American Water Works Association
Pacific Northwest Section

PO Box 872467
Vancouver, WA 98687
T 503-760-6460
F 360-254-0695
www.pnws-awwa.org

December 4, 2022

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) 2023 Annual Conference.

Dear Judy Grycko,

Enclosed for your review, evaluation and CEU credit approval are 20 hours of drinking water training, for the 2023 PNWS-AWWA Annual Conference, to be held in Kennewick, WA, May 3 – 5, 2023.

The conference will allow water 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 in-person 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 a room assistant scanning attendee bar-coded name badges 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@pnws-awwa.org.

Respectfully, Jill Hoyenga
2023 PNWS-AWWA Program Committee Chair
Home office (541) 543-5774

Enclosures

Kennewick 2023 Conference Program Schedule

2023 Conference Program Schedule

DRAFT - December 3, 2022

Attendees from Idaho will receive a certificate with an Oregon accreditation number per the Idaho Administrative Code Bureau of Occupational Licenses IDAPA 24.05.01.500 i. 0.4 Approved Courses. Those continuing education courses which are relevant and approved by the states of Nevada, Oregon, Montana, Utah, Wyoming, and Washington are deemed approved by the Board. (2-26-08)

Pending CEUS: Oregon, 2.0 Drinking Water; Washington, 2.0 Drinking Water

Wednesday, May 3							
Morning	**Morning Pre-Conference Seminar**						
Room	A & B (cap 100)	C (cap 120)	D (cap 120)	E & F (cap 120)		G (cap 130)	H (cap 130)
Hosting Committee		**Treatment**		**Distribution**		**Engineering**	
Preconference Seminar		**PFAS Solutions Part 1**		**A Comprehensive Look at Municipal Installation of High Density Polyethylene (HDPE) Pipe Part 1**		**Hydraulic Modeling & Pumping**	
Moderator				Brian Murphy		Nick Augustus	
8:30		145-Treatment selection and design for PFAS management in a changing regulatory environment (30 min) Joanie Stultz		36a-An Overview of Construction Installation Methods (60 min) Peter Dyke		16-Maximizing Booster Station Efficiency (30 min) Jason King	Reserved for Meet & Greet
9:00		53-Developing a PFAS Treatment Approach (30 min) Mehrin Selimger					
9:30 - 9:45 Break							
9:45		66-PFAS Mitigation Strategy and Lessons Learned by a Regional Water Provider (30 min) Marshall Meyer		36b-Open Cut Installation (60 min) Drew Mueller		34-Dual Challenges of Portland's Bull Run Filtration Pipelines Project: Minimizing Head loss and Optimizing Flow Control (30 min) Spencer Adams	
10:15		69-Removal of PFAS in groundwater: practical lessons and forward-looking planning (30 min) Chris McMeen				73-Leveraging Hydraulic Modeling Tools for Pump Selection in Closed Water Systems (30 min) Chadwick Johnson	
10:45 - 11:00 Break							
11:00		60-In Search of..... PFAS (30 min) Alex Mofidi		36c-Horizontal Directional Drill (60 min) Dan Landy		86-Distribution System Flushing: Conventional, Unidirectional, and No Discharge Methods (30 min) Dylan Bright	
11:30		12-Planning and Design of 18 MGD IX PFAS Treatment in Colorado (30 min) Laurie Sullivan				97-How Can I Make Sense of Demand Data, for Hydraulic Models and Everyone Else (30 min) Matt Huang	

Kennewick 2023 Conference Program Schedule

Pending CEUS: Oregon, 2.0 Drinking Water; Washington, 2.0 Drinking Water

Afternoon	Afternoon Pre-Conference Seminar						
Room	A & B (cap 100)	C (cap 120)	D (cap 120)	E & F (cap 120)		G (cap 130)	H (cap 130)
Hosting Committee		**Research**		**Distribution**		**Engineering**	
Preconference Seminar		**PFAS Solutions Part 2**		**A Comprehensive Look at Municipal Installation of High Density Polyethylene (HDPE) Pipe Part 2**		**Reservoirs**	
Moderator		Andrew Nishihara		Brian Murphy		Douglas Lane	
1:00		70-Communicating about PFAS While Maintaining Public Trust (30 min) Libby Barg-Bakke		36d-Pipe Bursting and Sliplining (60 min) Richard Kolasa		40-City of Kennewick Reservoir Evaluation & Replacement (60 min) Erik Peterson	Reserved for Meet & Greet
1:30		5-A PFAS Journey - Vancouver Approach to Widespread Source Detections (30 min) Tyler Clary					
2:00 - 2:15 Break							
2:15		136-Not-So-Forever Chemicals: Field Demonstration of PFAS Destruction by a Pilot-Scale Nanofiltration and UV-Sulfite Treatment Train (30 min) Charlie Liu		36e-Above Ground Installations (60 min) Drew Mueller		98-Keeping the Eggs in More than One Basket - One of the City of Beaverton's Plans for Post-Earthquake Water Supply (30 min) Tom Boland	
2:45		131-When PFAS is only half the battle: Treating multiple contaminants with a series of media (30 min) Stephen Timko				120-Rehabilitation Options for Aging Concrete Water Storage Reservoirs (30 min) Jamin Ankeny	
3:15 - 3:30 Break							
3:30		27-Thermal destruction of PFAS during full-scale reactivation of granular activated carbon from water treatment (30 min) Adam Redding		36f-Repair Methods for HDPE (60 min) Peter Dyke		128-Baffled by CT? How Anacortes used baffle design and clearwell redundancy to streamline compliance (30 min) Tara Randall	
4:00		24-Yorba Linda Water District Installs Largest Ion Exchange PFAS Water Treatment Plant in US (30 min) Kelsey Hakes				146-The Balance of Conservation and Storage (30 min) Michelle Johnson	

Kennewick 2023 Conference Program Schedule

Pending CEUS: Oregon, 2.0 Drinking Water; Washington, 2.0 Drinking Water

Thursday, May 4							
Morning	**Thursday Early Bird Session**						
Room	A & B (cap 100)	C (cap 120)	D (cap 120)	E (cap 60)	F (cap 60)	G (cap 130)	H (cap 130)
Hosting Committee	**Utility Management**	**Research**		**Water Resources**		**Engineering**	**Distribution**
Moderator	Ann Hajnosz	Andrew Nishihara				Greg Loscher	
7:00	2-Improvise, Adapt and Overcome: Using Failure as an Asset (30 min) Dick Talley	149-PFAS Addressing State and Federal regulatory changes-what's next (60 min) Mike Means		35-Water Supply Well Condition Assessments: Real-World Applications and Results (60 min) Panel Presentation facilitated by Kevin Lindsey		94-Delivering Capital Projects: A Young Professional's Guide to Specification Writing (60 min) Spencer Adams	49-How to Manage an Aging Control Valve System (60 min) Steve Causseaux
7:30	91-Asset Management Culture and Workplan (30 min) Andy Tuchscher						
Morning	**Thursday Morning Technical Session**						
Room	A & B (cap 100)	C (cap 120)	D (cap 120)	E (cap 60)	F (cap 60)	G (cap 130)	H (cap 130)
Hosting Committee	**Utility Management**	**Research**	**Treatment**	**Water Resources**	**Diversity & Inclusion**	**Engineering**	**Distribution**
Moderator	Ann Hajnosz	Andrew Nishihara			Randy Black	Dan Schafar	
8:30	14-Building A Small Systems Support Network (30 min) Jamie Porter	152-Reframing the Conversation around Emerging Contaminants (30 min) Holly Tichenor	33-Gas Chlorine is Still Used for Disinfection - Designing for Safety (30 min) Stephen Nuss	39-Data Dashboards: Who, What, When, Where, Why, and How (30 min) Emma Martin	100-Retaining Talent a Panel Discussion (60 min) facilitated by Benedicte Diakubama	7-Permitting 101: Expectations And Strategies For Your Project (30 min) Sean Thomson	50-If Check Valves Were Cars: Style, Selection, Performance (60 min) Steve Causseaux
9:00	23-Mentoring: Still the Critical Path (30 min) Kimberly Kelsey	89-Impact of PFAS on Tacoma Water's Groundwater Supply and Corrosion Control Strategy (30 min) Beth Mende	82-Converting from Chlorine Gas to Sodium Hypochlorite at the Meadowlark Water Reclamation Facility (30 min) Heather Burns	143-Seeing the Future: Using GIS for Enhanced Planning and Forecasting of Well Maintenance and Life Cycle Costs (30 min) Kelsey Mach		8-Planning for Success - Adding Resiliency to Water Supply via Horizontal Directional Drill (30 min) Kenneth Packard	
9:30 - 9:45 Break							
9:45	118-Infrastructure Capital Funding Programs Panel Discussion:Program Updates, Strategies, and future Development (60 min) Chris McCord	113-Toxic Additives in Microplastics Desorb into Drinking Water Matrices (30 min) Husein Almuhtara	88-Improving Chemical Supply Resiliency - Transition from Gas to On-Site Hypochlorite Generation for a Large 1500 PPD System (30 min) Joshua Kennedy	83-Integrated Modeling to Optimize Ecological and Agricultural Water Supply Enhancement (30 min) Jason Keller	59-Filling your Bucket: Diverse Discussion Panel on Recruitment (60 min) facilitated by Asa Reyes-Chavez	65-Successfully Tackling High Risk Design: Lessons Learned from the WWSP's Construction of the Raw Water Facility Project (30 min) Jennifer Minton	54-What's the Big Deal with Big Pumps? (30 min) Daphne Marcyn
10:15		107-Microplastics Removal in a Dynamic Coagulation-Flocculation-Sedimentation System (30 min) Robert Andrews	84-Round Tank in a Square Door: How to fit an OSHG System into an Existing WTP (30 min) Joanie Stultz	85-Pollutant Load Modeling Webtool for Source Water Protection (30 min) Jamie Feldman		93-Developing an Effective Permitting Strategy for your Water Supply Project (30 min) Jennifer Miller	1-Water Loss Reduction Techniques (60 min) Mike Uthe
10:45 - 11:00 Break							
11:00	30-Machine Learning / Artificial Intelligence (ML/AI) Applications for Small Systems (60 min) Mike Grimm	101-Machine Learning in Water Coagulation Optimization (30 min) Benedicte Diakubama	44-Successful Installation and Operation of a full-scale Hypolimnetic Oxygenation System for T&O Control (30 min) Daniel Mosiman	135-Using ESRI's GIS Technology to further Tacoma Water's AMI (Automated Metering Infrastructure) program (60 min) Andy Simpson	117-An Equity Journey Begins at Tacoma Water (30 min) Rochelle Gandour-Rood	115-Dog River Pipeline: Replacing a 100-year-old Wooden Pipeline to Secure a Resilient Water Future (60 min) Dave Anderson	80-Condition Assessment of Large Diameter Pipe (60 min) Glenn Edgemon
11:30		124-Making Conventional Treatment Cutting Edge Technology - Process Optimization Using Advanced Data Analytics (30 min) Damon Roth	102-Leveraging a Digital Twin to Implement Complex Control Logic at the 3Kings Water Treatment Plant (30 min) Stephanie McGregor		19-Everyone on Board: Advancing Equity Within Different Organizational Cultures (30 min) Nicki Pozos		
12:00 - 1:30	**Vendor Lunch**						

Kennewick 2023 Conference Program Schedule

Pending CEUS: Oregon, 2.0 Drinking Water; Washington, 2.0 Drinking Water

Afternoon	Thursday Afternoon Technical Session						
Room	A & B (cap 100)	C (cap 120)	D (cap 120)	E (cap 60)	F (cap 60)	G (cap 130)	H (cap 130)
Hosting Committee	**Utility Management**	**Water Quality**	**Treatment**	**Water Resources**	**Public Information**	**Engineering**	**Distribution**
Moderator	Kim Reid	Emilia Blake			Andrea Watson	Erika Murphy	
1:30	132-Environmental Justice and Water Equity Private Sector Alliance - Partnering with Utilities (30 min) Andrew Nishihara	71-The Changing Regulatory Picture of Manganese (30 min) Helene Baribeau	129-The Revitalization of Water Infrastructure: Modernizing and Expanding a 100-year-old Water Treatment Plant (30 min) Emily Palmer	37-Groundwater Level Declines: Not Just an Odessa Groundwater Management Area Challenge (30 min) Kevin Lindsey	58-What could go wrong? The challenges of communicating during construction (60 min) Marlys Mock	56-Incorporating Additional Resilience Measures through Operational and System Control Strategies now that the Design is Complete for the Willamette Water Supply System (30 min) Mike Britch	3-Fire Hydrant Maintenance, Operation and iHydrant (30 min) Vaughn Barber
2:00	21-Public Private Partnership is Micro Hydro Installations (30 min) Sam Shipp	62-How Widespread is Manganese in Drinking Water? (30 min) Andy Eaton	126-Evaluation of Membrane Technologies and Options for Meeting the Ultimate Capacity Demand at Kennewick WTP (30 min) YuJung Chang	68-A Study in Proactive Water Supply Planning (30 min) Kelsey Mach		67-Trailer to Tap: Maintaining a City's Water Supply While Replacing it's 100-year Old WTP (30 min) Danielle Kalmbach	13-Meter Health Analytics: The Importance of Large Meter to Water Districts Bottom Lines and Communities At Large Performance (30 min) Kali Kocdemir
2:30 - 2:45 Break							
2:45	32-City of Vancouver's Water Resiliency Strategy - Using different financial levers to raise revenues. (30 min) Chris Malone	63-Comparing Manganese Treatment Technologies (30 min) Philip Brandhuber	144-Finding the Best Option for Upgrading JWC's Chlorine Gas Disinfection System (30 min) Connor Mancosky	51-All's Well that Ends Well -- Implementing Eugene Water and Electric Board's Emergency Well Program (60 min) Nathan Endicott	15-That was Then, This is Now: Communications in an Everchanging COVID Environment (30 min) Tacy Steele	87-Seismically Resilient Transformation of the Medford Water Duff WTP (30 min) Joshua Kennedy	31-Setting Up for Success: The City of Hillsboro's Comprehensive Approach to Pipeline Replacement Project Prioritization (30 min) Preston Love
3:15	26-Financing the Cascade Groundwater Development Program with a WIFIA Loan and Revenue Bonds (30 min) Kari Duncan	55-Legacy Manganese Issues in Distribution Systems (30 min) Andrew Hill	76-High Rate Filtration Pilot Study and the impacts of the Chlorine Shortage (30 min) Tessora Young		122-Customer Information System Conversions: Lessons Learned (60 min) Andrea Watson	142-Installing Earthquake Resilient Water Mains in Constrained Corridors (30 min) Sarah Merrill	127-Elevated Water Storage Tank Assessment and Rehabilitation – Extending the Service Life of our most Visible Infrastructure (30 min) Justin Ford
3:45 - 4:00 Break							
4:00	162-Asset Management Plan: Lessons Learned (30 min) Chris Guest	57-Main Cleaning and Control Strategies for Legacy Manganese (30 min) Andrew Hill	156-Enhancing Drinking Water Treatment Resilience to Wildfire Events (60 min) Lynn Stephens	155-Groundwater Depletion and Municipal Supply Resiliency in the Columbia Basin, Washington (30 min) Walter Burt	141-Engaging the Community in the Affordability Challenge (60 min) Libby Barg-Bakke	116-The Cascade Groundwater Alliance: Groundwater Development Project Program Overview Update and Package 1 Construction (60 min) Justin Ford	47-77,000 Service Lines Identified in 1,000 days - GIS to the Rescue (30 min) Patrick Craney
4:30	160-Lessons Learned from School to Design (30 min) Michelle Horio	151-Manganese Landscape in Washington: Occurrence, Challenges, and Regulatory Perspective (30 min) Jolyn Leslie		158-Managing for the Future: Building Drought Resiliency and Reliability into Municipal Water Supply (30 min) Tyson Carlson			90-Challenges extending Earthquakes Resilience to hydrants and water services (30 min) Daniel Shafar

Kennewick 2023 Conference Program Schedule

Pending CEUS: Oregon, 2.0 Drinking Water; Washington, 2.0 Drinking Water

Friday, May 5							
Morning	**Friday Early Bird Session**						
Room	A & B (cap 100)	C (cap 120)	D (cap 120)	E (cap 60)	F (cap 60)	G (cap 130)	H (cap 130)
Hosting Committee	**Utility Management**	**Cross Connection**			**Diversity & Inclusion**	**Engineering**	**Distribution**
Moderator					Randy Black	Greg Loscher	
7:00	75-Navigating Supply Chain Disruptions and Inflation with Estimating and Scheduling (30 min) Bob Griesinger	109-Game on! Come Roll the Dice on Water Complaints (60 min) Darci Mattioda			18-Responsive Support for Disadvantaged Businesses (30 min) Jessie Maran	138-No Exceptions Taken - Construction Submittal Review 101 (30 min) Josh Yung	29-Use of Fusible PVC in Adverse Conditions: corrosive soils, expansive soils, slope stability and for seismic resiliency (60 min) Jeffrey Rosenlund
7:30	28-The Future Ain't What it Used to Be: Dealing with uncertainty in climate projections (30 min) John Phillips				108-Improving Disability and Language Access (30 min) Penny Milton	20-Engineering Departments - Going Digital. Moving beyond spreadsheets, blueprints and paper maps (30 min) Stephen Dennehy	
Morning	**Friday Morning Technical Session**						
Hosting Committee	**Utility Management**	**Cross Connection**	**Treatment**	**Water Resources**	**Conservation**	**Engineering**	**Water Quality & Distribution**
Moderator	Kimberly Kelsey			Andrew Austreng	Dan Denning	Mohammad Ahmad	Emilia Blake
8:30	17-Understand The Tools in Being a Good leader (60 min) Randy Black	163-Fire Sprinkler System Standards (60 min) Gary Honald	64-Coagulation 101 (30 min) David Pernitsky	48-Developing a Strategic Source Water Protection Plan for Oregon's Largest Watershed (30 min) Christina Walter	11- Evolving Approaches to Public Outreach on a Regional Scale (30 min) Bonny Cushman	77-Upgrading Pendleton's Infrastructure to Support Development at the Top of Its Water System (30 min) Taylor Spencer	99-Navigating the New Lead and Copper Rule Requirements & Leveraging Available Funding (30 min) Lauren Wasserstrom
9:00			9-How Long is Too Long? Evaluating Extended Biofilter Shutdown at Hayden Bridge (WRF #4984) (30 min) Michael McKie)	81-Development of a Watershed Protection, Monitoring, and Outreach Plan for the Willamette Intake Facilities Commission (30 min) Jacob Krall	10-Curtail Your Enthusiasm: How we exercised our conservation management plans and other regional projects (30 min) Bonny Cushman	140-Evaluation and Improvements Design of the Cloud Cap Inn Water System, Mt Hood, Oregon (30 min) Alex Bargmeyer	130-Preparing for LCRR Compliance Part I: Service Line Material Inventory (30 min) Helene Baribeau
9:30 - 9:45 Break							
9:45	4-Emergency! Who's In Charge? (60 min) Brian Murphy	105-Building a Robust Cross Connection Control Program (60 min) Brian McDaniel	137-Deep-Bed Filters: State of the Art and Lessons Learned (30 min) Katerina Meesologitis	166-Forecasting Daily Streamflow to Maintain a Critical Minimum Streamflow Target (30 min) Kevin Boggs	92-Seeing Purple: Design and Construction of the City of Beaverton's Non-potable Water System for Municipal Irrigation (60 min) Jason Melady	121-ShakeAlert and Water Systems: What Would You Do With 10 Seconds of Earthquake Early Warning? (30 min) Kelly Missett	125-Preparing for LCRR Compliance Part II: Beyond the Service Line Material Inventory (30 min) Damon Roth
10:15			95-Modified Tracer Testing Methodology for Long Detention Times (30 min) Andrew Nishihara	61-Source Water Protection Planning in an Agricultural Watershed (30 min) Joanna Lewis		159-A scenario approach to supply system planning positions Portland Water Bureau for a sustainable future (30 min) Mark Anderson	72-Lead and Copper Rule Revisions: Find-and- Fix Assessments, Even Without Lead Pipes. (30 min) Virpi Salo-Zieman
10:45 - 11:00 Break							
11:00	150-Building Effective and Efficient Project Management Teams (30 min) Rachel McGinn	103-Reviewing Building Plans for Cross Connection Control (30 min) Jessica Shaw	96-Ozone Disinfection in Drinking Water: Back to the Basics (30 min) Spencer Adams	52-Tualatin River Drinking Water Source Area Impoundment Identification and Prioritization (30 min) Austin Orr	164-Developing an Equity Data Toolkit: building organizational capacity to identify, assess and mitigate water conservation service inequities (30 min) Maoloud Dabab	25-Funding Your Next Risk Mitigation Project (30 min) Sarah Lingley - suggested	134-Guidance for Using Pipe Rigs to Inform Lead and Copper Corrosion Control Treatment Decisions - Program Drivers (30 min) Melinda Friedman
11:30	153-Aligning Strategic Priorities and Level of Service to Improve Project Outreach Effectiveness (30 min) Holly Tichenor	148-Backflow and the customer (30 min) Jay Breen	114-Major Ozone Equipment Replacement: How to Increase Resiliency of Your Ozone System Amidst Supply Chain Issues (30 min) Kim Ervin	78-Upper Tualatin Wildfire Protection Plan (30 min) Jacob Krall	165-Integrated conservation planning and targeted implementation (30 min) Dan Denning	139-Diving into Water Rates and Project Financing - end of PAYGO? (30 min) Lusan Burke	133-Guidance for Using Pipe Rigs to Inform Lead and Copper Corrosion Control Treatment Decisions - Design (30 min) Pierre Kwan
12:00 - 1:30	**Awards Lunch**						

Kennewick 2023 Conference Program Schedule

Pending CEUS: Oregon, 2.0 Drinking Water; Washington, 2.0 Drinking Water

Afternoon	Friday Afternoon Technical Session						
Room	A & B (cap 100)	C (cap 120)	D (cap 120)	E (cap 60)	F (cap 60)	G (cap 130)	H (cap 130)
Hosting Committee	**Competitions**		**Treatment**				**Water Quality & Distribution**
Moderator							Emilia Blake
1:30	Top Ops		154-Bull Run water: Investigating coagulation, flocculation and sedimentation (60 min) Mojtaba Azadiaghdam				42-Oversight and Communication for Implementing Improved Corrosion Control Treatment (30 min) Yone Akagi
2:00							41-Regulatory, In Home, and Installation Monitoring for Implementing Improved Corrosion Control Treatment (30 min) Mac Gifford
2:30 - 2:45 Break							
2:45	Gimmicks & Gadgets		112-Advances and Challenges in Microplastic Sampling and Analysis of Drinking Waters (30 min) Robert Andrews				46-Rockwood Pipe Loop Study: Pilot Testing Challenges for Corrosion Control Optimization (30 min) Aaron Gress
3:15			111-Interaction of Microplastics with Per- and Polyfluoroalkyl Substances (PFAS) and Microcystins in Drinking Water (30 min) Husein Almuhtaram				104-Setting the Standard: City of Lacey pH Treatment Projects (30 min) Nathan Rostad
3:45 - 4:00 Break							
4:00			161-Approaches for Accelerating the Design and Construction of a PFAS Treatment Facility (30 min) Amy Gao - suggested				79-Water Quality: Seriously Consider the System (30 min) Chris McMeen
4:30			123-Nitrate Treatment for Groundwater Wells (30 min) Jeganathan				119-Using Bench-Scale Testing and Field Activities to Identify Distribution System Destabilization Risks from Water Supply and Treatment Changes (30 min) Alex Mofidi

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2023 Annual Conference, Kennewick, WA May 3 – 5

Three Rivers Convention Center 7016 W Grandridge Blvd. Kennewick, WA 99336

Session ID: TreatPCAM01 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Treatment selection and design for PFAS management in a changing regulatory environment

Abstract: New per- and polyfluoroalkyl substances (PFAS) regulations with more stringent health advisory levels and a longer-list of PFAS compounds are changing the landscape for drinking water utilities. With more stringent PFAS requirements in effect, understanding available technologies for PFAS management and decision drivers for selection and design is a critical step to develop a utility-specific PFAS roadmap. This presentation will focus on the aspects of treatment selection for PFAS management, and cost tradeoffs through several examples from the PNW. Case studies will be introduced to exemplify site specific considerations such as deciding between granular activated carbon and ion exchange, defining treatment targets, and economic evaluation. Trickle down impacts of managing PFAS and disposal considerations will also be discussed.

CEU Relevance Statement: This presentation will focus on the drivers for PFAS management in the changing regulatory landscape. An overview of the available treatment technologies and tradeoffs will be provided for operators and engineers to be aware of the options available to remove PFAS from drinking water. Considerations for operation and maintenance of the systems as part of the treatment selection and design will be covered.

Author: Joanie Stultz **Author's Job Title:** Environmental Engineer

Email: jstultz@brwncald.com **Phone:** 2064998282

Organization: Brown and Caldwell

Primary Job Duties: Joanie Stultz is a senior environmental engineer with Brown and Caldwellâ€™s Seattle Office. She has experience in water, and wastewater treatment design, water system planning, water quality assessment, and hydrologic and hydraulic modeling. Joanieâ€™s focus is on drinking water treatment and planning studies. Joanie is a part of BCâ€™s national PFAS practice, with experience on several projects for PFAS treatment design.

Related Prior Employment:

Registrations or Certifications: PE (Washington)

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2023 Annual Conference, Kennewick, WA May 3 – 5

Three Rivers Convention Center 7016 W Grandridge Blvd. Kennewick, WA 99336

Session ID: TreatPCAM02 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Developing a PFAS Treatment Approach

Abstract: This presentation will provide an overview of the current state of PFAS regulations, current treatment methods, and site-specific factors to consider when evaluating treatment options. Specifically this presentation will focus on current information on common treatment alternatives, including adsorption with granular activated carbon or ion exchange resin. Participants will leave with a better understanding of PFAS treatment options as well as initial testing, impacts of other water quality parameters & contaminants, backwashing and backwash waste handling, and media life of the presented PFAS treatment approaches.

CEU Relevance Statement: PFAS is an emerging contaminant in drinking water supplies. In 2016, the EPA released its final health advisory limit for PFOA and PFOS; however states have been developing their own regulations due to a lack of a federal maximum contaminant level and growing public health concerns. As such, utilities will benefit from having an understanding of the current regulations and common treatment alternatives.

Author: Mehrin Selimgir **Author's Job Title:** Senior Water/Wastewater Engineer

Email: m.mselimgir7@gmail.com **Phone:** 7323792823

Organization: WSP

Primary Job Duties: I manage the design of multi-disciplinary process drinking water treatment plant upgrade projects. I also work on a variety of water/wastewater pump station designs and treatment chemical storage & feed designs.

Related Prior Employment:

Registrations or Certifications: Professional Engineer

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2023 Annual Conference, Kennewick, WA May 3 – 5

Three Rivers Convention Center 7016 W Grandridge Blvd. Kennewick, WA 99336

Session ID: TreatPCAM03 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: PFAS Mitigation Strategy and Lessons Learned by a Regional Water Provider

Abstract: Like many water systems, Lakewood Water District has detected PFAS in multiple groundwater sources. In order to mitigate impacts of PFAS on the water system, Lakewood has taken several steps including developing a comprehensive strategy to treat or replace impacted water sources. The presentation will cover the considerations, schedule and real-life experience of the District as it has developed and is implementing its PFAS mitigation strategy including a combination of new wells and two GAC treatment systems.

