



Speaker and Abstract Information for

VIRTUAL

2022 Onsite Wastewater Mega-Conference

October 2022

All speakers listed alphabetically by last name. Subject to change.

Robert Bair, University of South Florida

Automation in Onsite Systems: Progress, Future, and Classification System

Presentation, 25 minutes

Abstract:

Centralized wastewater treatment facilities have greatly benefited from the adoption of advanced control systems and sensors in their treatment trains. Automation in these facilities has made biological processes more efficient by reducing expensive chemical inputs, aeration costs, and direct operator supervision. These benefits outweigh the additional cost of installing and maintaining more complex controls and sensors. The onsite treatment sector has been slower to incorporate automation schemes despite an exponential drop in the cost of computing power, sensors, and the increased interconnectivity of household devices and appliances. As regulations across the nation are becoming more stringent towards onsite treatment, and as the desire for onsite water recycling increases, better process control and failure detection is needed in the onsite sector. This presentation proposes a classification system for defining onsite treatment systems based on the level of system automation. The system taxonomy includes five categories: no control, manual control, open-loop control, closed-loop control, and interconnected systems. These categories cover most of the existing onsite systems and lay a framework for the future of more interconnected onsite systems. Products common to the industry, including septic tanks, aerobic treatment units, and membrane bioreactors will be presented as case studies for the classification system. The presentation will also highlight existing sensor technologies and their potential applications to onsite system automation.

Bio:

Robert Bair is a Senior Development Engineer in the Civil and Environmental Engineering Department at the University of South Florida. He specializes in anaerobic membrane bioreactors for decentralized wastewater treatment. He has extensive experience in designing pilot skids for experimental testing and validation. His passion lies in seeing technological advancements serve the needs of marginalized communities. During his PhD, he served as the inventor, designer, builder, and operator of the NEWgenerator, a containerized wastewater treatment system designed to treat waste streams from informal settlements. He holds three patents on various reactor designs and has published over 12 peer-

reviewed publications on topics spanning algal biofuel production, food waste digestion, bioaugmentation of anaerobic digestion, and anaerobic membrane bioreactor operation.

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Allison Blodig, Infiltrator Water Technologies

Forgotten Factors Needed in Wastewater Treatment System Design

Presentation, 25 minutes

Abstract:

Climate and altitude have an effect on how the biology reacts in a wastewater treatment system but they are often times not included when sending a system out in the field. They also affect how mechanical parts work and perform in the field. This presentation will review how these factors influence the system performance with specific examples.

Bio:

Allison Blodig has been in the onsite wastewater treatment industry since 1997 and has worked most of her career in the wastewater treatment manufacturing industry and is currently a Wastewater Treatment Systems Specialist for Infiltrator Water Technologies. Along with a degree in Biology from Benedictine College in Atchison, KS, she has been a Registered Environmental Health Specialist and member of the National Environmental Health Association since 1996. She is also very active with the National Onsite Wastewater Recycling Association (NOWRA) and is the President Elect for that organization. Allison received the Women in Manufacturing award in 2012 and was the 2017 recipient of the Raymond Peat Lifetime Achievement award for outstanding achievement in the Kansas onsite wastewater field.

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Bryan Brooks, Ph.D., Baylor University

OPENING SESSION: Lessons Learned from Horizon Scanning with a Focus on Needs for Onsite Wastewater Recycling Research (NOW-R2)

Presentation, 50 minutes

Abstract:

Though formal horizon scanning efforts have presented opportunities to anticipate future priorities and provided benefits to other science and engineering professions, such strategic prospective approaches have not previously been initiated to identify research and professional practice needs for onsite wastewater recycling research. Leveraging experiences using a big questions approach through the Global Horizon Scanning Project, which identified priority research needs for environmental quality, and UNCOVER-EH (Understanding Needs, Challenges, Opportunities, Vision and Emerging Roles in

Environmental Health; which identified timely practice-based research needs associated with essential environmental public health program areas and services, we recently performed NOW-R2 (Needs for Onsite Wastewater Recycling Research) with NOWRA and other key national partners to examine timely research needs for decentralized systems. Following previously reported methods, a NOW-R2 survey was distributed to professionals working in onsite wastewater, followed by a synthesis workshop with experts from business, government, and academia in which focus groups further distilled input to identify consensus-based research needs. Whereas priority research questions focused on timely technical scientific topics and environmental management issues, priority problem statements examined future challenges within the profession and associated needs for individual professionals.

