

## Summer Issue 2016

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### 2ND ANNUAL OREGON ONSITE WASTEWATER FALL MINI CONFERENCE

Friday, November 4<sup>th</sup> & Saturday, November 5<sup>th</sup>  
The Mill Casino & Hotel  
3201 Tremont Avenue, North Bend, OR 97459  
Earn 0.6 CEUs



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## President's Message by Erin Mick, REHS

Greetings everyone. What a summer! As you all know, we're not done until the rains really come, so keep hanging in there. The board has taken a couple months off from meetings to accommodate everyone's need to work as much as possible, but that doesn't mean we haven't been working on a few projects. One of biggest works has been around updating the website. We are in the process of reviewing versions from our web designer and will be excited to announce its official launch very soon; we hope in just a month or two. Additionally we have reviewed and awarded several scholarships to this year's applicants and have been keeping current with DEQ and some of the new legislation that was passed around low-income loans for septic repairs and other related information. Much more will be learned at our next meeting in October.

So stay tuned for much more information as well try to get refocused on a few new ideas and projects we had to set aside for our busy summer months. May the final big push of the season treat you well and may many of you also enjoy your well-deserved time in the woods, hoping to get your freezer restocked for the upcoming year. Enjoy and stay safe, Erin



## Q&A by Brian Rabe, CPSS, WWS

**Question:** I have been contacted by telemarketers trying to sell me a septic tank treatment that they say will make it so I never have to pump my septic tank. Is this true?

**Answer:** I am afraid not. The purpose of the septic tank is to capture and retain solids that either float or sink, with the effluent in the middle being relatively low in solids. Some digestion occurs within the septic tank slowly over time, but that is not the primary purpose. In an environment with ample oxygen, such as the soil surrounding the drainfield trench, the digestion process is intended to be aerobic. This process essentially results in the digested material being converted to carbon dioxide, water, and relatively few byproducts. In an oxygen limited environment, such as the septic tank, anaerobic processes dominate that result in a different mix of byproducts. The reality is, the only way septic tank additives can achieve what they claim to do is to break up the solids into either soluble or finer particles that will move downstream with the effluent. This increases the loading to the downstream components, whether the soil absorption system or a secondary treatment system. It is far more cost-effective to let the septic tank work as intended and perform routine pumping every few years rather than have to repair or replace an expensive downstream component.

## Welcome New Members & Membership Benefits:

***WELCOME!** - The O2WA welcomes all to the organization as one voice for the industry. New members welcome to sign up at [www.o2wa.org](http://www.o2wa.org). Member renewing will be mailed invoices in November.*

### **BENEFITS of MEMBERSHIP**

- Provide persons engaged in the design, installation, maintenance, and regulation of on-site wastewater treatment and disposal systems an association through which lawful efforts may be made towards solving problems of on-site wastewater with the result that the general public shall receive the highest possible standard of safe, sanitary and environmentally sound on-site wastewater service.
- Provide a forum for research, exchange of ideas, information and technology among private industry, professionals and government policy makers and regulators.
- Develop programs to further the education, training and certification of persons involved in design, installation, maintenance and regulation of on-site systems.
- Actively participate in public and private efforts in development and acceptance of new and improved practices, policies, laws and regulations for on-site wastewater treatment and disposal.
- Develop, sponsor and support programs to improve on-site wastewater treatment and disposal, including uniform standards for on-site technologies.
- Participate as a member in other local, state or national associations with common needs, goals or purposes.
- Provide for professional representation and contract for assistance and the ability to coordinate and respond to the common needs of members including, without limit, membership benefit programs.

**VOLUNTEERS NEEDED** - Contact the O2WA Office to get involved - 541-389-6692

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**Six months after Dan and Anna Lee purchased their home, the toilet quit flushing. They spent the winter running to and from a rented porta-potty in the back yard. New systems are expensive – and Dan and Anna Lee couldn't afford to buy one outright. Then their septic installer told them about the Craft3 Clean Water Loan.**

Craft3 is a nonprofit community lender that puts people, the environment and the economy first. It gave Dan and Anna Lee an affordable loan – and even didn't require any money upfront. The loan let them repair their system – protecting the nearby waterway and keeping them in their home.