CEU Relevance Statement: This presentation provides information regarding approaches to address PFAS contamination in water sources. Operators will be able to use information regarding monitoring frequency and approaches in their regular duties. The presentation topic is centered around water quality and protecting public health in a cost effective manner.

Author: Marshall Meyer **Author's Job Title:** Engineering Manager

Email: mmeyer@lakewoodwater.org **Phone:** 2535884423

Organization: Lakewood Water District

Primary Job Duties: Marshall oversees water source, quality and storage operations in District. He leads engineering tasks for the District including improvement sizing, capacity planning, and developing engineering standards. Hi is responsible for developing long term planning and budgeting documents to meet the District's current and future water source and quality needs.

Related Prior Employment: Marshall was an engineering consultant for 19 years prior to joining the District, working with water systems throughout Washington State. Most recently, he was a Principal Engineer for Murraysmith in their Tacoma, WA office.

Registrations or Certifications: Licensed Civil Engineer in Washington State, Professional Project Manager through PMI

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Three Rivers Convention Center 7016 W Grandridge Blvd. Kennewick, WA 99336

Session ID: TreatPCAM04 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Removal of PFAS in groundwater â€“ practical lessons and forward-looking planning

Abstract: With tightening standards developing around PFAS in drinking water, many utilities will be faced with mitigating detections through source replacement or treatment. This presentation presents data and information from one Utility that has taken a leading role in this area. Lakewood Water District initiated removal treatment for PFAS in 2018 and brought an additional treatment plant into service in 2022. This paper reviews plant performance through initial operation, and provides insights related to performance monitoring and integration into system operating decisions, specifically shaped by the need to manage resources with PFAS detections.

CEU Relevance Statement: This training meets WDOH relevancy criteria by providing information related to water treatment, system operation, and system management.

Author: Chris McMeen **Author's Job Title:** Senior Project Manager

Email: chris@confluence-engineering.com **Phone:** 2533778739

Organization: Confluence Engineering

Primary Job Duties: Provide consulting advice to public water system clients on a variety of drinking water system related topics.

Related Prior Employment: Served in an executive management role at a large public water utility, responsible for water quality, treatment and supply.

Registrations or Certifications: Professional Engineer (WA), Level 4 Water Treatment Plant Operator, Level 4 Water Distribution Manager, Cross Connection Control Specialist

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Session ID: TreatPCAM05 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: In Search of..... PFAS

Abstract: As Washington has implemented State Action Levels for PFAS, it is possible that more of its water utilities may find PFAS in water supplies without having an obvious nearby contamination source. This situation has impacted the City of Vancouver (detection of PFAS in two of its water supply aquifers) and this presentation will go into the details regarding how the search for PFAS sources is being conducted, and current results and next steps. Discussion topics will include references to literature/research review of industry activity to identify environmental PFAS contamination sources, the use of groundwater modeling to assist the Vancouver area aquifer contamination investigation, and the process of considering possible PFAS inputs in Clark County that include airfields, fire department use, point-source polluters, wastewater, petroleum storage sites, landfills, septic tanks, and stormwater infiltration.

CEU Relevance Statement: Because PFAS is detected at extremely low levels, difficult to find environmental contamination of water supplies may impact many drinking water utilities across the pacific northwest. This presentation will go into detail regarding this work for City of Vancouver and will allow for operator/engineer understanding into where and how to look for PFAS when the source may not be obvious, and it will help managers, administrators, and public officials understand more about how to convey the complexities of contamination to their customers.

Author: Alex Mofidi **Author's Job Title:** Sr. Project Manager

Email: alex@confluence-engineering.com **Phone:** 2068664562

Organization: Confluence

Primary Job Duties: Alex has over 30-years of experience completing various water supply, treatment, distribution system, and premise plumbing optimization projects. Alex regularly supports water utilities in their efforts to identify and remove water supply contaminants, improve treatment processes for contaminant removal, optimize supply blending and treatment changes to reduce risk of negative impacts to the distribution system, and assist "after the meter" clients in identifying and minimizing risk related to premise plumbing pathogens and in-building water quality upsets.

Related Prior Employment: Employed with Confluence since 2016. Before confluence, I was a water quality and treatment lead for AECOM from 2009 to 2016. I worked for a small firm Water Quality and

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Treatment Solutions (WQTS) from 2007 to 2009 conducting similar work, and prior to that, worked from 1991 to 2007 for Metropolitan Wat. Dist. of So. Cal. as an engineer and one of their water quality purification managers.

Registrations or Certifications: PE in CA, WA, OR, ID, TX and licensed water treatment operator T3 in CA.

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Session ID: TreatPCAM06 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Planning and Design of 18 MGD IX PFAS Treatment in Colorado

Abstract: This presentation will provide the background on South Adams County Water and Sanitation Districts (SACWSD) PFAS mitigation planning process including pilot testing of ion exchange and full scale demonstration with GAC. Next it will describe the process for selection between GAC and IX, goal setting process, funding support and cost estimating. This discussion will summarize design considerations and status to date. Predesign will wrap up in July 2022 and design is expected to start in October 2022.

CEU Relevance Statement: This presentation provides operators with background on the types of discussions and decisions they will be involved in if their utility has to address the removal of PFAS.

Author: Laurie Sullivan **Author's Job Title:** Drinking Water Area Leader - Rockies

Email: lsullivan@brwncald.com **Phone:** 3039125579

Organization: Brown & Caldwell

Primary Job Duties: Laurie works closely with utilities in the Rockies and nationally to address drinking water treatment and regulatory challenges.

Related Prior Employment:

Registrations or Certifications:

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Session ID: ResPCPM01 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Communicating about PFAS While Maintaining Public Trust

Abstract: Communicating with the public about PFAS is inherently challenging. PFAS, termed â€œforever chemicalsâ€ by the media, often make for sensational national news stories. The topic is complicated and not easily explained to the public. The health issues are not fully understood. Also, under the current patchwork of PFAS regulations, utilities are being thrust into public communications without the benefit of years of proactive planning. How do we inform our customers, support them in making good decisions, and maintain their trust in tap water? How can we improve our engagement with communities of color and vulnerable populations most often impacted? This presentation will share PFAS communication best practices and lessons learned in the Pacific Northwest. Attendees will be more prepared to communicate on PFAS and other water quality issues with the public.

CEU Relevance Statement: This presentation will share PFAS communication best practices and lessons learned in the Pacific Northwest to retain community trust in drinking water and protect public health. Attendees will be more prepared to communicate on PFAS and other water quality issues with the public, key stakeholders and elected officials.

Author: Libby Barg Bakke **Author's Job Title:** Principal

Email: libbybakke@barneyandworth.com **Phone:** 5039499047

Organization: Barney & Worth, Inc.

Primary Job Duties: Principal with 22 years of experience providing strategic planning and communications services for water and wastewater utilities.

Related Prior Employment: Prior to being a consultant, I was the Water Quality Manager at the City of Salem

Registrations or Certifications: Level 4 Water Treatment and Water Distribution Operator licenses (Oregon #6334); Masters of Community & Regional Planning; BS Biology

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Session ID: ResPCPM02 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: A PFAS Journey - Vancouver Approach to Widespread Source Detections

Abstract: Through proactive testing in late 2020, the City of Vancouver found low levels of PFAS in eight out of its nine groundwater supply stations. Six of the nine wellfields had levels that were at or slightly above new State Action Levels being proposed by the Washington State Department of Health at the time. Since the detections, Vancouver has been proactively testing and engaging with multiple consultants to address the issue. This presentation will cover the approach and specific steps being taken to find the sources of PFAS, plan and budget for the possibility of large scale treatment systems, conduct pilot testing, obtain grants and loans, and communicate with the public while meeting the myriad of everchanging state and federals standards for PFAS in drinking water.

CEU Relevance Statement: Presentation will cover PFAS testing results, treatment alternatives, pilot testing, long term O&M cost evaluation, capital costs and numerous other water quality related to PFAS. State and federal rulemaking and how Vancouver has worked through the everchanging regulations and communicated that to the policy makers and the public will also be covered.

Author: Tyler Clary **Author's Job Title:** Water Engineering Program Manager

Email: tyler.clary@cityofvancouver.us **Phone:** 3609896381

Organization: City of Vancouver

Primary Job Duties: Manage the water engineering division for the 3rd largest water utility in the State of Washington. I am involved in all aspects of planning, project delivery and operation including production, treatment, storage, transmission and distribution.

Related Prior Employment: Previous employment include work at a semi-conductor fab working on facility systems including high purity water, waste treatment and mechanical systems.

Registrations or Certifications: Professional Engineer - WA

Water Distribution Manager 4 - WA

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Session ID: ResPCPM03 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Not-So-Forever Chemicals: Field Demonstration of PFAS Destruction by a Pilot-Scale Nanofiltration and UV-Sulfite Treatment Train

Abstract: This study reports on a field demonstration of a pilot-scale nanofiltration (NF) and UV-sulfite treatment train for the separation and destruction of 12 PFASs detected in groundwater. Samples were collected to evaluate rejection of PFASs by NF and destruction of PFASs by UV-sulfite. The field demonstration was performed for ~5 months and several treatment variables were evaluated and tested including:

â€¢ Impact of membrane recovery on rejection of PFASs by NF.

â€¢ Stability of PFAS treatment during continuous long-term operation of the NF and UV-sulfite treatment system

â€¢ Impact of pH and UV sensitizer identity and concentration on destruction of PFASs

Major findings of study include

â€¢ NF rejection was consistently â‰¥95% for most PFASs

â€¢ Collectively, >75% of the detected PFAS mass in the NF reject was destroyed after 4 h of UV treatment, increasing to >90% after 8 h of treatment

â€¢ All perfluorocarboxylic acids, including PFOA, were degraded in <2 hours and PFOS was degraded in <4 hours

CEU Relevance Statement: This presentation will provide operators with knowledge on the rejection of PFASs by high-pressure membranes such as reverse osmosis membranes as well as the current state of PFAS treatment by destruction. The impact of membrane operating conditions on rejection of PFASs will be assessed. Additional information on the energy costs associated with PFAS destruction will also be summarized.

Author: Charlie Liu **Author's Job Title:** Research Engineer

Email: charlieliu@kennedyjenks.com **Phone:** 3035475650

Organization: Kennedy Jenks Consultants

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Primary Job Duties: Charlie Liu is in the Applied Research Group at Kennedy Jenks Consultants where he investigates pressing challenges in emerging contaminants and water quality. Specifically he has expertise in PFAS remediation, Water Reuse, and the Revised Lead and Copper Rule.

Related Prior Employment: Prior to joining Kennedy Jenks Consultants, Charlie attained his PhD at the Colorado School of Mines focused on PFAS remediation by advanced water treatment technologies.

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Session ID: ResPCPM04 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: When PFAS is only half the battle: Treating multiple contaminants with a series of media

Abstract: The Elsinore Valley Municipal Water District owns and operates the 9-MGD Canyon Lake Water Treatment Plant. Pilot studies were conducted to optimize removal of PFAS, manganese, and cyanotoxins at the facility. PFAS removal was tested in novel configurations of GAC followed by either IX or the new media Fluorosorb-200. Efficiency of treatment of manganese, cyanotoxins, and PFAS will be discussed with the various treatment configurations.

CEU Relevance Statement: PFAS is a growing issue in the US. As agencies push for lower regulatory limits, new treatment methods are required. This presentation will educate operators and engineers on new treatment configurations and media that are available.

Author: Stephen Timko **Author's Job Title:** Principal Scientist

Email: stephentimko@kennedyjenks.com **Phone:** 2067533414

Organization: Kennedy Jenks

Primary Job Duties: Applied research of new and emerging technologies and approaches in water treatment and reuse. Water quality specialist focusing on disinfection systems and the removal of trace contaminants.

Related Prior Employment: N/A

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Session ID: ResPCPM05 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Thermal destruction of PFAS during full-scale reactivation of granular activated carbon from water treatment

Abstract: Granular activated carbon (GAC) is the most widely used and well-established treatment technology for the removal of PFAS contaminants from drinking water and wastewater. After the GAC has reached the end of its useful service life and become â€œspent carbonâ€, it is common practice in industry to thermally treat it in a process known as reactivation. In light of this, a thorough program of testing was carried out at a full-scale, RCRA certified GAC reactivation facility during the reactivation of a load of GAC known to contain adsorbed PFAS.

CEU Relevance Statement: PFAS contamination is ubiquitous due to the widespread use of these compounds and their resistance to degradation. Recently lowered health advisories have accelerated the need for a deeper understanding of removal methods and subsequent contaminant handling. Water treatment professionals and regulatory decision makers should understand that existing methods, such as capture with GAC and thermal destruction, are viable approaches for removing these compounds from water and the environment at large.

Author: Adam Redding **Author's Job Title:** Technical Director

Email: adam.redding@kuraray.com **Phone:** 4124177250

Organization: Calgon Carbon Corporation

Primary Job Duties: Technical support for global sales specifically in the area of potable water treatment. Research and development of new activated carbon products and water treatment methods.

Related Prior Employment: ~10 years as activated carbon scientist for Evoqua Water Technologies

Registrations or Certifications: EIT - Pennsylvania

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Session ID: ResPCPM06 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Yorba Linda Water District Installs Largest Ion Exchange PFAS Water Treatment Plant in US

Abstract: PFAS contamination is currently a national issue for both military and civilian drinking water sites. The Yorba Linda Water District (YLWD) was one of eleven (11) groundwater producers whose wells had low levels of Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonic acid (PFOS). To address this contamination, YLWD entered into a partnership with the Orange County Water District (OCWD), which manages the Orange County Groundwater Basin, to build the countryâ€™s largest ion exchange treatment plant to remove PFOA and PFOS from groundwater. The Yorba Linda Water District, the Orange County Water District, and AqueoUS VetsÂ® will discuss the differences between GAC and IX treatment, why IX treatment was chosen to treat PFAS, and lessons learned throughout this project.

CEU Relevance Statement: This technical session will detail the process YLWD went through to evaluate the best solution for their site and water quality and OCWDâ€™s role in taking a proactive approach to addressing PFOA and PFOS in the groundwater. With all of YLWDâ€™s wells affected, YLWD chose to build a centralized 25 MGD PFAS water treatment plant, which included six (6) pre-filters and twenty-two (22) vessels in lead/lag configuration. An evaluation was completed to compare life cycle costs, treatment technologies (e.g. reverse osmosis, ion exchange, GAC), media performance and operation and maintenance issues. This session will include an overview of the pilot testing and the chosen design for YLWDâ€™s equipment while highlighting the importance of a quality system to prevent corrosion, optimize media, lower overall head loss, and minimize the plant footprint and O&M requirements, as well as discussing impacts of supply chain issues and overall lessons learned.

Author: Kelsey Hakes **Author's Job Title:** Business Development Engineer

Email: khakes@aqueousvets.com **Phone:** 9495310786

Organization: AqueoUS Vets

Primary Job Duties: As a Sales and Business Development Engineer, Kelsey is responsible for being a technical resource for consulting firms and water agencies for all GAC and IX Resin treatment projects in the Western US for applications such as PFAS removal, Perchlorate removal, TOC removal, VOC Removal, Peroxide Quenching, and removal of any other organic/inorganic compounds. Kelsey Hakes helps customers with recommended media, sizing equipment, budgetary numbers, specification reviews, site layout recommendations, and field service requests.

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Related Prior Employment: Kelsey Hakes previously worked at Evoqua in the environmental solutions divisions overseeing key critical accounts in southern California for GAC and IX resin media. She also was in charge of working on new projects in her area at the design phase with any technical and costing information.

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Session ID: DistPCAM01 **Date:** 5/3/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: An Overview of Construction Installation Methods

Abstract: Municipal installation of high density polyethylene (HDPE) is growing beyond the typical trenchless technology installations. The Alliance for PE Pipe has built a reputation for high quality educational material for all things HDPE and is teaming with the AWWA community to offer this workshop. This session will provide an overview covering the major HDPE installation methods, traditional open cut construction, horizontal directional drill, pipe bursting, sliplining, marine, plowing and above ground installations. It is a thorough overview session intended for the civil engineer and operators with moderate HDPE experience.

CEU Relevance Statement: The relevancy of this seminar will be providing operators, engineers and managers with knowledge on the applicability and limitations of HDPE pipe and the field techniques, issues, and challenges used during installation

Author: Peter Dyke **Author's Job Title:** Executive Director

Email: pdyke@pepipe.org **Phone:** 0

Organization: PE Pipe Alliance

Primary Job Duties: He is tasked with educating public utilities and the engineering community on the features of HDPE pipe and how to best integrate it into existing US municipal water and WW systems.

Related Prior Employment: Peter has over 30 years of experience working in the public sector, serving clients, managing complex municipal construction projects, and advocating for issues at the federal level. He is a former elected official in Illinois and he is recognized as a national authority on HDPE pipe systems.

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Session ID: DistPCAM02 **Date:** 5/3/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Open Cut Installation

Abstract: Municipal installation of high density polyethylene (HDPE) is growing beyond the typical trenchless technology installations. The Alliance for PE Pipe has built a reputation for high quality educational material for all things HDPE and is teaming with the AWWA community to offer this workshop. This session will help operators and engineers understand the opportunities and challenges associated with open cut construction. HDPE is considered a flexible pipe when evaluating open cut construction. Most open cut installations fall within a standard installation window of greater than 3' feet to less than 25' burial depth. Special loading considerations may be required for installation parameters outside of the standard installation windows. This session includes a live demonstration and a Case Study: Projects Throughout Oregon.

CEU Relevance Statement: The relevancy of this seminar will be providing operators, engineers and managers with knowledge on the applicability and limitations of HDPE pipe and the field techniques, issues, and challenges used during installation

Author: Drew Mueller **Author's Job Title:** Regional Sales Manager

Email: **Phone:**

Organization: ISCO Industries

Primary Job Duties: Regional sales for ISCO Industries

Related Prior Employment: Drew Mueller (ISCO) is currently a regional sales manager for ISCO Industries and was previously the Alliance for PE Pipe's Lead Trainer. He graduated from the University of Minnesota in 2007 and was with the Alliance from 2014-2021. As an educator with the Alliance, Drew traveled North America teaching municipal employees, contractors, and engineers about the benefits of HDPE pipe use in municipal water

and wastewater applications.

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Session ID: DistPCAM03 **Date:** 5/3/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Horizontal Directional Drill

Abstract: Municipal installation of high density polyethylene (HDPE) is growing beyond the typical trenchless technology installations. The Alliance for PE Pipe has built a reputation for high quality educational material for all things HDPE and is teaming with the AWWA community to offer this workshop. This session will help operators and engineers understand the opportunities and challenges associated with horizontal directonal drill installation. Horizontal directional drill is a trenchless technology method for installation of a new pipeline to clear obstacles. This session will cover engineering analysis for design considerations, frictional forces along the proposed bore path, stress within the pipe wall as well as construction methods. This session will include a Case Study: Yaquina Estuary.

CEU Relevance Statement: The relevancy of this seminar will be providing operators, engineers and managers with knowledge on the applicability and limitations of HDPE pipe and the field techniques, issues, and challenges used during installation

Author: Dan Landy **Author's Job Title:** Engineer

Email: dlandy@pepipe.org **Phone:** 0

Organization: PE Pipe Alliance

Primary Job Duties: His primary roles are assisting specifying engineers, cities, municipalities, etc in their adoption of HDPE. Dan runs a lot of the free resources the Alliance offers such as seminars with engineering firms, handling design concerns, project review/assistance, and specification writing.

Related Prior Employment: Thirty years of experience as a consultant in the municipal water industry. Technical demonstrations will be HDPE pipe specialists.

Registrations or Certifications: Professional Engineer (which states?)

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Session ID: DistPCPM01 **Date:** 5/3/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Pipe Bursting and Sliplining

Abstract: Municipal installation of high density polyethylene (HDPE) is growing beyond the typical trenchless technology installations. The Alliance for PE Pipe has built a reputation for high quality educational material for all things HDPE and is teaming with the AWWA community to offer this workshop. This session will help operators and engineers understand the opportunities and challenges associated with using HDPE as a pipe rehabilitation option. Pipe bursting is the only trenchless technology rehabilitation method that can install a larger ID replacement pipe. Set up for sliplining projects is very similar to pipe bursting but the existing pipe remains intact. Discussions on applications, technology and crew limitations for sizes and lengths, design and construction considerations will be presented. This session will include a Case Study: City of Portland.

CEU Relevance Statement: The relevancy of this seminar will be providing operators, engineers and managers with knowledge on the applicability and limitations of HDPE pipe and the field techniques, issues, and challenges used during installation

Author: Richard Kolasa **Author's Job Title:** Technical Sales Manager

Email: brian.murphy@tetratech.com **Phone:**

Organization: Tetra Tech

Primary Job Duties: He supports the Alliance and WL's product development, and engineering support requirements. He carries extensive knowledge and expertise in polymer compositions, rheology, additive compositions, product performance and failure analysis. He also contributes to industry organizations including PPI, AWWA, NSF, and ASTM. He is a past recipient of the Alliance's Significant Contributor Award.

Related Prior Employment:

Registrations or Certifications:

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Session ID: DistPCPM02 **Date:** 5/3/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Above Ground Installations

Abstract: Municipal installation of high density polyethylene (HDPE) is growing beyond the typical trenchless technology installations. The Alliance for PE Pipe has built a reputation for high quality educational material for all things HDPE and is teaming with the AWWA community to offer this workshop. This session will help operators and engineers understand the opportunities and challenges associated with above ground installation. This section will discuss above ground installation of HDPE by illustrating topics such as thermal expansion, long term protection against UV radiation, restraint, and protection of the pipe, with actual case studies, calculations, and design analysis. HDPE is commonly used for temporary bypass piping and in many instances, the design of the bypass system can be more complex than the pipe rehabilitation project. This session will include a Case Study: Swalley's Canal.

CEU Relevance Statement: The relevancy of this seminar will be providing operators, engineers and managers with knowledge on the applicability and limitations of HDPE pipe and the field techniques, issues, and challenges used during installation

Author: Drew Mueller **Author's Job Title:** Regional Sales Manager

Email: Phone:

Organization: ISCO Industries

Primary Job Duties: Regional sales for ISCO Industries

Related Prior Employment: Drew Mueller (ISCO) is currently a regional sales manager for ISCO Industries and was previously the Alliance for PE Pipe's Lead Trainer. He graduated from the University of Minnesota in 2007 and was with the Alliance from 2014-2021. As an educator with the Alliance, Drew traveled North America teaching municipal employees, contractors, and engineers about the benefits of HDPE pipe use in municipal water

and wastewater applications.

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Session ID: DistPCPM03 **Date:** 5/3/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Repair Methods for HDPE

Abstract: Municipal installation of high density polyethylene (HDPE) is growing beyond the typical trenchless technology installations. The Alliance for PE Pipe has built a reputation for high quality educational material for all things HDPE and is teaming with the AWWA community to offer this workshop. This session will help operators and engineers understand the opportunities and challenges associated with repairing HDPE pipe. The Municipal Advisory Board (MAB) of the Plastics Pipe Institute is a group of municipal employees that meet to discuss the use of HDPE in municipal utility systems. The MAB has released MAB-4-2018 MAB Basic HDPE Repair Options which is a field handbook on the various methods used to identify pipe failures and multiple methods to fix and repair the pipe failures. This session includes a live demonstration.

CEU Relevance Statement: The relevancy of this seminar will be providing operators, engineers and managers with knowledge on the applicability and limitations of HDPE pipe and the field techniques, issues, and challenges used during installation

Author: Peter Dyke **Author's Job Title:** Executive Director

Email: pdyke@pepipe.org **Phone:** 0

Organization: PE Pipe Alliance

Primary Job Duties: He is tasked with educating public utilities and the engineering community on the features of HDPE pipe and how to best integrate it into existing US municipal water and WW systems.

Related Prior Employment: Peter has over 30 years of experience working in the public sector, serving clients, managing complex municipal construction projects, and advocating for issues at the federal level. He is a former elected official in Illinois and he is recognized as a national authority on HDPE pipe systems.

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Session ID: EngPCAM01 **Date:** 5/3/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Maximizing Booster Station Efficiency

Abstract: The City of Richlandâ€™s response to increased water demand resulting from recent rapid growth is to focus on optimizing their water system infrastructure. The Badger Mountain Booster Station, which was a blend of two different pump stations and pump technologies, was identified as a prime candidate for optimization. The booster station was not able to fully utilize the 15-million-gallon water storage tank at that site due to cavitation resulting from pump limitations. The City commissioned the design and construction of a new more efficient booster station that replaced aging infrastructure, increased pumping capacity, utilized the full volume of water storage, eliminated cavitation, and added redundancy to decrease the risk of failure.

CEU Relevance Statement: This presentation addresses how to mitigate cavitation, identifying field issues, and optimizing pump performance in water systems. It showcases a fascinating project where the owner was focused on providing real solutions rather than patching problems temporarily. The definition and cause of cavitation in pumping stations will be discussed in detail as it relates to this project. Solutions to resolve cavitation, systems modeling, equipment selection, and equipment optimization will be discussed. The information provided in the presentation is intended to help operators understand the signs of cavitation in pumps, what causes it and possible solutions to consider for resolving it.

Author: Jason King **Author's Job Title:** Project Manager

Email: jking@kellerassociates.com **Phone:** 2088137567

Organization: Keller Associates

Primary Job Duties: Jason is a licensed professional engineer in several states, including Idaho, Oregon, and Washington. He graduated from the University of Idaho with a bachelor's degree in civil engineering with an emphasis on hydraulics and water conveyance design. Jason has extensive experience in well and booster stations, water pipelines and conveyance systems, and treatment system design and construction. In the past five years, he has led the design and construction of over $100 million in water and wastewater infrastructure projects.

Related Prior Employment:

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Session ID: EngPCAM03 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Dual Challenges of Portland's Bull Run Filtration Pipelines Project: Minimizing Head loss and Optimizing Flow Control

Abstract: The Bull Run Treatment Projects are a multi-year program undertaken by the Portland Water Bureau to construct a new water filtration facility, pipelines, and an improved corrosion control treatment facility to help the Water Bureau comply with federal Safe Drinking Water Act regulations. The design of the Bull Run Filtration Pipelines is nearing completion in anticipation of the CM-GC-delivered construction beginning in 2023. The design team performed the hydraulic modelling to evaluate multiple near- and long-term operation scenarios of the pipelines to continue to provide gravity flow through the new filtration facility and into the City, providing a capacity up to 220 MGD. Challenging existing boundary conditions and tight available hydraulic margins on available head drove the overall pipeline design and the placement of a flow control facility on the new system. This presentation highlights the project and presents the challenges of designing to minimize every inch of headloss.

CEU Relevance Statement: Understanding the hydraulic design of large conveyance systems is critical to safe and efficient long term operation, particularly when flow control systems are located a remote sites. The engineer collaborated with operations teams in the hydraulic design of this system, selection of flow control valves, and design of the flow control facility to maximize the future ability of the utility to manage flow and pressure and maintain the conveyance assets in the long term.

