American Water Works Association
Pacific Northwest Section

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November 6, 2020

Ms. Judy Grycko
OESAC CEU Committee
PO Box 577
Canby, OR 97013-0577

Re: CEU Application for Technical Program Content, Pacific Northwest Section – American Water Works Association (PNWS-AWWA) 2021 Virtual Conference

Dear Judy Grycko,

Enclosed for your review, evaluation and CEU credit approval are 8 three-hour online webinars for a total of 24 hours, for the 2021 PNWS-AWWA Virtual Conference, to be conducted online due to the COVID-19 state of emergency.

The conference will allow water and wastewater professionals the opportunity to enhance their job skills and knowledge. Information and education about topics including engineering, water quality, water resources, water treatment, water distribution, customer service, public information/education, water information technology, water system resilience, regulatory compliance, asset and data management as well as other utility management strategies will be presented during this virtual conference.

Enclosed materials include:

- Program schedule
- Abstracts, which also include training goals and speaker information
- Example of a certificate of attendance

Attendance at sessions during the conference will be tracked by quizzing attendees at the beginning of each session and after each hour of presentations. Registration materials and conference information can be accessed on-line http://www.pnws-awwa.org/conference/ .

On behalf of the Pacific Northwest Section – American Water Works Association, thank you for your time and assistance regarding this request. Should you have any questions, please do not hesitate to contact me at my home office (541) 543-5774 or at jhoyenga@ci.the-dalles.or.us .

Respectfully, Jill Hoyenga
2021 PNWS-AWWA Program Committee Vice-Chair
Home office (541) 543-5774

Enclosures

PNWS-AWWA 2021 Virtual Conference
(0.6 CEUs/Day Pending)

Morning	Feb 25 - Resilience Strategies	May 20 - Regulatory Rodeo	Aug 12 - Bull Run Projects / Willamette Water Supply Projects	Oct 28 - Asset & Data Management
8:30	America's Water Infrastructure Act (AWIA) Risk Assessment and Emergency Response Plan Tools - Charlene Kormondy	RTCR Assessments: What Have We Learned? - Charese Gainor	Bull Run Project Overview - Yone Akagi	Using Data Analytics to Make Informed Water Infrastructure Maintenance Decisions - Mike Uthe
9:00	Water Supply Self-Sufficiency and Resilience: Groundwater Development Program for Rockwood PUD and the City of Gresham - Justin Ford	Protective Coating Performance Matters: Implications of NSF Std. 61 Changes - Michelle Call	Bull Run Projects: Communications Strategies for Customers and Water Filtration Facility Neighbors - Bonita Oswald	Asset Management System Development for a New Water Supply System - Kari Duncan
9:30 - 9:45 Break				
9:45	On-Site Sodium Hypochlorite Generation: A Safe and Reliable Disinfection Alternative to Bulk Sodium Hypochlorite and Gas Chlorine - Ethan Brooke	How State Regulations Affect Purveyor Cross Connection Control Programs - Terry Pickel	Bull Run Pilot Findings - Mac Gifford	Renewing Old Mains with Potable Distribution Water Main High-Pressure Jetting Method/Process - Chris Wilkinson
10:15	Rancheria Springs UV: From Spring Development to UV Treatment in 8 Months - Pat Van Duser	Responding to a System Contamination - Loren Searl		What's in a Name? Updating Bellevue's Obsolete Pressure Zones - Doug Lane
10:45 - 11:00 Break				
11:00	Success Stories From Implementing Common Low/No Cost Energy Saving Projects - Wendy Waudby	TrueWater: Operational Forecasts of Changes in Water Quality Using Big Data and Machine Learning - James Watson	Bull Run Filtration Project: Preliminary Design Update - Lyda Hakes	Implementing HDPE for TVWD Engineers & Operators - Sarah Alton
11:30	Consolidation of Water Utilities: The Ratepayer Value Proposition - Steve Green	Medford Water Commission's Integrated Approach to Data Management for Monitoring Water Quality and Informed Operations - Arlo Todd	Preparing Portland's Distribution System for Filtraton - Christina Suto	Mechanical Fittings and Repairs on High Density Polyethylene Pipe (HDPE) - Mike Scholz

PNWS-AWWA 2021 Virtual Conference
(0.6 CEUs/Day Pending)

Afternoon	Feb 25 - Resilience Strategies	May 20 - Regulatory Rodeo	Aug 12 - Bull Run Projects / Willamette Water Supply Projects	Oct 28 - Asset & Data Management
1:00	How a Small Utility Integrated the 2004 Vulnerability Assessment into the 2018 AWIA Requirements - Jill Hoyenga	Best Available Technologies for Treating PFAS in Drinking Water - Mike Tallering	Lessons from Mega-Projects for Your Midi-, Mini- and Micro-Projects - Mark Graham	Building a Data Strategy for Your Utility - Marshall Thompson
1:30	Adaptive Management Strategies for Integrated Water Resource Management in an Uncertain Future Climate - Kensey Daly	Removing PFAS: Startup and Performance of the Coupeville GAC Treatment System - Esther Chang	Six Years In: Developing the Willamette Water Supply System - Joelle Bennett	Securing Regulatory Compliance: Managing and Exploiting Data Effectively to Make Informed Decisions - David Lynch
2:00 - 2:15 Break				
2:15	Joint Water Commission's Expansion to 85MGD WTP Project - Brad Phelps	Deep Bubble Aeration: An Easy to Operate Alternative for Corrosion Control - Lee Odell	Lessons Learned from the 2011 Tohoku Earthquake, Applied to the Willamette Water Supply System - Mike Britch	Digital Water: Preparing Your Organization With the Future State in Mind - Kelly Kimball
2:45	Shaking Things Up: Innovative Seismic Resilience Planning in the City of Bellevue - Doug Lane	Corrosion Control Treatment & Required Monitoring - Kay Rottell		Navigating the Challenges of Defining Portland Water Bureau's Future SCADA System - Caitlin Bliesner
3:15 - 3:30 Break				
3:30	We're Running Out of Space! Where to Site Your New Backbone Facilities - Adam Blair	LCRR Implementation: Evaluating How Utilities Will Need to Adapt to New LCRR Requirements - Damon Roth	Evaluation of Risk Factors for Integrating a New Supply - Stephen Booth	Machine Learning to Optimize Water Treatment Plant Operations - Enoch Nicholson
4:00	Adapting Water Storage to the 21st Century - Patrick Craney	Lead & Copper Rule: Routine Monitoring and Site Selection - Matthew Hadorn		Bend's Plan for the Future - David Stangel

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Session ID	Q1AM01	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **America's Water Infrastructure Act (AWIA) Risk Assessment and Emergency Response Plan Tools**

Abstract Drinking water systems across the country are at risk to many kinds of water emergencies, causing disruptions in their service. The risks and threats range from floods, droughts, fires, cyber-attacks or broken mains. During this session, USEPA's Water Security Division will discuss the American Water Infrastructure Act (AWIA) which requires each community water system serving a population of greater than 3,300 persons to assess the risks to, and resilience of, its system. The participants will be informed of the tools and resources to assist utilities with developing their Risk and Resilience Assessment and Emergency Response Plan. Information will also be provided on how to certify completion of Risk and Resilience Assessments and Emergency Response Plans by the applicable deadlines.

CEU Relevancy Under Presidential Policy Directive (PPD) 21, which addresses Critical Infrastructure Security and Resilience, the United States Environmental Protection Agency (EPA) is designated as the Sector-Specific Agency for the Water Sector. EPA's Water Security Division (WSD) aims to enhance the preparedness and resilience of the water sector by providing practical, innovative tools and training. More information is available online at epa.gov/waterresilience. In 2018, America's Water Infrastructure Act (AWIA) was signed into law, which requires community (drinking) water systems serving more than 3,300 people to develop or update risk and resilience assessments (RRAs) and emergency response plans (ERPs). This webinar will provide drinking water utilities with detailed information on AWIA Sections 2013 and 2018. Specifically, the webinar will cover the new risk assessment and emergency response plan requirements and the tools available to help communities comply with AWIA.

Author	**Charlene Kormondy**	**E-mail**	kormondy.charlene@epa.gov
Author's Job Title	Physical Scientist	**Phone**	202.564.3807
Organization	EPA WSD		

Primary Job Duties Charlene Kormondy is a Physical Scientist in the Water Security Division at the U.S. EPA. Currently, her work focuses on creating outreach and communication and providing trainings to water utilities across the country related to requirements under America's Water Infrastructure Act.

Related Prior Employment Previously, Charlene completed a fellowship in EPA's Office of Ground Water and Drinking Water. Charlene earned her master's degree in Environmental Science and Management , with a focus on water resources management, from the University of California, Santa Barbara. While in graduate school, Charlene completed a summer internship at the EPA Office of Wastewater Management, Water Permits Division.

Registrations or Certifications Master of Environmental Science and Management degree

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Session ID	Q1AM02	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Water Supply Self-Sufficiency and Resilience: Groundwater Development Program for Rockwood PUD and the City of Gresham**

Abstract The Rockwood Water PUD and City of Gresham water supply agencies have historically bought wholesale water from a nearby water purveyor. To gain full ownership of their water supply and ensure resiliency, they undertook a $120 million, Groundwater Development Master Planning (GDMP) supply program consisting of nine packages: the development of five wells and wellhouses; four groundwater treatment plants; a 6.0 MG treated water storage tank; rehabilitation of a 4.0 MG treated water storage tank; and miles of water transmission piping. The program includes a seismically resilient AWWA D110 Type I prestressed concrete tank; tanks configured with electrically actuated, seismically activated control valves; fully restrained pipelines; and integration with the regional ShakeAlert system. This program is the beginning of a new era for their customers—one where self-sufficiency and resiliency are at the forefront. All project packages in the program are slated to be completed by the end of 2026.

CEU Relevancy This presentation will be relevant to water professionals of all kinds. Topics discussed will include groundwater supply and development, water storage and transmission, seismic resiliency and emergency preparedness, and program development.

Author	**Justin Ford**	**E-mail**	Justin.Ford@murraysmith.us
Author's Job Title	Civil Engineer	**Phone**	503-310-9671
Organization	Murraysmith		

Primary Job Duties Justin is a civil engineer and project manager at Murraysmith, where he has worked for almost 10 years. He works primarily on municipal potable water supply, distribution, transmission, and storage projects.