Bio:

Bryan W. Brooks, PhD, MS is a Distinguished Professor of Environmental Science and Public Health at Baylor University. The author of over 250 manuscripts, his current research is supported by the National Science Foundation, the National Institute of Environmental Health Sciences, the Strategic Environmental Research and Development Program, the United States Department of Agriculture, the World Health Organization, and the Centers for Disease Control and Prevention and Food and Drug Administration with the Texas Department of State Health Services. Prof. Brooks serves as Editor in Chief of Environmental Science & Technology Letters.

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Daniel Delgado, University of South Florida

Biological Nitrogen Removal for Passive Onsite Wastewater Treatment Systems Using Saltwater Toilet Flushing

Presentation with a paper, 25 minutes

Abstract:

Incomplete treatment of wastewater is a source of anthropogenic nitrogen pollution that has adverse effects on water bodies, aquatic life, and public health. In addition, freshwater resources continue to become overstressed by growing human needs, prompting some communities to utilize seawater for toilet flushing instead of potable water. This research investigates constraints and solutions towards construction of robust and sustainable onsite wastewater treatment systems (OWTS) with biological nitrogen removal for systems that use salt water for toilet flushing. Keeping sustainability in mind, a laboratory scale OWTS was designed to make use of passive treatment options, meaning limited to no inputs of energy and chemicals. The system treated domestic wastewater with added salts to bring the salinity to 1.5% and 3.0% to mimic different OWTS seawater flushing scenarios. No salt added wastewater was used as a control. Trickling columns achieved 76% conversion of ammonia to oxidized nitrogen (NOx) under non-saline conditions and 72% conversion at 1.5% and 3.0% salinity. Microcosms were constructed to evaluate different industrial and agricultural waste stream electron donors for denitrification at 3.0% salinity with freshwater controls. Electron donors used were sulfur pellets, sugar cane bagasse, banana stem, and pine chips, with pine chips and banana stem showing the best nitrogen removal rates. Results show biological nitrogen removal as a viable sustainable option.

Bio:

I spent six years in the Navy as a nuclear plant operator onboard a submarine. This led to an interest in engineering that motivated my decision to pursue a bachelor's degree in Environmental Engineering at San Diego State University (SDSU). While at SDSU I became a research assistant investigating the use of algae as a biofuel feedstock and treatment processes for nutrient removal of municipal wastewater. After completing my bachelor's degree at SDSU in 2018, I enrolled in a PhD program for Civil and Environmental Engineering at the University of South Florida (USF) that same year. I have spent the last four years pursuing my PhD at USF and I have earned a master's degree along the way in Civil Engineering. I have also spent those four years investigating the use of biological nitrogen removal in saline waster for onsite wastewater treatment systems.

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Kyle Dierolf, Premier Tech Water and Environment

Impact of Cumulative Sludge Release from OWWTS

Presentation, 50 minutes

Abstract:

Over the last 20-plus years, it has been largely documented that some OWT technologies are more prone to sporadically release sludge into the environment, contributing over time to the premature clogging of the drain field. Indeed, performance results from both testing on controlled platforms and in-situ, reported in many studies, suggest that biofiltration technologies are more robust and fit than ATUs to support on-site pollutants and hydraulic load fluctuations. Deficient operation and lack of regular maintenance were pointed out as the main contributing factors to these poor performances. Nevertheless, ATU performances are not as stable and consistent, and present a lower reliability level in case of malfunction or abuse than media filters that are inherently fail-safe. A fail-safe mechanism prevents partially or untreated effluent, or sludges produced and accumulated within the system from short-circuiting the treatment process and reaching the drain field. But still, it is difficult to evaluate and quantify the real impacts of these events over time on drain field performance and dispersal capacity. Based on its extensive expertise in biofiltration and physical barrier to retain and treat pollutants, PTWE conducted a study to further document these cumulative impacts to develop a compact post-filtration system ensuring the protection of the drain field from sludge surges and any fluctuation in the effluent quality. Preliminary results and observation will be presented.

Bio:

Kyle is a Product Manager with Premier Tech Water & Environment. Kyle's experience in the onsite septic industry began in regulation in Pennsylvania where he is a certified Sewage Enforcement Officer. In this role he performed site and soil evaluations for onsite septic systems, design reviews, regulatory compliance, and installation inspections. In addition to working with septic systems Kyle was also a Building Code Official. With Premier Tech Kyle started as a Regional Supervisor working with residential applications of the Ecoflo Biofilter. Kyle has worked with onsite wastewater projects in various states.