Author: Spencer Adams **Author's Job Title:** Water Project Manager

Email: spencer.adams@jacobs.com **Phone:** 2143357810

Organization: Jacobs

Primary Job Duties: As a project manager and design manager for municipal water projects, I am responsible for managing the scope and the delivery of the design of engineering projects. As a civil engineer with over 11 years' experience in the municipal water sector as both as a consultant and on a utility's staff, I bring an operations-focused perspective to every project and an engrained aspiration for engineering and construction quality.

Related Prior Employment: Previously employed as a project manager for capital facility projects for the Gwinnett County Department of Water Resources in Atlanta, Georgia, including primarily water

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treatment plant and pump station work. Prior to tenure in the public sector, worked as a consulting engineer across the southeastern United States on a variety of municipal water sector projects.

Registrations or Certifications: Professional Engineer (GA,NV,OR,TX,WA)

Certified Water Right Examiner (OR)

Drinking Water Operator Class III (GA)

Designated Design-Build Professional

Certified Construction Contracts Administrator

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Three Rivers Convention Center 7016 W Grandridge Blvd. Kennewick, WA 99336

Session ID: EngPCAM04 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Leveraging Hydraulic Modeling Tools for Pump Selection in Closed Water Systems

Abstract: Pump selection is a complicated process when working with water systems that operate without any storage and under a wide variety of customer flow and pressure demands. This gets even more complicated when the pumps must operate under a changing set of existing and future hydraulic conditions following Capital Improvement Plan upgrades. The Whatcom County PUD No. 1 water system is a closed system that includes two water treatment plants with two 200 psi pump stations and over 20 miles of 24-inch diameter transmission mains delivering up to 21 MGD of flow with delivery pressures ranging from 40 to 100 psi. This presentation is a case study of how setting up a model for such systems can assist with identifying network constraints and developing system curves for the design of a new pump station in the network. This presentation will also cover the modeling challenges associated with the closed system and how they were overcome to accurately simulate the complicated operating conditions.

CEU Relevance Statement: Operators will gain an appreciation for how hydraulic modeling tools can be used to identify constraints and risks in their water systems under various operating conditions. In this example, we will look at how modeling was used to: confirm the increased risk of watermain breaks when one pump station in the network is down, develop the staging of the clients Capital Improvement Plan, and position the client to analyze water system upgrades more efficiently in the future.

Author: Chadwick Johnson **Author's Job Title:** Engineering Designer

Email: chad.johnson@murraysmith.us **Phone:** 2064923799

Organization: CONSOR

Primary Job Duties: Chad works on multidisciplinary water and wastewater projects throughout Washington and Oregon, with a focus in water treatment, water system planning and modeling, and pump station design. Chad routinely engages in design meetings, performs hydraulic analyses using modeling software, and develops plans and specifications for a variety of water projects.

Related Prior Employment: Before joining Murraysmith, now part of CONSOR, Chad worked for GHD for five years, first in Buffalo, NY and then Wellington, New Zealand, where he worked on a variety of water treatment and pump station design projects.

Registrations or Certifications: Engineer in training

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Session ID: EngPCAM05 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Distribution System Flushing: Conventional, Unidirectional, and No Discharge Methods

Abstract: Distribution system flushing is an important practice for system maintenance and water quality improvement. This presentation will describe various approaches to developing a distribution system flushing program, such as conventional flushing events, unidirectional flushing events, and no-discharge flushing options. The presentation will detail the hydraulic modeling tools and techniques available to support the development of a distribution system flushing program.

CEU Relevance Statement: From an operations, maintenance, and management standpoint, a distribution system flushing program is valuable in that it facilitates system maintenance and improves water quality. Development of a formal distribution system flushing program provides an efficient structure for operations and maintenance staff to achieve maintenance and water quality goals. Operators can use the distribution system flushing program to achieve these goals in a sustainable fashion.

Author: Dylan Bright **Author's Job Title:** Project Engineer

Email: dbright@rh2.com **Phone:** 4259515304

Organization: RH2 Engineering, Inc.

Primary Job Duties: Consulting engineer with a primary focus on hydraulic modeling and development of water and sewer planning documents. Experience also includes analysis, planning, and design of drinking water and wastewater facilities.

Related Prior Employment:

Registrations or Certifications:

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Session ID: EngPCAM06 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: How Can I Make Sense of Demand Data, for Hydraulic Models and Everyone Else

Abstract: Data can be both a blessing and a curse! Most water utilities have lots of information on water system demands, whether it is through billing, Automated Metering Infrastructure (AMI) or other. The trend is also for utilities to have detailed all-pipe water distribution system hydraulic models. So how do you make sure that you make the most out of your data to use in your model not only for capacity analysis but everyday operational analyses? This presentation will discuss how existing data can be used to evaluate water systems, as well as methods for demand allocation into hydraulic models. Methods for demand analysis and allocation will be discussed, including use of billing data and allocating the demand to the nearest junction or pipe, use of AMI data, population and land use-based projections, inclusion of unaccounted-for-water, development of peaking factors, and diurnal patterns. Discussion of the benefit on hydraulic model accuracy and improved system evaluation is included.

CEU Relevance Statement: This will help engineers and operators understand how to better understand the flow and demand data that is already collected as part of normal processes. Use of this data will lead to improved tools. Better tools lead to more accurate solutions when performing hydraulic evaluations and will help utilities better plan for the future.

Author: Matt Huang **Author's Job Title:** Associate Vice President

Email: mhuang@carollo.com **Phone:** 2136086295

Organization: Carollo Engineers

Primary Job Duties: Matt is an expert on water and recycled water hydraulic modeling and master planning, with over 150 hydraulic models and over 20 years experience, with projects in 15 states and 7 countries. He leads Carollo's distribution system modeling and master planning practice and also is significantly involved in Quality Management. He is currently the Secretary on AWWAâ€™s Engineering Modeling Applications Committee.

Related Prior Employment:

Registrations or Certifications: Professional Engineer in Oregon, Washington, California, and Illinois

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Session ID: EngPCPM01 **Date:** 5/3/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: City of Kennewick Reservoir Evaluation & Replacement

Abstract: Having identified concerning issues related to an existing concrete roof system, the City of Kennewick engaged PSE to perform an investigation and opine on causal actions and issues. Our team fully investigated the interior and exterior physical condition of the existing structure, noting all aspects of the original and modified elements. Through structural and seismic analysis, PSE identified many aspects of the existing reservoir which were both physically as well as analytically deficient. Our team performed an economic returns options analysis and made recommendations for options to extend the life of the existing structure. But also identified elements which would be economically prohibitive. PSE generated and submitted an Evaluations & Conditions Report for the city to use in the process of determining a path forward for the Zone 2 storage requirements. PSE provided design of a 6.0MG prestressed concrete water reservoir to replace the existing reservoir on the project site.

CEU Relevance Statement: This project would be relevant to many disciplines on an Owner's staff. Operations & maintenance would learn tips for identifying structural issues in reservoir roofs and walls. Management would learn about cost/benefit studies related to reservoir upgrades and repairs. Seismic considerations would also be part of the information.

Author: Erik Peterson **Author's Job Title:** President/CEO

Email: erik.peterson@psengineers.com **Phone:** 5038198132

Organization: Peterson Structural Engineers, Inc.

Primary Job Duties: In his 25 years with PSE, Erik has served as a Project Manager, Structural Engineer, and Consultant for a wide variety of public and private clients. Erik became the Managing Principal of PSE in 2001 and continues to inspire and direct the firm. His experience includes over 200 reservoir assessment, retrofit and design projects. Specific experience with concrete reservoir design, retrofit and construction provide him the ability to creativity solve the inevitable issues that come up during construction.

Related Prior Employment: Erik has spent his entire professional career with Peterson Structural Engineers.

Registrations or Certifications: Professional Engineer: AK, AZ, CA, LA, MS, NV, NJ, OR WA

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Session ID: EngPCPM03 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Keeping the Eggs in More than One Basket: One of the City of Beaverton's Plans for Post-Earthquake Water Supply

Abstract: The City of Beaverton recently completed the Cooper Mountain Reservoir No. 2 and Associated Improvements Project. This WIFIA-funded project included construction of a second 5.5 million gallon (MG) prestressed concrete reservoir adjacent to the existing 5.5 MG reservoir, an aquifer storage and recovery (ASR) well and treatment facility, a booster pump station, an operations storage building, a transmission main, and an emergency intertie connection with Tualatin Valley Water District. With the new facilities, the Cooper Mountain site has 11.0 MG of water storage capacity that can be filled from the Cityâ€™s two water supplies, including the existing Joint Water Commission supply and the Willamette Water Supply System, which is under construction. The new ASR Well No. 7 can fill the reservoirs from the ASR aquifer that can store up to 250 MG. This presentation will outline how these improvements provide the City a strategy to deliver a safe, secure, and seismically resilient water supply.

CEU Relevance Statement: This presentation will be relevant to water professionals of all kinds. Topics discussed will include water storage and transmission, aquifer storage and recovery (ASR), and seismic resilience.

Author: Tom Boland **Author's Job Title:** Principal Engineer

Email: tom.boland@murraysmith.us **Phone:** 5032014400

Organization: CONSOR

Primary Job Duties: Tom is a civil engineer and serves as a project manager and technical advisor at Murraysmith, now part of CONSOR, where he has worked for 24 years. He works primarily on municipal potable water supply, distribution, transmission, and storage projects

Related Prior Employment:

Registrations or Certifications: â€¢ Professional Engineer (OR & WA)

â€¢ Project Management Professional

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Session ID: EngPCPM04 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Rehabilitation Options for Aging Concrete Water Storage Reservoirs

Abstract: Often rehabilitation of a concrete water storage reservoir is initiated by an obvious problem such as leakage of reservoir contents or corrosion of steel piping found during an inspection. However, a rehabilitation project provides an opportunity to address other less obvious issues and to make key upgrades to the reservoir. This presentation will review lessons learned from several recent rehabilitation projects, and highlight several interesting findings and repairs.

CEU Relevance Statement: Not Aplicable

Author: Jamin Ankney **Author's Job Title:** Drinking Water Engineer

Email: jankney@g-o.com **Phone:** 5099306454

Organization: Gray & Osborne, Inc.

Primary Job Duties: Jamin is a project manager at Gray & Osborne with 10 years of experience working on municipal infrastructure projects throughout Eastern Washington. He experience includes leadership and design responsibilities on multiple water storage reservoir projects, as well as many other planning and construction projects for water infrastructure.

Related Prior Employment: Since joining Gray & Osborne in 2012, Jamin has worked on a wide variety of water and wastewater projects, including funding, planning, design, and construction admin. His expertise includes water rights, wells, reservoirs, water mains, chlorination systems, remote metering technology, system planning, sewer mains, lagoon lining, and interface with the electrical, structural, and HVAC disciplines.

Registrations or Certifications: Civil Engineer: Washington (53172)

M.Eng.C.E. University of Idaho (2012)

B.S.C.E. University of Idaho (2011)

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Session ID: EngPCPM05 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Baffled by CT? How Anacortes used baffle design and clearwell redundancy to streamline compliance

Abstract: In 2017, the Washington State Department of Health completed a study investigating detention times and baffling factors at water treatment facilities across the state and found that one-third of facilities needed corrective action. So where did they go wrong? In 2021, the 42 MGD Anacortes WTP surface water treatment facility added another clearwell and installed baffles in both 2.1 million gallon clearwells to combat hydraulic short-circuiting and occasional difficulties achieving contact x time (CT) requirements. Their experiences with clearwell redundancy, baffle design and construction, followed by tracer testing contain valuable lessons for the one-third of water treatment facilities in the state needing corrective action for factors related to CT.

CEU Relevance Statement: This presentation serves to educate operators, engineers, and other water-professionals on baffle design, clearwell redundancy, and the execution of tracer studies. Topics covered include achieving CT compliance through retrofitting existing treatment facility infrastructure, the impacts of design redundancy at the Anacortes WTP, and modern tracer test methods. For example, the modified step-dose test may be more suitable than traditional testing methods proposed in the SWTR like step-input, pulse-input tests. The audience will learn elements of baffle design, concepts of design redundancy, important considerations impacting tracer study design, quality assurance and control methods during testing, and more.

Author: Tara Randall **Author's Job Title:** Water/Wastewater Engineer

Email: tara.randall@hdrinc.com **Phone:** 5309061791

Organization: HDR

Primary Job Duties: #NAME?

Related Prior Employment: Previous employment was for University of Colorado Boulder conducting research on UVLED disinfection technology for water treatment under water reuse scenarios. I examined UVLEDs as a secondary disinfectant in distribution systems for biofouling mitigation.

I also conducted NSF/ANSI 55 validation testing for UVLED manufactures.

Registrations or Certifications: Engineer in training

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Session ID: EngPCPM06 **Date:** 5/3/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: The Balance of Conservation and Storage

Abstract: Hayden Lake Irrigation District is currently completing construction on a two-million-gallon storage tank. The need for additional storage for the system was first identified in 2001, though the District didnâ€™t have a clear path forward for designing and constructing the storage tank. While developing a path, the District evaluated options such as conservation, odd-even watering schedules, and xeriscaping to determine if conservation efforts could negate the need for additional storage. Re-evaluation in 2019 as part of a Facility Planning effort, provided insight into the cost/benefit relationship of storage, additional sources, pump and controls, and conservation efforts. The analysis led the District to proceed with new storage. This presentation will discuss the planning effort and cost benefits analysis components that were utilized, including efficient use of time, forecast budgeting, and clear communication/expectations to their patrons.

CEU Relevance Statement: This presentation will discuss considerations and evaluations that HLID used to mitigate their low storage volume and work to postpone and minimize adding storage capacity. It will have components beneficial to planners, engineers, and system managers and operators. The tools presented will present options for owners to make informed and educated decisions during system planning.

Author: Michelle Johnson **Author's Job Title:** Project Manager

Email: Mjohnson@jub.com **Phone:** 2086517730

Organization: J-U-B ENGINEERS, Inc.

Primary Job Duties: Michelle is a professional engineer licensed in the state of Idaho and Washington and is responsible for day-to-day project management, construction, and design for projects. She has been with JUB Engineers for 17 years, and she is currently managing a number of projects in the north west.

Related Prior Employment: Michelle Johnson has worked for JUB Engineers since 2005, and received her professional engineering license in Idaho in 2009 and Washington in 2019. Prior to working for JUB, Michelle worked in Missoula, Montana for a year after graduating from the University of Idaho with a degree in Chemical Engineering.

Registrations or Certifications: State of Idaho, Professional Engineer, #13810
State of Washington, Professional Engineer, #56914

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Session ID: UMEBT01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Improvise, Adapt and Overcome: Using Failure as an Asset

Abstract: Portland is constructing a seismically resilient transmission main to connect the $1B in assets on the west side of the Willamette River to the $1B in assets on the east side using a DB delivery model. The Willamette River Crossing Project is one of the most challenging projects that the City has undertaken given the location proximity to Interstate 5, geotechnical conditions and the extensive trenchless pipe technologies. The Project encountered unique challenges brought about by the impacts of COVID, supply chain disruptions and volatility in commodity pricing.

Presenters will focus on how they evaluated various trenchless methodologies and how the team navigated challenges when original approached were deemed not feasible. They will share lessons learned on how to create a project delivery team that is accepting of change, resilient to multiple re-designs, changing project requirements and the messaging and consensus building required to maintain confidence of elected officials.

CEU Relevance Statement: Relevancy includes practical and applied approaches to trenchless technologies, three-dimensional design delivery, seismic analysis and mitigation, corrosion control and alternative project delivery

Author: Dick Talley **Author's Job Title:** Vice President and Area Manager

Email: richard.talley@stantec.com **Phone:** 5032205423

Organization: Stantec

Primary Job Duties: I served as the Design Manager for the development of plans, specifications and details that govern the installation of the WRX Transmission Pipeline. As the Design Manager, I was responsible for design quality and thoroughness as a registered engineer.

Related Prior Employment: I have been working as a professional design engineer for the past 35 years primarily in municipal engineering of public works projects. The vast majority of this time was spent working for professional consulting engineering firms.

Registrations or Certifications: Professional Engineer Montana, Wyoming, Washington, Oregon and Idaho

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Session ID: UMEBT02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Asset Management Culture and Workplan

Abstract: This presentation will focus on Sammamish Plateau Water's Asset Management culture and ongoing work efforts. We will talk about our team make up, the work done to create an Asset Management plan, and the ongoing work to optimize our Asset Management program.

CEU Relevance Statement: This presentation will talk about ongoing O&M efforts to inform the Asset Management program. This includes our implementation of Reliability Centered Maintenance. We will also discuss failure reporting to inform asset decision making.

Author: Andy Tuchscherer **Author's Job Title:** Operations Manager

Email: andy.tuchscherer@spwater.org **Phone:** 4254956528

Organization: Sammamish Plateau Water and Sewer District

Primary Job Duties: My primary responsibilities for the past 4-1/2 years include overall management of the District's Operations Department. This includes the Water Treatment, Water Distribution, Sewer, and Telemetry sections.

Related Prior Employment: I worked at the City of Bellevue for over 21 years. Started as a Water Maintenance worker. I worked in Water Operations including supervisor of that group. I was a Senior Engineering Technician for Water after that. My final position for the City Utility Department was Asset Manager.

Registrations or Certifications: Washington State WDM 4 and CCS.

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Session ID: PITPM01 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: What could go wrong? The challenges of communicating during construction

Abstract: The Willamette Water Supply Program Communications Team is guided by their hands on, no surprises approach to construction communications and neighbor relations. We meet people in their driveways. Neighbors and businesses have our cell phone numbers. We do our best to respond quickly to issues. We value relationships. During this presentation, weâ€™ll discuss the communication challenges and pitfalls during all phases of construction on the new $1.6 million water system and provide lessons learned.

CEU Relevance Statement: NA

Author: Marlys Mock **Author's Job Title:** Communications Supervisor

Email: marlys.mock@tvwd.org **Phone:** 5039414563

Organization: Tualatin Valley Water District

Primary Job Duties: Marlys currently manages the $1.6 billion Willamette Water Supply Program outreach efforts. Activities include coordination and communications with staff and the public around construction of more than 30 miles of large diameter pipeline, a water reservoir tank, and the new water treatment plant. The new seismically resilient system will be online in 2026.

Related Prior Employment: Marlys has worked in public involvement and communications in the Pacific Northwest since 1998. She was a consultant for eight years prior to transitioning to public service in 2009. Marlys began her public service as the Portland Public Schools facilities liaison to Portland Parks & Recreation and to the communities surrounding each school facility.

Registrations or Certifications: NA

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Session ID: PITPM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: That was Then, This is Now: Communications in an Everchanging COVID Environment

Abstract: This session will center around how operations and communications have changed for waterworks staff since the pandemic began. A mixed panel will answer questions about their experiences and adaptations in a changed, and still changing work environment. What changed? What were successes and challenges? What changed and is now "returning to normal?" "What is likely not to change?" "What lessons have been learned for future crisis situations? Panelists will come ready with information and tools to help attendees with similar issues. The session will be facilitated and the audience will be asked to share experiences as well.

CEU Relevance Statement: As the pandemic has proven, good communication is essential to good operation and management of a water system. This session will touch on the operational, managerial and financial "pivoting" that has taken place since early 2020, in order to keep drinking and wastewater systems working, and ensure protection of public health. Topics will include planning, policy implementation, operations, affordability, and communication with water-serving organizations, their counterparts, and to water user communities.

Author: Tacy Steele **Author's Job Title:** Program Manager

Email: tacy.steele@hillsboro-oregon.gov **Phone:** 5039361086

Organization: City of Hillsboro

Primary Job Duties: I have 25 years experience in the Water Industry, working for City of Hillsboro and the Joint Water Commission. I currently serve in an administrative role for creation and implementation of agreements and policies to protect public health and keep the water system running smoothly. I am also involved in rate and SDC setting, working with partners and wholesale customers, communications, and program develoment.

Related Prior Employment: N/A

Registrations or Certifications: Distribution 1, Cross-connection Specialist, Teaching Certification K-12, IAP2 Certification

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Session ID: PITPM04 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Customer Information System Conversions: Lessons Learned

Abstract: Customer Information/Billing System Conversions: Lessons Learned

CEU Relevance Statement: Managerial and Financial categories of the CEU requirements.

Author: Andrea Watson **Author's Job Title:** Communications Supervisor

Email: andrea.watson@tvwd.org **Phone:** 5038483012

Organization: Tualatin Valley Water District

Primary Job Duties: Andrew Carlstrom, TVWD's Customer service Manager

Related Prior Employment: Managed TVWD's CIS project

Registrations or Certifications:

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Session ID: PITPM05 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Engaging the Community in the Affordability Challenge

Abstract:

Today, more than ever, water utilities are facing affordability challenges.. The increasing cost of maintaining, replacing, and building new infrastructure is skyrocketing, and rates are rising. At the same time, income disparity and past policy practices are taxing community members capacity to meet their basic needs. Several utilities in the Pacific Northwest have deployed community engagement to find solutions to the affordability challenge. This session will bring together utility staff to share examples of strategies deployed, successes and challenges, including engagement methods that worked and some that didn't. There will be opportunities for the audience to share their experiences and ask questions. The goal is for participants, both the panel and audience, to learn from each other and take home new ideas.

CEU Relevance Statement: Financial and Management Need to know criteria are met with this content.

Author: Libby Barg Bakke **Author's Job Title:** Principal

Email: libbybakke@barneyandworth.com **Phone:** 5039499047

Organization: Barney & Worth, Inc.

Primary Job Duties: Prior to being a consultant, I was the Water Quality Manager at the City of Salem

Related Prior Employment: Principal with 22 years of experience providing strategic planning and communications services for water and wastewater utilities.

Registrations or Certifications: Level 4 Water Treatment and Water Distribution Operator licenses (Oregon #6334); Masters of Community & Regional Planning; BS Biology

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Session ID: TreatTPM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: The Revitalization of Water Infrastructure: Modernizing and Expanding a 100-year-old Water Treatment Plant

Abstract: Philadelphia has one of the oldest drinking water systems in the United States and over the last several decades the primary investment was on system maintenance. Although the system has continually met compliance and treatment standards, its increasing age necessitated a comprehensive capital improvement plan for the next 25 years. One of the primary capital projects is a 70% expansion of one of Philadelphia's Water Treatment Plants, which is nearing 100 years old. This presentation will review the integrated planning process of maintaining and modernizing a 100-year-old plant and its state-of-the-art expansion.

CEU Relevance Statement: Target audience engineers

Author: Emily Palmer **Author's Job Title:** Associate Environmental Engineer

Email: epalmer@brwncald.com **Phone:** 3604024910

Organization: Brown and Caldwell

Primary Job Duties: Emily Palmer is an environmental engineer in the Portland Brown and Caldwell office who specializes in drinking water infrastructure and treatment. Emily's work primarily focuses on providing engineering and management support on conceptual design, sustainability evaluations, and risk and resiliency analyses.

Related Prior Employment:

Registrations or Certifications: Professional Engineer, Envision Sustainability Professional

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Three Rivers Convention Center 7016 W Grandridge Blvd. Kennewick, WA 99336

Session ID: TreatTPM06 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Evaluation of Membrane Technologies and Options for Meeting the Ultimate Capacity Demand at Kennewick WTP

Abstract: This paper presents Kennewick (WA) water treatment plantâ€™s consideration on updating its filtration technology to meet production demand and provide maximum operation flexibility. The plant currently utilizes submersible UF membranes and would like to evaluate other potential options for the future upgrade. A total of 4 options are evaluated in this paper including (1) continue using existing membrane, (2) retrofit current membrane basins with different submersible membranes, (3) retrofit current membrane basins with plate-style ceramic membranes, and (4) use a Phased-in approach to convert current system to a pressurized membrane system to provide operation flexibility. Detail evaluation and potential cost estimations will be presented.

CEU Relevance Statement: This paper provides a framework for O&M managers to assess how to evaluate and integrate newer and better membrane technologies that can achieve more reliable operation, produce reliable and consistent high-quality treated water, and reduce the operation costs. This paper also provide a framework for plant managers to evaluate practical options that can further expand the plantâ€™s production capacity for future demands.

Author: YuJung Chang **Author's Job Title:** Senior Water Treatment Specialist

Email: yujung.chang@hdrinc.com **Phone:** 2062278951

Organization: HDR

Primary Job Duties: Provide technical leadership in the selection and design of most cost-effective water treatment processes as well as providing guidance in trouble shooting and process optimization.

Related Prior Employment: HDR, West Virginia University, University of Washington

Registrations or Certifications:

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Session ID: TreatTPM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Finding the Best Option for Upgrading JWC's Chlorine Gas Disinfection System

Abstract: Chlorine gas disinfection systems can be dangerous, particularly when paired with the threat of a Cascadia Subduction Zone earthquake and housed in a minimally seismic-resilient building. The Joint Water Commission has prioritized replacement of their gas chlorine system to improve the safety and resilience of their water treatment facility. They compared bulk hypochlorite, on-site hypochlorite generation, and a hybrid approach before selecting their preferred alternative. A FEMA grant will likely fund 75 percent of the project implementation costs.

CEU Relevance Statement: This presentation will help certified operators, engineers, and utility managers understand the various water disinfection technology options.

Author: Connor Mancosky **Author's Job Title:** Engineer

Email: cmancosky@carollo.com **Phone:** 709399235

Organization: Carollo Engineers

Primary Job Duties: Connor has been with Carollo Engineers in Seattle for over 5 years since finishing a master's degree at the University of Wisconsin Madison. He has served as project engineer and support staff on a variety of water and wastewater planning and design projects throughout the Pacific Northwest. He has recently supported multiple utilities in the planning, design, and operation of surface water treatment facilities.

Related Prior Employment: Graduate research assistant with at the University of Wisconsin Madison conducting research on energy savings opportunities for the Madison Water Utility.

Registrations or Certifications: Professional Engineer (State of Washington)

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Session ID: TreatTPM04 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: High Rate Filtration Pilot Study and the impacts of the Chlorine Shortage

Abstract: The Medford Water Commission (MWC) is planning improvements to their Duff Water Treatment Plant (WTP) to improve resiliency and increase capacity from 45 MGD to 65 MGD. The project includes new deep bed high-rate filters which provide the benefit of additional resiliency as well as reduced footprint and cost. This presentation covers the pilot test for the new filters up to 12 gpm/sq. ft. The recorded data also includes operational changes during a chlorine shortage and highlights the impact of chlorine pre-oxidation on filterability, turbidity, and headloss through the filters.

CEU Relevance Statement: This topic will cover results during typical operation of a surface water filtration plant and share performance results from new media configurations at high filter loading rates. Regional case study data adds to an operatorâ€™s tool box by sharing lessons learned and operational successes at neighboring utilities. This presentation will focus on tips to improve water quality during the filtration process and the importance of pilot testing.

Author: Tessora Young **Author's Job Title:** Process Engineer

Email: tessora.young@jacobs.com **Phone:** 5417061920

Organization: Jacobs

Primary Job Duties: Tessora Young is a consultant engineer that executes process mechanical design for drinking water and wastewater treatment utilities. Responsibilities include preliminary to final design of chemical, hydraulic, and mechanical facilities related to water treatment.

Related Prior Employment: 1.5 years experience of application engineering experience at Kubota Membrane. Tasks include designing and pricing membrane bioreactors for wastewater treatment.