Related Prior Employment Same as current

Registrations or Certifications Professional Engineer (P.E.) in OR, WA, CO, and ID

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Session ID	Q1AM03	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **On-Site Sodium Hypochlorite Generation: A Safe and Reliable Disinfection Alternative to Bulk Sodium Hypochlorite and Gas Chlorine**

Abstract This presentation will discuss the relative advantages of OSHG, the design features of the modern OSHG systems and will present a number of case studies that include systems that generate from 10 pounds per day (PPD) of chlorine equivalent to over 14,000 PPD.

CEU Relevancy This presentation will provide water system managers, operators and engineers a practical understanding of the science and implementation behind on-site sodium hypochlorite generation (OSHG) as a source of chlorine disinfection capacity for water and wastewater plants as well as distributed well systems.

Author	**Ethan Brooke**	**E-mail**	ebrooke@ugsicorp.com
Author's Job Title	Regional Sales Manager & Senior Product Manager	**Phone**	917-501-7358
Organization	UGSI Solutions		

Primary Job Duties Ethan Brooke is a Regional Sales Manager and Senior Product manager for UGSI solutions inc. He is an internationally recognized expert on aeration technologies for trihalomethane (THM) removal.

Related Prior Employment Prior to joining PAX water in 2013, Ethan worked as a civil engineer on water and wastewater improvement projects at Underwood Engineers in Portsmouth NH. He holds an MS in civil engineering from the University of New Hampshire, and undergraduate degrees in Physics and Sculpture from Antioch college, Yellow Springs OH.

Registrations or Certifications A peer reviewed summary of his Master Thesis on THM aeration was published in the Journal American Water Works Assoc, and recently referenced in AWWA manual of practice M68.

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Session ID	Q1AM04	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Rancheria Springs UV - From Spring Development to UV Treatment in 8 Months**

Abstract The Medford Water Commission chose Jacobs to improve the Rancheria Springs supply. The project shifted course to UV Treatment and implemented this treatment in 8 months to help meet system demand in the peak period late Summer 2020 just ahead of wildfire season. The presentation will address project goals and tools to accomplish this very cost-efficiently including innovative use of CM/GC contracting for a relatively small project.

CEU Relevancy The presentation will address improving and increasing water supply and address details in construction important to the operation and maintenance of a small UV Treatment facility.

Author	**Pat Van Duser**	**E-mail**	pat.vanduser@jacobs.com
Author's Job Title	Project Manager	**Phone**	(503) 705-3923
Organization	Jacobs		

Primary Job Duties Project manager and Project Delivery Manager for Jacobs Engineering Group. Based out of Portland, Oregon. Note: Primary Speaker may differ at presentation - either way, a brief, detailed bio will be provided.

Related Prior Employment Worked for 25+ year career out of Portland, Oregon with focus on drinking water pumping, storage and treatment projects. Focus on pump stations from 8 mgd to 144 mgd and intake screens and pumping.

Registrations or Certifications Professional Engineer in Oregon and Washington

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Session ID	Q1AM05	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Success Stories From Implementing Common Low/No Cost Energy Saving Projects**

Abstract In working with dozens of water systems, we have found a typical water system can save 9% energy on average by implementing low/no cost energy saving projects. We will share the most common types of low/no cost energy saving projects that don't sacrifice water quality. We will share real world success stories from water systems in the Pacific Northwest that have already implemented projects and documented savings.

CEU Relevancy This presentation will cover common operation, maintenance, and management issues and solutions for water systems. We will provide examples of successful implementation of low and no cost energy saving improvements that did not negatively impact water quality. Certified operators will be able to take what they learn back to identify and implement improvements for their systems.

Author	**Wendy Waudby**	**E-mail**	wendy.waudby@cascadeenergy.co
Author's Job Title	Water/Wastewater Engineer	**Phone**	208.917.4915
Organization	Cascade Energy		

Primary Job Duties Helping water and wastewater professionals to save energy while maintaining water quality through leading trainings, identifying opportunities, and providing support. Estimating energy savings and potential power utilities incentives for low/no cost and capital projects.

Related Prior Employment I have 17 years of experience in energy efficiency, wastewater treatment plant design, reuse, and wastewater service charges. I've worked as a design consultant and a regulator and I've worked for a large wastewater agency.

Registrations or Certifications Registered professional engineer in Idaho and California

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Session ID	Q1AM06	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Consolidation of Water Utilities: The Ratepayer Value Proposition**

Abstract The consolidation of smaller water utilities into larger, regional organizations with combined governance, financial and operational structures can enable communities to implement more stable, affordable rate structures while also addressing unfunded infrastructure needs, enhancing resilience, ensuring regulatory compliance and accessing innovative practices and technologies. Despite being an important tool for long-term, sustainable water services, utility consolidation is rarely discussed and utilized very infrequently. This fact-based presentation will discuss definitions and types of consolidation approach, discuss barriers and best practices, and offer case studies on utilities that have successfully benefited ratepayers by accessing the benefits of a consolidated approach.

CEU Relevancy This presentation will add to the toolkit of water utility operators, engineers, managers and public officials as they determine the best way to maintain optimal customer services amid the challenges of population growth, affordability challenges, income disparity and increasing regulations. Certified operators within larger, consolidated or regionalized utilities are able to access a large peer network, greater levels of pooled expertise, and more funding sources to ensure water quality and protect the public health. Consolidated utilities can often access or implement water supply options in a more resilient and affordable manner when compared to multiple, smaller water providers.

Author	**Steve Green**	**E-mail**	steve.green@nwnatural.com
Author's Job Title	Business Development Director - Public Sector Water & Wastewater	**Phone**	503.318.9290
Organization	NW Natural Water		

Primary Job Duties I help water and wastewater utilities encountering financial, governance or operational challenges understand their options when it comes to utility consolidation and public/private partnership (P3) solutions. I help them navigate the process to consolidate or implement a P3 approach where it proves to be the most beneficial solution for ratepayers.

Related Prior Employment I was initially an engineering consultant helping water utilities improve their infrastructure, then transitioned to water tech business development, helping communities implement upgrades to benefit rate payers and increase resilience. I now help utilities understand and implement consolidation or P3 approaches where and when appropriate. I have 20+ years experience in the water industry.

Registrations or Certifications BSCE, EIT, MBA

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Session ID	Q1PM01	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **How a Small Utility Integrated the 2004 Vulnerability Assessment into the 2018 AWIA Requirements**

Abstract During this session, the presenter will describe the development process at her utility for compliance with the American Water Infrastructure Act (AWIA) which requires each community water system serving a population of greater than 3,300 persons to assess the risks to, and resilience of, its system. The presenter will discuss which elements of utility's Vulnerability Assessment, required by the 2002 Public Health Security and Bioterrorism Preparedness and Response Act, were integrated into the new AWIA compliant assessment and emergency response plan. This topic is especially relevant to medium-sized and small utilities which face AWIA compliance deadlines in June and December 2021.

CEU Relevancy This presentation relates to the CEU core competencies from the ABC Need to Know Criteria for Operators: How to comply with drinking water regulations; How to administer emergency preparedness, safety and security programs. OESAC Need to Know Criteria: water treatment facilities construction and performance, source construction and protection, capacity, storage, pumping and distribution facility construction and protection; drinking water and related regulations to insure protection of public health. Washington DOH Need to Know Criteria: Utility management: Drinking water regulations, financial viability, water system security, and responding to drinking water emergencies.

Author	**Jill Hoyenga**	**E-mail**	jhoyenga@ci.the-dalles.or.us
Author's Job Title	Regulatory Compliance Manager	**Phone**	541-506-2005
Organization	City of The Dalles		
Primary Job Duties	Regulatory Compliance and Public Information Officer		
Related Prior Employment	Planner III		
Registrations or Certifications	BS in Management, Certificate in Marketing; OR Water Distribution I; OR Cross Connection Specialist; OR Backflow Prevention Assembly Tester; Instructor		

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Session ID	Q1PM02	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Adaptive Management Strategies for Integrated Water Resource Management in an Uncertain Future Climate**

Abstract Addressing uncertainties in future climate and its impacts to water supply and demand is required by the American Water Infrastructure Act, and is a challenge for utility managers who are responsible for providing reliable water resources. This presentation describes multiple techniques to develop future climate risk adaptation and mitigation strategies and to provide a strategic roadmap for management of water supply in an uncertain future. These techniques have been widely applied on projects across the western United States, including the Colorado River Basin, California Central Valley, and Rocky Mountains, and this presentation will focus on vulnerability assessments and adaptation strategies relevant to Pacific Northwest drinking water utilities.

CEU Relevancy Attendees will learn about impacts of climate change on water supply, and available adaptation and mitigation strategies to reduce climate future risk to water supply utilities. Information from this presentation helps drinking water utilities meet regulatory and customer demands for reliable future supply planning.

Author	**Kensey Daly**	**E-mail**	KENSEY.DALY@JACOBS.COM
Author's Job Title	Water Resource Engineer	**Phone**	805.636.6801
Organization	Jacobs		

Primary Job Duties My work is generally focus on adaptive and integrated management planning for near- to long-term planning efforts. My skillset focuses on dynamic systems modeling, as well as environmental fluid mechanics modeling for a variety of water resource systems.

Related Prior Employment

Registrations or Certifications

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Session ID	Q1PM03	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Joint Water Commission's Expansion to 85MGD WTP Project**

Abstract The Joint Water Commission embarked on the expansion of their Water Treatment Plant in 2015. Through careful planning and looking to the future the project team developed and implemented a $35M/15MGD capacity expansion plan with many unique features and benefits which redirected the future of the plant. As the project was completed in 2020, many construction techniques were employed, and some interesting challenges were encountered. The presentation will provide a culmination of the work elements conducted, the strategies employed and solutions developed to complete this successful project.

CEU Relevancy Seismic Resiliency planning with increased water supply, and new operational parameters allowed this project to become the current largest conventional water treatment plant in Oregon. Techniques of design and operations will be provided to provide a platform for others to learn and utilize in their water supply operations and designs.

Author	**Brad Phelps**	**E-mail**	Brad.Phelps@jacobs.com
Author's Job Title	Principal Portfolio Manager	**Phone**	503.360.7413
Organization	Jacobs		

Primary Job Duties Project Development and Delivery Services for Successful Municipal Projects

Related Prior Employment I have been employed in the water engineering industry of the Northwest for over 35 years.

Registrations or Certifications PE - Washington, Oregon, Idaho

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Session ID	Q1PM04	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Shaking Things Up – Innovative Seismic Resilience Planning in the City of Bellevue**

Abstract What impacts could seismic events have on your water system and community? How much might water service be interrupted, and how quickly can supply be restored? What level of capital spending is appropriate to increase resilience and reduce impacts? This presentation details innovative risk, probability, and consequence based modeling approaches that Bellevue is using to answer these questions, baseline water system seismic vulnerability, and identify economically justifiable resilience improvements. New methods to evaluate asset vulnerability on a pipe, facility, and neighborhood basis are detailed, along with probabilistic modeling approaches that predict water system seismic performance, and characterize resulting impacts and economic consequences. Computerized optimization methodologies that establish economically justifiable system improvements and quantify resulting benefit are presented, along with real-world findings and lessons-learned from the Bellevue assessment.