Homeowners in Oregon can now use the Craft3 Clean Water Loan to fix their failing septic systems. Visit [www.Craft3.org/CleanWater](http://www.Craft3.org/CleanWater) to see how Craft3 can be part of the solution to your customers' financial problem. You can also contact us at [CleanWater@Craft3.org](mailto:CleanWater@Craft3.org) or 888-231-2170 to learn more.



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## Soils on the Horizon by Brian Rabe, CPSS, WWS

The topic of this edition of *Soils on the Horizon* is what in Oregon is known as a Capping Fill. This is where the soil absorption trench is installed at a shallower depth such that some or all of the backfill over the trench is imported. This is an option on sites meeting certain criteria, such as slopes no steeper than 12 percent, to overcome some depth-related limitations (e.g., water table, restrictive layer, and/or bedrock). Capping Fills must be carefully installed under dry conditions to avoid adversely affecting the permeability of the underlying soils as a result of compaction. The area to which the cap will be applied includes the area over and between the trenches as well as the area extending 10 feet beyond on all sides. This area must be scarified or tilled to break up any sod or vegetative mat at the surface and provide a loosened soil condition for the cap material to be incorporated into. The intent is to have the boundary between the natural soil and the cap material to interlock rather than be abrupt, which could create a seam for water to follow horizontally. There are specific criteria for the selection of the imported soil. The soils are required to be the same textural class as the surface horizon where it will be applied, or one textural class finer.

I have often wondered why this allows a slightly finer textured soil but not a slightly coarser textured soil. Most natural soils get finer with depth as percolating water carries clay particles from the upper part of the soil profile to the lower part. Since the "cap" becomes the "upper part" upon installation, it makes sense that it would be perfectly appropriate for it to be slightly coarser. I am not certain about the origins of this particular criterion, but it might be worth reconsidering during the next rule revision process.

I look for alternatives to using a capping fill, especially when suitable cap material is scarce. I also look for alternatives, such as pressure-assisted distribution, whereby I can use a hydrosplitter to achieve equal distribution on sloping sites thereby effectively reducing the minimum trench depth from 24 inches down to 18 inches. Capping fills have their place, but the risk of compaction during installation is higher since there are more trips across the site with equipment to conduct the site preparation, cap placement, and incorporation.

That is it for now. Remember, Soil Rocks!

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# Septic Care: Antimicrobial Products and Onsite Systems

By Sara Heger July 18, 2016

## 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 (MOWA) and the National Onsite Wastewater Recycling Association (NOWRA), and serves on the NSF International Committee on Wastewater Treatment Systems. Send her questions about septic system maintenance and operation by email to [kim.peterson@colepublishing.com](mailto:kim.peterson@colepublishing.com).

Antibacterial soaps and wipes are now used by 75 percent of American households, according to a recent report. Products designed to kill microorganisms have become increasingly common in today's homes. But how do these products affect septic tanks and septic systems, where microorganisms are essential?

To achieve proper treatment, a septic system is very dependent on millions of naturally occurring bacteria throughout the system. Daily, beneficial bacteria are added to septic systems, bacteria typically found in wastewater, our bodies, and other waste materials we dispose of via our septic system.

The use of antibacterial or disinfectant products in the home can and does destroy good and bad bacteria in the treatment system. Normal-use amounts of these products will destroy some beneficial bacteria but the population will remain sufficient and recover quickly enough to not cause significant treatment problems.

Excessive use of these products in the home can cause significant and even total destruction of the bacteria population in a septic system. Often the use of a single product or single application will not cause major problems, but the cumulative effect of many products and many uses throughout the home may add up to an excessive total and cause problems. In addition, with many of the products a greater amount is used when they are in a liquid form. More research is needed to determine what is "excessive" and which products are more or less harmful to systems.

What products are we talking about?