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Session ID: TreatTPM05 **Date:** 5/4/2023 **Length of Session:** 60 minutes (preferred) or 30 minutes depending on technical session's needs

Area of Relevancy: Drinking Water

Presentation Title: Enhancing Drinking Water Treatment Resilience to Wildfire Events

Abstract: Wildfire frequency and severity has been increasing in the northwest and this trend is anticipated to continue with climate change. This presentation will share the results from Water Research Foundation Project 5168, which is focused on developing guidance and best practices for utilities so that they can know how to respond to wildfire events and post-fire water quality challenges in a crisis. Results from spiking ash in the late fall of 2022 into Portland Water Bureauâ€™s source water will be presented. The presentation will share what changes an operator can do most easily within the treatment process to respond to wildfire impacts and still meet regulatory and production requirements. Northwest utility partners on this project include the City of Grants Pass, Medford Water Commission, and Metro Vancouver, who will share their experiences with watershed disturbances and best management practices to reduce risk to achieve water quality goals.

CEU Relevance Statement: Pilot-scale and side-by-side comparisons of treatment strategies, specifically comparing conventional treatment with pre-ozonation and biofiltration compared to conventional treatment with pre-chlorination and filtration, will be conducted to provide design and operational recommendations that can be made in treatment and monitoring so utilities can more effectively respond to a post-fire scenario. The presentation will share what changes an operator can do most easily within the treatment process to respond to wildfire impacts and still meet regulatory, public health, and production requirements.

Author: Lynn Stephens **Author's Job Title:** Northwest Drinking Water Leader

Email: LStephens@brwncald.com **Phone:** 2067492893

Organization: Brown and Caldwell

Primary Job Duties: Lynn Stephens is BCâ€™s Northwest Drinking Water Leader. Lynn has expertise helping multiple communities prepare for climate change and evaluating how source water quality challenges impact treatment through treatability/piloting efforts. Lynn serves a project manager, water quality technicla expert, and has expertise in water treatment design and optimization.

Related Prior Employment: Lynn Stephens has worked at Brown and Caldwell for 13 years as an environmental engineering consultant.

Registrations or Certifications: PE in Washington and Oregon

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Session ID: TreatTAM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Gas Chlorine is Still Used for Disinfection - Designing for Safety

Abstract: Many water, wastewater, and reclaimed water treatment plants have moved away from gas chlorine as a disinfectant. However, there are many systems that are still in use that require upgrades to maintain them safely and some new plants have chosen to use gas chlorine as a disinfectant due to its effectiveness and relatively lower lifecycle costs. Gas chlorine poses safety risks to treatment plant operators and to surrounding communities and safety design elements must be considered in the design. This presentation will focus on upgrades to two treatment plants (including Skagit PUDâ€™s Judy Treatment Plant) and a new installation. It will focus on the safety elements that are included as part of the design.

CEU Relevance Statement: Gas chlorine is still used as a disinfectant at water and wastewater treatment plants within Washington and around the country. The presentation will focus on safety elements within the design of new and upgraded gas chlorine disinfection systems. Operators will benefit by gaining an understanding of the safety elements incorporated into the design to protect themselves and the communities that they serve.

Author: Stephen Nuss **Author's Job Title:** Principal, Water Practice Leader

Email: stephen.nuss@stantec.com **Phone:** 4252897315

Organization: Stantec

Primary Job Duties: Stephen Nuss is a Principal with Stantec and is a licensed professional engineer in the State of Washington. He focuses on the design and management of water and wastewater projects for municipalities and utilities. His experience has predominately been in the design and management of upgrades to existing treatment plants as well as on conveyance projects.

Related Prior Employment: Prior to joining the engineering consulting world within Washington, Stephen spent over 15 years at the Anchorage Water and Wastewater Utility in Anchorage, Ak. Stephen was a project engineer, project manager, capital program manager, and engineering division manager who directly worked on over 100 projects during his time there.

Registrations or Certifications: Stephen is a registered professional engineer in Alaska, Washington, Idaho and British Columbia.

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Session ID: TreatTAM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Wastewater

Presentation Title: Converting from Chlorine Gas to Sodium Hypochlorite at the Meadowlark Water Reclamation Facility

Abstract: This presentation will discuss Vallecitos Water Districtâ€™s plans to improve plant safety by converting the 5.0 mgd Meadowlark tertiary wastewater treatment facility from chlorine gas to sodium hypochlorite disinfection. Murraysmith, now part of CONSOR, was hired by the District to design the new disinfection system for current demand with the capacity to treat the future plant expansion to 6.5 mgd. Design for this project includes new sodium hypochlorite storage tanks, metering pump skids, yard piping, demolition of the existing chemical building, and construction sequencing with temporary disinfection facilities to ensure the plant continues to meet disinfection during construction. Jar testing was also completed as part of design to confirm optimum sodium hypochlorite dose with the new disinfection system, and proof-of-concept testing was completed to verify the plan to re-use the existing chlorine gas diffusers as injection points for the new sodium hypochlorite solution.

CEU Relevance Statement: This presentation applies to the operation of a wastewater treatment plant by sharing our methods for using construction sequencing to successfully meet treatment goals during a disinfection project. It will also share how to conduct proof-of-concept and jar testing as part of early design to confirm the intended solution meets plant needs before it is constructed, including lessons learned from the Vallecitos Water Districtâ€™s operations staff experience with proof-of-concept testing setup. Operators can also use this presentation to consider whether conversion from chlorine gas disinfection to sodium hypochlorite disinfection may be an option for improving safety at their own plant.

Author: Heather Burns **Author's Job Title:** Civil Engineer

Email: heather.burns@murraysmith.us **Phone:** 8172296160

Organization: CONSOR

Primary Job Duties: Heather contributes to the civil design and project management of projects involving water and wastewater infrastructure. As a consulting professional engineer, she creates specifications and drawings for projects at water and wastewater treatment plants, pump stations, and reservoirs based on client needs and feedback and civil engineering best practices.

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Related Prior Employment: Heather have previously worked as a project manager and engineer in the public sector at Tacoma Water and as a consulting engineer for another Firm.

Registrations or Certifications: PE, Washington, #20122973

PE, Texas, #134450

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Session ID: TreatTAM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Improving Chemical Supply Resiliency - Transition from Gas to On-Site Hypochlorite Generation for a Large 1500 PPD System

Abstract: The City of Bellingham recently completed the replacement of their gas chlorine system at the Post Point Resource Recovery Plant to improve reliability and resiliency of their disinfection and odor control systems. This presentation will focus on the design, construction, and commissioning activities associated with a new 1,500 ppd on-site hypochlorite generation system that was retrofit into an existing building at the plant. This is the second large OSHG system installed at the City in the last 5 years.

CEU Relevance Statement: Many utilities are in the midst of deciding how to proceed with their chlorine systems after the events of 2020 left them without chlorine supply for weeks. This presentation will provide tools to examine what it takes to replace a gas system with on-site hypochlorite generation and the keys to a successful startup and commissioning.

Author: Joshua Kennedy **Author's Job Title:** Drinking Water Engineer, Treatment Group Lead

Email: joshua.kennedy@jacobs.com **Phone:** 2067657652

Organization: Jacobs

Primary Job Duties: I am responsible for planning, design, and construction services at drinking water treatment plants. I provide process engineering services to develop design criteria for treatment processes and mechanical equipment. I also serve as project manager and design manager to oversee staff and review work.

Related Prior Employment: I have worked at Jacobs for 8 years and previously worked in the United States Peace Corps as a water and sanitation volunteer where I designed and constructed latrines and a water system in the Dominican Republic.

Registrations or Certifications: Professional Engineer (PE) in Washington and Oregon

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Session ID: TreatTAM04 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Round Tank in a Square Door: How to fit an OSHG System into an Existing WTP

Abstract: The City of Vancouver embarked on a system-wide chlorine gas conversion program starting in 2015, to convert to a safer disinfection alternative with On-site Hypochlorite Generation (OSHG). This presentation will focus on the Cityâ€™s latest conversion project at the Ellsworth WTP and how the team worked through unexpected design and construction elements, as well as how this project fits into the Cityâ€™s overall goal to reach a 100% chlorine gas reduction by 2025. One of the key aspects that will be covered is how the existing plant layout was leveraged to fit the new system by replacing an existing caustic tank with the new sodium hypochlorite tank. An added complexity was realizing the existing doors did not have clearance for the new tank, therefore requiring a field assembled FRP tank. In addition, this presentation will walk through how the City chose to mitigate high silica levels with a reverse osmosis (RO) pre-treatment system and early insights on performance trade-offs.

CEU Relevance Statement: The focus of this paper will be on lessons learned from the design of an On-site Hypochlorite Generation system and considerations for operation and maintenance that went into the design process. This presentation will provide the audience with an understanding of the OSHG process, and pre-treatment with reverse osmosis to remove silica.

Author: Joanie Stultz **Author's Job Title:** Environmental Engineer

Email: jstultz@brwncald.com **Phone:** 2064998282

Organization: Brown and Caldwell

Primary Job Duties: Joanie Stultz is an environmental engineer with Brown and Caldwellâ€™s Seattle Office. She has experience in water, and wastewater treatment design, water quality assessment, and hydrologic and hydraulic modeling. Joanieâ€™s focus is on drinking water treatment, with experience in providing project management support and design on several projects including a PFAS GAC treatment design project, On-site Hypochlorite Generation project, and task and schedule management for an interdisciplinary, multi-year permitting and water management project for a large private industry client.

Related Prior Employment:

Registrations or Certifications: PE (Washington)

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Session ID: TreatTAM05 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Successful Installation and Operation of a full-scale Hypolimnetic Oxygenation System for T&O Control

Abstract: Reservoir management is proving to be an effective taste and odor (T&O) mitigation strategy that is relatively low cost and provides cascading positive impacts to water treatment plant processes. The Umpqua Indian Utility Cooperative (UIUC) has recently installed a reservoir management system in their raw water reservoirâ€"among other treatment systems to be installedâ€"to mitigate cyanobacteria T&O. The system includes a hypolimnetic oxygenation system (HOS), diffused air-mixing (DAM), and aluminum chlorohydrate (ACH) dosing. This presentation will discuss the preliminary water quality results, operational aspects of the system, and lessons on how to mitigate future T&O events, which are becoming more abundant in water bodies worldwide.

CEU Relevance Statement: Reservoir management is proving to be an effective T&O mitigation strategy that is relatively low cost and provides cascading positive impacts to water treatment plant processes. This presentation will help municipalities understand what such a system could do for their system, based on this case study, to mitigate future T&O events that are becoming more abundant in water bodies worldwide.

Author: Daniel Mosiman **Author's Job Title:** Engineer Designer

Email: Daniel.mosiman@murraysmith.us **Phone:** 6309578604

Organization: CONSOR

Primary Job Duties: Daniel is involved in planning and design improvement projects for municipal drinking water plants including disinfection, taste & odor control, and corrosion control.

Related Prior Employment: Prior to working at CONSOR, Daniel conducted his PhD research on cost-effective fluoride removal technologies for low-income contexts at the University of Illinois at Urbana-Champaign.

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Session ID: TreatTAM06 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Leveraging a Digital Twin to Implement Complex Control Logic at the 3Kings Water Treatment Plant

Abstract: Park City Municipal Corporation is undergoing construction of the 8 MGD 3Kings Water Treatment Plant (3KWTP), scheduled for 2023 completion. Complex control strategies will be implemented to treat several water sources of varying quality, provide multiple treatment bypasses and automate all filter service control and associated backwashes. This presentation will show how a digital twin was used to:

â€¢ Develop and test these complicated control strategies during the design phase

â€¢ Dynamically test the PLC code across the full range of plant flows, resulting in: elimination of code issues prior to start up

â€¢ Effectively communicate with operations staff for control strategy input

CEU Relevance Statement: The use of digital twins to improve design and operation is becoming more widespread. The 3KWTP project will provide an example of how a digital twin can be used to throughout a project and focus on the using a digital twin to improve control system testing. The 3KWTP digital twin provides an excellent overview of overall digital twin capabilities because it includes the hydraulics, controls and major water quality criteria for the entire 3Kings treatment facility.

Author: Stephanie McGregor **Author's Job Title:** Instrumentation & Controls Engineer

Email: stephanie.mcgregor@jacobs.com **Phone:** 5412311779

Organization: Jacobs

Primary Job Duties: Stephanie McGregor is an instrumentation and controls engineer for Jacobs in Portland, Oregon. She received her process engineering degree from Oregon State University and is a licensed PE in Oregon and Idaho. Her experience includes design, programming and startup of control systems for water and wastewater treatment systems. Stephanie's expertise includes controls modeling for treatment plants and conveyance systems using dynamic simulation.

Related Prior Employment:

Registrations or Certifications: PE, Oregon and Idaho

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Session ID: ResEBT01 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: PFAS Addressing State and Federal regulatory changes-what's next

Abstract: PFAS are a class of chemicals that are quickly comong under both state and federal regulations. Learn more about what the current status of regulations are and how this might affect the water, wastewater, and environmental communities.

CEU Relevance Statement: This discussion is directly applicable to implementation of water and wastewater utilities. It will review current sampling requirements, notification requirements, and explore the impacts of proposed federal regulation reacting to changing understanding of the science.

Author: Mike Means **Author's Job Title:** Capacity Development and Policy Manager

Email: Mike.means@doh.wa.gov **Phone:** 3602717991

Organization: WA Departments of Health, Office of Drinking Water

Primary Job Duties: I lead the Office of Drinking Water CAP Dev-Policy team. I manage sections in ODW that cover Operator Certification, State Revolving Funds, Policy, and Engineering and technical services. We help direct the current and future direction of the office regarding drinking water regulation and funding.

Related Prior Employment: I have been with DOH for over 15 years in various capacities. I managed the water quality and technical services section, the Field Operations Manager, and the Director of ODW.

Registrations or Certifications: Registered Geologist, Licensed Hydrogeologist

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Session ID: ResTAM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Reframing the Conversation around Emerging Contaminants

Abstract: In recent months and years, emerging contaminants such as PFAS and microplastics have become an issue of growing public concern. Utility leaders are faced with the challenge of communicating information that is fact-based and understandable to the communities they serve. Technical information can often confuse and alarm the public. In this session, we will outline best practices for effective public communications around PFAS and other contaminants of concern, and how to motivate a public audience to better understand and take action on the issues at hand.

CEU Relevance Statement: This session will highlight strategic communications best practices and methodologies including effective risk communications, behavior change, and building informed consent around building awareness around contaminant sources and managing the need for treatment of emerging contaminants in drinking water.

Author: Holly Tichenor **Author's Job Title:** Oregon Local Leader

Email: htichenor@brwncald.com **Phone:** 5037395414

Organization: Brown and Caldwell

Primary Job Duties: Ms. Tichenor's current job responsibilities include leading Brown and Caldwell's strategic planning and communications work and overseeing Oregon operations. Related work includes developing creative messaging and branding that enhances utility performance, inter-agency collaboration, stakeholder participation, new water program development, and addressing of emerging needs such as PFAS, climate resiliency, funding, water reuse and broader resource recovery initiatives. Ms. Tichenor is an active volunteer in water/wastewater professional organizations including the Association of Clean Water Agencies (OR ACWA) Board Member and Education Committee Chair and active volunteer in PNW WateReuse.

Related Prior Employment: Ms. Tichenor brings 23 years of strategic communications experience for water utility projects and programs across the U.S., including leading strategic planning and stakeholder engagement work for several Pacific Northwest water utility client projects, including Clackamas Water Environment Services, Tualatin Valley Water District (TVWD), and City of Beaverton, Oregon.

Registrations or Certifications: Oregon Association of Clean Water Agencies â€“ Chair of Education and Outreach Committee, PNCWA, PNW WateReuse

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Session ID: ResTAM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Impact of PFAS on Tacoma Water's Groundwater Supply and Corrosion Control Strategy

Abstract: Tacoma Water has one of the largest water systems in Washington and uses both surface water and groundwater supplies. Though used infrequently, these groundwater supplies serve a variety of purposes, such as meeting demands when the river supply is unavailable, during droughts and for emergency responses. The GPL wells make up Tacoma Waterâ€™s second largest wellfield (8 MGD) and were selected for upgrades. The project includes the construction of a new corrosion control facility along with pumping upgrades to make sure the wells can be used reliably in the future. During the projectâ€™s design, the EPA release updated Lifetime Health Advisories (LHAs) for PFAS. This triggered the need to consider PFAS treatment as part of the GPL well facility upgrades which are now being incorporated into the design. This presentation discusses the planning and implementation of a corrosion control and PFAS treatment facility geared to tackle two of the most prominent regulations in our industry.

CEU Relevance Statement: With new and changing regulations on the horizon, the need for installing new or upgrading treatment facilities continues to grow and the need to treat and remove these contaminants is an ongoing issue being faced in the water industry. This presentation will focus on the impacts of the Lead and Copper Rule along with PFAS on water utilities and will provide insight into planning, mitigation and design efforts to help a water utility become more reliable and resilient for changes in the future.

Author: Beth Mende **Author's Job Title:** Water/Wastewater Engineer

Email: Elizabeth.mende@hdrinc.com **Phone:** 9095281002

Organization: HDR

Primary Job Duties: Beth's experience ranges from running bench scale and pilot plant operations, technical studies, field tests, water quality evaluations, as well as plant operation optimizations. She has experience with surface water and groundwater treatment plant process design and operations, laboratory analytics, water quality management and regulatory compliance, and system piping and hydraulic designs.

Related Prior Employment:

Registrations or Certifications: Professional Engineer (Washington and California)

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Session ID: ResTAM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Toxic Additives in Microplastics Desorb into Drinking Water Matrices

Abstract: Microplastics consist of synthetic polymers as well as chemical â€œadditivesâ€ that may constitute up to 75% of their total mass. Additives may include hundreds of individual chemicals. As such chemical hazards associated with ingestion of microplastics, or leaching of additives into drinking water, are challenging to predict. In this study, the toxicity of the extracts from five common polymer types was assessed using in-vitro assays. PVC pellets used in the manufacturing of household items as well as PVC pipe materials exhibited greater toxicity when compared to other common polymer types. Non-targeted chemical analyses were also conducted to identify the specific additives which drive toxicity. Subsequent trials were conducted to assess the potential for these additives to leach from PVC into drinking water.

CEU Relevance Statement: This presentation describes hazards associated with an emerging drinking water treatment-related contaminant that may be regulated in the future. Toxic additives that are added to plastics may pose a greater health risk when compared to microplastics themselves. Operators can use this information to gain an appreciation for the multi-faceted water quality threats associated with microplastics.

Author: Husein Almuhtaram **Author's Job Title:** Postdoctoral Fellow

Email: husein.almuhtaram@utoronto.ca **Phone:** 4165051662

Organization: University of Toronto

Primary Job Duties: Dr. Husein Almuhtaram is a postdoctoral fellow at the University of Toronto, where he completed his PhD. His research focuses on issues related to emerging contaminants in drinking water including microplastics and cyanotoxins.

Related Prior Employment:

Registrations or Certifications:

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Session ID: ResTAM04 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Microplastics Removal in a Dynamic Coagulation-Flocculation-Sedimentation System

Abstract: To-date, the removal of microplastics during conventional treatment has been poorly characterized. Of the limited studies available, most have incorporated jar tests to represent coagulation-flocculation-sedimentation processes when considering the removal of microplastics. Typical jar tests cannot appropriately represent dynamic performance at full scale as they often employ conditions that do not address hydraulic residence times, mixing intensities, and/or coagulation/flocculation mechanisms. In this study, removal of microplastics of varying types and sizes was assessed using a dynamic bench-scale CFS system for a range of operating conditions and source waters.

CEU Relevance Statement: This presentation relates to the operation of water treatment systems. It describes the removal by conventional treatment processes of an emerging contaminant that may be regulated in the future. No studies to-date have reported microplastic removal in dynamic, continuously flowing coagulation/flocculation/sedimentation (CFS) systems that accurately represent full-scale conditions, when compared to simple jar testing. Operating personnel can use this information to help understand the removal of microplastics by CFS.

Author: Robert Andrews **Author's Job Title:** Professor

Email: robert.andrews@utoronto.ca **Phone:** 4165051662

Organization: University of Toronto

Primary Job Duties: Professor Robert Andrews leads the Drinking Water Research Group at the University of Toronto where his research has focused on the treatment of emerging contaminants in drinking water.

Related Prior Employment:

Registrations or Certifications:

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Session ID: ResTAM05 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Machine Learning in Water Coagulation Optimization

Abstract: This presentation will discuss coagulation optimization case of Woodland Davis Water Treatment Plant. Previous works have been completed to build a time series optimization algorithm and deploy a dashboard to help optimize coagulant dosage. The work that will be presented focuses building a condition-based algorithm, results of the full-scale deployment of the algorithm.

CEU Relevance Statement: Machine learning is the future of water as it will utilize data to smooth out water system operation, improve water quality by optimizing dosage of chemical. Deploying dashboard and giving operators a visualization platform that will capture data and predict ideal dosage will relieve some stress. We will share insight on how we utilize data and machine learning to predict dosage and other parameters.

Author: Benedicte Diakubama **Author's Job Title:** Water Engineer

Email: benedicte.diakubama@jacobs.com **Phone:** 5033698513

Organization: Jacobs

Primary Job Duties: Conducting site visits to sample water and monitor finished water quality. Assisting in designing, planning, and implementing water process flow diagram that optimize production and decrease costs. Developing and implementing water treatment plant operation manual

Related Prior Employment:

Registrations or Certifications:

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Session ID: ResTAM06 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Making Conventional Treatment Cutting Edge Technology - Process Optimization Using Advanced Data Analytics

Abstract: With the advent of digital instruments and SCADA systems, water systems are often in a position where they collect more data on their treatment systems then they can analyze, leaving them information rich but knowledge poor. Smart Utility concepts include leveraging technology to empower a water systemâ€™s workforce by providing them with greater access to the collected data, along with comparisons to operational goals and historical context that facilitates a deeper understanding of treatment facility operations. This presentation will detail Smart Utility concepts, and will provide a case study on how these concepts are being utilized by the Portland Water Bureau as they develop their Bull Run Filtration Facility. Specific examples of data dashboards that were developed to integrate multiple data sources and provide insight into process operations (coagulation/flocculation/sedimentation, filtration, disinfection, solids management, water and mass balances) will be presented.

CEU Relevance Statement: This presentation will provide water treatment operators, managers, and other water industry professionals with an understanding of Smart Utility concepts and how they can be implemented to leverage existing data being collected by water systems. Information on integrating multiple data sources will be presented, along with information on data analytics that can help provide insight into plant operators. Recommendations for implementing Smart Utility concepts to optimize water treatment operators will be provided.

Author: Damon Roth **Author's Job Title:** National Specialty Leader, Drinking Water Process Engineering

Email: droth1@brwncald.com **Phone:** 5097704322

Organization: Brown and Caldwell

Primary Job Duties: As Brown and Caldwell's National Specialty Leader for Drinking Water Process Engineering, Damon works with process engineers across the company to engage BCâ€™s subject matter specialists, digital technologists, and company leadership to continue to advance and set BCâ€™s Drinking Water Strategy. Damon also serves as a subject matter specialist on a variety of projects ranging from optimization of existing facilities to design of a wide range of water treatment processes, with additional focus on lead and copper corrosion control as well as water treatment residuals management.

Related Prior Employment:

Registrations or Certifications: PE, BCEE

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Session ID: WQTPM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: The Changing Regulatory Picture of Manganese

Abstract: The adverse impact of manganese on drinking water quality is receiving renewed attention by regulators and utilities based on recent research. This presentation is to be the first in a series of 6 presentations on Emerging Issues with Manganese. It will focus on federal regulatory requirements that apply to manganese, state requirements in the PNW, and elsewhere in the country and in the world. This proposed session is provided by members of AWWAâ€™s national Manganese Subcommittee, and was solicited by the PNWS Water Quality Committee.

CEU Relevance Statement: Appreciate the growing body of health effects literature documenting manganese effects on children, and be aware of efforts tightening the regulation of manganese in the USA, in the PNW, and elsewhere in the country and in the world.

Author: Helene Baribeau **Author's Job Title:** Distribution System Water Quality Leader

Email: HBaribeau@BrwnCald.com **Phone:** 8585716713

Organization: Brown and Caldwell

Primary Job Duties: I started working in the drinking water industry in 1989. Throughout my career, I have focused on disinfection processes and disinfection byproducts (DBPs), microorganism inactivation and control, corrosion control, impact of treatment processes on distribution system water quality, and regulatory compliance.

Related Prior Employment: Prior to joining Brown and Caldwell in summer 2019, I worked for the State of California (State Water Resources Control Board, Division of Drinking Water, Regulatory Development Unit). I was independent consultant before working for the state.

Registrations or Certifications: CA PE, CA WTP Operator Grade 3, CA Advanced WTP Grade 3, AWWA member, Vice-chair of AWWA Manganese Subcommittee

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Session ID: WQTPM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: How Widespread is Manganese in Drinking Water?

Abstract: The adverse impact of manganese (Mn) on drinking water quality is receiving renewed attention by regulators and utilities based on recent research. This presentation is to be #2 in a series of 6 presentations on Emerging Issues with Manganese. It will focus on the UCMR results which show widespread occurrence of Mn in drinking water across the US and more specifically the Pacific Northwest region. This proposed session is a product of an initiative of AWWAâ€™s national Mn Subcommittee and was solicited by the PNWS Water Quality committee.

CEU Relevance Statement: Appreciate the growing body of health effects literature documenting Mn effects on children

Be aware of efforts tightening the regulation of Mn

Recognize Mnâ€™s widespread occurrence

Become familiar with effective methods for treating Mn

Understand the adverse consequences of legacy Mn and its influence on water quality at the tap

Understand operational and maintenance practices to mitigate legacy Mn

Author: Andy Eaton **Author's Job Title:** Owner

Email: ade1014@gmail.com **Phone:** 6264371286

Organization: Eaton Environmental Water Quality Consulting, LLC

Primary Job Duties: Having retired as Technical Director of Eurofins Eaton Analytical, LLC (the nation's largest potable water lab) after 40 years, I opened a consulting business to advise utilities on emerging water quality issues.

Related Prior Employment: I spent 40 years in a variety of roles at Eurofins Eaton Analytical (and it's predecessors - MWH Labs and JMM), retiring as Technical Director Emeritus in 2020.

Registrations or Certifications: AWWA TAW PFAS and SDWA; AWWA Mn subcommittee

BCES

George Warren Fuller awardee

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Session ID: WQTPM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Comparing Manganese Treatment Technologies

Abstract: The adverse impact of manganese (Mn) on drinking water quality is receiving renewed attention by regulators and utilities based on recent research. This presentation is to be #4 in a series of 6 presentations on Emerging Issues with Manganese. It will provide a comparison of the many technologies which can be used to treat manganese.. This proposed session is a product of an initiative of AWWAâ€™s national Mn Subcommittee and was solicited by the PNWS Water Quality committee.

CEU Relevance Statement: After attending the session conference participants should:

- Appreciate the growing body of health effects literature documenting Mn effects on children

- Be aware of efforts tightening the regulation of Mn

- Recognize Mnâ€™s widespread occurrence

- Become familiar with effective methods for treating Mn

- Understand the adverse consequences of legacy Mn and its influence on water quality at the tap

- Understand operational and maintenance practices to mitigate legacy Mn

Author: Philip Brandhuber **Author's Job Title:** Owner

Email: philbwater@gmail.com **Phone:** 13037172457

Organization: Brandhuber Water Quality and Treatment LLC

Primary Job Duties: Owner of company focused advising utilities and regulators on drinking water quality issues, with particular emphasis on inorganic contaminants.