CEU Relevancy The presentation shares new tools and approaches that water utility managers, engineers, and operators can apply to better understand community and utility system seismic risks, and appropriately determine, plan for, and justify needed resilience improvements. Real-world seismic resilience assessment approaches and results from the City of Bellevue analysis provide realistic planning and operational perspectives into typical system vulnerabilities, and appropriate resilience improvement strategies.

Author	**Doug Lane**	**E-mail**	dlane@bellevuewa.gov
Author's Job Title	Water and Sewer Systems Senior Engineer	**Phone**	425 452 6865
Organization	City of Bellevue, Washington		

Primary Job Duties Doug Lane serves as a Senior Engineer with the City of Bellevue, with a focus on water and sewer system planning, modeling, design, and asset management.

Related Prior Employment

Registrations or Certifications Licensed Professional Engineer and Certified Water Distribution Manager 4 in the State of Washington

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Session ID	Q1PM05	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **We're Running Out of Space! Where to Site Your New Backbone Facilities**

Abstract Limited available land suitable for new storage reservoirs, in combination with expanding urban growth, is increasingly creating the need for large scale construction projects within existing neighborhoods. This presentation will explore a case study from a water district in Oregon, Clackamas River Water, who recently navigated a challenging reservoir project. Designed as a critical element in an expanding water distribution backbone infrastructure, the 6.0 million gallon 152nd Avenue Reservoir, constructed jointly with the neighboring Sunrise Water Authority, was needed for system resiliency, improved distribution, and expanded storage for the growing service areas. Located on a tight site in a residential neighborhood, the presenters will discuss lessons learned from the wide variety of site civil, system operations, geotechnical, and public relations challenges that the District/Consultant design team were able to overcome.

CEU Relevancy This presentation will be of interest to operators, officials, and engineers with increased need for resiliency (backbone) projects, system expansion, and a focus on the benefits of AWWA D110 Type I prestressed concrete reservoirs in challenging construction environments. It is also of interest to planners, officials, engineers, and operators trying to site large engineering and construction projects in developed residential communities. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Adam Blair**	**E-mail**	adam.blair@murraysmith.us
Author's Job Title	Civil Engineer	**Phone**	503.546.0335
Organization	Murraysmith		

Primary Job Duties Adam is a project engineer at Murraysmith with a established record of ensuring effective project design from start to finish. His current duties include design and construction engineering on reservoir, ASR well, water transmission, and distribution systems in Oregon and Washington.

Related Prior Employment

Registrations or Certifications Professional Engineer in Oregon

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Session ID	Q1PM06	**Date**	February 25, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Adapting Water Storage to the 21st Century**

Abstract The presentation illustrates steps taken to bring a 1.0 MG elevated water storage tank into 21st century operational guidelines. The 1963 structure was evaluated for seismic resiliency, coatings options and operational appurtenances. The project development decisions to address identified deficiencies will be highlighted. The final project outcomes will be shared as well.

CEU Relevancy Water storage tanks are an expensive asset that if designed and maintained properly could be active for over 100 years. As operational guidelines are updated, these long term assets must be altered to meet those changing guidelines. Safe operator access, drinking water quality and structural protection are some common themes that should be reviewed periodically to ensure this long term asset continues to serve the community past its design life.

Author	**Patrick Craney**	**E-mail**	patrick.craney@cityofvancouver.us
Author's Job Title	Water Resources Engineer	**Phone**	360.487.7167
Organization	City of Vancouver		

Primary Job Duties Enhancing and protecting the groundwater sources serving the City of Vancouver.

Related Prior Employment Developed drinking water/wastewater utilities in the western U.S. since 1989.

Registrations or Certifications PE in multiple states.

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Session ID	Q2AM01	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **RTCR Assessments: What Have We Learned?**

Abstract The Revised Total Coliform Rule, effective in 2016, introduced the assessment following confirmed contamination events (aka treatment technique trigger). An assessment is a comprehensive water system evaluation of system facilities, operations, and management, that seeks to find and fix any sanitary defects or failure or imminent failure in barriers to contamination. Nearly 5 years in, what trends have we seen in Washington State and what can you do?

CEU Relevancy This presentation will look directly at data and trends observed by WA State Drinking Water program and discuss steps that operators and managers can take to help prevent confirmed contamination as well as address common misunderstanding of the RTRC.

Author	**Charese Gainor**	**E-mail**	charese.gainor@doh.wa.gov
Author's Job Title	Coliform Program Manager	**Phone**	360.608.1963
Organization	WA State Dept of Health Office of Drinking Water		

Primary Job Duties Charese Gainor has been working for the Office of Drinking for nearly four years with the Coliform, Disinfection, and WFI programs in the Southwest Regional office. Her daily work includes helping water systems respond to unsatisfactory routine coliform samples, reviewing month disinfection report forms and assessments, and updating water facilities inventory forms to represent water system operators accurately.

Related Prior Employment Before coming to ODW, she worked in an environmental laboratory for nearly 5 years analyzing the very samples required by the RTCR. She has a degree in cellular and molecular biology from Western Washington University.

Registrations or Certifications In her spare time, she is attending UND to obtain a Master's in Engineering.

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Session ID Q2AM02 **Date** May 20, 2021 **Length of Session** 30 Minutes

Location Remote **Drinking Water, Wastewater, Both** Drinking Water

Presentation Title: **Protective Coating Performance Matters: Implications of NSF Std. 61 Changes**

Abstract This presentation will include a review of the recent NSF changes to Std. 61 and the new Std. 600 and the implications on commonly used protective coatings technologies for potable water service. A discussion around why "performance matters" will include an evaluation protocol for owners/specifiers to determine which existing or new technologies to use. The goal of this evaluation protocol will be to determine the coating technology offering the longest service life possible, which will be shown to offer the lowest life cycle cost and most sustainable solution consistent with asset management objectives. The evaluation protocol will include use of standard ASTM testing procedures and actual case histories to predict accurate service life.

CEU Relevancy The new Std. 600 defines the toxicology review procedures for evaluating specific chemicals or contaminants in drinking water resulting from use of treatment chemicals (Std. 60) and water distribution system components (Std. 61). The standard evaluates the potential human health risk of contaminants that may be imparted into drinking water under anticipated use conditions. Included in the new Std. 600 are new significantly lower maximum contamination levels (MCL) for three commonly used solvents which are widely used in solvent borne epoxy protective coatings effectively eliminating many conventional workhorse epoxy coatings. NSF has established an effectivity date of 1/1/2023 for these new limits. This change will require a shift to 100% epoxy technology, or other solvent free technologies, for the protection of both steel and concrete in contact with potable water.

Author **Michelle Call** **E-mail** mcall@tnemec.com

Author's Job Title Coating Consultant **Phone** 801.518.6802

Organization Tnemec - Call Coating Consultants

Primary Job Duties Michelle Call is an Independent Representative of Tnemec Company covering Idaho, Utah and Nevada. Michelle is able to offer consulting in all aspects of the coating process from start to finish. Assistance in writing the specification, selection of the contractors, training in application, and jobsite visits. She understands the education and experience she can provide with her industry knowledge of shop and field applications.

Related Prior Employment Michelle has more than 30 years experience in the coatings industry. Michelle joined Tnemec in the fall of 2009 after working in her family's blasting and painting business since 1986 and also spending 7 years as the Coatings Division Manager for SME Steel.

Registrations or Certifications Michelle is active in AWWA, RWAU, IRWA, SSPC and CSI member with a certificate in Construction Document Technology.

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Session ID	Q2AM03	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **How State Regulations Affect Purveyor Cross Connection Control Programs**

Abstract The drinking water rules relating to cross connection control for Washington, Idaho and Oregon vary to a certain degree, mainly in the level of detail. This discussion will highlight the public water system operator's responsibility for the various states and how the differences in the rules affect them. The differences in certification, training and reporting will be detailed.

CEU Relevancy This will illustrate for program operators and managers the differences across state lines and the challenges presented by testers certified in multiple states. Will also highlight the complexity of program administration. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Terry Pickel**	**E-mail**	tpickel@cdaid.org
Author's Job Title	Water Dept. Director	**Phone**	208-769-2210
Organization	City of Coeur d'Alene		

Primary Job Duties Provide day to day oversight and long term management of a medium sized public water system. Duties include personnel management, budgeting and administration, water quality and regulatory compliance. Operator of record.

Related Prior Employment Water Dept. Supervisor, City of Cheney

Registrations or Certifications WA: WDM III, WTPO II, CCS - ID: DWD 4, DWT 2

American Water Works Association
Pacific Northwest Section

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Session ID	Q2AM04	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Responding to a System Contamination**

Abstract Spokane experienced a backflow incident that resulted in hydro seed material being introduced to the water system. We will discuss how this happened, the impacts that our customers experienced, the response by the department, and how we returned to normal operations. We will also look at the operational changes implemented and regulations enacted to better protect our community in the future.

CEU Relevancy This presentation will highlight an actual backflow incident and the effects it had, to better inform an operator on the importance of protecting the system. By looking at the response for our department and sharing the lessons learned, operators will know what to look for and how to express the importance of backflow protection to their community. Administrators will be able to use our lessons to better secure their own systems without having to experience this themselves. Many functions for a wastewater operator also involve the use of drinking water and this can help the wastewater operator understand how their operations can affect the drinking water system so they can maintain their system better while protecting the health and safety of the drinking water. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Loren Searl**	**E-mail**	lsearl@spokanecity.org
Author's Job Title	Superintendent	**Phone**	(509)625-7851
Organization	City of Spokane		

Primary Job Duties I have worked in our water system for over 25 years. As the water superintendent for the city of Spokane I manage the maintenance and operations of the city's water system. This includes maintenance and repair, metering, cross connection control, and new installation.

Related Prior Employment

Registrations or Certifications

American Water Works Association
Pacific Northwest Section

2021
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Session ID	Q2AM05	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **TrueWater: Operational Forecasts of Changes in Water Quality Using Big Data and Machine Learning**

Abstract TrueWater is a novel water quality prediction system that has been developed to make operational forecasts of harmful algae biovolume and toxin concentrations. This system is now being expanded to predict other dimensions of water quality such as temperature, turbidity and dissolved oxygen. Predictions are made for a range of forecast horizons: from short-term weekly predictions to seasonal forecasts. TrueWater was built to 1) provide warning so utilities can avoid emergency events; 2) inform the location and timing of source water monitoring; and 3) build trust with citizens through a public-facing web portal. I will present the collaboration with the City of Salem from which TrueWater emerged, and describe how TrueWater can be applied to any other water body in the US for which data are collected.