Kyle has served as a member of the Board of Directors for the Maryland Onsite Wastewater Professionals Association.

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Tom Fritts, Residential Sewage Treatment Company and Nicholas Dykes, Dykes Construction LLC

OPENING SESSION: OWTS Looking Back and Moving Forward

Presentation, 50 minutes

Abstract:

Wastewater Treatment has changed considerably over the last 100 years. New Developments and Technologies have enabled our industry to be able to provide efficient wastewater treatment to many areas where it was not previously possible. Often with a much smaller footprint. By using the many different types of treatment systems, our industry will continue to protect the public health and environment. Where have we been and where do we see the industry going? We can only imagine where the industry will be 100 years from now, but we know that workmanship and education will be key in Onsite successfully growing. We must be willing to accept changes in system design, when new technologies are available. While not ignoring Legacy Systems place in our world, not all Systems fit all Sites. How do we work with existing non-compliant systems for homeowners? As professionals, what can we do to further our states and national professional development and workforce for our industry? This keynote will touch on the history of wastewater treatment, how we have grown over time and look forward to how our industry will continue to thrive through intelligent management of wastewater treatment systems.

Bio:

Tom Fritts is vice-president of Residential Sewage Treatment Company, Inc. in Grandview, Missouri where they design, sell and service alternative onsite wastewater systems. Tom is past president of the Missouri Smallflows Organization (MSO), the Kansas Small Flows Association (KSFA) and the National Onsite Wastewater Recycling Association (NOWRA). He is an approved instructor for NOWRA, the Consortium of Institutes for Decentralized Wastewater Treatment and several states across the country. Tom is the 2016 recipient of the NOWRA Dick Otis Industry Achievement Award and the 2015 Kansas Small Flows Association Raymond Peat Industry Achievement Award.

Nicholas Dykes grew up in the onsite wastewater industry, and has been working with his father Scott Dykes since he was old enough to come to work. Some of his earliest memories are using a grade stick and laying infiltrators. He can't quite remember a time when setting an ATU, chlorinator, and pipe to daylight was common practice. But it was, and perfectly legal! He is 32 years old now, and so much has changed for the better. He is grateful to have watched Onsite Wastewater Treatment in the State of Missouri grow to what it is today. Nicholas is a 3rd Generation in a Business who puts Workmanship and Best Practices First. He has been Blessed to learn this trade from many great men in the Kansas City area whom he considers the best in the business. Nicholas is a registered Advanced installer and Inspector with DHSS. He has Installed systems from 360 gpd to 3000 gpd systems, conventional, LPP, Drips,

Lagoons, Mounds, UV Discharge (DNR), even the experimental ones we do not talk about. Nicholas loves what he does and this industry, and looks forward to watching it grow and evolve in the future.

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Claude Goguen, National Precast Concrete Association

A Close Look Inside Concrete and How to Make the Most Durable Wastewater Treatment Tanks

Presentation, 50 minutes

Abstract:

This presentation will address how concrete is manufactured and what is done during that manufacturing to enhance durability of precast concrete tanks. We will examine raw material such as aggregates. Why are certain sizes and types of aggregates selected? How are they tested, and how aggregate moisture is determined for mix design adjustments. We will talk about cements. What types of portland cement are used and why. What supplementary cementitious materials are used and how do they contribute to tank watertightness and durability. We will discuss admixtures, what they do, and why certain ones may be needed for septic tanks. We will examine how mix designs are developed and why one mix design does not work for all precast applications. We will use videos to show how ingredients are batched and mixed in precise sequence and quantities. We will also talk about tank reinforcing. Why do we use rebar or welded wire fabric and determine placement. We will discuss fibers and their potential uses in precast concrete wastewater tanks. We will use video to demonstrate placement of concrete in tank forms. We will talk about proper curing of precast concrete tanks and discuss how they are stripped from the forms, inspected and made ready to deliver. A thorough and insightful look inside concrete that will help manufacturers, designers, contractors and inspectors better understand the process of delivering a product that contributes to treatment system resiliency.

Bio:

Claude Goguen has more than 28 years of experience in the precast concrete and construction industry. He holds a degree in Civil Engineering and is a licensed P.E. in Indiana. Prior to his role in technical services with NPCA, Claude was an operations manager at a precast concrete manufacturing plant. Since starting with NPCA, Claude has focused on the onsite wastewater industry and has served as the staff liaison to the NPCA Water and Wastewater Structures Committee. Claude also serves on NAWT and NOWRA education and technical committees and on IOWPA and NOWRA Board of directors. He has presented courses and seminars relating to precast concrete wastewater systems at various federal, state and regional onsite wastewater meetings over the last 14 years.