Related Prior Employment: 25 years experence in drinking water field. Previously employeed by McGuire Environmental and HDR Engineering. Past chair of AWWA Inorganics Committee and current Chair of Manganese Subcommittee.

Registrations or Certifications:

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Session ID: WQTPM04 **Date:** 5/4/2023 **Length of Session:** 30 minutes, as part of a 6-presentation session â€œEmerging Issues with Manganeseâ€

Area of Relevancy: Drinking Water

Presentation Title: Legacy Manganese Issues in Distribution Systems

Abstract: The adverse impact of manganese (Mn) on drinking water quality is receiving renewed attention by regulators and utilities based on recent research. This presentation is to be #4 in a series of 6 presentations on Emerging Issues with Manganese. It will focus on issues and water quality challenges posed by legacy Mn accumulation in distribution systems. This proposed session is a product of an initiative of AWWAâ€™s national Mn Subcommittee and was solicited by the PNWS Water Quality committee.

CEU Relevance Statement: After attending the session conference participants should:

- â€¢ Appreciate the growing body of health effects literature documenting Mn effects on children
- â€¢ Be aware of efforts tightening the regulation of Mn
- â€¢ Recognize Mnâ€™s widespread occurrence
- â€¢ Become familiar with effective methods for treating Mn
- â€¢ Understand the adverse consequences of legacy Mn and its influence on water quality at the tap
- â€¢ Understand operational and maintenance practices to mitigate legacy Mn

Author: Andrew Hill **Author's Job Title:** Senior Project Manager

Email: andrew@confluence-engineering.com **Phone:** 2068544125

Organization: Confluence Engineering Group

Primary Job Duties: Planning, research, and process engineering related to drinking water treatment and distribution system water quality control

Related Prior Employment: 23 years of consulting engineering experience in drinking water (with EES, Kennedy/Jenks, HDR, and Confluence)

Registrations or Certifications: Licensed Chemical PE in WA and CA

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Session ID: WQTPM05 **Date:** 5/4/2023 **Length of Session:** 30 minutes, as part of a 6-presentation session â€œEmerging Issues with Manganeseâ€

Area of Relevancy: Drinking Water

Presentation Title: Main Cleaning and Control Strategies for Legacy Manganese

Abstract: The adverse impact of manganese (Mn) on drinking water quality is receiving renewed attention by regulators and utilities based on recent research. This presentation is to be #5 in a series of 6 presentations on Emerging Issues with Manganese. It will focus on strategies to mitigate legacy Mn with emphasis on main cleaning methods and chemistry control. This proposed session is a product of an initiative of AWWAâ€™s national Mn Subcommittee and was solicited by the PNWS Water Quality committee.

CEU Relevance Statement: After attending the session conference participants should:

- â€¢ Appreciate the growing body of health effects literature documenting Mn effects on children
- â€¢ Be aware of efforts tightening the regulation of Mn
- â€¢ Recognize Mnâ€™s widespread occurrence
- â€¢ Become familiar with effective methods for treating Mn
- â€¢ Understand the adverse consequences of legacy Mn and its influence on water quality at the tap
- â€¢ Understand operational and maintenance practices to mitigate legacy Mn

Author: Andrew Hill **Author's Job Title:** Senior Project Manager

Email: andrew@confluence-engineering.com **Phone:** 2068544125

Organization: Confluence Engineering Group

Primary Job Duties: Planning, research, and process engineering related to drinking water treatment and distribution system water quality control

Related Prior Employment: 23 years as a consulting engineer in drinking water (with EES, Kennedy/Jenks, HDR, and Confluence)

Registrations or Certifications: Licensed Chemical PE in WA and CA

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Session ID: WQTPM06 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Manganese Landscape in Washington â€“ Occurrence, Challenges, and Regulatory Perspective

Abstract: The adverse impact of manganese (Mn) on drinking water quality is receiving renewed attention by regulators and utilities based on recent research. This presentation is to be #6 in a series of 6 presentations on Emerging Issues with Manganese. It will focus on manganese occurrence in Washington State, associated challenges with treating to remove manganese, and a focus on the regulatory perspective. This proposed session is a product of an initiative of AWWAâ€™s national Mn Subcommittee and was solicited by the PNWS Water Quality committee.

CEU Relevance Statement: Manganese is prevalent in drinking water sources throughout Washington State (and other parts on PNW). In addition, Washington has other water quality parameters that can make treatment to remove manganese more challenging.

Author: Jolyn Leslie **Author's Job Title:** Regional Engineer

Email: Jolyn.Leslie@doh.wa.gov **Phone:** 2069456927

Organization: Washington State DOH

Primary Job Duties: For the past 20 years, apply engineering expertise to protect public health by responding to drinking water emergencies; regulating public water systems to ensure adequate quality and quantity of water supply; conducting sanitary surveys; providing technical review of water system plans and design documents; providing technical assistance to local health jurisdictions, state and federal agencies, water system owners and operators, community officials, consulting engineers, and citizen groups.

Related Prior Employment:

Registrations or Certifications: Professional Engineer in Washington, AWWA Member

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Session ID: WREBT01 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Water Supply Well Condition Assessments â€“ Real-World Applications and Results

Abstract: Case studies will be presented demonstrating typical municipal water supply well conditions and issues that have informed water system operators about whether to rehabilitate or replace the well in question. NWGS and GeoEngineers, working with staff at West Richland, Walla Walla, and Milton-Freewater, have conducted multiple physical and geochemical assessments of aging water supply wells in the last three years. These assessments have been triggered by reduced production capacity and/or water quality issues. The approach used in these assessments integrates performance monitoring, biogeochemical profiling, and physical inspection. This work provides the information needed to support decisions ranging from simple disinfection to reconstruction and replacement.

CEU Relevance Statement: The case studies will present municipal water supply well conditions and issues that necessitate decisions related to whether a well should be rehabilitated or replaced. These are needed for short and long-term water system planning, scoping well work and scheduling and building capital budgets. All of these are directly relevant to potable water system operation and the quantity and quality of delivered water.

Author: Kevin Lindsey **Author's Job Title:** Principal Hydrogeologist

Email: klindsey@geoengineers.com **Phone:** 5099475729

Organization: GeoEngineers, Inc.

Primary Job Duties: Planning, implementing, and reporting on groundwater supply projects in the Columbia Basin. This includes assessments of existing wells, development of new wells, and MAR projects.

Related Prior Employment: I have been involved in this line of work, for both public and private clients for at least the past 20 years.

Registrations or Certifications: Licensed Hydrogeologist Washington; Professional Geologist Idaho.

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Session ID: WRTAM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Data Dashboards: Who, What, When, Where, Why, and How

Abstract: The City of Hillsboro utilizes several programs for data analysis and data visualization. This presentation will briefly describe these programs (i.e., Tableau, Seeq, Excel), their strengths and weaknesses, and projects associated with each. Project descriptions will discuss the development and creation of dashboards using these programs, the goals and intended audience for each project, and the lessons learned. These projects involve water quality, reservoir storage, treatment plant, and transmission data.

CEU Relevance Statement: N/A

Author: Emma Martin **Author's Job Title:** Water Resources Project Specialist

Email: emma.martin@hillsboro-oregon.gov **Phone:** 5163826530

Organization: City of Hillsboro/ Joint Water Commission

Primary Job Duties: Emma is responsible for tracking and reporting reservoir storage, production, consumption, and distribution data for the City of Hillsboro and Joint Water Commission. She creates reports, dashboards, and maps in addition to other documentation needs, such as internal and external data requests. She also provides support for source water protection projects and water rights reporting.

Related Prior Employment: Prior to working for the City of Hillsboro, Emma was a GIS Specialist for a consulting company outside of Washington, DC working on projects for the Department of Energy. She then attended Arkansas State University for her masterâ€™s degree where she worked in an environmental research laboratory performing chemical, physical, and biological water quality tests.

Registrations or Certifications: N/A

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Session ID: WRTAM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Seeing the Future: Using GIS for Enhanced Planning and Forecasting of Well Maintenance and Life Cycle Costs

Abstract: The City of Laceyâ€™s water system includes over 20 groundwater supply wells, 10 pressure zones, and over 350 miles of pipes. The City is in the process of developing The Well Program, a GIS-based web-application designed to forecast groundwater supply well maintenance and life cycle replacement events, and to create an early warning system for potential well issues. The Well Program will be utilized by operations, maintenance, and engineering staff, and is built within the Cityâ€™s existing ESRI GIS infrastructure. Historical and real time data and unstructured datasets (well reports, well logs, photos, as-builts) will be incorporated into the Well Program to provide a cohesive, visually appealing, and interactive framework to warehouse and to continuously assess and warehouse the ongoing streams of groundwater source information. The City will share the results from their initial Pilot-version of the Well Program, lessons learned, and plans for future phases.

CEU Relevance Statement: Operators, and managers will learn about innovative methods for efficient and comprehensive management and analysis of production well data. The Well Program web-application can help operators and water system managers predict potential for well failures and maintenance and be proactive in protecting the integrity of the water system.

Author: Kelsey Mach **Author's Job Title:** Project Geologist

Email: kmach@aspectconsulting.com **Phone:** 5709800490

Organization: Aspect Consulting, LLC

Primary Job Duties: Provide technical and project management support for a range of water rights and hydrogeological projects. Projects include water right permitting, portfolio management and compliance assistance for Cities and municipalities, as well as hydrogeologic evaluations related to installation of municipal production wells.

Related Prior Employment:

Registrations or Certifications: Licensed Geologist Washington, Registered Geologist Oregon

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Session ID: WRTAM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Integrated Modeling to Optimize Ecological and Agricultural Water Supply Enhancement

Abstract: The Walla Walla Basin faces challenges in sustaining agricultural water supplies and endangered fish species in the Walla Walla River (WWR). Increased alluvial aquifer pumping during the growing season and modification of the natural distributary river system has resulted in decreased aquifer storage and high seepage losses. A number of Managed Aquifer Recharge (MAR) sites have been developed in the alluvial aquifer to supplement groundwater storage during the winter and spring months, with the primary goal of maximizing instream river flow during the summer months when fish species are most threatened. Crucial to the MAR program has been the development of an integrated numerical groundwater-surface water model. The basin integrated model has been calibrated to observed groundwater and surface water conditions and used to identify optimum MAR locations and recharge quantities that will have the greatest influence on alluvial aquifer storage and surface-water groundwater interactions.

CEU Relevance Statement: Integrated groundwater-surface water modeling is a tool that can be used for water providers to predict water availability and management alternatives to enhance water resiliency.

Author: Jason Keller **Author's Job Title:** Senior Hydrogeologist

Email: jason@gsanalysis.com **Phone:** 5413993399

Organization: GeoSystems Analysis, Inc.

Primary Job Duties: Project Manager and technical lead for GSA's managed aquifer recharge projects and water resource modeling projects in the Pacific Northwest.

Related Prior Employment: Scientist at Pacific Northwest National Laboratory evaluating groundwater recharge and contaminant fate and transport at the Hanford site.

Registrations or Certifications: Oregon and Arizona Professional Geologist

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Session ID: WRTAM04 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Pollutant Load Modeling Webtool for Source Water Protection

Abstract: An interactive, web-based pollutant load model has been developed for the Clackamas River Water Providers in Oregon to support programs that protect the drinking water source water quality of the Clackamas River. The tool allows users to create best management practice (BMP) scenarios to evaluate the potential of select BMPs to reduce pollutant loading from various land uses. This presentation will cover the model inputs, the algorithm that drives the tool, and how the tool may be used to support implementation of BMPs in the Clackamas River watershed. The presentation will also include a demonstration of the tool.

CEU Relevance Statement: This is relevant to managers and engineers because it discusses the engineering analyses conducted to characterize watershed-scale risks to drinking water source water associated with pollutant loading from the land surface activities and informs strategies to reduce those risks.

Author: Jamie Feldman **Author's Job Title:** Engineer in training

Email: jfeldman@geosyntec.com **Phone:** 6463484590

Organization: Geosyntec Consultants

Primary Job Duties: Hydrology and water quality data analysis, modeling, and task and project management under the supervision of a Professional Engineer

Related Prior Employment:

Registrations or Certifications: EIT

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Session ID: WRTAM05 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Using ESRI's GIS Technology to further Tacoma Water's AMI (Automated Metering Infrastructure) program

Abstract: In this presentation, we'll cover several ways in which Tacoma Water was able to leverage their ESRI GIS technology to prepare for and implement Automated Metering Infrastructure. Lessons learned, money saved, efficiencies gained as well as the road ahead for these 2 technologies will be discussed in detail and may serve as a model for other water utilities to follow.

CEU Relevance Statement: This presentation has CEU relevancy in that we'll cover how the GIS technology saved time and money in operational efficiency as well as better management of metering infrastructure.

Author: Andy Simpson **Author's Job Title:** GIS/IT Supervisor

Email: asimpson@cityoftacoma.org **Phone:** 2534114860

Organization: Tacoma Water

Primary Job Duties: Organize and administer GIS technology development at Tacoma Water. Supervise, Mentor and Train personnel involved in GIS applications, GIS programming or GIS Application configuration as it relates to the water utility

Related Prior Employment: City of Sparks GIS Administrator/Manager

Registrations or Certifications: GISP (Geographic Information Systems Professional)

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Session ID: WRTPM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Groundwater Level Declines â€“ Not Just an Odessa Groundwater Management Area Challenge.

Abstract: Groundwater is used to meet almost all domestic, municipal, and industrial needs in Lincoln County, Washington, most of which is not located within the Odessa Groundwater Management Area (the Odessa). Public/private efforts are underway in the Odessa to replace groundwater sourced irrigation water with surface sourced water. But, what of the areas outside of the Odessa? This presentation will describe recent and current groundwater level monitoring efforts in this part of the Columbia Basin lying outside of the Odessa. These data will inform municipal and private groundwater system operators about the condition of the groundwater resource as Odessa groundwater replacement proceeds. This information will be central to future decisions by water system owner/operators related to groundwater resource sustainability, to water storage, to conservation, to supply well changes.

CEU Relevance Statement: Odessa groundwater replacement will affect the groundwater resources used by water purveyors as irrigation transitions to surface water sources. The extent of that change will determine the future needs of these purveyors. These needs will determine the nature of future water storage, conservation, and supply projects needed to allow public and private water system operators to meet future demand.

Author: Kevin Lindsey **Author's Job Title:** Principal Hydrogeologist

Email: klindsey@geoengineers.com **Phone:** 5099475729

Organization: GeoEngineers, Inc.

Primary Job Duties: Planning, implementing, and reporting on groundwater supply projects in the Columbia Basin. This includes assessments of existing wells, development of new wells, and MAR projects.

Related Prior Employment: I have been involved in this line of work, for both public and private clients for at least the past 20 years.

Registrations or Certifications: Licensed Hydrogeologist Washington; Professional Geologist Idaho.

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Session ID: WRTPM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: A Study in Proactive Water Supply Planning

Abstract: The City of Moses Lake is a thirsty little City in the hot, dry heart of Washington State. The Cityâ€™s water system is reliant on water supply from deep wells that provide excellent water quality, but are experiencing significant declines in yields due to decreasing water levels. While the Cityâ€™s wells currently have adequate capacity to meet existing demands, they needed to get creative as they consider their future projected water supply demands and source capacity. The City will present on their past and planned efforts to establish redundant and replacement water supply.

CEU Relevance Statement: The presentation will include description of the permitting, engineering and political challenges around establishing additional and replacement water supply. These efforts include acquiring redundant shallow gravel aquifer water rights, the challenges of installing shallow gravel aquifer production wells, exploring replacement water sources such as surface water sources for non-potable uses, evaluating the feasibility of ASR, and developing future-looking City ordinances.

Author: Kelsey Mach **Author's Job Title:** Project Geologist

Email: kmach@aspectconsulting.com **Phone:** 5709800490

Organization: Aspect Consulting

Primary Job Duties: Provide technical and project management support for a range of water rights and hydrogeological projects. Projects include water right permitting, portfolio management and compliance assistance for Cities and municipalities, as well as hydrogeologic evaluations related to installation of municipal production wells.

Related Prior Employment:

Registrations or Certifications: Registered Geologist in Oregon, Licensed Geologist in Washington

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Session ID: WRTPM03 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: All's Well that Ends Well -- Implementing Eugene Water and Electric Board's Emergency Well Program

Abstract: In response to meeting resiliency goals, Eugene Water and Electric Board (EWEB) developed an Emergency Water Supply Program. The Program prioritized the use of existing and new groundwater wells as emergency water supply sources in the event of a major seismic event or loss of the primary surface water source. This was a notable shift in priority from EWEBâ€™s focus on developing a second surface water source, which is considerably more expensive and would require a longer implementation to achieve an emergency water source. This presentation will highlight the planning, early implementation issues, and achievements to-date. This includes the administrative coordination public agencies, property owners, and other stakeholders, as well as the technical issues related to siting and operations of the wells in the near- and long-term. The shared lessons learned will help others consider if and how a similar program could be implemented for their utilities.

CEU Relevance Statement: This presentation will describe how EWEB approached developing the emergency well program including internal coordination the operation and maintenance of the wells. The information shared will help operators understand the integration and interface of emergency well operations and maintenance with its primary surface water source and distribution system.

Author: Nathan Endicott **Author's Job Title:** Staff Engineer

Email: Nathan.Endicott@EWEB.org **Phone:** 5416857367

Organization: Eugene Water and Electric Board

Primary Job Duties: Planning and engineering related work for water utility infrastructure renewal and replacement. Performing project management of construction services as the Owners representative.

Related Prior Employment: Engineering intern at TVWD and Vestas America wind Technology. Laborer for Springfield Utility Board.

Registrations or Certifications: P.E. in Civil Engineering.

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2023 Annual Conference, Kennewick, WA May 3 – 5

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Session ID: WRTPM05 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Groundwater Depletion and Municipal Supply Resiliency in the Columbia Basin, Washington

Abstract: Groundwater from basalt aquifers is the sole source of supply for municipal water systems in most of the Columbia Basin. Irrigated agriculture in the Odessa Subarea, located east of the Columbia Basin Project canal system, also depends on the same aquifers. Groundwater levels in these aquifers have declined as much as 300 feet since the 1960s, threatening the economy of the region, and the supplies for municipal systems. Agencies and other stakeholders have been working with water systems in the region to improve source resiliency, including improving groundwater monitoring, improving existing supplies, identifying alternative sources, and supporting initiatives to replace agricultural groundwater sources with surface water. Measures to improve supply resiliency include collecting operational data to provide early warning of vulnerabilities, improving the performance of existing sources, and replacing underperforming wells.

CEU Relevance Statement: This presentation will provide a case study of an imperiled water source and provide municipal systems in the region, and elsewhere with recommendations for simple operational measures that can be taken to provide an early warning of potential source vulnerabilities, and develop responses to improve source resiliency

Author: Walter Burt **Author's Job Title:** Principal Hydrogeologist

Email: wburt@gsiws.com **Phone:** 5037816895

Organization: GSI Water Solutions, Inc.

Primary Job Duties: I am responsible for directing teams of scientists and engineers that support public-sector and private clients with developing, improving and operating their groundwater sources of supply, including aquifer storage and recovery (ASR) systems. A core focus of my work is assisting clients identify alternatives to improve supply resiliency through diversification of sources, identifying vulnerabilities and improving operations and maintenance practices.

Related Prior Employment: I have been employed at GSI Water Solutions since its founding in 2000. Previously, I worked as a senior hydrogeologist at CH2M Hill (1999 - 2000), and before that as a project and then senior hydrogeologist at GeoEngineers for 10 years.

Registrations or Certifications: Registered Geologist (Oregon) and Licensed Hydrogeologist (Washington)

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Session ID: WRTPM06 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Managing for the Future: Building Drought Resiliency and Reliability into Municipal Water Supply

Abstract: In response to population growth and a changing climate, municipalities must adapt to meet increasing annual and shifting peak water supply demands. In the Columbia River Basin, both physical and legal water supply are limited. Development of new groundwater supplies are often challenged by declining groundwater levels, poor water quality, depletion of river flows, and pumping interference from nearby wells. Likewise, development of surface water is limited by proximity to a suitable source, high treatments costs, decreasing summer river flows, and impacts to Tribal Time Immemorial, State Instream Flow Rules, and Endangered Species Act-listed fish. Solutions often require municipalities to make significant and strategic investments in future water supply. This presentation will provide case studies and discuss the technical and legal implications of how local municipalities are addressing these concerns through a variety of innovative solutions.

CEU Relevance Statement: In the Columbia River Basin, both physical and legal water supply are limited. This presentation will provide region-specific case studies and discuss the technical and legal implications of how local municipalities can adapt to meet increasing annual and shifting peak water supply demands through a variety of innovative solutions.

Author: Tyson Carlson **Author's Job Title:** Principal Hydrogeologist

Email: tcarlson@aspectconsulting.com **Phone:** 2066961525

Organization: Aspect Consulting

Primary Job Duties: Tyson is a Principal Hydrogeologist with Aspect Consulting. Working from the Yakima office, his strengths lie in evaluating hydrogeologic systems, developing regional and site-specific hydrogeologic conceptual models, and permitting water resources. Tyson has completed projects for public, private, and NGOs in support of numerous water right assessments and acquisitions. He has been the lead water right investigator on decisions for both new appropriations and transfer/change of existing rights, including use of the Stateâ€™s Trust Water Right Program (TWRP) for purposes of instream flow, habitat, and mitigation through water banking.

Related Prior Employment: Tyson has been at Aspect Consulting for nearly 20 years.

Registrations or Certifications: Tyson is a Washington-State licensed Hydrogeologist and an Ecology-approved Certificate Water Right Examiner

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Session ID: DivTAM01 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Retaining Talent a Panel Discussion

Abstract: This panel will discuss the challenges of retaining diverse talent in the water industry, and discuss paths to sustain an inclusive workforce. Panelists from various sectors will discuss topics such as, DEI workplace trainings, employee affinity groups, workplace culture, mentorship programs, etc.

CEU Relevance Statement: This panel discussion aims to support talent retention in organizations, and the industry overall for a long period of time to develop and sustain an experienced workforce which is critical for successful operation of a drinking water or wastewater system. Having a strong workforce will help ease the transition of knowledge between senior, mid-level, and entry level staff. The panelists will share insights from their organizations and personal experiences about best practices for staff retention through a lens of diversity.

Author: Benedicte Diakubama **Author's Job Title:** Water Engineer

Email: benedicte.diakubama@jacobs.com **Phone:** 5033698513

Organization: Jacobs

Primary Job Duties: Conducting site visits to sample water and monitor finished water quality. Assisting in designing, planning, and implementing water process flow diagram that optimize production and decrease costs. Developing and implementing water treatment plant operation manual

Related Prior Employment:

Registrations or Certifications:

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Session ID: DivTAM03 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Filling your Bucket: Diverse Discussion Panel on Recruitment

Abstract: This panel will discuss the path to create a more diverse workforce to promote a growing industry with representation from various sectors. They will discuss topics such as the benefits of internships/apprenticeships, volunteering, and community outreach, using resources like local programs, partnerships, and social media, etc.

CEU Relevance Statement: Recruitment is a core process for any organization as we need to fill our buckets to serve and grow our industries. To best serve our communities, we must start integrating initiatives and best practices to have a diverse workforce. The panelists will share insights from their organizations and personal experiences about recruitment and hiring best practices through a lens of diversity.

Author: Asa Reyes-Chavez **Author's Job Title:** Water Solutions Engineer

Email: areyeschavez@parametrix.com **Phone:** 0

Organization: Parametrix. Inc.

Primary Job Duties: Panelists' info will be submitted at a later date

Related Prior Employment: Panelists' info will be submitted at a later date

Registrations or Certifications: Panelists' info will be submitted at a later date

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Session ID: DivTAM05 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: An Equity Journey Begins at Tacoma Water

Abstract: Tacoma Water formed its first equity committee, made of employees from across the organization, in January of 2020. In 2+ years since, the group has developed a vision and goals, as well as undertaken a number of tasks and projects to improve the equity of operations, both for employees and for the communities served. This presentation will share the journey of the committee from its beginnings to today, and invite session participants to consider the relevance of Tacomaâ€™s work to their own organization and community.

CEU Relevance Statement: Equity is a critical lens with which to view all organizational operations, both as impact to employees and the surrounding community. Participants in this session will have the opportunity to hear Tacomaâ€™s story and draw parallels to their own work, examining whether Tacomaâ€™s progress and lessons learned might influence their own operations.

Author: Rochelle Gandour-Rood **Author's Job Title:** Water Program Specialist for Community Engagement and Conservation

Email: rgrood@cityoftacoma.org **Phone:** 2532441043

Organization: Tacoma Water

Primary Job Duties: Rochelle Gandour-Rood is the Water Program Specialist for Community Engagement and Conservation. This includes managing a residential and commercial conservation program of rebates, information, and education. Rochelle conducts public outreach and engagement via both public events for the general public and scheduled youth programs with community partners, as well as consulting on marketing and communications materials from the utility. Finally, Rochelle is currently the co-chair of the equity committee at Tacoma Water.

Related Prior Employment: Rochelle has been a middle school science teacher, worked for the public school system administration in environmental education, and been a youth program coordinator for Trout Unlimited, including managing youth leadership teams and editing a children's periodical.

Registrations or Certifications: North American Association of Environmental Education, City of Tacoma EEO Cohort

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Session ID: DivTAM06 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Everyone on Board: Advancing Equity Within Different Organizational Cultures

Abstract: Social equity and justice seem to be everywhere these days, but that focus does not always improve outcomes for the underrepresented or disadvantaged. In some organizations, the intention is there, but the actions are unclear. While in other places, equity may face internal opposition and even alienate some staff. This presentation focuses on value systemsâ€"understanding the value systems that are present in our organizations, and connecting equity work to those value systems in a meaningful and positive way.

CEU Relevance Statement: This presentation focuses on engaging broad staff - in particular operators and front line staff - in equity initiatives. Operators and front line workers often best understand the barriers and needs of vulnerable customers because they are out in our communities and interacting with customers every day. By engaging operators in this work, we can better address the needs of customers that most vulnerable to water quality issues.

Author: Nicki Pozos **Author's Job Title:** Principal

Email: nicki@theformationlab.com **Phone:** 5034818611

Organization: The Formation Lab

Primary Job Duties: Nicki's work focuses on social equity, small business development programs, and utility management. Current projects include: Equity Lead on the Bull Run Treatment Projects for Portland Water Bureau, Project Manager for the Hillsboro Public Works Strategic Plan, and leading small business programs on multiple projects for Portland Bureau of Environmental Services.

Related Prior Employment: Nicki Pozos brings 19 years of experience in engineering, planning and communications for major infrastructure projects. Her work includes managing water master plans, water supply studies, and multiple communications projects.

Registrations or Certifications: Professional Engineer, Oregon

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Session ID: DistEBT01 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: How to Manage an Aging Control Valve System

Abstract: Water systems are aging and legacy staff are retiringâ€¦ along with their knowledgeable experience! What should a water district do to address their aging hydraulic control valves and the retiring staff who operate them? This class addresses asset management, valve maintenance frequency and practices, when to replace components or an entire valve, the value of stainless and other premium components, valve design to prevent failures, and developing your next generation of valve operators.

