

Concurrent Sessions
Track: NOWRA Troubleshooting Training

Monday, October 14, 2019

1:30 pm to 2:30 pm

Troubleshooting Changing Water Flows

Sara Heger

This presentation will focus on a study funded by the Water Research Foundation evaluating water use from over 23 utilities and over 1,000 homes. The average household hot water accounted for 33.2% of total indoor water use. Residential indoor water use in single-family homes has decreased. The average per household daily water use has decreased 22 percent, from 177 gphd in 1999 to 138 gphd in 2016. Per capita average water use has decreased 15 percent, from 69.3 gpcd to 58.6 gpcd. In 1999, a household averaged 2.77 people and in 2016, a household averaged 2.65 people so overall the number of people per home has remained the same. The primary sources for the reduction will be discussed along with implications with increased concentrations. Toilet flushing is the largest indoor use of water in single-family homes, followed by faucets, showers, clothes washers, leaks, bathtubs, other/miscellaneous, and dishwashers. Mandated reductions in toilet flush and clothes washer volumes and shower and faucet flow rates have contributed to the declines in residential water use. When water usage decreases the concentrations of contaminants included organic material and nitrogen increases. Septic system design and operation considerations will be highlighted.

Monday, October 14, 2019

2:30 pm to 3:30 pm

Troubleshooting Septic Tanks

Claude Goguen

This presentation will discuss aspects and methods for troubleshooting tanks of various materials. It will also discuss troubleshooting the performance of tanks, such as: system backing up into the home, then there could be clogging due to various factors: roots, poor slope on inlet piping, bends, or possibly the pipe has settled,



field inspection methods will be discussed to check these possibilities. Other issues to review: Proper pumping intervals, sludge and scum depths, surface drainage, tank siting/location, backfill settlement, tank settlement. Observations of a proper and improper functioning tank: odors, scum buildup, or conversely lack of a proper scum layer, dead tanks, and wastewater color (strength observation).

Monday, October 14, 2019

4:00 pm to 4:30 pm

Troubleshooting Septic Tanks Continued

Dennis Hallahan

Continuation of "Troubleshooting Septic Tanks"

Tuesday, October 15, 2019

8:00 am to 9:00 am

Troubleshooting Media Filters

Kevin Sherman

This presentation will describe the design concepts of both natural and artificial media filters. The key difference between media filters and other advanced treatment systems is that the beneficial microorganisms are physically attached to the media. Performance of media filters is both robust and resilient under normal conditions, but extra care should be taken to ensure toxic substances are kept out of the waste stream. A sequential inspection checklist (such as that provided by the CIDWT) prompts the operator to examine and collect all the information necessary

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to troubleshoot a media filter system. This protocol should be modified depending on whether the system recirculates a nitrified effluent, disinfects, etc. If media filters develop overly thick biomats, they can be physically or chemically cleared of excess biological growth. Some natural media filters have a finite predictable media lifespan. At some point the exhausted natural media will need to be removed and replaced with fresh natural media. Artificial media filters ordinarily are not subject to this step. A detailed examination of the mechanism for delivering effluent to the filter surface is usually a key inspection point during media filter troubleshooting. Various models use gravity or pressure to deliver an equal liquid dose to the filter surface.

Tuesday, October 15, 2019

9:00 am to 10:00 am

Microbiology in Advanced Treatment Systems

Sergio Abit

Advanced systems are usually installed in areas with significant soil and site limitations. Specifics of system design are usually proprietary but all involve the introduction of air to the wastewater to cause aerobic conditions that favor microbial action that causes enhanced decomposition of organic particulates, transformation of contaminants and even deactivation of some pathogens. This talk will start with a discussion of site and soil conditions that leads to decision to install an advanced system. Detailed discussions on various processes that goes on in a typical advanced system treatment train will then follow. Particular attention will be given to microbial processes that affects the fates of organic particulates and of contaminants nitrogen, phosphorus and pathogenic bacteria as they move through the system.

Tuesday, October 15, 2019

10:30 am to 11:30 am

Troubleshooting of Mechanical Treatment Systems

Ron Suchecki

The state of Colorado mandated regulations for sewage disposal systems in 1979. The State Board of Health required that all jurisdictions either adopt their own regulations for sewage disposal systems or follow the state adopted guidelines. As the industry became more advanced and the regulations changed with it, the key basis of the regulation remained the same, any structure that was to be occupied is required to be served by adequate facilities for the sanitary disposal of sewage. But what happens when a property does not comply with this most basic requirement? What is the danger when a property owner decidedly chooses to not comply with this requirement?

Tuesday, October 15, 2019

1:00 pm to 2:00 pm

Troubleshooting Pumps and Controls

Tom Fritts

This presentation will address issues when troubleshooting systems that incorporate pumps and controls. It will cover the 3 most used pumps in our industry, how they work and how they differ depending on their application. Pumps can fail for a variety of reasons including sizing the pump. It is important to know how pumps should be chosen to help determine the reason for failure. Some of the basic rules of troubleshooting will also be covered. There are many different types and styles of control panels on the market today and learning to troubleshoot all of them would be impossible in this short time but there are some basic practices and procedures that apply to all panels which we will cover.

Tuesday, October 15, 2019

2:00 pm to 3:00 pm

Troubleshooting Soil Treatment Systems

Randy Miles

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Troubleshooting soil treatment areas (STA) is a complex process as essentially all of the components of the STA are not visible and accessible for assessment or measurement. Principles for troubleshooting STA will be discussed. Essential initial inputs include: any permits for the system as well as the soil-site assessment; history of the home/business site development; surrounding and neighboring development that could influence the hydrology of the site; past and current use of the onsite wastewater system; troubleshooting of upstream components of the onsite wastewater system as well as the activities the home owner or business manager have placed on top of the STA. Once an assessment of current and past use status has been developed, intrusion into the STA through probing, coring, and/or digging will need to be performed to “ground truth” the problem. Examples will be provided to illustrate many of the common causes of poor performance of the STA of onsite wastewater systems that have been managed by one entity over a relatively long period of time as well as those managed by a relative new homeowner or business manager. In some instances, the STA may be able to be continued to be used at a lesser intensity with some renovation while in a many cases, new STA locations may need to be located and assessed if there is ample area to do so.

Tuesday, October 15, 2019
3:30 pm to 4:30 pm
System Failure Identification
Jim King

This presentation will focus what is the definition of a failed system and what is needed to document that failed system. The class is broken into two distinct discussions. The first discussion is on the signs of failure to include drain field saturation, spongy soil, odors, frequent pumping, back-ups, system alarms and algae blooms in water sources. The second discussion is on the steps taken to conduct the system investigation.

This includes the prep work, the onsite inspection and the results of that inspection. We will discuss typical investigation equipment to include, probes, augers, and other equipment. The investigation will focus on all portions of the field from the septic tank to the disposal field. The presentation includes some of the more interesting events seen in the field to include oil coming into a septic tank, pump chambers misdiagnoses, questionable electrical practices and more. The end result of this presentation is to document the reasons failure system investigation is so important and what the documentation of the failures means to our researchers. We will also work at highlighting where our industry has decent documentation of the waste strength from the facilities as to the places where documentation is lacking.