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Tracy Hammond, Polsinelli, LLC

OPENING SESSION: How NOWRA Represents Your Interests in Washington

Presentation

Abstract:

Tracy Hammond is a member of the firm's National Public Policy group and assists clients interested in shaping energy, environmental, and infrastructure legislation and regulation. He is part of the team which represents NOWRA on Capitol Hill. He will provide an analysis of the legislative and regulatory landscape, initiatives underway which may have an impact on the onsite/decentralized industry, and steps the industry can take to increase its influence in Washington on those initiatives

Bio:

Tracy has spent over 15 years representing clients before Congress and many executive branch agencies. Tracy entered politics, serving as an aide to the Minority Floor Leader of the Missouri General Assembly in Jefferson City. Upon arriving to Washington, D.C., he began working for the Campaign Media Analysis Group (CMAG) where he serviced both electoral and issue advocacy campaigns by providing analysis on political media activity. Prior to joining Polsinelli, Tracy served as Vice President at Dutko, advising clients with the firm's Energy, Environment and Sustainability practice.

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Justin Jobin, Coastal Wastewater Solutions

Fostering the Use of Nitrogen and Phosphorus Removing Septic Systems in Cayuga County, NY

Presentation, 50 minutes

Abstract:

Owasco Lake, located in Cayuga County is one of the New York Finger Lakes and encompasses an area of approximately 6,660 acres. The lake serves as the primary source of drinking water for the City of Auburn and the Town of Owasco. The lake is also a popular spot for fishing and recreational activities. Owasco Lake is on the NYS impaired waterbodies list due to high bacteria counts along the north shore and a recent surge of blue-green algae blooms (cyanobacteria) which are fueled by non-point source nutrient pollution from runoff, wildlife, agriculture, and lakefront septic systems. Historically the algal blooms have been limited to nearshore areas. However, in 2020, although the overall phosphorus loading seemingly decreased, data has shown an increase of cyanobacteria in open water. Coastal Wastewater Solutions, LLC was contracted by The Nature Conservancy to provide a review of the current state of phosphorus removal and loading associated with septic systems and develop and implement phosphorus and nitrogen reducing septic system demonstration program to assist in the advancement of these initiatives.

Bio:

Justin Jobin started Coastal Wastewater Solutions after leaving his position as Environmental Projects Coordinator with the Suffolk County Department of Health Services in March of 2021. Justin is a soil scientist and wastewater management expert with over 20 years of experience with Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS). Coastal Wastewater Solutions was founded to further Justin's commitment to advancing I/A OWTS to address the region's nitrogen pollution crisis. Justin ran several pilot programs in Rhode Island and on Long Island evaluating onsite

treatment system viability and performance. Justin previously served 13 years as the Wastewater Management District & GIS Coordinator for the Town of Jamestown, RI, a small island community designated by EPA as a sole-source aquifer, where nutrients from septic systems pollutes ground and surface water just as it has similarly affected Long Island waters. Justin has also authored several publications on wastewater management and developed curriculum for the New England Onsite Wastewater Training Program at the University of Rhode Island.

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Jonathan Kaiser, Infiltrator Water Technology

Top Wastewater Treatment Myths

Presentation, 25 minutes

Abstract:

There are common industry misconceptions in the life cycle of an active wastewater treatment system. This presentation will address these misconceptions through design examples in an audience-interactive format. Addressing these myths can help industry professionals properly design, install, and maintain active treatment systems for optimal system performance and longevity. Some of the myths that will be addressed include misconceptions about septic system odors, the NSF certification (residential vs. commercial applications) and NSF testing specifications, advanced treatment unit performance, septic system sizing (hydraulic loading vs. organic loading), and advanced treatment system startup best practices. Septic system odors could depend on a number of factors including venting, plumbing (overall system design), and influent wastewater characteristics. With NSF-certified advanced treatment system design, it's critical to understand how the treatment systems were tested and what they're certified to. This allows the designer to specify the appropriate treatment technology based on required effluent concentrations. There's also a misconception within the industry on system sizing based on hydraulic loading versus organic loading for advanced treatment systems. In what situations would a designer choose to incorporate organic loading into system sizing versus hydraulic loading alone. Lastly, this presentation will analyze the many myths regarding system startup.