CEU Relevance Statement: Hydraulic control valves and maintenance are a vital aspect of a functioning water system. Systems are aging and so are hydraulic control valves, which in some cases, were installed back in the 50â€™s, 60â€™s, and 70â€™s! When should control valves be replaced? How often should they be maintained? Who is keep track of maintenance? Who on a district team knows how to maintain and troubleshoot their control valves or what they do? What happens when staff retire or move to a different district? This class will address ops leads, lower level operators, and district leads on the necessity of proper hydraulic control valve management and staff development to ensure the system continues to operate as it should for the coming generations.

Author: Steve Causseaux **Author's Job Title:** Regional Manager, Engineering Support

Email: steve@cimcopnw.com **Phone:** 2535345667

Organization: Cimco-GC Systems

Primary Job Duties: Steve works closely along side water and wastewater district operators, engineers, and independent engineering firms to select valves and specific valve functions for the wide range of applications. With 33,000+ possible combinations of control valves available, engineers and operators often need assistance in understanding valve capabilities, applications, maintenance, and troubleshooting. Cimco-GC Systems has been supporting the PNW water/wastewater industry for 47 years.

Related Prior Employment: Steve has spent the past 15 years working in water management for waterworks and construction projects. As an environmental consultant in the AZ deserts, he worked with major home builders to control sediment and erosion. As a consultant for 13 years with Cimco-GC Systems, a local waterworks rep and service firm, Steve helps water districts and engineers design and manage their systems.

Registrations or Certifications: CPMR: Certified Professional Manufacturer's Representative

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Session ID: DistTPM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Fire Hydrant Maintenance, Operation and iHydrant technology

Abstract: I would like open with an overview of fire hydrant maintenance, operation and repairs. I would like to then transition to current fire hydrant design and construction. Lastly, I would like to present iHydrant pressure and temperature monitoring and data collection.

CEU Relevance Statement: The presentation will be directly relevant to operation and maintenance of fire hydrants. It will show engineering design and improvements made to current fire hydrants. Certified operators will receive information on operating and repairing fire hydrants. There will be information on monitoring pressure and temperature through iHydrant technology which is an improvement to overall water quality and public health.

Author: Vaughn Barber **Author's Job Title:** District Sales Manager

Email: vaughn.barber@kvmhsales.com **Phone:** 2066012457

Organization: Kennedy Valve / M&H Valve

Primary Job Duties: I am District Sales Manager for Kennedy and M&H Fire hydrants and Valves. I conduct hydrant demonstrations for customers and perform hydrant and valve repairs as needed. I work with distributors to take care of customers water distribution system needs.

Related Prior Employment: I worked for the City of Washougal Water division for almost 20 years, starting as an entry level maintenance worker and progressing to water supervisor for the past 14 years. I have worked with all aspects of operating a drinking water system from water treatment to distribution O&M as well as design and regulatory compliance.

Registrations or Certifications: Washington State WDM 4, CCCS and WTPO 1-IT. I also have a PO level 3 certification

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Session ID: DistTPM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Meter Health Analytics: The Importance of Large Meter Performance to Water Districtsâ€™ Bottom Lines and Communities At Large

Abstract: Large commercial and industrial water meters can represent 40%-60% or more of a utilityâ€™s annual revenue, despite representing less than 10% of the meter fleet. The failure of a single large meter can cost a utility hundreds of thousands of dollars a month in lost revenue.

So how do municipalities ensure their highest revenue-generating meters are registering consumption within AWWA guidelines and manufacturerâ€™s specifications? Recent advancements in low-power microchips, AI-algorithm processing and machine learning are revealing new insights for water departments to ensure large meters are performing optimally.

This session will cover the importance of large meter accuracy, available technologies to ensure accuracy â€“ how they work and detailed pros and cons of each type â€“ and real-world case studies of water districts leveraging technology to manage their largest revenue generators.

CEU Relevance Statement: In this session, operators, engineers, managers and public officials will learn about a new way to rapidly diagnose large meter malfunctions to bring water loss under control. Until now, the industry best practice has been flow testing, either on a flow bench or with portable test meters. However, flow testing can waste significant amounts of water, has to be routinely scheduled, and doesnâ€™t always provide a complete picture of meter health. New technology developments ease the burden of this important task of mentoring large meter performance.

Author: Kali Kocdemir **Author's Job Title:** Regional Manager

Email: kkocdemir@oleaedge.com **Phone:** 2533047282

Organization: Olea Edge Analytics

Primary Job Duties: Serve as a resource to operators and managers on large meter maintenance best practices to support more effective O&M activities. Travels and studies latest industry trends. Develops consumer-targeted strategies to increase the awareness of how valuable water resources are to our daily lives.

Related Prior Employment: Specialized in meters and AMI for 2 international meter and AMR/AMI companies for 6 years total (5 at Kamstrup, 1 at Smart Earth).

Registrations or Certifications: Bachelors of Science, Business

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Session ID: DistTPM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Setting Up for Success: The City of Hillsboroâ€™s Comprehensive Approach to Pipeline Replacement Project Prioritization

Abstract: The City of Hillsboro owns and operates approximately 15 miles of 18-inch diameter steel transmission main serving its Upper System customers via multi-directional supply between their Slow Sand Filtration Plant near Cherry Grove and the Joint Water Commissionâ€™s conventional Water Treatment Plant south of Forest Grove. The pipeline was constructed over 80 years ago and has required numerous repairs due to leaks caused by corrosion. The City engaged Murraysmith, now part of CONSOR to complete a field and desktop assessment of the existing pipe, conduct an alternatives analysis to determine the preferred method and materials for replacement, and prioritize 10 individual segments of the pipeline for replacement over the next decade. This presentation will demonstrate how an array of pipeline evaluation criteria including seismic resiliency, environmental impacts, and social vulnerability were leveraged to effectively evaluate and prioritize alternatives for pipeline replacement.

CEU Relevance Statement: This presentation is relevant to the operation, maintenance, and management of water systems because it demonstrates the Cityâ€™s comprehensive approach to alternatives analyses and provides an example of how an array of criteria can be used for the evaluation, selection, and prioritization of pipeline replacement alternatives. Certified operators can use this information to better understand risk factors for pipeline failure and considerations for repair and replacement that can impact the useful life of the pipeline. The presentation will include a discussion on how social factors such as public health and vulnerability can be an important criterion in the alternatives analysis process. A demonstration of how a hydraulic analysis can be used to assess pipeline sizing optimization and water quality impacts will also be included.

Author: Preston Love **Author's Job Title:** Civil Engineer

Email: preston.love@murraysmith.us **Phone:** 4253439865

Organization: CONSOR

Primary Job Duties: Project manager for design of water and wastewater pipeline and pumping systems at CONSOR. Preston also serves as a team lead, providing mentorship to multiple team members.

Related Prior Employment: Preston has a BS in Civil Engineering from Gonzaga University and 8 years of experience as a civil engineering consultant. He relocated from Seattle to Spokane in 2018 to join our

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team as a civil engineer, and has experience with planning, design, and construction of water and wastewater pipeline and pumping facility projects.

Registrations or Certifications: Professional Engineer (WA & ID)

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Session ID: DistTPM04 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Elevated Water Storage Tank Assessment and Rehabilitation â€“ Extending the Service Life of our most Visible Infrastructure

Abstract: Elevated water storage tanks are arguably our most visible water infrastructure, showcasing some of the most impressive assets of the waterworks industry. Elevated tanks are also critical elements of a water system, providing better operational reliability than pumped systems, keeping supply close to demand, and maintaining higher system water quality when operated correctly. However, these facilities often stand as relics of previous building codes and bygone operational features requiring modernization in order to remain in service and preserve both the publicâ€™s and operatorsâ€™ safety. This presentation will discuss case studies from four water towers in the Pacific Northwest, covering elevated water storage tank condition assessments, seismic upgrades, appurtenance improvements, and maintenance painting.

CEU Relevance Statement: This presentation will be relevant to water professionals of all kinds. Topics discussed will include asset management, seismic resiliency, and construction safety.

Author: Justin Ford **Author's Job Title:** Project Engineer

Email: Justin.Ford@Murraysmith.us **Phone:** 5033109671

Organization: CONSOR

Primary Job Duties: Justin is a civil engineer and project manager at Murraysmith, where he has worked for 12 years. He works primarily on municipal potable water supply, distribution, transmission, and storage projects.

Related Prior Employment:

Registrations or Certifications: Professional Engineer (OR, WA, ID, CO)

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Session ID: DistTPM05 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: 77,000 Service Lines Identified in 1,000 days - GIS to the Rescue

Abstract: The long awaited Lead & Copper Rule Revisions (LCRR) were published in late 2021. Identifying BOTH the purveyor and customer water service line (WSL) materials were included in the revisions. Water systems were given up to three (3) years to define the complete water service line inventory. In addition, water service lines classified as lead, lead status unknown and/or galvanize requiring replacement must have a replacement plan.

The City of Vancouver has approached this daunting task with a combination of GIS data & field identification techniques. Historical field gathered WSL information was reviewed to ensure that it was attributed to an operator. Once verified, those WSLâ€™s went through an Extract, Transform, Load (ETL) process to present a visual indicator of location and material type. The ETL process will eventually provide public access where a property owner can see the service line from the main through their meter and to the structure.

CEU Relevance Statement: The processes used to identify, evaluate, build and publicly share a communityâ€™s water service line inventory provides insight to both water system operators and managers. All water system purveyors are tasked to provide an accurate visualization of WSL materials and location under the LCRR. GIS tools are utilized and made available to the operators to build the database while completing the field work.

Author: Patrick Craney **Author's Job Title:** Water Resources Engineer

Email: patrick.craney@cityofvancouver.us **Phone:** 3604877167

Organization: City of Vancouver

Primary Job Duties: Provide support to Public Works Water Operations to meet the community drinking water system needs. This includes replacing or maintaining existing infrastructure while meeting new regulatory requirements.

Related Prior Employment: Previous experience includes 30+ years planning, designing, constructing & maintaining water, sewer and solid waste systems for small communities.

Registrations or Certifications: Professional Engineer in CA, WA

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Session ID: DistTPM06 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Challenges extending Earthquakes Resilience to hydrants and water services

Abstract: Earthquake resilient water main popularity is growing in areas of extreme risk. This session will focus on design solutions to extending seismic resilience to hydrant laterals and water services. Participants will leave this session with new solutions tailored to address resilience of hydrant laterals and water services.

CEU Relevance Statement: This presentation will include discussion items focused on commissioning and sequences of operation to transfer services to new infrastructure.

Author: Daniel Shafar **Author's Job Title:** Assistant Vice President, Drinking Water Lead

Email: dan.shafar@wsp.com **Phone:** 3606099192

Organization: WSP USA

Primary Job Duties: Project manager responsible for overseeing planning and design of large capital projects with a focus on municipal and public agency work.

Related Prior Employment:

Registrations or Certifications: WA and OR registered PE, ENV SP.

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Session ID: DistTAM01 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: If Check Valves Were Cars: Style, Selection, Performance

Abstract: Check valves perform a basic function: They open during forward flow and close to prevent reverse flow. Cars perform a basic function: They get you from "A" to "B". Check valves, like cars, come in a variety of styles and perform differently in different situations. Some are certainly "sexier" than others! Your check valve choice is critical for efficient system performance and to prevent accidents/slam. In this course we discuss available options to get you the best car, er, check valve for your applications.

CEU Relevance Statement: A check valve's function seems simple: It opens during forward flow and closes quickly (or slowly) in instances of pressure reversal or flow reversal to prevent reverse flow. Like cars, style, performance, and therefore selection of check valves is critical to prevent system damage and subsequent failure due to slamming. Excessive head loss through check valves will also reduce water/wastewater districts' efficiency. Check valves continue to develop to improve system performance and prevent damage.

Author: Steve Causseaux **Author's Job Title:** Regional Manager; Engineering Support

Email: steve@cimco-gcsystems.com **Phone:** 2535345667

Organization: Cimco-GC Systems

Primary Job Duties: Steve works closely along side water and wastewater district operators, engineers, and independent engineering firms to select valves and specific valve functions for the wide range of applications. Since engineers and operators are often involved with a wide range of duties and applications, they request assistance in understanding valve capabilities, applications, maintenance, and troubleshooting. Cimco-GC Systems has been supporting the PNW water/wastewater industry for 47 years.

Related Prior Employment: Steve has spent the past 15 years working in water management for waterworks and construction projects. As an environmental consultant in the AZ deserts, he worked with major home builders to control sediment and erosion. As a consultant for 13 years with Cimco-GC Systems, a local waterworks rep and service firm, Steve helps water districts and engineers design and manage their systems.

Registrations or Certifications: CPMR: Certified Professional Manufacturer's Representative

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Session ID: DistTAM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: What's the Big Deal with Big Pumps?

Abstract: This presentation will provide an overview of local case studies involving the design and installation of large vertical turbine pumps and motors (up to 1,000 hp motors). The presenters will review important design aspects, differences between NSF 61 compliance and certification, and factory and field testing suggestions and requirements. Case studies will present factory and field testing results and wet well improvements to increase flow and decrease potential for cavitation.

CEU Relevance Statement: Proper design and installation of pumping equipment can prevent O&M issues, increase the longevity of equipment and reduce O&M costs. Additionally, operators should have knowledge of NSF 61 compliance/certification, which is required for and installing components that come into contact with drinking water.

Author: Daphne Marcyan **Author's Job Title:** Principal Engineer

Email: dmarcyan@westyost.com **Phone:** 5039152647

Organization: West Yost

Primary Job Duties: I am a design manager and client manager for municipal drinking water and wastewater projects for local clients. I am responsible for the design and delivery of projects from planning through construction while managing scope, schedule and budgets. I communicate progress and design issues with the project team, client and stakeholders.

Related Prior Employment: I have over 20 years of experience as a civil engineer. My career is focused on the design of local municipal water utility projects over the last 14 years

Registrations or Certifications: Professional Licensed Civil Engineer in Oregon, Washington, and Illinois

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Session ID: DistTAM04 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Water Loss Reduction Techniques

Abstract: In this presentation I will cover a few common techniques for reducing non-revenue water in a distribution system. We will discuss apparent losses, pressure optimization, and acoustic leak detection. We will also cover the insights gained by combining these measures.

CEU Relevance Statement: The last few years of population growth and drought in the Northwest have caused utilities to take a closer look at water loss in their underground distribution systems. This presentation will cover some of the most common ways to tackle this problem. We will look at solutions from around the world for preserving one of our most precious resources. The main ideas will be district metered areas, pressure control, and acoustic monitoring.

Author: Mike Uthe **Author's Job Title:** Northwest Area Manager

Email: muthe@muellerwp.com **Phone:** 4062232192

Organization: Mueller Water Products

Primary Job Duties: I cover 8 states for Mueller's technology division. We are a resource for both end users and engineers to reduce water loss using our products and services.

Related Prior Employment: I have been with Mueller for 3 years. Prior to this I was working at a rep firm designing pump stations for both water and wastewater for 5 years. Before this I worked on oil and gas pipelines.

Registrations or Certifications: I have a Master's degree in mechanical engineering.

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Session ID: DistTAM05 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Condition Assessment of Large Diameter Pipe

Abstract: This presentation covers fundamentals of corrosion, major corrosion and degradation processes that impact large diameter water and wastewater pipes, and methods of assessing the condition of these types of pipes ranging from desktop studies to at-grade testing to advanced internal electromagnetic inspections.

CEU Relevance Statement: This presentation provides information on identifying how and where to look for areas of corrosion in large diameter water and wastewater pipes. In aging infrastructure, this should help operators, engineers, and facility owners make informed decisions on where and how to look for pipeline damage. The presentation focuses on an overview of condition assessment techniques that operators and engineers can use to guide the care and maintenance of pipelines, starting with non-invasive techniques and moving to internal, advanced electromagnetic inspections.

Author: Glenn Edgemon **Author's Job Title:** Senior Condition Assessment Project Manager

Email: glenn.edgemon@hdrinc.com **Phone:** 5094302799

Organization: HDR Engineering, Inc.

Primary Job Duties: Mr. Edgemon is responsible for the condition assessment of existing metallic and concrete systems, leak detection, developing failure/degradation analyses, and making recommendations for rehabilitation and future corrosion mitigation strategies. He conducts field assessments of existing cathodic protection systems and develops new cathodic protection designs. He is a recognized expert in the design and operation of corrosion monitoring and control systems.

Related Prior Employment: Glenn Edgemon has over 30 years of metallurgical and corrosion engineering and

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control experience across a variety of industries. At HDR his focus is on the water, wastewater, and transportation industries. Prior to coming to HDR, Mr. Edgemon work in corrosion monitoring and control in the nuclear and oil and gas industries.

Registrations or Certifications: Masters Degree in Metallurgical Engineering and certified by NACE International (NACE) as a Corrosion Specialist, Cathodic Protection Specialist, and Materials Selection and Design Specialist.

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Session ID: EngEBT01 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Delivering Capital Projects: A Young Professional's Guide to Specification Writing

Abstract: Intimidated by Specifications? Intimidated even more by editing or writing specs? You're not alone. Clear and concise construction documents are the foundation of success for every engineering project, and technical specifications are a primary building block in that foundation. Whether you call it an art, a science, a skill, or a craft, spec writing is not taught in school; you have to learn it on the job.

As a follow-up to last year's "Young Professionalâ€™s Guide to Construction Contract Administration," this year we take a step backwards into the design phase to discuss the tools and standards for writing technical specifications. Join us to hear best practices about what good spec writing IS, what good spec writing ISN'T, and where you can get started. "Nowhere is the ability to express his thoughts in clear and forcible English more necessary to an Engineer than in the preparation of his specifications." - Richard Kirby, 1913

CEU Relevance Statement: An engineer must prepare clear, concise, correct, and complete written specifications, which are the foundation for successful delivery of engineering projects in the water sector. These technical specifications are crucial to the acceptance of project by owners in the design phase, and to the delivery of the project by contractors in the construction phase. This presentation reviews best practices with the aim to improve the quality of written specifications for the benefit of all who are involved in the engineering and construction process, from operator to administrator to engineer to contractor.

Author: Spencer Adams **Author's Job Title:** Water Project Manager

Email: spencer.adams@jacobs.com **Phone:** 2143357810

Organization: Jacobs

Primary Job Duties: As a project manager and design manager for municipal water projects, I am responsible for managing the scope and the delivery of the design of engineering projects. As a civil engineer with over 11 years' experience in the municipal water sector as both as a consultant and on a

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utility's staff, I bring an operations-focused perspective to every project and an engrained aspiration for engineering and construction quality.

Related Prior Employment: Previously employed as a project manager for capital facility projects for the Gwinnett County Department of Water Resources in Atlanta, Georgia, including primarily water treatment plant and pump station work. Prior to tenure in the public sector, worked as a consulting engineer across the southeastern United States on a variety of municipal water sector projects.

Registrations or Certifications: Professional Engineer (GA,NV,OR,TX,WA)

Certified Water Right Examiner (OR)

Drinking Water Operator Class III (GA)

Designated Design-Build Professional

Certified Construction Contracts Administrator

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Session ID: EngTAM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Permitting 101: Expectations And Strategies For Your Project

Abstract: Permits have a direct impact on project design and construction. Without appropriate planning, the permitting process can delay construction, increase costs and generally place those involved under stress. This presentation will include a general overview for those new to the permitting process and provide effective strategies and tools which can help to streamline project development and reviews. Lessons learned from two recent case studies in Oregon; one small water utility and one very large municipal wastewater utility, will compare the right and wrong ways to go about project permitting. The presentation will also include brief introductions to permit team development and their use of SharePoint document management. From this presentation, utilities, consultants and agencies alike will see how more effective permit coordination is the key to efficient project development, lower costs and happier people.

CEU Relevance Statement: This presentation will provide context for utility managers to prepare for future upgrades and work which will require permitting efforts. By learning how to better coordinate permit requirements early on in project design, managers would be better prepared ahead of time for the complexities and requirements of the permit process which will allow them to better fund and schedule their projects and communicate with the design engineer(s).

Operators will benefit by gaining an understanding of the permitting process and how their input to design engineers and managers can provide valuable insight for design.

Author: Sean Thomson **Author's Job Title:** Civil Engineer

Email: sean.thomson@stantec.com **Phone:** 5032205426

Organization: Stantec

Primary Job Duties: Sean Thomson, PE has been with Stantec in Portland for 6 years where he has supported various water process design efforts for drinking water and wastewater clients in Idaho, Oregon and Washington. Sean has also been involved in pilot projects, various facility planning efforts, water system seismic risk evaluations and project permitting since starting with Stantec. Sean has also mentored four interns through Oregon's CECOP program.

Related Prior Employment:

Registrations or Certifications: Oregon PE (#95487PE)

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Session ID: EngTAM02 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Planning for Success - Adding Resiliency to Water Supply via Horizontal Directional Drill

Abstract: The City of Anacortes successfully installed a parallel 42-inch diameter forcemain under the Skagit River via a 1980 lineal foot horizontal directional drill in the fall of 2020 to add redundancy to an aging and inaccessible existing line. This line conveys water from the City's intake to its water treatment plant (WTP). The presentation will follow this project from alternatives analysis through successful pullback. This will include what crossing methods were initially considered, what geotechnical conditions were discovered and how that impacted HDD as well as challenges that were encountered during construction. In addition, the tie-ins to the existing facilities within the short duration shutdown window for the WTP.

CEU Relevance Statement: Aging infrastructure is a challenge facing ever water and wastewater utility in the Pacific Northwest, even Anacortes, who built a brand new WTP in 2013. This presentation is widely relevant as it discusses identifying high risk or high consequence of failure infrastructure and implementing a plan to minimize risk. The presentation will also cover how to construct key infrastructure while minimizing impacts to day to day operations.

Author: Kenneth Packard **Author's Job Title:** Water/Wastewater Engineer

Email: kenneth.packard@hdrinc.com **Phone:** 4256158114

Organization: HDR

Primary Job Duties: Kenny has 10 years of experience in the design and construction of water and wastewater infrastructure including water distribution, water transmission, and sewer mains. His expertise includes special crossing methods for ROWs as well as creek and river crossings. In addition to his experience as a design lead and project manager, Kenny has served as a construction manager for trenchless projects.

Related Prior Employment: N/A

Registrations or Certifications: AWWA Member

NWWA Subsection of PNWS President

PE

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Session ID: EngTAM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Successfully Tackling High Risk Design: Lessons Learned from the WWSP's Construction of the Raw Water Facility Project

Abstract: The Willamette Water Supply Program (WWSP) is a partnership between the Tualatin Valley Water District, the City of Hillsboro and the City of Beaverton to develop the Willamette River at Wilsonville as an additional seismically resilient water supply source. The WWSP Raw Water Facility Project (RWF_1.0) is an expansion of the existing facilities at the Willamette River Water Treatment Plant (WRWTP) and began construction of the first of two phases in 2020. The first phase successfully reached completion in early 2022 on schedule and included many high-risk elements such as; a trenchless crossing, seismic improvements along the riverbank, in water work, and seismic retrofit of the existing raw water pump station. The WRWTP which serves drinking water to Wilsonville and Sherwood remained in operation throughout construction. The presentation will describe the planning, execution, and lessons learned to complete the high-risk design and construction elements.

CEU Relevance Statement: Presenters will share the design and conceptual phase planning, unique design elements, coordination with stakeholders, construction implementation and lessons learned. This information will give water system owners and operators ideas to optimize existing facilities, address seismic vulnerabilities, and plan for future design projects.

Author: Jennifer Minton **Author's Job Title:** Project Manager

Email: jminton@carollo.com **Phone:** 9728096051

Organization: Carollo Engineers

Primary Job Duties: Jenn Minton is a project manager with Carollo Engineers, Inc. for the Willamette Water Supply Program. Her primary responsibilities include design and construction coordination for the Raw Water Facility and Reservoir projects.

Related Prior Employment:

Registrations or Certifications: Jenn is a professional engineer in the states of Oregon and Texas.

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Session ID: EngTAM04 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Developing an Effective Permitting Strategy for your Water Supply Project

Abstract: The recent focus on resiliency has created an unprecedented interest in hardening existing water supplies and developing additional and diverse water supplies. Drawing from our experience permitting water supplies for the Willamette Water Supply Program, the Tualatin Valley Water District, the City of Corvallis, the City of Newberg, Threemile Canyon Farms, and others we will describe the permitting trends that most affect project schedules, budgets, and even viability. Our presentation is intended to help project proponents scope their planning efforts to reduce permitting challenges and to facilitate the design and implementation of water supply projects that maximize resiliency across the built and natural environment.

CEU Relevance Statement: The development of new water supplies and the maintenance of existing water supply infrastructure can be challenged by environmental and land use permitting requirements. If these requirements are not anticipated, they can increase the projectâ€™s schedule, budget, and overall risk. Water system managers, engineers, and operators can use the information provided in this presentation to minimize the potential for permitting requirements to hamper their ability to effectively manage their water supply.

Author: Jennifer Miller **Author's Job Title:** Senior Permitting Strategist

Email: jennifer.miller@deainc.com **Phone:** 5036797209

Organization: David Evans and Associates, Inc.

Primary Job Duties: I am a Senior Permitting Strategist, Project Manager, Market Leader, and Vice President. In my role as Senior Permitting Strategist I work with my clients to navigate environmental regulations such as the National Environmental Policy Act, the Clean Water Act, and the Endangered Species Act. I have worked on a diversity of infrastructure projects and my focus has been on water supply and wastewater projects for the past decade.

Related Prior Employment: I've been with David Evans and Associates for close to 25 years and I've been an environmental consultant working in the PNW for over 30 years.

Registrations or Certifications: NA

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Session ID: EngTAM05 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Dog River Pipeline: Replacing a 100-year-old Wooden Pipeline to Secure a Resilient Water Future

Abstract: The Dog River Pipeline has operated for more than 100 years and provides over half the City of The Dallesâ€™ annual water supply through an inter-basin transfer to South Fork Mill Creek. The City prioritized the wooden pipeâ€™s replacement for over 20 years and has worked through extensive permitting and public process to finally arrive at project implementation to address leaks and failures as the pipe transits through Mount Hood National Forest. Replacing this critical infrastructure has involved a complex multi-agency permitting process, realignment to improve access in existing roads, effective federal and local partnerships, and thoughtful planning for ongoing construction in a recreation area. Dog River is an essential source of drinking water and subject to changing hydrology in a changing climate. The new 3.5-mile 30-inch-diameter HDPE pipeline will be a key piece of a more resilient water system.

CEU Relevance Statement: Audience will benefit from understanding how this project addressed pipeline construction over multiple seasons with critical bypassing, coordination experiences with Federal and State regulators, public engagement successes and processes, pipe material selection and procurement processes, contractor qualification, project packaging and scheduling, and provisions for remote connectivity with satellite internet at remote site.

Author: Dave Anderson **Author's Job Title:** Public Works Director

Email: danderson@ci.the-dalles.or.us **Phone:** 5419801446

Organization: City of The Dalles, Oregon

Primary Job Duties: Director of Public Works at the City of The Dalles, Oregon. Oversee the Cityâ€™s water, wastewater, and streets services.