There are over 1,000 products that are concerning in relation to having a good bacteria community, including: 'antibacterial' hand soaps; tub, tile and shower cleaners; drain cleaners; toilet bowl cleaners; laundry bleach products; and others. Also included are 'antibiotics' that may be prescribed for medical treatment. These are products that are found in nearly all homes. "Antimicrobial" is the general term for any product or ingredient that kills or inhibits bacteria, viruses or molds. Disinfectant and chlorine bleach are common antimicrobials. Antibacterials, on the other hand, are only effective against bacteria. Lots of cleaning products and liquids now claim to be "antibacterial."

If homeowners show resistance when you tell them they should go easy with the antibacterial products, science is on your side. There's a growing consensus that antimicrobial household cleaners won't keep them any safer from infectious illnesses than regular types. In 2000, the American Medical Association issued the statement that antibacterial soaps were no more effective against germs than common soap. Although they initially kill more germs than soap, within an hour or so there is no difference in the numbers of germs that have repopulated the area. In fact, experts say, it's not the type of cleaner that matters in combating germs, but the frequency and thoroughness of cleaning; plain soap, hot water and elbow grease are generally enough to do the job. As with antibiotics, prudent use of these products is urged. Their designated purpose is to protect vulnerable patients.

## The Problem with Soil Compaction

By Sara Heger

Test prospective sites for soil compaction potential, and protect the septic system site during and after installation.

Humans, along with all our activities, cause widespread soil compaction. An ideal soil has 50 percent pore space: some air-filled pores and some filled with water. In addition, 45 percent of a typical soil is composed of mineral materials, with 5 percent composed of living and dead organic materials. The term compaction includes soil compression, soil compaction and soil consolidation.

Compression is the loss of soil volume. Soil compression leads to a loss of total pore space and aeration pore space, and an increase in capillary pore space. In other words, large air-filled pore spaces are crushed, creating more small, water-filled pores. Compression is most prevalent in soils under wet conditions.

Compaction is the translocation and resorting of textural components in the soil (sand, silt and clay particles), destruction of soil aggregates and collapse of aeration pores. Compaction is facilitated by high moisture contents.

The third primary component of soil compaction is consolidation. Consolidation is the deformation of the soil, destroying any pore space and structure, and water is squeezed from the soil matrix. This process leads to increased internal bonding and soil strength as more particle-to-particle contacts are made and pore space is eliminated.

Compaction constrains oxygen (O<sub>2</sub>) movement in the soil and shifts soil toward anaerobic conditions. Less O<sub>2</sub> diffusion into the soil leads to a chemically reducing soil environment. Compaction leads to smaller pore spaces and slower infiltration rates.

(continued)

## **The Problem with Soil Compaction Continued**

**By Sara Heger**

### **Common compaction causes**

**Wet soils** – For every soil type there is a soil moisture content at which the soil can be severely compacted with minimal effort. The higher the clay content, the higher the likelihood that the soil will hold water. Soils that are saturated or nearly saturated have lower soil strength and compact, smear and move more than the same soil under dry conditions.

**Vehicles, pedestrian and animals** – The pounds per square inch of force exerted on the soil surface by walking, grazing, standing, and concentrated humans and other animals can be great. Traffic with tracks and wheels puts a force on the soil surface. Narrow rubber tires can transfer many pounds of compaction force to the soil.

**Soil handling** – The movement, transport, handling and stockpiling of soil destroys aeration pore spaces and disrupts soil aggregates. Soil cuts, fills and leveling compacts the soil. Soil-handling equipment can be large and heavy, allowing compaction many inches deep.

### **Avoidance**

Compaction can occur on any soil texture. In order to assess the potential of a soil to compact, the plastic limit should be tested. Plastic limit means a soil moisture content above which manipulation will cause compaction or smearing. The plastic limit can be measured by the American Society for Testing and Materials Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils, ASTM D4318 (2005). Below is an abbreviated version of the test: Select a handful of soil for testing (any non-soil material – rocks, roots, etc. – should be removed). Do not add moisture or let it dry out. Sample should be taken at the depth of excavation (absorption area).

Roll the sample between the palms into a pencil or worm shape.

Continue rolling the thread until it reaches a uniform diameter of 1/8 inch if possible.

If the sample does not reach a diameter of 1/8 inch, the soil is above the plastic limit and construction can proceed.