CEU Relevancy Real-time water quality monitoring is always late: by the time a problem has been identified, it has already happened. To effectively manage emergency events such as harmful algal blooms, water quality managers need predictions: actionable information that enables managers to respond to problems before they happen. To address this need, TrueWater is a water quality prediction system that applies novel machine learning methods to data provided by users on water and weather conditions, as well as data from satellite imagery when available, to provide estimates of the concentration of specific algal species, toxin levels and other dimensions of water quality at multiple time horizons (from days to months). TrueWater is low-cost, predictive rather than observational, and resilient: being able to continue to make predictions even with data dropouts.

Author	**James Watson**	**E-mail**	james@thepredictionlab.com
Author's Job Title	CEO	**Phone**	805.699.5453
Organization	The Prediction Lab LLC		

Primary Job Duties I am the CEO of The Prediction Lab LLC. I manage a team of environmental and computer scientists who develop new technologies for solving wicked problems.

Related Prior Employment In addition to being the CEO of The Prediction Lab LLC, I am an Assistant Professor at the College of Earth, Ocean and Atmospheric Sciences, Oregon State University. Previously I was a postdoctoral scholar at Princeton University, then an Assistant Research Professor at The Stockholm Resilience Centre in Sweden. I received my PhD in Marine Sciences from the University of California Santa Barbara.

Registrations or Certifications

American Water Works Association
Pacific Northwest Section

2021
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Session ID	Q2AM06	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Medford Water Commission's Integrated Approach to Data Management for Monitoring Water Quality and Informed Operations**

Abstract This presentation will describe Medford Water Commission's comprehensive approach to managing and integrating data across programs and departments. Using SCADA, WIMS, GIS, and Microsoft applications we have improved data collection, data quality, treatment operations, compliance reporting and ultimately the quality of water at customer taps. The discussion will cover how treatment and distribution system data from online analyzers and grab samples along with hydrant flushing data, lab reports and water quality complaints are integrated, analyzed, graphed, and mapped with interactive dashboards. Examples include analyses for optimizing reservoir cycling, responding to water quality issues by tracking their temporal and geographic extents, using data to maintain and track the performance of instruments and equipment, quality control with grab samples vs online data analysis, and using data to communicate with confidence with consultants, our board, for compliance, and with the public.

CEU Relevancy This presentation will provide operators, technicians, engineers, managers and IT, examples of how to make the most of the data collected when operating a treatment plant and managing water quality in the distribution system. Takeaways from the presentation include ideas of how to better use the software common in the industry, how to integrate all available data, how to use visual data interpretation tools, assessing and maintaining the quality of the data and integrated data across different platforms.

Author	**Arlo Todd**	**E-mail**	arlo.todd@medfordwater.org
Author's Job Title	Watershed and Water Quality Technician	**Phone**	520.305.0572
Organization	Medford Water Commission		

Primary Job Duties I have been with the Medford Water Commission for three years. My current job duties include maintaining our Water Quality database and supporting our Director of Water Quality with analysis and reporting of this data. I also support our field technicians as a backup for water quality sampling and hydrant flushing. In our Watershed Department, I am the monitoring coordinator, data analyst and assist with the planning and management of watershed protection and enhancement activities such as forest management and watershed restoration projects.

Related Prior Employment

Registrations or Certifications I have a Bachelors of Science in Environmental Science and Policy with an emphasis in Data Analytics and GIS.

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Session ID	Q2PM01	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Best Available Technologies for Treating PFAS in Drinking Water**

Abstract We will provide overview, design criteria, and case studies covering the Best Available Technologies for Treating PFAS in Drinking Water.

CEU Relevancy This presentation is extremely relevant to all municipalities operation, maintenance and management of their water treatment systems. This will allow management and operations the ability to successfully treat for PFAS in their water systems. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author **Mike Tallering** **E-mail** mike.tallering@envirositesolutions.

Author's Job Title President **Phone** 360-503-7299

Organization Environmental Site Solutions

Primary Job Duties Own and operate a water treatment system supply & service company

Related Prior Employment

Registrations or Certifications

American Water Works Association
Pacific Northwest Section

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Session ID	Q2PM02	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Removing PFAS: Startup and Performance of the Coupeville GAC Treatment System**

Abstract The Town of Coupeville and the Navy have constructed granular activated carbon (GAC) treatment process improvements at the Town's existing Fort Casey WTP to addressing PFAS (per- and polyfluoroalkyl substances) groundwater contamination in the Town's water supply wells, located adjacent to Naval Air Station Whidbey Island facilities. The new GAC treatment system delivers water quality consistent with current USEPA lifetime health advisory thresholds for PFOA and PFOS, two primary contaminants of concern within the broader PFAS family of compounds, but is also effective at removing other PFAS contaminants of concern. This presentation will review the evolving PFAS regulatory landscape, GAC treatment process technology and application for removal of PFAS and other contaminants of concern, and lessons learned, with a focus on treatment system startup and ongoing PFAS treatment performance through the first 2-years of system operation.

CEU Relevancy As an emerging contaminant with increasing prevalence in the natural environment and in water supply resources, PFAS removal and treatment is a growing concern for water system engineers, operators, and public officials. This presentation discusses the significance, measurement, health-advisories, and regulatory framework relative to PFAS chemicals, and evolving approaches to protect public health and reduce exposure to PFAS through drinking water. In addition, it provides a case-study for the implementation of PFAS removal technologies detailing lessons learned and process performance from treatment system startup through 2-years of successful operation.

Author	**Esther Chang**	**E-mail**	esther.chang@jacobs.com
Author's Job Title	Water Engineer	**Phone**	206.861.6791
Organization	Jacobs		

Primary Job Duties Esther is a water engineer with four years of industry experience in drinking water supply and treatment. She has experience collaborating on projects from conception through detailed design, to include construction management, commissioning and startup assistance for projects with municipal, private, and state clients.

Related Prior Employment

Registrations or Certifications

American Water Works Association
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Session ID	Q2PM03	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Deep Bubble Aeration: An Easy to Operate Alternative for Corrosion Control**

Abstract Aeration to remove carbon dioxide and raise pH is an effective and safe method of corrosion control for many utilities with low pH groundwater with moderate levels of alkalinity. This presentation will describe the use of deep bubble aeration as an easy to operate alternative to packed tower aeration facilities. Pilot testing results and full-scale operational data will be presented.

CEU Relevancy This presentation will focus on the operational safety, reliability, and effectiveness of the treatment units. Descriptions of the maintenance requirements will be provided. The use of the treatment systems can help operators adjust pH in a safe, reliable manner for many groundwaters.

Author	**Lee Odell**	**E-mail**	Lee.Odell@murraysmith.us
Author's Job Title	Principal Engineer	**Phone**	503.225.9010
Organization	Murraysmith		

Primary Job Duties Lee recently joined Murraysmith as a Principal Engineer. He is a nationally recognized expert in drinking water quality and treatment. His over 30 years of experience includes completion of more than 200 water treatment projects, authorship of AWWA's Treatment Technologies for Groundwater, development of ASCE's only certificate course on drinking water treatment, and innovation of many new treatment technologies. It goes without saying that Lee is Murraysmith's go-to expert for projects dealing with drinking water quality, planning, and treatment.

Related Prior Employment Former president and founder of Odell Engineering, LLC

Registrations or Certifications Registered PE in WA, ID, OR and Chair of ASCE EWRI Water Supply, Treatment and Distribution Committee

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Session ID	Q2PM04	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Corrosion Control Treatment and Required Monitoring**

Abstract This presentation will discuss optimal corrosion control treatment systems for water systems. We will discuss what optimal corrosion control treatment is, the different treatment options for water systems, and the required post treatment monitoring. We will discuss the required and recommended water quality parameter monitoring along with discussions about the designation of optimal water quality parameters. In addition to monitoring requirements the presentation will define the Treatment Technique Violations (TTVs) and how they are determined. If time allows and the draft lead and copper rule long term revisions have been release we will discuss any changes to the sampling requirements in the long term revisions.

CEU Relevancy This presentation discusses treatment systems and the required treatment system monitoring under the lead and copper rule. The presentation will describe how to monitor the corrosion control system at entry point and in distribution and help the operator determine the monitoring requirements and how treatment technique violations are determine. It will also discuss the monitoring programs that should be discussed during the design of these systems. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Kay Rottell**	**E-mail**	kay.rottell@doh.wa.gov
Author's Job Title	SW Regional Office Assistant Regional Manager	**Phone**	360-236-3024
Organization	Washington State Department of Health		

Primary Job Duties I am the southwest regional office assistant regional manager and supervise the regional engineers and planner in our region. I ensure that the regional staff are consistent with rules and regulations and office policy. I am also a member of the office lead and copper work team to ensure consistent enforcement of the lead and copper rule throughout the State.

Related Prior Employment I was a regional engineer in the Office of Drinking Water for 4 years and an engineering in the large on-site sewage system (LOSS) program at the Department of Health for 4 years.

Registrations or Certifications PE in Environmental Engineering

American Water Works Association
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Session ID	Q2PM05	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **LCRR Implementation: Evaluating How Utilities Will Need to Adapt to New LCRR Requirements**

Abstract In late 2019, the US Environmental Protection Agency (USEPA) published proposed language revising the Lead and Copper Rule (LCR), known as the Lead and Copper Rule Revisions (LCRR). This presentation will focus on describing the major changes introduced by the LCRR, with an emphasis on how to implement a selection of the new requirements introduced by the LCRR. This presentation will be tailored around the final rule language expected in September 2020, but it is anticipated that the presentation will focus on the following changes introduced in the proposed LCRR language: 1) Implementation of new find-and-fix requirements at all locations where individual tap samples exceed the 15 ppb action level for lead. 2) Introduction of a new 10 ppb 'trigger level' for lead, and the corresponding impacts to systems that fall between the trigger level and action level. 3) Required drinking water testing for lead at schools and licensed childcare facilities to be conducted by the water system.

CEU Relevancy This presentation will be useful for water system staff and industry professionals seeking to understand how the new LCRR requirements will impact water systems in practice, beyond the simple regulatory language. Case-study and illustrative examples will be provided to help the audience understand additional resources that may be required to comply with the LCRR once it is promulgated. Participants in this session will get a better understanding of the major changes introduced by the LCRR with an emphasis on how to implement a selection of the following new requirements: find-and-fix, lead trigger level, and lead testing in schools and childcare facilities.