Related Prior Employment:

Registrations or Certifications:

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Session ID: EngTPM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Incorporating Additional Resilience Measures through Operational and System Control Strategies now that the Design is Complete for the Willamette Water Supply System

Abstract: Seismic resiliency was a key design element for the $1.6 billion Willamette Water Supply System (WWSS). Now that design is complete, the focus shifts to construction of the various projects and operational planning and system controls, including those that support improved resilience. This presentation describes the work that is underway related to system operations and controls that will further enhance the overall WWSS seismic resilience. The presentation will describe planned post-earthquake approaches to controlling flows at system turnouts, managing storage volumes, system shutdown and startup procedures, and use of emergency standby generators that other utilities can consider to improve their operational seismic resiliency.

CEU Relevance Statement: In the Pacific Northwest, a major subduction zone fault exists that poses significant risks to the region and associated infrastructure. The earthquake produced from the full fault rupture is expected to be a magnitude 9.0 earthquake with several minutes of ground shaking. Operational and system control strategies are rarely discussed related to seismic resiliency for water systems. This presentation will describe the latest planned approach related to operational planning and system control strategies to improve the overall seismic performance of the Willamette Water Supply System.

Author: Mike Britch **Author's Job Title:** WWSP Engineering and Construction Manager

Email: mike.britch@tvwd.org **Phone:** 5037011343

Organization: Tualatin Valley Water District

Primary Job Duties: Engineering and Construction Manager for the Willamette Water Supply Program (WWSP). The WWSP is a $1.6 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: Chief Engineer and Senior Engineer for TVWD. Prior to that worked for two design consulting firms in the Portland area.

Registrations or Certifications: P.E. and MPA. Member of AWWA and ASCE.

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Session ID: EngTPM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Trailer to Tap: Maintaining a City's Water Supply While Replacing it's 100-year Old WTP

Abstract: The City of Lewiston, ID is replacing its 100-year-old, conventional treatment plant with a new membrane treatment facility. The primary source of supply is the Clearwater River and the City also uses groundwater as a back-up source of supply. The new membrane facility was designed for an initial capacity of 10 mgd and expandable to 15 mgd. This project is being delivered by a fast-paced progressive design-build method.

Existing plant was demolished in October 2021, and the new MF WTP is constructed March 2023. During the low demand part of the year, from October through April, the existing GW supply, 4 mgd, is the only source for the cityâ€™s drinking water. From April through October 2022, the GW supply is being supplemented with water produced from four mobile membrane treatment trailers, furnished by the supplier of the permanent MF system, 4 mgd total. The temporary and permanent plant will be able treat turbidities in excess of 100 NTU during limited periods of the year.

CEU Relevance Statement: Our team quickly evaluated alternate site locations, surface water quality, existing alternative supply resources, system requirements, and maintenance of service risks. A solution emerged to use proven membrane technology and bench testing to expedite the piloting process, use the existing intake and administration building, and demolish the existing plant to clear the site. The City is provided uninterrupted winter supply using upgraded existing groundwater resources and temporary membrane treatment trailers to provide peak summer supply during plant construction. Soon after the team and solution were selected, a pandemic began and upped the challenge.

A low dose of aluminum chlorohydrate (ACH) will be used as the primary coagulant to remove some TOC to produce low disinfection by-products (DBPs) and low chlorine demand/decay. Sand separators are installed upstream of the MF treatment system, to reduce the risk of small sand/grit damaging the membrane feed pumps and the membranes.

Author: Danielle Kalmbach **Author's Job Title:** Water/Wastewater EIT

Email: danielle.kalmbach@stantec.com **Phone:** 5032074349

Organization: Stantec, Inc.

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Primary Job Duties: Danielle developed the preliminary engineering report for the final work design to obtain approval from Idaho's Department of Environmental Quality. Danielle worked closely with the Department of Environmental Quality to achieve approval, including approval of the first UV disinfection system in the State of Idaho. Danielle developed several water quality technical memos to assist with the ongoing design of the project. Danielle also worked closely with the contractor and providing support for construction services. Danielle served as assistant project management and worked on tasks such as maintaining the action and decision log, development of scope of work, review of costs, and coordination between designers and the contractors.

Related Prior Employment:

Registrations or Certifications:

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Session ID: EngTPM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Seismically Resilient Transformation of the Medford Water Duff WTP

Abstract: The Medford Water Commission (MWC) is in the midst of a $200 M upgrade to their water system to improve resiliency, reliability, and capacity to their 140,000 customers. The MWC's Rogue Valley Water Supply Resiliency Program includes improvements at the WTP for corrosion control, ozone, filtration, storage, and finished water pumping, and also includes distribution system upgrades to transmission and storage. This presentation will focus on the overall project drivers, federal funding approach with WIFIA, and project highlights.

CEU Relevance Statement: Resiliency and capacity improvements are needed at many utilities across the Pacific NW. This presentation will provide an example of how a utility approached large, programmatic upgrades to meet resiliency and capacity goals for their water system.

Author: Joshua Kennedy **Author's Job Title:** Drinking Water Engineer, Treatment Group Lead

Email: joshua.kennedy@jacobs.com **Phone:** 2067657652

Organization: Jacobs

Primary Job Duties: I am responsible for planning, design, and construction services at drinking water treatment plants. I provide process engineering services to develop design criteria for treatment processes and mechanical equipment. I also serve as project manager and design manager to oversee staff and review work.

Related Prior Employment: I have worked at Jacobs for 8 years and previously worked in the United States Peace Corps as a water and sanitation volunteer where I designed and constructed latrines and a water system in the Dominican Republic.

Registrations or Certifications: Professional Engineer (PE) in Washington and Oregon

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Session ID: EngTPM04 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Installing Earthquake Resilient Water Mains in Constrained Corridors

Abstract: Replacing aging water infrastructure with earthquake resilient ductile iron pipe within constrained corridors produces several challenges. Some of those challenges include; where can thrust blocks be installed? Should earthquake resilient ductile iron pipe be used when the water main crosses below other significant utilities? What type of structures should be used to house large mainline valves? Solutions to these questions have been developed and will be expanded upon to provide participants design options that can be used for similar projects in the future. Participants will also leave with a new way to think about how standard structures behave during earthquakes.

CEU Relevance Statement: This presentation has been developed for design engineers and water system operators to provide design considerations for earthquake resilient pipe. The presenter is an engineer in training who performed the design work and the co-presenter is a professional engineer who is the engineer of record.

Author: Sarah Merrill **Author's Job Title:** Water/Wastewater Engineer

Email: sarah.merrill@wsp.com **Phone:** 5419716113

Organization: WSP

Primary Job Duties: Sarah applies her technical engineering knowledge to develop plans, specifications, and cost estimates for pre-design through construction ready documents. She also develops water and wastewater models to tailor designs based on the needs of Clients. Sarah participated in the design of the project described in this abstract and will be supported by her co-presenter who is the engineer of record on the project.

Related Prior Employment: Sarah previously worked as a Design Engineer for Contech Engineered Solutions designing their proprietary stormwater treatment devices for site installation.

Sarah also interned at Civil West Engineering Services where she developed a Wastewater Master Plan, assisted with site development designs and performed site construction inspections.

Registrations or Certifications: EI, Oregon

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Session ID: EngTPM05 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: The Cascade Groundwater Alliance: Groundwater Development Project Program Overview Update and Package 1 Construction

Abstract: Water supply agencies have historically bought wholesale water from a nearby water purveyor. To gain full ownership of their water supply and ensure resiliency, The Cascade Groundwater Alliance (formed in partnership between Rockwood Water PUD and City of Gresham), undertook a $120 million, Groundwater Development Master Planning (GDMP) supply program consisting of nine packages which are slated to be completed by the end of 2026: 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. This presentation will showcase the Program and focus on current efforts to design and construct various program packages, including Package 1 Construction which lays the foundation for system-wide resiliency, storage, and supply capacity and will be complete in the Spring of 2024.

CEU Relevance Statement: 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 **Author's Job Title:** Project Engineer

Email: Justin.Ford@Murraysmith.us **Phone:** 5033109671

Organization: CONSOR

Primary Job Duties: Justin is a civil engineer and project manager at Murraysmith, where he has worked for 12 years. He works primarily on municipal potable water supply, distribution, transmission, and storage projects.

Related Prior Employment:

Registrations or Certifications: Professional Engineer (OR, WA, ID, CO)

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Session ID: UMTAM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Building A Small Systems Support Network

Abstract: Rainbow Water District's award-winning program uses full-time licensed water operators to train and support part-time small system operators at neighboring utilities. Rainbow contract manages five small systems ranging in size from 30-250 connections, providing Direct Responsible Charge / operations management, planning and engineering, billing and bookkeeping, and some limited after hours repair and maintenance response. Monthly safety training and operator mentoring opportunities are open to admin and operations staff.

CEU Relevance Statement: Rainbow's licensed operators are able to share tools and expertise with small system operators. The ongoing collaboration and networking during normal operations improves response during disasters. The safety and operational training raises the knowledge and competence of all, leading to improved operations and ultimately better water quality.

Author: Jamie Porter **Author's Job Title:** Superintendent

Email: jamie@rwdonline.net **Phone:** 5413374496

Organization: Rainbow Water District

Primary Job Duties: A registered Civil and Environmental Engineer, Jamie has served as the Superintendent of Rainbow Water District (in Springfield, Oregon) since 2010. Duties include CEO, CFO, and PIO, covering a wide range of functions that incorporate engineering, planning, writing newsletter articles, preparing financial reports, and serving as a backup distribution operator.

Related Prior Employment: Jamie Porter began his career in the U.S. Navy, using seawater to make industrial process water on a nuclear submarine. He has worked as the business manager for a non-profit, sampled wastewater as a sewer cop, supported soil and water environmental cleanup projects as a consultant, and managed a variety of capital improvement projects for public employers.

Registrations or Certifications: Registered Professional Engineer, Oregon #19623PE (Civil and Environmental). Oregon Water Operator #D-08887 (Distribution Level 1).

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Session ID: UMTAM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Mentoring: Still the Critical Path

Abstract: â€˜By the end of 2021, the U.S. tech industry is estimated to reach a market value of $1.6 trillion.â€™* The need for engineering and technical workforce is steadily increasing with the tech industry experiencing an overall compound annual growth rate of 5%. Our water industry is seeing increased competition in hiring engineering and technical staff along with massive retirement. We also have a need for additional and more advanced resources to build and maintain safe and quality public infrastructure. We need to better recruit and retain talent in the infrastructure world, and we need to better prepare that talent to take on more responsibility earlier in their careers. Mentoring plays a big part in this, and we need to improve our mentoring skills and effectiveness at all levels. This presentation will set the stage for mentoring opportunities and discuss specific actions and methods for success.

*Tech Industry Statistics [2022]: The State of the U.S. Tech Industry â€“ Zippia

CEU Relevance Statement: not applicable

Author: Kimberly Kelsey **Author's Job Title:** Water Sector Manager

Email: kimberly.kelsey@tylin.com **Phone:** 2064620504

Organization: TYLin

Primary Job Duties: I am responsible for building and managing a team of water professionals to provide engineering and technical solutions to the industry. My responsibility includes business management as well as staff recruiting and development.

Related Prior Employment: I have worked as a consultant in the water industry for 22 years, focused on bringing water and wastewater solutions to the Pacific Northwest.

Registrations or Certifications: Professional Engineer, Washington; Certified Project Manager (PMP)

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2023 Annual Conference, Kennewick, WA May 3 – 5

Three Rivers Convention Center 7016 W Grandridge Blvd. Kennewick, WA 99336

Session ID: UMTAM03 **Date:** 5/4/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Infrastructure Capital Funding Programs â€“ Program Updates, Strategies, and future Development â€“ A facilitated discussion and brainstorming opportunity to help make good programs even better

Abstract: Discussion with funding entities and utility managers about the developing strategies around Water Sector funding opportunities.

This session will include a series of short overview presentations from Drinking Water Infrastructure funding agencies from Washington State - Health and the Public Works Board

The session will be facilitated by an agency or Board leader, and will include an open forum for utilities leadership and staff, consultants, and funding agencies, to discuss the increasing level of available water sector funding, current challenges that all are facing, asking and answering related questions, and some brain storming of potential ideas for how programs might be adjusted to better serve the sector funding needs.

CEU Relevance Statement: Safe and Reliable water supply requires well developed and designed capital projects to update and replace aging infrastructure components. The development and funding of these projects calls for input from Water Utility operators, managers, and administrators, along with their consultants.

This session is intended to inform, and encourage dialog between utilities, consultants, and agencies who provide infrastructure funding. The session will be facilitated by an agency leader, and will include an open forum for utilities leadership and staff, consultants, and funding agencies, to discuss the increasing level of water sector funding, current challenges that all are facing, asking and answering related questions, and brain storming of potential ideas for how programs might be adjusted to better serve the sector funding needs.

Author: Chris McCord **Author's Job Title:** Managing Director of the Boards Unit

Email: Chris.McCord@Commerce.wa.gov **Phone:** 3603590428

Organization: Washington State Department of Commerce

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Primary Job Duties: As Managing Director of the Boards Unit at Commerce, Chris' primary responsibilities include oversight and support for staff supporting the Public Works Board, the Community Economic Revitalization Board, and the Small Communities Association.

Related Prior Employment: Chris spent 26 years in the DOH Office of Drinking Water, and is a past Chair of the Water Professionals International's - Boards of Certification.

Registrations or Certifications:

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Session ID: UMTAM05 **Date:** 5/4/2023 **Length of Session:** 60 minutes

Area of Relevancy: Drinking Water

Presentation Title: Machine Learning / Artificial Intelligence (ML/AI) Applications for Small Systems

Abstract: Table top asset management assessments and paper inventory records are typically still employed by small drinking water utility. But ML/AI technology is easier than ever to use and offers significant benefits to small systems for asset management plans and customer service line inventories, for example. This presentation shares the experience of how a small system can use ML/AI economically to improve the utility.

CEU Relevance Statement: Drinking water utilities large and small are required to compile a customer service line inventory to comply with the Revised LCR as well as develop an asset management program to strategically plan for infrastructure repair and replacement. ML/AI is a tool that small systems especially need to learn about to assist with both tasks.

Author: Michael Grimm **Author's Job Title:** General Manager

Email: mgrimm@wswd.org **Phone:** 5037290544

Organization: West Slope Water District

Primary Job Duties: As a general manager of a water utility, I have the responsibility of overall management of and leadership for the District. Additional responsibilities include engineering, water quality, water conservation, emergency response, public outreach, and interagency coordination & collaboration.

Related Prior Employment: Full time engineering consultant for six years, senior water engineer for five years, and a water quality engineer & regional manager for 18 years prior to being a General Manager for just over seven years.

Registrations or Certifications: Registered professional engineer in Oregon

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Session ID: UMTPM01 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Environmental Justice and Water Equity Private Sector Alliance - Partnering with Utilities

Abstract: In July 2022, NACWA helped publish the white paper, "The Private Sectorâ€™s Role in Partnering with Water Utilities to Advance Environmental Justice." While there are a lot of organizations, utilities, and private sector companies working towards similar goals, the purpose was to help promote information sharing and ways people can get involved. This presentation and session can be flexible for a panel-type discussion or used to summarize the white paper, call to action for utilities and the private sector, overall importance, and how to engage in meaningful discussions.

CEU Relevance Statement: Utilities have a unique opportunity to engage directly with the customers they serve through planning, capital improvement projects, and rate adjustments. This presentation/panel will cover how operations staff and utility managers can incorporate water equity and environmental justice principals at every stage of a project - from planning to design to construction to long-term operations and maintenance. By promoting equity, this can lead to more reliable and affordable services for communities that need safe drinking water and sanitation the most.

Author: Andrew Nishihara **Author's Job Title:** Civil Engineer

Email: andrew.nishihara@stantec.com **Phone:** 5032205432

Organization: Stantec

Primary Job Duties: Professional Civil Engineer (OR/WA/ID/HI) with experience spanning as a project engineer and field engineer for a number of projects with Stantec where responsibilities have ranged from: data management and assessment for regional water supply projects (water resources planning), leading multidisciplinary teams during detailed design (water treatment and wastewater treatment), and providing on-site construction field services. Focus areas of water treatment process design and delivery, technical report writing (Master Planning/Facility Planning), and providing other civil engineering support in whatever capacity needed.

Related Prior Employment:

Registrations or Certifications: PE - Civil; ENV SP

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Session ID: UMTPM02 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Public Private Partnership is Micro Hydro Installations

Abstract: The Skagit PUD strives to find ways to innovate and better serve our customers while at the same time meeting our goals of environmental stewardship. To meet these goals, Skagit PUD has installed one operating micro-hydro unit within the existing distribution system. To expand on this system, the PUD is looking to partner with water customers to install energy harvesting micro-hydro units to provide power to private water customers. New micro-hydro units will be installed on the PUD distribution system adjacent to the private water customer's place of business. The micro-hydro units will be owned and operated by the PUD, while the water service customers will use the micro-hydro generated energy. The presentation will touch upon the legality of this approach in Washington State and private/public agreements for cost reimbursement.

CEU Relevance Statement: Engineers, Managers, Administrators, and Public Officials are likely to be interested in hearing about how the Skagit PUD successfully incorporated this new technology into its distribution system and how the PUD partnered with an existing water customer to reduce energy costs by harvesting power from the water distribution system. Attendees will learn about the challenges and legality of a public/private partnership regarding power generation with a non-electric public utility.

Author: Sam Shipp **Author's Job Title:** Capital Projects Manager

Email: shippsam@gmail.com **Phone:** 3602201198

Organization: Skagit PUD No. 1

Primary Job Duties: Sam Shipp is a Capital Projects Manager with the Skagit PUD No 1. Sam was the project manager for the recently completed micro-hydro project for the Skagit PUD.

Related Prior Employment: Sam has been a project manager for over 20 years with a wide range of municipal project experience. Sam is currently a member of the AWWA Northwest Section of the Utility Management Committee.

Registrations or Certifications: Washington State Professional Engineer. WDM2

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Session ID: UMTPM03 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: City of Vancouver's Water Resiliency Strategy - Using different financial levers to raise revenues.

Abstract: The Water Resiliency Strategy is a concept that all utilities (water/wastewater/surface water) are working together to protect the City's water resources. We've identified increased capital needs in order to properly protect our water resources. In order to pay for the increased capital needs, and improve rate equity, the City is working with our City Council to adjust financial levers in order the bring in the necessary revenues. These financial lever include adjusting user rates, utilize bonding when it makes sense, stabilizing utility taxes, increasing System Development Charges, and reducing the outside city customer rate,

CEU Relevance Statement: Not sure if this would qualify for CEUs since it is about raising revenues for utilities.

Author: chris malone **Author's Job Title:** Public Works Finance and Asset Manager

Email: chris.malone@cityofvancouver.us **Phone:** 3604877711

Organization: city of vancouver

Primary Job Duties: Manage Public Works Finances. Manage Public Works infrastructure asset management including Geographic Information Systems (GIS).

Related Prior Employment: Been with the City for 24 years. Managing Public Works infrastructure assets and finances for the past 10 years. Previously designed and managed street capital projects.

Registrations or Certifications: Professional Engineer in the State of Washington (PE). Masters in Business Administration (MBA). Project Management Professional (PMP) through the Project Management Institute.

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Session ID: UMTPM04 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Financing the Cascade Groundwater Development Program with a WIFIA Loan and Revenue Bonds

Abstract: The Rockwood Water People's Utility District and the City of Gresham are financing a $120 Million Groundwater Development Program with Water Infrastructure Financing and Innovation Act (WIFIA) funds and Revenue Bonds. The project includes the development of 6 additional wells in the Sand and Gravel Aquifer of the Columbia Basin, the construction of a 6 MG Reservoir, and the construction of several water treatment facilities to remove Manganese and Iron from the groundwater.

CEU Relevance Statement: This presentation covers the management and financing of critical water infrastructure and will cover several key topics related to proper operations and management of public drinking water systems. Attendees will receive information on public budget management, major infrastructure project financing, navigating the EPA WIFIA loan program, construction and operation of wells, manganese water treatment facilities, reservoirs, and raw and finished water transmission pipelines.

Author: Kari Duncan **Author's Job Title:** General Manager

Email: kduncan@rwpud.org **Phone:** 5036744507

Organization: Rockwood Water People's Utility District

Primary Job Duties: Management of the Rockwood Water People's Utility District, serving 66,000 customers and approx. 13,300 service connections. Plans, directs and manages all District operations including water supply, distribution, water quality, financial management, rate setting. Oversees human resources management, leads and directs District planning activities, reports directly to an elected Board of Directors.

Related Prior Employment: Water Treatment Plan Manager, City of Lake Oswego. Oversaw water treatment operations for the Lake Oswego Tigard Water Partnership supply system, water quality and water conservation for Lake Oswego.

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

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Session ID: UMTPM05 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Asset Management Plan: Lessons Learned

Abstract: This presentation will cover the lessons learned from Covington Water District during their journey to produce the Districts first Asset Management Plan. Over the years the District has developed their Asset Management Program and honed management strategies to determine their future funding needs for the next 100 years. The journey from asset management program development to production of the organizations first Asset Management Plan will be covered. Key concepts will be what Covington Water District learned during this time and opportunities for continuous improvement that can be shared with others.

CEU Relevance Statement: This presentation is relevant to operators, managers, and public officials. These individuals are tasked with maintaining and replacing infrastructure today and in the future. This presentation informs lesson learned and applied knowledge these individuals can use to implement asset management concepts within their organization.

Author: Chris Guest **Author's Job Title:** Customer Service Supervisor

Email: chris.guest@covingtonwater.com **Phone:** 2532619988

Organization: Covington Water District

Primary Job Duties: Provides oversight of the day-to-day activities related to customer support representatives, utility billing, receipting, meter reading installation and repair.

Related Prior Employment: Chris Guest has worked in water utilities for 13 years in various roles. He has bachelors in business management and holds numerous State of Washington certifications including; Water Distribution Manager 4, Water Treatment Plant Operator 2, and Cross Connection Specialist. He is currently working as the Customer Service Supervisor at Covington Water District where he provides oversight of the day-to-day activities related to customer support representatives, utility billing, receipting, meter reading installation and repair. Formerly, he worked as the Business Analyst at Covington Water District where he supported financial and business decisions regarding strategic planning, asset management, and process improvement.

Registrations or Certifications:

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Session ID: UMTPM06 **Date:** 5/4/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Lessons Learned from School to Design

Abstract: Students graduate and move into the industry and expect work to be the same as homework, but it's apparent for those that get a job in design that working on a design project requires a different set of skills not taught in the classroom.

One lesson learned is "Don't assume, don't trust anyone." In school we're taught to trust the problem assumptions to solve the homework assignment, but in design we are told to never just take information but to verify it for ourselves. Another lesson is the importance of communication. In school we may work together, but we are all working on the same problem, but in design there is a lot of cross discipline coordination and communication that needs to take place since we are all working on a part of the problem that needs to come together to form the whole solution.

This presentation will aim to further describe these lessons and identity additional tips and tricks I learned while working in design that differ from the classroom.

CEU Relevance Statement: Although this presentation will primarily focus on the skills learned for design projects, many of the lessons can be applied to operations or management. The lessons learned in this presentation are not technical but related more to how to approach situations and communicate with others. Operators can take these skills and apply it to their operations communications and management.

Author: Michelle Horio **Author's Job Title:** Staff Professional

Email: mhorio@carollo.com **Phone:** 8082184808

Organization: Carollo Engineers

Primary Job Duties: I am a staff engineer with experience in water and wastewater planning and design projects. My main role is to provide assistance throughout these disciplines and recently include developing master plans, assisting to design the chemical systems for a water treatment plant, and helping to design the solids handing for a wastewater treatment plant.

Related Prior Employment:

Registrations or Certifications:

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Session ID: XconnEBF01 **Date:** 5/5/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Game On! Come Roll the Dice on Water Complaints

Abstract: Backflow incidents usually start with a call from a customer. This presentation will provide an interactive and fun way to explore the many challenges of responding to customer complaints, including common water complaints and investigating potential backflow incidents. Attendees will participate in a table top game that can be used with your own utility staff to train on complaint response and investigation.

CEU Relevance Statement: Cross Connection Control programs protect public and private drinking water systems from contamination. Responding appropriately to complaints is the first step in responding to backflow incidents. This presentation will help operators, managers, administrators and public officials understand the importance of investigating customer complaints and provide practical information for responding to those complaints and protecting water quality.

Author: Darci Mattioda **Author's Job Title:** Utility Planner

Email: dmattioda@wenatcheewa.gov **Phone:** 0

Organization: City of Wenatchee

Primary Job Duties: TBD

Related Prior Employment:

Registrations or Certifications:

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Session ID: XconnFAM01 **Date:** 5/5/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Fire Sprinkler System Standards

Abstract: The National Fire Protection Association provides standards for fire sprinkler systems. This presentation will cover those standards as they relate to fire sprinkler use of drinking water.

CEU Relevance Statement: Providing water for firefighting activities is a key function of water utilities. Operators, Engineers and Cross Connection Control Specialists should have an understanding of the current National Fire Protection Association codes related to fire sprinkler systems. This knowledge will assist utility staff in water system planning, design, building plan review, and cross connection control.

Author: Gary Honold **Author's Job Title:** Regional Director, Northwest Field Office

Email: ghonold@nfpa.org **Phone:** 0

Organization: National Fire Protection Association

Primary Job Duties: Gary Honold is the Regional Director of the Northwest Field Office for the National Fire Protection Association.

Related Prior Employment: Gary retired from the Missoula Fire Department after a 21 year career. During his years with the fire department, he rose through the ranks to the position of captain. He also spent ten years in the fire marshal's office and was also active in statewide fire code adoption activities.

Registrations or Certifications: Gary is a certified Emergency Medical Technician and Fire Protection Specialist.

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Session ID: XconnFAM03 **Date:** 5/5/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Building A Robust Cross Connection Control Program

Abstract: This presentation will cover the challenges with developing a successful cross connection control program and how to breakdown silos between Building, Engineering, Planning, Finance, and Public Works.

CEU Relevance Statement: Silos and lack of support can derail cross connection control program implementation. Cross connection control is an important program for water utilities to protect the drinking water system from contamination. Utilities employees, especially certified cross connection control specialist, will benefit from the information provided in this presentation by increased knowledge of hazards and backflow prevention application.

Author: Brian McDaniel **Author's Job Title:** Water System Manager

Email: brianm@cityofanacortes.org **Phone:** 0

Organization: City of Anacortes

Primary Job Duties: TBD

Related Prior Employment:

Registrations or Certifications:

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Session ID: XconnFAM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Reviewing Building Plans for Cross Connection Control

Abstract: The presentation will cover reviewing plans for cross connection control, including what hazards to look for when reviewing residential, commercial and industrial building plans. The City's procedures for coordinating with both City and County building departments and other utilities will be discussed. Finally, the presentation will provide tips for communicating cross connection requirements to customers during the building plan review and inspection process.

CEU Relevance Statement: Cross connection control is an important program for protecting drinking water quality both in the customers system and the public water system. This presentation will assist operators, engineers, managers and cross connection control specialist in making sure new connections are protected with the appropriate backflow prevention assemblies. Information will also be presented to help drinking water utility staff coordinate with local jurisdictions having authority on new construction and tenant improvements to make sure cross connection control requirements are followed.

Author: Jessica Shaw **Author's Job Title:** Deputy Public Works Director-Utilities

Email: jshaw@wenatcheewa.gov **Phone:** 5096305007

Organization: City of Wenatchee

Primary Job Duties: I have worked for the City of Wenatchee's water, sewer and stormwater utilities for 20 years. I am currently responsible for the planning, operation, and maintenance of the aforementioned utilities.