If the sample is rolled into a diameter equal to 1/8 inch before breaking, the soil is too wet and construction should not occur.

The septic system site must be protected. During construction, the proposed soil treatment and dispersal area site should be protected from disturbance, compaction or other damage by staking, fencing, posting or other effective method.

The best way to minimize compaction is to not allow equipment on site. However, this is seldom possible, so minimizing impact is the next best option. Distributing the weight of vehicles by tracks is beneficial. Related: [Septic System Answer Man: A Job With Percs](#)

After the system is built, traffic on the soil treatment system by both humans and animals should be avoided. Instruct homeowners to keep pets off the system. Warn them never to drive a car or other vehicle across the mound or mow when the soil is wet. Compacted soil can lead to soil erosion and impedes the flow of air around the system. In winter, activity on a mound can cause frost to penetrate, resulting in freezing problems.

### **Solutions**

Soil compaction is permanent. Studies demonstrate that after half a century, compaction still affects soils under natural conditions. Recovery time for significant compaction is at least two human generations. Soils do not “come back” from compaction. With surface compaction, time will help. Normal freeze/thaw cycles, root activity and weathering will help to loosen up the compaction.

Any modification is temporary and is less than ideal. This does not mean that modifications cannot work, but that it simply may be more complicated and costly, and may increase maintenance and monitoring requirements. Percolation tests or other hydraulic soil tests are also useful in providing a better understanding of site impacts (e.g. compaction, fill, etc.). Related: [Rules and Regs: Maine Adopts New Onsite Rules](#)

When a compacted site must be used, you may consider pretreating the wastewater prior to it reaching the soil and using reduced loading rates. In both instances, the reduced organic and hydraulic loading rate will maximize the ability of the soil to treat and accept the wastewater. If the compaction is very severe, experimental methods include deep plowing and ripping and mechanical soil fracturing. In these applications, removal of the material may be needed.



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Friday, November 4<sup>th</sup> & Saturday, November 5<sup>th</sup>

The Mill Casino & Hotel, 3201 Tremont Avenue, North Bend, OR 97459

Earn 0.6 CEUs - Register online at [www.o2wa.org](http://www.o2wa.org) – Click on Conference... or mail in your conference registration!

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.

Conference includes Friday welcome reception, classes, breakfast, lunch and time with exhibitors. Each individual will receive a certificate of proof of attendance at the conclusion of this conference. Maximum number of CEUs available are 0.6.

## REGISTRATION FEE

Registration fee includes educational sessions, tradeshow, reception on Friday (no host bar), breakfast & lunch on Saturday. \$150.00 per attendee. Register online at [www.o2wa.org](http://www.o2wa.org).

## GUEST ROOM RESERVATIONS

Make your reservations by October 21st to receive the discounted rate. Please contact the hotel for guest room reservations at 800-953-4800.

## DIRECTIONS

Coming to The Mill Casino Hotel & RV Park is an easy and scenic drive. Located on the Southern Oregon Coast (Highway 101 between North Bend and Coos Bay) at 3201 Tremont Avenue, North Bend, OR 97459.

## CONFERENCE SCHEDULE & CLASSES

### FRIDAY

6:00 p.m. – 7:00 p.m. Welcome Reception

### SATURDAY

7:30 a.m. Registration Open & Attendees Sign In

7:30 a.m. – 8:15 a.m. Breakfast with Exhibitors

8:15 a.m. – 8:30 a.m. Welcome and Orientation

**8:30 a.m. - 9:30 a.m. Soil Science & Septic Systems** Sean Rochette, CPSS, Onsite Wastewater Specialist, Oregon DEQ

Making the connection between onsite soil conditions and septic system design. Soil science plays a large role in how septic systems are designed based on the prescriptive nature of the rules established by DEQ. Knowing the basic properties of soils and identifying limitations at individual sites allows one to have an understanding for what type of septic system is required and how it is designed. Emphasis will be placed on local soils, limitations, and septic systems encountered.