Author	**Damon Roth**	**E-mail**	droth1@brwncald.com
Author's Job Title	Sr Prin, Enviro Engr	**Phone**	509.770.4322
Organization	Brown and Caldwell		

Primary Job Duties Damon has 17+ years of experience, over which he has managed or served as project engineer on treatment studies, designs, and construction projects for drinking water, wastewater, and stormwater treatment projects through the United States. He provides technical expertise to guide project teams and bring solutions to municipal clients, particularly in areas related to drinking water system planning and treatment optimization, including treatment feasibility evaluations, corrosion control treatment, and capital improvement planning.

Related Prior Employment Damon previously served as the Director of Water for Cornwell Engineering Gruop, where he led research, process evaluation, and design projects involving conventional and advanced drinking water treatment processes.

Registrations or Certifications Professional Engineer (WA, VA, OH, CA); Board Certified Environmental Engineer

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Session ID	Q2PM06	**Date**	May 20, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Lead & Copper Rule: Routine Monitoring and Site Selection**

Abstract The Lead & Copper Rule is fairly complex and has specific site selection and monitoring requirements. This presentation is aimed at guiding water system managers and operators through selecting tiered monitoring locations based on materials assessments and water quality data. Further, water system staff will receive recommendations on minimizing potential sample errors from homeowner-collected samples. Tentatively, this presentation will/may focus on upcoming changes to LCR from the EPA's long-term revisions.

CEU Relevancy This presentation will provide a deeper dive into understanding the purpose of tiered site selection under the LCR. First, operators/managers will learn why the LCR calls for samples typically needing collection from private home/business owners. Second, information on developing a materials evaluation and sample pool will be presented. Finally, recommendations will be offered to ensure quality sample collection from homeowners with reduced likelihood of sample result discrepancy. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Matthew Hadorn**	**E-mail**	matthew.hadorn@doh.wa.gov
Author's Job Title	Environmental Specialist, Lead & Copper Rule Program Lead	**Phone**	509.329.2133
Organization	Washington State Department of Health		

Primary Job Duties Working out of the ODW eastern regional office, I am responsible for ensuring community and NTNC public water systems' understanding of and compliance with the Lead & Copper Rule. I am also the water facilities and treatment plant database coordinator, as well as the groundwater rule (GWR) technical advisor for the region.

Related Prior Employment Prior to my work with WA Office of Drinking Water, I worked as a sanitarian for the Tacoma-Pierce County Health Department. Past duties included functioning as a/the local public health officer for areas of Pierce County, compliance inspections, epidemiological investigations, and community outreach.

Registrations or Certifications

American Water Works Association
Pacific Northwest Section

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Session ID	Q3AM01	**Date**	August 12, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Bull Run Filtration Project Overview**

Abstract The Portland Water Bureau is developing a green field 145 mgd drinking water filtration facility to be in use by 2027. This presentation will give an overview of the program, its drivers, and major efforts. This talk aims to be part 1 of 5 talks in the Bull Run Filtration Project Session on February 25. The Bull Run Filtration Facility will fulfill multiple goals to improve public health through additional water quality benefits, meet regulatory schedules and requirements, and invest in system resiliency against risk of future catastrophes. The program began by operating a 20 gpm pilot to demonstrate treatment for regulatory approval, inform process selection and detailed design, and train operators. It includes distribution system preparation by unidirectional flushing to remove decades of accumulated sediment in over 2,000 miles of pipeline. Critical to its success is public outreach and gathering input on values important to the 1 million people who drink Bull Run water every day.

CEU Relevancy Managers, operators, and engineers from utilities of all sizes will benefit from lessons learned on developing a framework to execute a large, complex water treatment project. Attendees will learn methods for establishing formal operational procedures, improve communication between internal staff and stakeholders and with external contractors, and how to procure new equipment and quickly get it into service.

Author	**Yone Akagi**	**E-mail**	yone.akagi@portlandoregon.gov
Author's Job Title	Water Quality Manager	**Phone**	503-823-7648
Organization	Portland Water Bureau		

Primary Job Duties As PWB's Water Quality Manager, ensures the highest water quality and regulatory compliance for the largest drinking water utility in the state of Oregon. Directs a team of 30 people who oversee distribution system sampling, flushing, communication, and regulatory reporting. Serves as executive member of the Bull Run Filtration Program.

Related Prior Employment Yone Akagi has been a member of the Portland Water Bureau team for over 25 years.

Registrations or Certifications Oregon PE

American Water Works Association
Pacific Northwest Section

2021
Virtual
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Session ID	Q3AM02	**Date**	August 12, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **The Bull Run Treatment Projects—Communications Strategies for Customers and Water Filtration Facility Neighbors**

Abstract The Bull Run Treatment Projects communications presentation will focus on strategies for two key audiences: customers and facility neighbors. For customers, the communications goal is to increase awareness of the projects and benefits. PWB is using a wide range of tools and methods to provide focus and leverage multiple channels to engage customers and share information about the Bull Run Treatment Projects. The goal with neighbors is to get their input of the design of the Water Filtration Facility. A Site Advisory Committee has been meeting for a year to develop a Good Neighbor Plan to provide early feedback.

CEU Relevancy This presentation provides information to participants on methods to communicate a water system's needs to the public and people who may be impacted by large infrastructure projects. The purpose of communicating with the public is to build ownership and acceptance of large infrastructure projects critical for maintaining public health. Learning about methods to communicate with stakeholders is essential for water system managers, design engineers, communications and financial professionals, and the frontline operations staff who interact daily with the public.

Author	**Bonita Oswald**	**E-mail**	bonita.oswald@portlandoregon.go
Author's Job Title	Senior Communications Specialist	**Phone**	503-865-6039
Organization	Portland Water Bureau		

Primary Job Duties Bonita Oswald is a Senior Communications Specialist at Portland Water Bureau (PWB). For the 18-months she has been at PWB, she has been managing communications for the Bull Run Treatment Projects.

Related Prior Employment Before PWB, Bonita worked as a communications professional for Washington County for nearly 18 years. Bonita has an MBA from George Fox University and a BS in Multimedia and Web Design from The Art Institute of Portland.

Registrations or Certifications Advanced Public Information Officer, FEMA; Project Mgmt, Portland State University's Center for Exec and Professional Education (CEPE); Certified Assc Project Mgmt, Project Management Institute

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Session ID	Q3AM03	**Date**	August 12, 2021	**Length of Session**	60 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Bull Run Filtration Pilot Findings**

Abstract The Portland Water Bureau's Bull Run Filtration Pilot will inform design and train operators for the upcoming full-scale treatment facility. Lessons learned over the first 18 months of operating the pilot-scale oxidation, flocculation/sedimentation, and granular media filtration processes will be presented. The pilot seeks to answer critical questions such as how much value ozonation brings, what media should be used in the filters, and what loading rates are possible while ensuring finished water meets water quality goals. Treatment lessons learned will be shared, such as how to coagulate cold, low alkalinity, low turbidity water. Benefits of enacting filtration treatment will be shared including the drastic reduction in disinfection byproduct levels. This talk will be divided between three or four presenters over the 60 minute slot, and is targeted to be part 2 of 5 presentations in the Bull Run Filtration Project Session on February 25.

CEU Relevancy Engineers and operators from utilities of all sizes will benefit from lessons learned on treating cold, clean water (typical of the Pacific Northwest). Fundamentals of process selection, treatment design, and equipment operation will be shared. Attendees will develop skills in chemical dosing and effects on downstream processes, and expected contaminant removals for each step in the treatment train. A presentation on preliminary findings was approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878.

Author	**Mac Gifford**	**E-mail**	mac.gifford@portlandoregon.gov
Author's Job Title	Water Quality Engineer	**Phone**	503-823-1507
Organization	Portland Water Bureau		

Primary Job Duties Water Quality Engineer. Serves as Operations Lead for the Bull Run Filtration Pilot and a technical stakeholder for the overall filtration project.

Related Prior Employment Mac Gifford has been a member of the Portland Water Bureau for three years. Previously he worked developing water treatment technology as a post-doctoral researcher for the Southern Nevada Water Authority, and as a consulting engineer.

Registrations or Certifications

American Water Works Association
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Session ID	Q3AM04	**Date**	August 12, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Bull Run Filtration Project: Preliminary Design Update**

Abstract The Portland Water Bureau is developing a green-field 145 mgd drinking water filtration facility to be in use by 2027. This presentation will provide an overview of the Project's preliminary design phase and will include: workshop sequencing and topics, establishment of level of service goals, sustainability, collaboration between the design, client, and program management teams, the selected processes/technology and site layout for the Filtration Facility, the Project's decision-making process, geotechnical investigations, and coordination with the pipeline design. The presentation will conclude with how the Project is advancing into detailed design and tips for managing that transition successfully. This talk aims to be part 4 of 5 talks in the Bull Run Filtration Project Session on February 25.

CEU Relevancy Managers, operators, and engineers from utilities of all sizes will benefit from lessons learned during the preliminary design phase for a large, complex water treatment facility. Attendees will learn methods for bringing multiple teams (i.e., Design, Client, and Program Manager) together for collaborative workshops, how to advance the design from the Project Definition Report (i.e., approximately 5% design) to the Basis of Design Report (i.e., approximately 15% design), the importance of well-defined decision-making processes, and how to set-up processes for a successful detailed design that will result in a facility that operates successfully and protects public health. Attendees will leave the workshop familiar with the selected processes/technology and site layout for the Portland Water Bureau's Filtration Facility.

Author	**Lyda Hakes**	**E-mail**	lyda.hakes@portlandoregon.gov
Author's Job Title	Engineer III	**Phone**	503-865-4713
Organization	Portland Water Bureau		

Primary Job Duties Ms. Hakes is the Portland Water Bureau's Project Manager for the Filtration Facility Design.

Related Prior Employment Ms. Hakes has worked for the Portland Water Bureau for two years and was previously at the Alameda County Water District for nine years.

Registrations or Certifications Oregon PE, California PE

American Water Works Association
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Session ID	Q3AM05	**Date**	August 12, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Preparing Portland's Distribution System for Filtraton**

Abstract The Portland Water Bureau (PWB) operates 2,500 miles of distribution system which consists of a variety of pipe materials, pipe ages and conditions. Additionally, as an unfiltered system, the distribution system has continuously received sediment loading during the more than 100 years of operation. Over the next seven years, PWB plans to clean the distribution system with a variety of tools including unidirectional flushing (UDF), in preparation of the new filtration treatment facility. This presentation will discuss the challenges related to expanding a small UDF program to a large-scale program including purchasing/incorporating a UDF module for hydraulic modelling, implementing new BMPs learned in a WaterRF project to revise flushing methods and benchmarks, hiring new staff and developing new program goals all operating a complex distribution system which serves drinking water to close to one-million customers.

