

Collection to Recovery: Recap of 4 Emerging Techs Presented at 2021 PNCWA Conference

12pm PST on March 2, 2022

12 - 12:05 Intros and Emerging Tech Committee Overview

12:05 - 12:15 Presentation 1

12:15 - 12:25 Presentation 2

12:25 - 12:35 Presentation 3

12:35 - 12:45 Presentation 4

12:45 - 1:00 Q&A for all presenters

Presentation Summaries and Speaker Bios

Presentation 1. Smart Cover Presentation

This presentation will review and discuss a unique and patented monitoring technology, used in several wastewater collection system applications in the USA and Canada. The goal of this technology is to provide reliable, remote data for water and wastewater utilities. Specifically, this presentation will highlight a case study out of the Klamath Falls South Suburban Sanitary District, OR (SSSD). The key focus area for SSSD is the management of Inflow and Infiltration (I&I). By utilizing this technology, SSSD was able to quickly expand their monitoring capabilities and enhance the granularity and detail of information they were able to receive. SSSD took advantage of key components of this technology, such as lower cost, no confined space entry, and superior satellite communications to yield better information on their I&I and provide a more refined capital improvement decision making process.

Presenter: Brogan Quist

Brogan has a Bachelors of Science Degree from Westmont College, located in Santa Barbara, CA. Brogan has over 10 years of experience in the wastewater and technology sector. Brogan first started in the industry by installing and maintaining monitoring devices in the field, beginning in 2008. He has completed over 500 site visits, troubleshooting, and installations. Currently, Brogan works with customers in the Western/Central region of the United states to help solve their challenges by providing remote monitoring systems.

Presentation 2. Nuvoda Presentation: Pilot Testing Nuvoda's Mobile Organic Biofilm at the Edmonds WWTP

Like many other WWTPs in the Puget Sound region, the Edmonds WWTP will be facing nitrogen limits under the Nutrient General Permit from the Washington State Department of Ecology. The City of Edmonds WWTP is a conventional activated sludge process originally

designed for oxidation of BOD with a mean-cell residence time typically between 3 and 5 days. A large amount of additional tankage would be required to upgrade the conventional activated sludge process for nitrification and denitrification at considerable expense and would present major challenges in creating space for such an addition. Rather than wait until forced to face this challenge, the City decided to proactively explore promising alternatives. One such alternative is Nuvoda's MOB™ (Mobile Organic Biofilm) process. The City of Edmonds, Nuvoda, BHC Consultants, Jacobs, and the University of Washington worked together to assess the feasibility and potential effectiveness of this technology, conducting a full-scale pilot test, and assess potential application of this technology at the Edmonds WWTP.

Presenter: Tom Giese

Tom Giese is a registered professional engineer with over 26 years of consulting engineering experience focused primarily on wastewater treatment including facility planning, evaluation and design; process modeling; pilot testing; and construction management. Mr. Giese received both his B.S. and M.S. degrees in Civil Engineering from Oregon State University.

Presentation 3. Bioforcetech Presentation

The biosolids management industry is being asked to adjust business-as-usual practices in a number of critical areas. Treatment plants are responding to new regulatory requirements, addressing the contaminants present in our biosolids, and are working to reduce their carbon footprints to avoid increased costs and to ensure a better future for generations. Through rigorous testing with the EPA, a Life Cycle Analysis using the BEAM model, and a multitude of commercial applications that make up the reuse options for our process' resulting material, OurCarbon, the Bioforcetech system has created a path to overcoming some of the most difficult challenges our industry faces today.

Presenter: Elizabeth Bridges

Elizabeth Bridges is the Director of Design Research at Bioforcetech where she has co-lead the research and development for the biochar produced by the company's technology, called OurCarbon. Her background in sustainable materials and their applications have helped Elizabeth and the rest of the R&D team to successfully place OurCarbon into a myriad of commercial industries. She lives and works with her partner and their dog in San Francisco, California.

Presentation 4. Thermal Energy Recovery – a new role for wastewater utilities in the path towards energy decarbonization

This year's Intergovernmental Panel on Climate Change (IPCC) report matched our personal observations, the world's climate is changing. Continued economic growth and environmental sustainability are inextricably linked by climate change impacts. A primary challenge is replacing energy demands traditionally met with natural gas like indoor heating and hot water. For scale, consider that two-thirds of all household energy in the northern climates of the United States is for indoor heat and hot water. Through the advent of heat pumps and district energy systems,

it is now possible to cost-effectively recovery low-grade thermal energy from any nearby source and recycle it for low-carbon heating in nearby residences and commercial space. The last century of investment in wastewater conveyance and treatment infrastructure now provides society with a value-add opportunity to also be a viable source of low-grade heat for district energy systems. The presentation will provide an overview of district energy systems, their evolution and the state of adoption of sewer heat recovery as a low-carbon source of thermal energy.

Presenter: Jim McQuarrie

Jim McQuarrie is Tetra Tech's One Water innovation lead and a professional engineer with more than 25 years of experience serving the municipal wastewater industry in both public and private sector roles. Jim has deep practical expertise in wastewater infrastructure planning, design, and operation and has been active in bringing innovation into practice wherever it helps to save on lifecycle infrastructure costs or improve social sustainability. He is based out of Tetra Tech's Denver, Colorado, office and supports innovative wastewater solutions for our teams around the world. He has his Bachelor of Science in Environmental Science from Rutgers University and Master of Science in Environmental and Civil Engineering from Colorado State University.

Tracking Attendance on Webinar:

The Workshop will be moderated by Andrew Perez, PE, PMP (Kennedy Jenks) and the webinar software will track individual attendance as well as duration of attendance for CEUs.