**9:40 a.m. - 10:40 a.m. Septic Systems 101?—Back to Basics** Brannon Lamp, REHS, Aqua Resource Design & Consulting

A holistic understanding of Onsite Wastewater Treatment (Septic) Systems requires one to look beyond the system itself, and to the source(s) of the inputs, as well as the surrounding environment. Only then can a practitioner look at the system itself to better understand why a system functions as it does, and under certain conditions, may function poorly. Often, when troubleshooting a system, we are investigating the wrong elements altogether. The goal of this presentation is to expand our understanding and to better stock our 'toolkit' as professionals.

**10:40 a.m. - 11:00 a.m. Break with Exhibitors**

**11:00 a.m. - 12:00 p.m. Why ATT Systems?** Scott Hammerschmith, Orenco Systems

The "Why ATT Systems?" course discusses operation of primary septic tanks, drain field sizing/layout for "standard" systems, operation and effluent quality of secondary treatment systems, needs for treatment, and drain field sizing behind secondary treatment. The presentation uses excerpts from OAR341-071 and we discuss how and why the secondary treatment systems effect drain field sizing and approvals. A short Q&A session is provided after the presentation.

**12:00 p.m. – 1:00 p.m. Lunch – Exhibitor Introductions**

**1:00 p.m. - 2:00 p.m. Pump Fundamentals – Pump Sizing & Selection** How to pick the pumps that stay in the tank, basin, well, or wherever you put them. Larry O'Connor, RepCo

This class will cover how to size pumps for septic applications focusing on low-head pumps for new or replacement applications. We will show how to read a pump curve, discuss system curves, and besides, who doesn't like curves? We will show how to do bar napkin pump selection and talk about why some pumps fail prematurely. This would be a good class for those new to the business as well as having something to offer those that have been installing for years.

**2:00 - 2:20 – Break**

**2:20 p.m. - 3:20 p.m. Concrete Septic Tank Standards and Installation** Doug Dilley, Willamette Graystone

The goal of this presentation is to explain tank construction standards and installation guidelines. What they are and why they are important.

**3:20 p.m. – 4:20 p.m. Sand Filter System Troubleshooting, Maintenance, Repair & Recovery** Brannon Lamp, REHS, Aqua Resource Design & Consulting

This presentation will shed new light for many practitioners on the theory, application, and functionality of Sand Filter treatment systems. While still basic and limited in scope, the attendee will gain knowledge that will provide new understanding of how and why these systems function, as well as providing some useful practical knowledge for operation and troubleshooting of these systems.

**4:30 Conclusion**

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Earn 0.6 CEUs

## 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

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Attending Friday Reception  YES  No

Second Attendees Full Name \_\_\_\_\_

DEQ Installer / O&M Certification / CCB #(s) \_\_\_\_\_

Attending Friday Reception  YES  No

Third Attendees Full Name \_\_\_\_\_

DEQ Installer / O&M Certification / CCB #(s) \_\_\_\_\_

Attending Friday Reception  YES  No

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

Food Allergies: \_\_\_\_\_

REGISTRATION FEE INCLUDES FRIDAY RECEPTION, EDUCATIONAL SESSIONS, TRADESHOW, BREAKFAST & LUNCH ON SATURDAY.

CEU Attendee to Fall Conference Registration # Attendees \_\_\_ x \$150.00 = \$ \_\_\_\_\_

NON CEU Attendee to Fall Conference Registration # Attendees \_\_\_ x \$ 55.00 = \$ \_\_\_\_\_

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Cancellation Policy: Full registration fees will be refunded if a written cancellation notice is received at O2WA office by 1:00 P.M. October 15, 2016.

# SepticSmart Week 2016

## SAVE THE DATE

September 19-23, 2016

[www.epa.gov/septicmart](http://www.epa.gov/septicmart)

Each year, EPA holds SepticSmart Week with outreach activities to encourage homeowners and communities to care for and maintain their septic systems.

During SepticSmart Week, EPA seeks to: inform homeowners on proper septic system care, assist state and local governments and organizations in promoting homeowner education and awareness, and educate local decision makers about infrastructure options available to improve and sustain communities.

### Join the effort to raise awareness by:

- Hosting an event or training
- Sharing SepticSmart materials
- Scheduling service for your system
- Getting your local and state decision makers involved
- Participating in the conversation on social media



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