CEU Relevancy Unidirectional Flushing is increasingly used by water utilities to improve water quality in distribution systems. Implementing and expanding a UDF program for a large-scale distribution system is complex and presents operational challenges. The PWB distribution system consists of 2,500 miles of pipe and over 200 pressure zones. This presentation will provide water operators and managers a roadmap to the development and implementation of a UDF program including incorporation of complex hydraulic modelling, developing program goals and benchmarks, coordination with both intra-PWB groups as well as other City and County organizations (transportation, collection systems, parks), and developing new roles and hiring new personnel for into these roles.

Author	**Christina Suto**	**E-mail**	christina.suto@portlandoregon.gov
Author's Job Title	Distribution System Optimization Program Manager	**Phone**	503-823-9408
Organization	Portland Water Bureau		

Primary Job Duties Christy Suto manages the Distribution System Optimization group which includes the Unidirectional Flushing Program. Additionally, Ms. Suto acts as a project stakeholder for new PWB treatment projects.

Related Prior Employment Prior to the Portland Water Bureau, Ms. Suto's experience was focused on water and wastewater treatment plant planning, design and construction. Her work focused on unit process evaluation, new facility layout and retrofit of existing facilities.

Registrations or Certifications Registered Civil Engineer (State of California), Registered Civil Engineer (State of Oregon)

American Water Works Association
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Session ID	Q3PM01	**Date**	August 12, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Lessons from Mega-Projects for Your Midi-, Mini- and Micro-Projects**

Abstract With unfortunate regularity, megaprojects around the world have failed to meet budget, schedule and performance expectations. Governments, consulting firms and professional organizations such as the Netherlands, McKinsey & Company and the Project Management Institute, have studied the root causes of megaproject failure and developed recommendations to improve the odds of success on future megaprojects. In this presentation, I will summarize some of the key findings of these studies and how they can apply to the types of projects members of our Section perform regularly.

CEU Relevancy The Project Management Institute (PMI) defines a project as "a temporary endeavor undertaken to create a unique product, service or result." By this definition, water system O&M staff and managers perform many projects every year--from replacing a metering pump to preparing a capital budget. By using strategies for more successful project delivery, staff and managers are more likely to successfully complete projects on-time, within budget, and with the expected level of quality. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Mark Graham**	**E-mail**	Mark.Graham@Stantec.com
Author's Job Title	Senior Principal	**Phone**	425-922-1781
Organization	Stantec		

Primary Job Duties I am a Senior Principal Project Manager with a firm on ENR's list of Top 10 Global Design Firms. My primary responsibilities are the development and management of large water infrastructure projects, covering the full project lifecycle from planning to design, and through construction and operations.

Related Prior Employment I have been with my current firm for over 24 years. While I currently focus on project management, I have previously held positions focusing on research, engineering and design of water infrastructure facilities.

Registrations or Certifications PE: Washington, Oregon, North Dakota, Colorado and CaliforniaProject Management Professional (PMP), certified by the Project Management Institute

American Water Works Association
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Session ID	Q3PM02	**Date**	August 12, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Six Years In - Developing the Willamette Water Supply System**

Abstract The Willamette Water Supply Program (WWSP) is a $1.3 B water supply infrastructure program developing the Willamette River as a source for more than 400,000 people in Hillsboro, Beaverton and unincorporated Washington County, Oregon. The WWSP mobilized in 2015 and has an 11-year mission to deliver water to owners and their customers by June 30, 2026. This presentation will summarize the progress of infrastructure design and construction as of early 2021, six years in. WWSP staff will highlight significant project changes that have occurred over the past six years and share plans for completing design and construction on time and on budget. The presentation will also highlight the organization of the WWSP and adaptations and lessons-learned related to real estate acquisition, public outreach, permitting (both local and federal permits), construction health and safety, risk management, and start-up and commissioning.

CEU Relevancy Engineers and other professionals will be able to apply the multi-disciplinary lessons shared in this presentation to their planning and design projects to reduce project changes, build internal and external consensus, and proactively manage the many types of risk inherent in building and commissioning infrastructure projects. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Joelle Bennett**	**E-mail**	joelle.bennett@tvwd.org
Author's Job Title	Assistant Program Director for the Willamette Water Supply Program	**Phone**	503.349.7236
Organization	Tualatin Valley Water District		

Primary Job Duties Joelle Bennett, PE, is the Assistant Program Director for the Willamette Water Supply Program, a $1B water supply infrastructure project near Portland, Oregon. Joelle works for Tualatin Valley Water District, which is partnering with the Cities of Beaverton and Hillsboro to deliver this innovative, seismically resilient water supply system. As assistant director, Joelle supports the team by leading risk management, real estate acquisition, and water supply integration planning. Joelle's passion for improving her community drew her into engineering and particularly to water infrastructure design.

Related Prior Employment Ms. Bennett has been employed by TVWD for the past two years and prior to this worked for engineering consulting firms for 14 years.

Registrations or Certifications Professional Engineer registered in Washington and Oregon

American Water Works Association
Pacific Northwest Section

2021
Virtual
Conference

Session ID	Q3PM03	**Date**	August 12, 2021	**Length of Session**	60 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Lessons Learned from the 2011 Tohoku Earthquake and Tsunami Crisis, Application of Lessons Learned to the WWSS, and other Practical Approaches to Incorporating Seismic Resiliency into Water Infrastructure**

Abstract Earthquakes are complex, multi-dimensional problems. Water infrastructure is critical for restoring public health and safety following a disaster. This presentation provides an overview of background information on earthquakes that is relevant and useful to water system engineers. It considers lessons learned from the 2011 Tohoku Earthquake and Tsunami Crisis and will summarize lessons learned to improve resiliency, provide a broader framework to more completely address the different complex elements to achieve greater water system resiliency, and describe how they were applied to the Willamette Water Supply System (WWSS) design. The presentation will provide an overview of seismic guidelines developed based on best practices from multiple industries that serve as minimum requirements for the WWSS. The presentation will conclude with a discussion of practical examples of how the seismic guidelines are being used to design both water infrastructure facilities and pipelines.

CEU Relevancy This presentation describes lessons learned from the 2011 Earthquake and Tsunami Crisis in the Tohoku Region of Japan to help utilities better prepare for natural disasters and improve their overall resiliency. The presentation also provides a broader framework for resiliency that will help improve preparedness prior to a disaster and effectiveness of operations following a disaster. Additionally, this presentation describes strategies to improve water infrastructure resiliency in light of lacking seismic standards. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Mike Britch**	**E-mail**	mike.britch@tvwd.org
Author's Job Title	Engineering & Construction Manager for the Willamette Water Supply Program	**Phone**	(503) 701-1343
Organization	Tualatin Valley Water District		

Primary Job Duties Mike Britch is the Engineering & Construction Manager for the Willamette Water Supply Program (WWSP). The WWSP is a $1.3 billion infrastructure program to deliver a new potable water supply to the Washington County area on the west side of the Portland metro area.

Related Prior Employment Prior to working on the WWSP, Mike was the Chief Engineer and a Senior Engineer for TVWD. Prior to that he worked for two design consulting firms in the Portland area. PE and MPA. Member of AWWA and ASCE.

Registrations or Certifications PE

American Water Works Association
Pacific Northwest Section

2021
Virtual
Conference

Session ID	Q3PM04	**Date**	August 12, 2021	**Length of Session**	60 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Evaluation of Risk Factors for Integrating a New Supply**

Abstract A Water Supply Integration study is being conducted for the Willamette Water Supply Program to develop the approach to prepare the distribution systems to utilize the new supply. This study is determining how best to utilize the WWSS in conjunction with existing water supplies in each of the three owners' distribution systems and to recommend finished water quality conditions at the new water treatment plant to increase compatibility within the three distribution systems. The owners will provide an overview of lessons learned during data collection, hydraulic modeling efforts, and main cleaning trials that are helping to develop system management best practices for the integration of the new supply. Confluence will overview the desk-top process used to identify and evaluate chemical and hydraulic water quality risks will be presented. The WWSP employed a Blue Ribbon Panel of experts to review the work to-date, and recommendations from those national experts will be shared as well.

CEU Relevancy Key Take-aways – Overview of integration risk factors and water compatibility factors; best practices for main cleaning; conversion issues when changing from chloramine to free chlorine for secondary disinfection. Previously approved for CEUs in 2020: ID WWP191210742, OR 4027, WA A2878

Author	**Stephen Booth**	**E-mail**	stephen@confluence-engineering.c
Author's Job Title	Senior Project Manager	**Phone**	206.380.0507
Organization	Confluence Engineering Group		

Primary Job Duties Conduct water quality and treatment studies, optimize distribution systems, and perform water system planning studies.

Related Prior Employment Brown and Caldwell, Kennedy/Jenks Consultants, Carollo Engineers

Registrations or Certifications Bachelors Degree in Chemical Engineering, PhD in Civil Engineering

American Water Works Association
Pacific Northwest Section

2021
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Session ID	Q4AM01	**Date**	October 28, 2021	**Length of Session**	30 minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Using Data Analytics to Make Informed Water Infrastructure Maintenance Decisions**

Abstract A typical utility has multiple difficult choices it has to make every day – decisions on how to prioritize maintenance tasks and utilize limited resources. But data can make those choices easier and more effective. Recent developments in Internet-of-Things (IoT) devices, communications, batteries, and the power consumption of IoT devices have made it possible for the cost of acquiring that data to come down. Now, the cost is low enough that it's worth investing in systems to gather and analyze that data to make sure the distribution system is performing as well as the treatment facility. When water is treated and pumped out into the distribution system and into the aging infrastructure, there has not been the technology to adequately measure the pressure or the performance in the distribution network. It's all pipeline, it's all aging, it's fairly expensive and it's fairly difficult to go out and get that information. But that's starting to

CEU Relevancy By using fire hydrants and battery powered state-of-the-art sensors, operations will be able to understand how their distribution system is performing and be proactive rather than reactive. With 24/7 monitoring platforms utilities will be able to plan strategically rather than on urgency. They can record and display data including pressure, flow, leak, chlorine and pH and then make informed decisions to control assets on their own terms. Asset management is only as good as the data that is available, and this presentation will focus on how to collect the data, but also how to use it to improve service to their customers and plan for the future.