Bio:

Jon joined Infiltrator Water Technologies in 2016 as a Project Engineer after graduating with his B.S. in Environmental Engineering from the University of Vermont. At Infiltrator, Jon works with on the design and construction of decentralized wastewater treatment systems. He also works on product regulation and research and development initiatives. Jon is currently perusing a Masters of Engineering at the University of Connecticut with a concentration in Environmental Engineering.

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Cory Lyon, Orenco Systems Inc.

Delivering More Efficient and Scalable O&M with Modern Remote Monitoring

Presentation, 25 minutes

Abstract:

In recent years modern wastewater control system technology has diversified to offer everything from very sophisticated monitoring, command and & control, and on-board intelligence to very accessible remote alarm notification. This progress has reached the point where there are four main tiers of capability that have developed in the market. All this functionality has prompted many operators and system owners to ask how they can best leverage these technologies. Matching control system capabilities to the needs of system owners, operators, and service companies can help create opportunities for improved system operation, greater O&M efficiency, and operational flexibility. This presentation will highlight five aspects of remote monitoring technology. One, it will help operators determine which tier of remote monitoring capability may best suit their clients, business, or management model needs. Two, it will share information on how the four primary tiers of remote monitoring technology may apply to large deployments of systems. Three, it will illustrate how remote monitoring technology can be used to optimize O&M management. Four, it will show how remote monitoring technology and data can be used to optimize individual system operation. Five, the presentation will review the operational considerations of currently available sensors and the underlying onsite wastewater collection and treatment equipment.

Bio:

Cory Lyon is an Account Manager for Orenco Systems, Inc., a wastewater equipment manufacturing firm. In this role, he helps customers grow and improve their business by providing information about Orenco products, product applications, and day-to-day business operations. He also introduces new products, supervises system startups, and performs program audits. A skilled presenter, Cory regularly gives trainings to diverse groups, including regulators, engineers, installers, service providers, electricians, and distributors. Cory holds an Associate of Applied Science degree in civil engineering technology from Umpqua Community College.

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Douglas Nelson and Alexis Countryman, Milwaukee School of Engineering

Nitrogen and Phosphorus Removal in Onsite Wastewater Treatment Systems Utilizing Microbial Inoculator Generators and Nutrient Removal Devices

Presentation, 50 minutes

Abstract:

The project is a full-size pilot onsite system that is designed to remove BOD, TSS, TN, and TP. As of this writing the system has been installed and sampling and testing will begin shortly. There should be preliminary results available by October of 2022. Project Goals and Objectives: 1. Assess the phosphorus and nitrogen removal effectiveness of a Microbial Inoculator Generator (MIG) onsite wastewater treatment system, 2. Determine the phosphorus removal capabilities of a phosphorus adsorption media, 3. Identify the maximum loading rates and flow rates to the MIG system while

achieving groundwater discharge limits. Pilot Anticipated Outcomes: 1. Enhanced nutrient removal capabilities of small-scale onsite wastewater treatment systems, 2. Increased availability of low maintenance phosphorus removal technology.

Bio:

Douglas Nelson, PE is an associate professor in the Civil and Architectural Engineering and Construction Management Department at MSOE. He teaches courses in all three programs within the department. His experience with onsite wastewater systems dates back to the mid 1980s when he started teaching and then designing systems. He started and was the charter director of the New York State Onsite Training Network. His memberships include WEF, CSWEA, ASPE, and WOWRA/NOWRA. He has been a certified inspector, maintainer, and soil tester in Wisconsin.

Alexis Countryman is a Masters Candidate in Civil Engineering with a specialization in Water and Wastewater Treatment at the Milwaukee School of Engineering (MSOE.) She has spent the past 4 years focusing her studies on wastewater treatment systems. She is very active in student organizations including Engineers Without Borders (EWB) and Central States Water Environment Association (CSWEA.) In EWB she has been on design teams and travelled to Guatemala pre pandemic and will travel again in July 2022.

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Steven Polacek, Director, Water Programs Division

OPENING SESSION: USDA Update

Presentation

Abstract:

Mr. Stein will discuss EPA’s activities in support of onsite and decentralized wastewater systems. He will cover the high-level activities of EPA’s Decentralized Wastewater Program, and place particular emphasis on the recently announced Closing America’s Wastewater Access Gap Community Initiative.

Bio:

Coming soon.

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Matt Rousseau, T.G. Rankin Co., Inc.

