICY: Full registration fees will be refunded if a written cancellation notice is received at O₂WA office by 1:00 P.M. February 22, 2018.
Oregon Onsite Wastewater Association | 70 SW Century Dr., #353, Bend, OR 97702 | Email info@o₂wa.org | Questions? Call 541-389-6692