Author	**Mike Uthe**	**E-mail**	muthe@muellerwp.com
Author's Job Title	Northwest Area Manager (WA, OR, ID, WY, MT, UT, CO, AK)	**Phone**	406-223-2192
Organization	Mueller Water Products		

Primary Job Duties I cover WA, OR, ID, WY, MT, UT, CO, and AK for the water management solutions team. Our goal is to help municipalities and utilities provide clean water to their customers with minimal losses. I handle Echologics, Singer Valve, and Hydro-Guard product lines.

Related Prior Employment Prior to Mueller, I was in a technical sales role for Advanced Pump and Equipment. There I sold and designed a variety of engineered water and wastewater systems in the Northwest US.

Registrations or Certifications Master's of Engineering - Mechanical Engineering

American Water Works Association
Pacific Northwest Section

2021
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Session ID	Q4AM02	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Asset Management System Development for a New Water Supply System**

Abstract The Lake Oswego-Tigard Water Supply System, completed in 2017, was a 250 million dollar regional supply project to pump, treat and supply up to 38 MGD of water to 100,000 retail and wholesale customers. Approximately 2000 new assets were commissioned as part of this project and the partnership developed a separate computer maintenance management system (CMMS) and a renewal and replacement funding strategy to manage these assets. This presentation will review the development of these systems and provide some asset management lessons learned after 4 years of operation and maintenance of the system.

CEU Relevancy Certified operators will gain knowledge and tools to properly track and maintain their water system assets. Proactively managing drinking water treatment and distribution system assets is key to ensuring reliability and dependability of a water system.

Author	**Kari Duncan**	**E-mail**	kduncan@ci.oswego.or.us
Author's Job Title	Water Supply and Treatment Manager	**Phone**	503.701.2978
Organization	Lake Oswego-Tigard Water Supply		

Primary Job Duties Management of a 38 MGD water supply system that includes a River Intake Pump Station, Water Treatment Plant. Oversee a department that includes Operators, Maintenance personnel, water quality and water conservation specialists that ensure the water system reliably produces high quality drinking water.

Related Prior Employment Operator and Laboratory Technician at the Eugene Water and Electric Board from 2000-2005. O&M of a 72 MGD direct filtration plant, water quality sampling, laboratory analysis of samples.

Registrations or Certifications Oregon Water Treatment Level 4, Water Distribution Level 3, Filtration Endorsement

American Water Works Association
Pacific Northwest Section

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Session ID	Q4AM03	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Renewing Old Mains with Potable Distribution Water Main High-Pressure Jetting Method/Process, Removing Tuberculation/Scale (Accessing Thru Hydrants).**

Abstract Participants in this session will learn about a new method to remove tuberculation and scale from the insides of old (but still usable) potable drinking water mains; with less disruption to the customers, with virtually no impacts on the environment (no digging or paving) and at a fraction of the costs of pigging or replacement! Details of how the simple debris removal is performed, our new camera process is employed, plus leak detection will be discussed.

CEU Relevancy This new method of potable water main jetting will renew the inside diameter of old tuberculated distribution water mains, at a much lower cost than pigging or replacement, and less disruption to the customer and environment. It will improve fire flows, system disinfectant residuals while improving water quality, safety and conserving precious drinking water.

Author	**Chris Wilkinson**	**E-mail**	wilkinson@no-des.com
Author's Job Title	President	**Phone**	559.799.8415
Organization	NO-DES, Inc.		

Primary Job Duties Owner - NO-DES, Inc. Design, Develop, Manufacture, Sell and Contract Operate NO-DES Flushing/Jetting Technology and Equipment - US and International.

Related Prior Employment Superintendent of water distribution systems at California Water Service Company - Water and Wastewater supervisor at Avenal CSD CA.

Registrations or Certifications Four USPTO Patents for the NO-DES process and method for flushing and Jetting water distribution systems. Certified in water, wastewater and distribution operations in California and New Mexico.

American Water Works Association
Pacific Northwest Section

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Session ID	Q4AM04	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **What's in a Name? Updating Bellevue's Obsolete Pressure Zones**

Abstract The City of Bellevue operates more than 70 pressure zones across its water service area. In many cases, existing pressure zone names and mapping did not accurately represent the actual hydraulic grade, true reservoir overflow elevations, or the discrete zone boundaries. This led to some confusion regarding proper zone settings and zone connectivity. This creates some risks of not meeting minimum or maximum pressures, sub-standard fire flow, main breaks, unintended loss of service during shutdowns, and other avoidable problems. To address this problem the City embarked on a Pressure Zone Update project, to clarify pressure zone operational settings, clarify zone naming, and accurately reflect the optimal current and planned operation of the water distribution system.

CEU Relevancy This presentation is relevant to water distribution system operation, public health protection (both backflow prevention and fire flow), and water quality. Water operators control pressure settings, and often can address deficiencies by changing pressure. This presentation will describe numerous constraints, considerations, and potential risks and pitfalls of changing system pressure, and offer suggestions on the options to approach these issues.

Author	**Doug Lane**	**E-mail**	dlane@bellevuewa.gov
Author's Job Title	Senior Engineer	**Phone**	425.452.6865
Organization	City of Bellevue		

Primary Job Duties Mr. Lane performs water and sewer planning for the City of Bellevue Utilities Department. He is responsible for the City's Water System Plan, and maintains the City's water distribution system hydraulic model.

Related Prior Employment Mr. Lane has 18 years of experience in the water industry. Before joining the City of Bellevue, he worked with MWH in their Bellevue office, and Greeley & Hansen in Detroit, Michigan.

Registrations or Certifications Mr. Lane is a Washington State certified Professional Engineer (P.E.) and Water Distribution Manager (WDM4).

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Session ID	Q4AM05	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Implementing HDPE for TVWD Engineers & Operators**

Abstract This presentation will go over TVWD's HDPE pilot program for water main replacements. Topics covered will be operator certification and training, development of engineering plans, parts and equipment, installation and testing methods, and lessons learned.

CEU Relevancy This presentation is relevant to public drinking water systems because it will focus on how system operators can be certified to install HDPE water mains, and the installation process that we have worked through to allow our operators to add this installation method to their repertoire. HDPE has different requirements than DIP so it is important to understand the differences.

Author	**Sarah Alton**	**E-mail**	sarah.alton@tvwd.org
Author's Job Title	Engineering Associate	**Phone**	503.70.79963
Organization	Tualatin Valley Water District		

Primary Job Duties Primary job responsibilities include development plan review and coordination, and water main replacements. I've recently started to be involved with larger CIP projects.

Related Prior Employment

Registrations or Certifications Oregon Professional Engineer

American Water Works Association
Pacific Northwest Section

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Session ID	Q4AM06	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Mechanical Fittings and Repairs on High Density Polyethylene Pipe (HDPE)**

Abstract The working characteristics of High Density Polyethylene Pipe (HDPE) require special attention to the repair, connection and tapping procedures performed in systems utilizing this type of pipe. Success in the installation of Mechanical Products on HDPE is largely due to the design criteria that takes the working characteristics of HDPE pipe into consideration. This presentation will provide an overview of the working characteristics of HDPE pipe, the design considerations and installation techniques of products recommended for the repair, connection and branching, and discuss examples of completed projects.

CEU Relevancy This presentation is focused on furthering the education of HDPE pipe characteristics, the selection and installation techniques of mechanical products for HDPE where conditions are not conducive to properly fuse the pipe and limit service disruptions while avoiding pipeline shutdowns. Operators responsible for installing, tapping and repairing HDPE pipe will learn when these techniques are appropriate and how they should be done.

Author	**Mike Scholz**	**E-mail**	mscholz@jcmind.com
Author's Job Title	Western Regional Sales Manager	**Phone**	916.803.2888
Organization	JCM Industries, Inc.		

Primary Job Duties Mike Scholz is responsible for direct sales, territory and independent sales representation management. Mike is involved in JCM's national conference presence and is coordinating JCM's virtual participation. Through his leadership and outdoor experience in Scouting, Mike is committed to mentoring future industry leaders through practical training and teamwork development.

Related Prior Employment Mike Scholz entered the industrial and waterworks industries in 1986 for an independent wholesale distributor in Fresno, California where he started working with products manufactured by JCM Industries. In 2002 Mike joined a Manufacturer's Representative responsible for selling JCM Industries and other related waterworks products in Northern California and Northern Nevada.

Registrations or Certifications

American Water Works Association
Pacific Northwest Section

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Session ID	Q4PM01	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Building a Data Strategy for Your Utility**

Abstract A good data strategy can help utilities improve operations for customers, and ensure high levels of regulatory compliance. This presentation will provide an overview of what goes into a good data strategy, and how this can improve operations for your utility.

CEU Relevancy Increasingly, data literacy is becoming essential to the operation, maintenance, and management of public water systems. This presentation will provide relevant background on how data can be used to improve maintenance planning and general operations.

Author	**Marshall Thompson**	**E-mail**	marshallthompson@mac.com
Author's Job Title	VP & General Manager	**Phone**	208.571.0651
Organization	SUEZ Water Idaho		

Primary Job Duties I am the general manager for a water system in SW Idaho. We serve a population of almost 250,000 using a combination of surface and groundwater sources.

Related Prior Employment I have worked in the water industry for over 20 years.

Registrations or Certifications Idaho Distribution and Water Treatment Licensure (DWD-4, DWT-1)

American Water Works Association
Pacific Northwest Section

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Session ID	Q4PM02	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Securing Regulatory Compliance - Managing and Exploiting Data Effectively to Make Informed Decisions**

Abstract Compliance is a fundamental corporate goal of every water utility globally. This is achieved by ensuring regulatory requirements are met. However, the task of maintaining compliance is often spread across multiple departments in a utility. As a result, data is hard to find as each individual works tirelessly at doing their part, but in silos. The future digital water utilities will have to be able to capture and analyze multiple layers of data to extract key insights. This will require a centralized system focused on cross-functional exchange of data to provide for effective decision-making We will discuss how the utilities' challenge of how to increase efficiency can be answered by the right technology that will allow them to tackle process automation and have access to the right data at the right time.

CEU Relevancy Individuals are managing their piece of compliance such as permitting, sample management, backflow prevention or biosolid management but they are doing it in isolation. The challenge is they are working fervently to stay on top of the regulatory requirements they are responsible for, but they have no view of the bigger picture. It can be very difficult to get an organizational view of compliance and when management ask for a consolidated view of the data it can often take weeks to pull it together. The work is done in excels, word docs, phone calls and people's heads! As a result, the value of this data is lost – the data is not becoming knowledge to discover and correct deficiencies and optimize operations, but instead it is being used to serve a single function – meeting a regulatory obligation – and then we leave it behind. In this talk people can learn how to stop the loss of data while improving knowledge sharing - and as a result improve water quality overall.