Pump Sizing and Choosing the Right Pump for the Application

Presentation, 25 minutes

Abstract:

Power point presentation discussing the difference between Sump, Sewage, Effluent, and Grinder pumps. Going over the SSPMA (Sump and Sewage Pumps Manufacturing Association) information on sizing a pump for the right application, what information is needed to size a pump system, explaining the concept of friction loss in different diameter pipes and determining TDH (total dynamic head), reviewing pump curves, reviewing the filters and screens used in pump applications focusing on drip irrigation systems and the explaining the different filters used on pumps, and on supply lines for drip systems (spin filters vs disk filters). When to use zones for drip systems, talking about size of zones and how the correct pump is needed to supply the zone sizing and why zoning is used in larger systems tying in the discussion on how zones allow the soils to rest between each pump cycle.

Bio:

Matt Rousseau has over 25 years of experience in the on-site wastewater industry. Graduating with a Bachelor of Science degree in Wildlife Conservation and Land Management from (Southwest) Missouri State University, he emphasized in Soil Science. After graduating, while working for SCI Engineering in St. Louis metro area he was involved with field studies for construction services, then producing wetland delineations field studies and reports. In 1998, Matt received his certification through the MO Dept. of Health and Senior Services for Certified Soil Evaluator to perform soil morphology reports for new and repair septic system evaluations. In 2001, Matt started MR Soil Consulting, continuing to perform soil evaluations and soils related preliminary development and construction reports for local and state permits. During that time, Matt also received his certification as a Basic and Advanced Septic Installer and Septic Inspector. In late 2014, Matt decided to take the opportunity to work for T.G. Rankin Company, becoming an outside sales representative for plumbing and on-site septic wastewater products. Currently as a sales rep. covering Eastern MO and Southern IL territories, Matt manages many plumbing wholesale and OEM accounts, while keeping his Soil Evaluator and Advanced Installers certifications current.

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Scott Steiger, Sump Alarm Inc.

WiFi Survival Guide for the Septic Installer

Presentation with a paper, 50 minutes

Abstract:

Wi-Fi and Cellular enabled devices are becoming prevalent in today's market. As a septic installer, your customers either are now or will be requesting them. This session will provide you the knowledge and tools to you need to know to be able to successfully define scope, quote, and execute projects containing wireless devices. Learning Objectives: 1--Identify if a customer's site is suitable for Wi-Fi enabled devices, 2--Wireless signal strength: How to test for it, and what to do if it's not there, 3--Wireless and non-wireless solutions in power loss situations, 4--Wi-Fi versus Cellular Technology: Which one to choose, 5--How to define and communicate your scope on a Wireless Installation, 6--Ways to use wireless technology as a business development opportunity.

Bio:

Scott Steiger is one of the founders of Sump Alarm Inc. Sump Alarm put the first Wi-Fi Septic Alarms onto the market in 2016 and has continued to be a front runner in outdoor Wireless Technologies for the Sump Pump and Septic sectors. Scott is an Electrical Engineering graduate from Missouri S&T and oversees new product development and engineering for Sump Alarms various product lines. He has 25 years in industry and enjoys presenting on this technology.

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Raffael Stein, US EPA Headquarters

OPENING SESSION: US EPA Update

Presentation

Abstract:

Mr. Stein will discuss EPA’s activities in support of onsite and decentralized wastewater systems. He will cover the high-level activities of EPA’s Decentralized Wastewater Program, and place particular emphasis on the recently announced Closing America’s Wastewater Access Gap Community Initiative.

Bio:

Raffael Stein is the Director of EPA’s Water Infrastructure Division and oversees the Clean Water State Revolving Fund (SRF) program which has provided over \$150 billion in assistance since its inception. Raffael also has responsibility for the decentralized wastewater program, the WaterSense program and a number of targeted wastewater funding programs. He helped establish the Water Infrastructure Finance and Innovation Act (WIFIA) program as well as the Water Infrastructure & Resiliency Finance Center. Raffael has been with the Agency for over 30 years. During the course of his EPA career he worked as an economist in the Office of Water and served in several management positions in the Agency’s Office of the Chief Financial Officer including Director of EPA’s Office of Financial Services where he was responsible for all of the Agency’s financial operations. Prior to coming to EPA, Raffael was an economist for the Commonwealth of Virginia and a financial analyst in a consulting firm specializing in municipal finance research. He earned a B.A. from Grinnell College and an MPP from Duke University.

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