Author	**David Lynch**	**E-mail**	david@klir.io
Author's Job Title	CEO	**Phone**	647.473.7665
Organization	Klir		

Primary Job Duties CEO of Klir, a single platform to simplify compliance for all water providers. By automating the administration around compliance, utilities can save time and stress and focus on the main challenges facing the water industry and so achieve our shared goal to Make Water Better.After years working in the water space I could see a gap in the market for a platform build specifically for managing compliance in the water space and so myself and my co-founder Elaine Kelly created Klir. As an expert in the water RegTech sector and a water-conscious citizen, I am passionate about water and environmental issues. I strongly believe that implementing sustainable water operations and practices is going to be critical to ensuring water availability and sanitation for all human beings in the future

Related Prior Employment

Registrations or Certifications

American Water Works Association
Pacific Northwest Section

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Session ID	Q4PM03	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Digital Water – Preparing Your Organization With the Future State in Mind**

Abstract Portland Water Bureau is making a major investment to secure the region's drinking water supply by building the Bull Run Filtration Facility. In order to meet levels of services goals, it was necessary to develop a plan that encompassed both the current and future states of technological capabilities to ensure the best possible operational outcomes. Digital technology is a rapidly changing field that is creating vast amounts of data. Business-as-usual adoption of department-level technology tools meant that more and more data would remain siloed amongst various groups within the organization. PWB set out to establish Digital Water Plan that embraced this new digital technology paradigm that emphasizes an increasing amount of data collection for operational awareness, as well as the connection of business and operational applications to provide staff with the holistic and real-time information and tools to enable the best operational and business decision making across the utility.

CEU Relevancy Managers, operators and engineers want the best in class tools and technology integration in order to make the best business and operational decisions in real time. In order to understand what these tools need to be, you have to understand the current challenges of the organization and dream big about what the future could look like without the constraints of "we can't do that because…". Establishing these elements early establishes solid user requirements and drives the content of the plan to align People, Policies, Projects and Pricing to the end goal of the organization.

Author	**Kelly Kimball**	**E-mail**	kkimball@brwncald.com
Author's Job Title	Project Manager	**Phone**	206.529.7610
Organization	Brown and Caldwell		

Primary Job Duties Kelly currently leads BC's Oregon operations and is a key figure in BC's digital water group. He has been with BC for 15 years and his background is in electrical, controls, automation with an emphasis on digital technology. He holds a BSEE in Electrical Engineering from Oregon State University.

Related Prior Employment Prior to joining BC, Kelly worked in the construction field in Texas doing mostly Design Build projects as a project manager.

Registrations or Certifications Professional Engineer registration in WA, ID, OR, HI and NY

American Water Works Association
Pacific Northwest Section

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Session ID	Q4PM04	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Both		

Presentation Title: **Navigating the Challenges of Defining Portland Water Bureau's Future SCADA System**

Abstract This presentation will describe Portland Water Bureau's (PWB) process for evaluating their SCADA system and developing a roadmap to implement improvements using selected technologies. With the construction of the new Bull Run Filtration Facility, PWB has the opportunity to develop and implement a unified SCADA system that integrates the existing system and new filtration facility to meet the operational and business needs of the bureau. The SCADA evaluation process includes identifying operational, maintenance, and organizational requirements through workshops with key stakeholders, and establishing architecture, technology, and implementation needs for SCADA. The outcome of the evaluation will set control system standards for the new filtration facility and future SCADA system. The SCADA system is foundational to PWB's smart utility vision – leveraging data to guide operational and business decisions.Session preference: Oct. 28, 2021, Asset and Data Management

CEU Relevancy Operators are key contributors to the SCADA evaluation process as they are the ultimate end-users of the control system. During the requirements gathering phase, operations staff defined the future vision for the SCADA system by identifying needs and areas for O&M improvement related to SCADA. Implementation of the roadmap will empower operations through improved tools and access to information. This will enhance decision making and operational response. The presentation will introduce operators to future SCADA technology and how they can be involved in the evaluation process.

Author	**Caitlin Bliesner**	**E-mail**	cbliesner@brwncald.com
Author's Job Title	Instrumentation and Controls (I&C) Engineer	**Phone**	815-409-1795
Organization	Brown and Caldwell		

Primary Job Duties Caitlin Bliesner is an Instrumentation and Controls (I&C) Engineer with Brown and Caldwell's (BC) Electrical Process and Automation Services group. During her six years at BC, Caitlin provides I&C engineering for water and wastewater projects in the municipal and private sector through all phases of project execution, including planning, design, and construction.

Related Prior Employment

Registrations or Certifications Professional Engineer, Washington 55655, 2017

American Water Works Association
Pacific Northwest Section

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Session ID	Q4PM05	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Machine Learning to Optimize Water Treatment Plant Operations**

Abstract This presentation focuses on the application of machine learning to optimize water treatment plant operations. A predictive neural model was developed to predict treated water quality based on raw water quality and coagulant doses at a 30 mgd water treatment plant. This model was then used for multi-objective optimization to select the optimal combination of ferric chloride and polymer to maximize turbidity removal and reduce treatment cost. The results of the optimization indicated the possibility to achieve a 10% saving in chemical costs and improve treated water quality.

CEU Relevancy Presentation will demonstrate the value of machine learning on optimizing water treatment processes. Additionally, application for other areas of the drinking water industry will be reviewed. This information will teach operators and managers alike how they can use machine learning to make the most out of their existing assets.

Author	**Enoch Nicholson**	**E-mail**	Enoch.Nicholson@jacobs.com
Author's Job Title	Senior Drinking Water Engineer	**Phone**	425.233.3259
Organization	Jacobs		

Primary Job Duties Responsible for all phases of drinking water treatment and resiliency projects including studies, evaluation, design, construction and operation.

Related Prior Employment

Registrations or Certifications Professional Engineer

American Water Works Association
Pacific Northwest Section

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Session ID	Q4PM06	**Date**	October 28, 2021	**Length of Session**	30 Minutes
Location	Remote	**Drinking Water, Wastewater, Both**	Drinking Water		

Presentation Title: **Bend's Plan for the Future**

Abstract The City of Bend's explosive growth continues. In order to effectively serve both current and future customers they have employed leading edge optimization technology to evaluate the best overall life cycle cost infrastructure solutions through build-out of their service area. The CIP which includes almost $200M in improvements over the next 20 years for the first time includes a comprehensive list of deferred maintenance projects that also must be funded. Hear how the approaches used in this water master plan could be applied to your utility.

CEU Relevancy The O&M staff are equal partners with Engineering on this project and some of the analysis is focused on how to optimize operational settings to better utilize existing storage in particular. A comprehensive condition assessment of all tanks, wells and pump stations was included to identify investments required over the next 20 years in addition to increasing funding levels for pipe replacement. Utilities across the NW are struggling with how to adequately fund infrastructure replacement and this project will provide a case study for how that can be accomplished.

Author	**David Stangel**	**E-mail**	david.stangel@murraysmith.us
Author's Job Title	Vice President	**Phone**	208.850.3688
Organization	Murraysmith		

Primary Job Duties Advisor to clients on water and sewer infrastructure investments

Related Prior Employment NA

Registrations or Certifications Licensed Civil Engineer in OR, WA, ID, CO, HI

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Dear <Attendee>,

Thank you for attending the 2021 PNWS-AWWA Virtual Conference, Resilience Strategies on Thursday February 25, 2021. Your commitment to the water works industry was evidenced by your attendance at this extended webinar. We recommend you keep this letter for your files.

Below is the electronic record that was gathered by recording your answers to quizzes at the beginning of each technical session and after each hour of presentations. While every effort was made for accurate accounting of the attendance, if you should find an error, please contact Kyle Kihs, Executive Director of the Pacific Northwest Section, at kkihs@pnws-awwa.org.

Credits for the State of Oregon: 0.6 CEU's in Drinking Water & Wastewater

Date	Exact Course Title	OESAC #	CEUs
Feb 25, 2020	America's Water Infrastructure Act (AWIA) Risk Assessment and Emergency Response Plan Tools America's Water Infrastructure Act (AWIA) Risk Assessment and Emergency Response Plan Tools; Water Supply Self-Sufficiency and Resilience: Groundwater Development Program for Rockwood PUD and the City of Gresham		0.1
Feb 25, 2020	On-Site Sodium Hypochlorite Generation: A Safe and Reliable Disinfection Alternative to Bulk Sodium Hypochlorite and Gas Chlorine; Rancheria Springs UV: From Spring Development to UV Treatment in 8 Months		0.1
Feb 25, 2020	Success Stories From Implementing Common Low/No Cost Energy Saving Projects; Consolidation of Water Utilities: The Ratepayer Value Proposition		0.1
Feb 25, 2020	How a Small Utility Integrated the 2004 Vulnerability Assessment into the 2018 AWIA Requirements; Adaptive Management Strategies for Integrated Water Resource Management in an Uncertain Future Climate		0.1
Feb 25, 2020	Joint Water Commission's Expansion to 85MGD WTP Project; Shaking Things Up: Innovative Seismic Resilience Planning in the City of Bellevue		0.1
Feb 25, 2020	We're Running Out of Space! Where to Site Your New Backbone Facilities; Adapting Water Storage to the 21st Century		0.1

For your information, the maximum Continuing Education Units (CEUs) that you could have obtained for the entire extended webinar was 0.6, for six hour of content. For those who track Professional Development Hours (PDHs), 0.1 CEU = 1 hour of instruction.

Thank you again for attending the 2021 PNWS-AWWA Virtual Conference, Resilience Strategies. Three additional quarterly virtual trainings are scheduled this year:

May 20 – Regulatory Rodeo: Will cover updates to the NSF 61 standards that impact coating systems; updates to the Lead and Copper Rule; corrosion control treatment and required monitoring; PFAS technologies; cross connection control regulations; using data and machine learning to improve regulatory compliance. **0.6 CEUs**

August 12 – Bull Run Projects and Willamette Water Supply Projects: Will cover several sub-projects of two major water supply projects. There will also be a piece on applying lessons from mega-projects to midi-, mini- and micro-projects. **0.6 CEUs**

October 28 – Asset and Data Management: Will cover using analytics to make maintenance decisions, developing an asset management system for a new water supply system; maintaining distribution system piping; and updating pressure zones. **0.6 CEUs**

Kyle Kihs, Executive Director of the Pacific Northwest Section