Related Prior Employment: I worked for 4 years as chemist at a water and soil laboratory.

Registrations or Certifications: Water Distribution Manager IV, Cross Connection Control Specialist, and Wastewater Treatment Plant Operator III in Washington State

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Session ID: XconnFAM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Backflow and the customer

Abstract: The backflow verification process step by step and how we help customers maneuver the process.

CEU Relevance Statement: Backflow must be checked every year. We have a program that we follow to insure our customers are getting their backflow checked. This program keeps track of our customers who have backflow and maintains records showing they had them inspected.

Author: Jay Breen **Author's Job Title:** Assistant Superintendent of Operations

Email: jbreen@rwpud.org **Phone:** 5036654179

Organization: Rockwood Water P.U.D.

Primary Job Duties: Assistant Superintendent of Operations

Related Prior Employment: N/A At present job with Rockwood Water P.U.D. for 10+ years.

Registrations or Certifications: Water certification #4, backflow certification

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Session ID: ConsFAM01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Evolving Approaches to Public Outreach on a Regional Scale

Abstract: Learn about how the Regional Water Providers Consortium (www.regionalH2O.org) has worked together with its 25 water provider members and community partners to develop and implement multimedia campaigns that educate customers about water conservation, emergency preparedness, source water protection, value of drinking water, and other topics. The Consortium currently uses television, public transit advertising, radio, and a suite of digital tools to deliver its messaging to the public in English and Spanish.

This presentation will provide an overview of the Consortiumâ€™s messages and public outreach strategies over its first 25 years and how they continually pivoted to meet changing customer needs and evolving media trends. It will also highlight how the Consortium used its recent strategic plan update as an opportunity to embed equity into its outreach efforts over the next five years.

CEU Relevance Statement: Most water providers in Oregon are required to have a Water Conservation and Management Plan (WMCPs). While many providers have WMCPs in place, there are many lessons learned and best management practices that can be learned from this presentation. Especially with providers that are located in a shared media market and for working together to maximize economies of scale.

Author: Bonny Cushman **Author's Job Title:** Public Outreach and Programs Coordinator

Email: bonny.cushman@portlandoregon.gov **Phone:** 5038234074

Organization: Regional Water Providers Consortium

Primary Job Duties: Bonny Cushman's responsibilities include overseeing all aspects of the Consortiumâ€™s public outreach strategies; brand management; running television, radio, and digital campaigns in English and Spanish; and other collateral material development. She also provides leadership and direction to the Consortium's three Working Committees (conservation, emergency preparedness, and regional coordination) which consist of staff from the Consortiumâ€™s 25 water provider members.

Related Prior Employment:

Registrations or Certifications:

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Session ID: ConsFAM02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Curtail Your Enthusiasm: How we exercised our conservation management plans and other regional projects

Abstract: In early June 2022, the Regional Water Providers Consortium (RegionalH2O.org) conducted a virtual tabletop exercise called "Curtail Your Enthusiasm" which drew 74 participants from 21 water providers and several other regional and state organizations. Geared mainly toward conservation and communications staff, the exercise included the following participant objectives:

1. Gain a broader understanding of drinking water curtailment including causes, impacts, and the different stages of curtailment and triggers.

2. Learn the importance of coordinated messaging and effective ways to share timely information during the life cycle of a curtailment event

3. Identify gaps for providing accessible and translated messaging to the public with a specific focus on the ADA and Title VI requirements.

4. Identify regional communication tools and roles when there is a curtailment event.

Learn about the event and how the Consortium and its members will respond to lessons learned from this exercise.

CEU Relevance Statement: Most water providers in Oregon are required to have a Water Conservation and Management Plan (WMCPs). As public entities, many are also required by the ADA and Title VI to equitably distribute critical information about their water systems to all customers. While many providers have WMCPs in place, for most there is still much work to be done to meet ADA and Title VI requirements effectively.

Author: Bonny Cushman **Author's Job Title:** Public Outreach and Program Coordinator

Email: bonny.cushman@portlandoregon.gov **Phone:** 5038234074

Organization: Regional Water Providers Consortium

Primary Job Duties: Bonny Cushman's responsibilities include overseeing all aspects of the Consortiumâ€™s public outreach strategies; brand management; running television, radio, and digital campaigns in English and Spanish; and other collateral material development. She also provides

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leadership and direction to the Consortium's three Working Committees (conservation, emergency preparedness, and regional coordination) which consist of staff from the Consortiumâ€™s 25 water provider members.

Related Prior Employment:

Registrations or Certifications:

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Session ID: ConsFAM03 **Date:** 5/5/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Seeing Purple: Design and Construction of the City of Beaverton's Non-potable Water System for Municipal Irrigation

Abstract: The City of Beaverton initiated the formation of a non-potable water utility to provide irrigation supply to the rapidly developing area referred to as South Cooper Mountain. The non-potable utility capitalizes on previous investments made by the City in its successful aquifer storage and recovery (ASR) program to provide a cost-effective supply of water for irrigation that would otherwise be derived from the Cityâ€™s limited drinking water supplies. Additionally, the non-potable system will use treated wintertime residential stormwater through an innovative treatment process and stored in the subsurface via ASR to augment the irrigation supply and enhance summertime streamflows. The presentation will cover major progress and achievements to-date including overall system design and integration with the site, construction of stormwater treatment and ASR pump station facilities, and operation and maintenance considerations. The facility is scheduled to be operational in 2023.

CEU Relevance Statement: This presentation will describe development and construction of a unique and innovative non-potable water utility in the Pacific Northwest. The presentation will will include discussion of the challenges in development of a complex project that combines drinking water and stormwater regulatory systems with custom designed water treatment components in a newly formed non-potable water system utility. The information shared will help operators understand the integration and interface between potable and non-potable water systems from an administrative and technical operations perspective.

Author: Jason Melady **Author's Job Title:** Principal Hydrogeologist

Email: jmelady@summitwr.com **Phone:** 5037992198

Organization: Summit Water Resources

Primary Job Duties: Jason Melady, RG, CWRE, is a principal hydrogeologist at Summit Water Resources in Portland, Oregon, specializing in water resources, groundwater supply, and water rights evaluations. He is an expert in the design and operation of ASR well systems for municipal and agricultural clients. Jason is a registered geologist in Oregon and Washington and a certified water rights examiner in the state of Oregon.

Related Prior Employment:

Registrations or Certifications: Registered Geologist (RG) in Oregon and Washington, Certified Water Rights Examiner (CWRE) in Oregon

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Session ID: ConsFAM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Developing an Equity Data Toolkit: building organizational capacity to identify, assess and mitigate

water conservation service inequities.

Abstract: This presentation will walk attendees through the development of an equity water conservation data toolkit, address where we met and overcame hurdles, describe in detail the toolkit components and how they are being applied by operators and program administrators to identify, assess, and ultimately mitigate service inequities.

CEU Relevance Statement: Our bureaus have

established equity goals, desired outcomes, and specific actions to better serve our community. Yet, to meet these goals, we recognize the need to build organizational capacity to identify, assess, and ultimately mitigate service inequities.

Leveraging FEMA's Social Vulnerability Index (SVI), we created an equity data toolkit to enable employees in both our bureaus to examine level of service in relationship to community well-being.

Author: Maoloud Dabab **Author's Job Title:** Senior Engineering Associate -Asset Management Branch

Email: Maoloud.Dabab@portlandoregon.gov **Phone:** 0

Organization: Portland Water Bureau

Primary Job Duties: Under general direction, performs intermediate to advanced professional project management, specialized engineering or developer/building plan reviews in one of several recognized engineering specialties; applies advanced technical engineering knowledge to the solution of design, construction, improvement and maintenance problems pertaining to the City's infrastructure and private development; carries projects through from inception to completion, manages several projects at once and/or manages a complex project in a specialty field; and performs related work as assigned. Incumbents may oversee, coordinate and review the work of support staff and technicians.

Related Prior Employment:

Registrations or Certifications:

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Session ID: ConsFAM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Integrated conservation planning and targeted implementation

Abstract: The City of Bend integrated the conservation analysis of its latest WMCP into the 2020 Water master planning effort to measure the effects of conservation in offsetting water demands and deferring capitol projects. The analysis showed that an investment of 10 million into conservation measures would offset 21 million in infrastructure needs in the next 40 years. Since then, the City of Bends conservation program has continued to leverage its customer data to shape these new measures and target water savings through enhanced communication, water use analysis and code writing.

CEU Relevance Statement: Integrating conservation into planning efforts can be considered as part of an adaptive management strategy or to fund conservation programs like capitol projects.

Author: Dan Denning **Author's Job Title:** Water Conservation program manager

Email: ddenning@bendoregon.gov **Phone:** 15416932194

Organization: City of Bend Utility Dept

Primary Job Duties: The Water Conservation Program Manager leads in developing, implementing, monitoring and evaluating water conservation and efficiency programs to include; public outreach campaigns; high-level policy advice; liaison with organizations having water conservation and efficiency related interests. The Water Conservation Program Manager focuses on demand management through water conservation and efficiency policies and programs.

Related Prior Employment:

Registrations or Certifications: CLIA

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Session ID: TreatFAM01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Coagulation 101

Abstract: Coagulation 101 reviews fundamental chemistry of coagulants, particles, and NOM and provides guidelines for selection of the best coagulant and best coagulation pH for various treatment applications. The most important chemical characteristics of the raw water and how they should be matched to the chemical characteristics of the coagulant are summarized in technically precise, but plain language. This paper has been given at ACE, several regional AWWA conferences, and various operators' conferences to good reviews.

CEU Relevance Statement: Proper coagulation is essential for maintaining turbidity and DBP compliance in a wide variety of WTPs, including direct filtration, sedimentation and DAF, and membrane plants. Coagulation chemistry is complex and not fully understood by all operators. Proper coagulation requires a knowledge of how coagulants, particles and NOM react and how this is influenced by the pH of coagulation. This presentation was put together to explain coagulation chemistry in operator-friendly language. The paper was requested and presented at 3 ACE "back-to-basics" sessions and consistently gets large crowds and good reviews.

Author: David Pernitsky **Author's Job Title:** Vice President, Water Treatment

Email: david.pernitsky@stantec.com **Phone:** 14036058110

Organization: Stantec

Primary Job Duties: I lead Stantec's global drinking water treatment practice and am involved in WTP process selection, design, and operational troubleshooting. Am a chapter author and reviewer for update of AWWA's M37 Manual or Practice for Coagulation and Filtration Processes.

Related Prior Employment: 30 yrs of water treatment experience with several consulting firms in US and Canada as well as a 7-yr stint as chief water system troubleshooter for an operating energy company supporting the operation of potable and industrial water systems

Registrations or Certifications: PE in Alberta and Saskatchewan Canada, PE in California (Application pending review)

Ph.D. Envir. Eng., University of Mass.. Amherst

B.Sc. and M.Sc. Civil and Envir. Eng., University of Alberta

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Session ID: TreatFAM02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: How Long is Too Long? Evaluating Extended Biofilter Shutdown at Hayden Bridge (Water Research Foundation Tailored Collaborative #4984)

Abstract: The Eugene Water and Electric Board in partnership with the Drinking Water Research Group at the University of Toronto and the Water Research Foundation completed a long-term pilot project to evaluate changes in treated water quality associated with elimination of raw water chlorination and filter shutdown following backwash ranging from 2 to 96 hours. Eliminating raw water chlorination resulted in biological acclimation of the pilot filters; biological function as quantified by enzyme activity was observed to develop more rapidly than biomass as measured by ATP. Filter shutdown longer than 12 hours was observed to improve filter production (measured by unit filter run volume) relative to filters operated without shutdown. Ultimately, the elimination of raw water chlorination was deemed a viable alternative at the Hayden Bridge Filtration plant and the lessons learned during the pilot study provided the operations team with confidence during full-scale implementation.

CEU Relevance Statement: This work showed the benefits of pilot trials prior to making significant process changes at full-scale, as the impacts to plant operation and water quality could be assessed. Understanding the transition to biological filtration and the acclimation period required to achieve the desired level of treatment will improve an operatorâ€™s understanding of the process as well as the factors that need to be considered during operation. Finally, this presentation will present monitoring approaches to guide the operation and optimization of biological processes to estimate the level of treatment being provided and identify potential issues in operation before impacting treated water quality.

Author: Michael McKie **Author's Job Title:** Water System Engineer

Email: mike.mckie@c3water.com **Phone:** 5195019122

Organization: C3 Water Inc.

Primary Job Duties: Project manager for process upgrade and optimization projects. Coordinate consulting activities with utilities, sub-consultants, equipment vendors and contractors.

Related Prior Employment: Previously worked with the Drinking Water Research Group at the University of Toronto as a Post-doctoral Fellow and research project manager.

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Vancouver, WA 98687
T 503-760-6460
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Registrations or Certifications: Licenced professional engineer in Ontario. Ph.D. from the University of Toronto. Member of AWWA serving on the biological treatment committee. IOA member and chair of the ROPES commitee.

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Session ID: TreatFAM03 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Deep-Bed Filters: State of the Art and Lessons Learned

Abstract: The drinking water industry in North America has been building and operating dual media filters with 24-48 inches (600-1000 mm) of media loaded at 4-5 gpm/ft2 (10-12 m/h) since the Second World War. In recent years, utilities and design engineers have recognized the cost savings that can be realized from using deeper filter beds that are 60-100 inches (1500 â€“ 2500 mm) deep and running at loading rates of up to 12 gpm/sf (30 m/h). The fundamentals of the filtration process provide insight into both the potential benefits of deep-bed filtration as well as key requirements to avoid potential problems. This presentation discusses the state of the art for deep-bed filter designs from both a theoretical and practical basis, highlighting the characteristics of successful full-scale designs. A series of practical case studies will be discussed to show how these deep-bed designs have performed in full-scale operation.

CEU Relevance Statement: Effective use of high-rate filtration can greatly improve overall plant efficiencies and help save water and avoid costly upgrades. This presentation can help inform operators about the benefits of high-rate filtration, and the state of the industry around its use.

Author: Katerina Messologitis **Author's Job Title:** Process Engineer

Email: katerina.messologitis@stantec.com **Phone:** 5033332257

Organization: Stantec Consulting

Primary Job Duties: Katerina is a Professional Engineer (OR) with 5 years of experience in water/wastewater engineering. Her main responsibilities include water / wastewater treatment plant design and water quality / treatment studies at the pilot scale and at full-scale treatment plants.

Related Prior Employment: N/A

Registrations or Certifications: PE (Oregon)

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Session ID: TreatFAM04 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Modified Tracer Testing Methodology for Long Detention Times

Abstract: Tracer testing can be difficult to perform on large reservoirs or clearwells. Having a place to put water or being able to run a WTP at rates needed to prove out hydraulic efficiency may not be feasible. This presentation will provide an overview of tracer testing, and provide case studies where abbreviated tracer testing was performed that shortened testing by over half the time traditional testing would require. Modified method used was discussed and vetted with approving regulatory authorities.

CEU Relevance Statement: Accurate knowledge of hydraulic efficiencies of storage used for primary disinfection can help with overall disinfectant dosing and strategy. If hydraulic efficiency factors are proven to be higher than assumed, or if they can be improved with baffling or piping modifications, then this can help reduce disinfectant dose or eliminate costly expansions to disinfection storage. This can help utilities save money on chemicals and potentially reduce the amount of disinfection byproduct precursors formed.

Author: Andrew Nishihara **Author's Job Title:** Civil Engineer

Email: andrew.nishihara@stantec.com **Phone:** 5032205432

Organization: Stantec

Primary Job Duties: Professional Civil Engineer (OR/WA/ID/HI) with experience spanning as a project engineer and field engineer for a number of projects with Stantec where responsibilities have ranged from: data management and assessment for regional water supply projects (water resources planning), leading multidisciplinary teams during detailed design (water treatment and wastewater treatment), and providing on-site construction field services. Focus areas of water treatment process design and delivery, technical report writing (Master Planning/Facility Planning), and providing other civil engineering support in whatever capacity needed.

Related Prior Employment:

Registrations or Certifications: PE - Civil; ENV SP

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Session ID: TreatFAM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Ozone Disinfection in Drinking Water: Back to the Basics

Abstract: Ozone disinfection systems are widespread in water and wastewater treatment, and ozone case study presentations can be found at conferences all the time, but sometimes we skip over the basics. How does an ozone system really work? Join us for a back-to-the-basics look at ozone disinfection, the way we use it, and the different components of the system. Walk away from this presentation empowered to explain ozone disinfection to your grandmother or your sixth grader; no charts, no equations, and as little chemistry as we can get away with.

CEU Relevance Statement: Ozone disinfection systems are already widespread and continue to gain popularity for their capability in drinking water disinfection. This presentation will empower utility administrators and operators at treatment facilities using ozone with a better understanding of ozone systems in layman's terms, which contributes to their own appreciation of the advantages of ozone disinfection systems, and aids in all aspects of communicating with ratepayers about the use of ozone in drinking water treatment.

Author: Spencer Adams **Author's Job Title:** Water Project Manager

Email: spencer.adams@jacobs.com **Phone:** 2143357810

Organization: Jacobs

Primary Job Duties: As a project manager and design manager for municipal water projects, I am responsible for managing the scope and the delivery of the design of engineering projects. As a civil engineer with over 11 years' experience in the municipal water sector as both as a consultant and on a utility's staff, I bring an operations-focused perspective to every project and an engrained aspiration for engineering and construction quality.

Related Prior Employment: Previously employed as a project manager for capital facility projects for the Gwinnett County Department of Water Resources in Atlanta, Georgia, including primarily water treatment plant and pump station work. Prior to tenure in the public sector, worked as a consulting engineer across the southeastern United States on a variety of municipal water sector projects.

Registrations or Certifications: Professional Engineer (GA,NV,OR,TX,WA)

Certified Water Right Examiner (OR)

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Session ID: TreatFAM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Major Ozone Equipment Replacement: How to Increase Resiliency of Your Ozone System Amidst Supply Chain Issues

Abstract: The Medford Water Commission (MWC) is in the midst of a $200 M upgrade to their water system to improve resiliency, reliability, and capacity to their 140,000 customers. This program includes replacement of aging ozone equipment which is used to reduce taste and odor compounds at the Robert A. Duff WTP. This presentation will focus on the best practices for conducting an ozone equipment replacement and lessons learned from the equipment pre-purchase, installation, and startup and commissioning of the ozone system during the supply chain crisis.

CEU Relevance Statement: Many utilities are considering replacement of aging packaged vendor equipment and these lessons learned will help their projects move forward more smoothly. Ozone is a common treatment process used to combat taste and odor and also for disinfection.

Author: Kim Ervin **Author's Job Title:** Project Manager, Drinking Water Technologist

Email: kim.ervin@jacobs.com **Phone:** 4254952556

Organization: Jacobs

Primary Job Duties: Kim is a project manager and drinking water technologist specializing in treatment process engineering for surface water and groundwater treatment plants. She manages teams to deliver planning, design, and construction services for clients across the United States.

Related Prior Employment:

Registrations or Certifications: Professional Engineer (WA, OR, CA)

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Session ID: TreatFPM01 **Date:** 5/5/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Bull Run water: Investigating coagulation, flocculation and sedimentation

Abstract: This presentation will investigate the use of different coagulants, coagulant aids, flocculant aids, and other chemicals on treating the Bull Run water. Bull Run water is a unique water body with low turbidity, medium to low natural organic matter (NOM) concentration and low alkalinity causing very challenging conditions for coagulation, flocculation and sedimentation and requires an in-depth investigation. During this pilot study, variety of chemical doses and combinations were tested for each coagulant in order to achieve lowest settled water turbidity, particle count and NOM concentration. Ferric sulfate, alum, and polyaluminum chloride were compared side by side and across seasons. Tools such as a zetasizer, streaming current analyzer, and pH were compared to inform dose selection. Subsequently, the optimized conditions for each coagulant were tested side by side to find the best combination in terms of filter run time and filter effluent water quality.

CEU Relevance Statement: During this presentation, attendees will learn about variety of chemicals that could affect the coagulation. They will also gain knowledge on parameters that affect the coagulation and how to use them in order to improve the coagulation, flocculation and sedimentation. Instruments such as streaming current monitor and zeta sizer will be introduced and their benefit to the coagulation will be discussed. This topic is relevant to engineers who design coagulation systems, operators who look to improve water quality, and managers who decide which chemicals and tools will be available.

Author: Mojtaba Azadiaghdam **Author's Job Title:** Process Engineer

Email: mojtaba.azadiaghdam@portlandoregon.gov **Phone:** 5204402461

Organization: Portland water bureau

Primary Job Duties: I am a process engineer at Portland Water Bureau. I am a lead in the pilot plant operations and conduct multiple investigation including coagulation that will be presented in this conference.

Related Prior Employment:

Registrations or Certifications:

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Session ID: TreatFPM03 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Interaction of Microplastics with Per- and Polyfluoroalkyl Substances (PFAS) and Microcystins in Drinking Water

Abstract: Microplastics and per- and polyfluoroalkyl substances (PFAS) both represent persistent environmental contaminants that have been associated with human health risks. Microcystins are naturally occurring cyanobacterial toxins that may be present in drinking water sources. Recent concerns have emerged regarding the ability of microplastics to adsorb various types of organic contaminants, including PFAS and microcystins. This study examined the adsorption of two long-chain PFAS and two short-chain PFAS compounds, as well as two common microcystins, by both virgin and weathered microplastics in freshwater. Results indicate that weathering may increase adsorption of both classes of contaminants, however polymer type represents the most important factor.

CEU Relevance Statement: This presentation relates to the operation of water treatment systems as it describes the potential for microplastics to act as vectors of regulated and emerging contaminants: PFAS and microcystins. Operators can use this information to become aware of the possibility for microplastics to transfer other emerging contaminants into drinking water.

Author: Husein Almuhtaram **Author's Job Title:** Postdoctoral Fellow

Email: husein.almuhtaram@utoronto.ca **Phone:** 4165051662

Organization: University of Toronto

Primary Job Duties: Dr. Husein Almuhtaram is a postdoctoral fellow at the University of Toronto, where he completed his PhD. His research focuses on issues related to emerging contaminants in drinking water including microplastics and cyanotoxins.

Related Prior Employment:

Registrations or Certifications:

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Session ID: TreatFPM04 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Advances and Challenges in Microplastic Sampling and Analysis of Drinking Waters

Abstract: The presence of microplastics in both source and treated drinking water has been observed around the globe. However, no standardized sampling or analysis methods have been adopted, limiting the comparability of reported data. Sampling methods must be combined with analytical techniques to generate data regarding plastic mass, count, size, and polymer composition. Obtaining this information may ultimately require the use of multiple sophisticated instrumentation. Selection of appropriate sampling and analysis methods should always be based on the objectives of any studies that focus on microplastics.

CEU Relevance Statement: This presentation relates to the operation of water treatment systems. It describes considerations for collecting and analyzing microplastic samples, which are entirely unlike other drinking water contaminants. A microplastic monitoring program is commencing in the State of California, and it is likely that operators will assist with sample collection. Operators can use this information to help understand different types of sampling systems and appreciate their unique challenges.

Author: Robert Andrews **Author's Job Title:** Professor

Email: robert.andrews@utoronto.ca **Phone:** 4165051662

Organization: University of Toronto

Primary Job Duties: Professor Robert Andrews leads the Drinking Water Research Group at the University of Toronto where his research has focused on the treatment of emerging contaminants in drinking water.

Related Prior Employment:

Registrations or Certifications:

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Session ID: TreatFPM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Approaches for Accelerating the Design and Construction of a PFAS Treatment Facility

Abstract: This presentation will discuss several approaches for accelerating the design and construction of the GAC treatment facility for PFAS treatment to allow the utility to meet summer demands. Approaches discussed will include delivery method, 3D modeling, early procurement of equipment, future connections for expansion and blending.

CEU Relevance Statement: The presentation covers general overview of GAS operations for PFAS treatment, including blending operations to optimize treatment while minimizing operating costs.

Author: Amy Gao **Author's Job Title:** Water Engineer

Email: amy.gao@jacobs.com **Phone:** 9172169135

Organization: Jacobs

Primary Job Duties: Drinking water treatment design, including flocculation/sedimentation, ozone, GAC, filtration, UV processes.

Related Prior Employment:

Registrations or Certifications: Professional Engineer

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Session ID: TreatFPM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Nitrate Treatment for Groundwater Wells

Abstract: This paper is dealing with the treatment of nitrate laden groundwater for a small community on Southern Ontario. This also includes a pilot study to determine overall performance of the ion exchange nitrate removal system treating the raw water from the Wells. The recommendation for the water treatment system will also be discussed.

CEU Relevance Statement: This will provide information to operators and Engineers for executing a water treatment system

Author: JEGANAESAN JEGANATHAN **Author's Job Title:** Senior Project Manager

Email: jegajega@gmail.com **Phone:** 6479868300

Organization: TYLin

Primary Job Duties: Senior PM

Related Prior Employment: PM

Registrations or Certifications: P. Eng, WEF

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Session ID: WQDistFAM01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Navigating the New Lead and Copper Rule Requirements & Leveraging Available Funding

Abstract: The new Long-Term Lead and Copper Rule Revisions (LCRR) have significant impacts on the 60,000 public water systems required to comply with the rule. This presentation will provide a high-level overview of the key aspects of the revisions, highlighting tools and industry best practices to help water systems achieve compliance. Examples of specific state requirements in the Pacific Northwest as well as information on the available funding through the Bipartisan Infrastructure Act will also be addressed.

CEU Relevance Statement: This presentation will cover the regulatory requirements for the LCRR as well as forthcoming federal requirements (Lead and Copper Rule Improvements). It will specifically address corrosion control treatment, compliance monitoring and reporting, impacts of exceeding the action and trigger levels for lead, and associated public outreach, education & notification requirements under the new rule. These key components are important for operators to understand as it directly impacts the management of the water system and the quality of water delivered to consumers.

Author: Lauren Wasserstrom **Author's Job Title:** National Practice Leader for Lead and Copper Rule Compliance

Email: lauren.wasserstrom@jacobs.com**Phone:** 6143301445

Organization: Jacobs

Primary Job Duties: Lauren is the National Practice Leader for Lead and Copper Rule Compliance at Jacobs. She is responsible for assisting water systems throughout the country implement the new Lead and Copper Rule Revisions as well as applicable state-specific requirements.

Related Prior Employment: Lauren previously worked for the Greater Cincinnati Water Works to implement the LCRR, as well as managed the Online Water Quality Monitoring Program. She also worked for AWWA providing technical advice and process guidance on matters related to water quality & treatment and the US EPA conducting research on corrosion and contaminant accumulation in drinking water distribution systems.

Registrations or Certifications: State of Ohio Class II Water Supply License

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Session ID: WQDistFAM02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Preparing for LCRR Compliance Part I: Service Line Material Inventory

Abstract: With the compliance date for the Lead and Copper Rule Revisions (LCRR) fast approaching, water systems should be well on their way to preparing their service line material inventory that will need to be submitted to their primacy agency by October 16, 2024. This presentation will describe the requirements of the service line material inventory, methods for collecting additional information to identify lead status unknown service lines, and provide guidance on best practices for compiling collected information to prepare the inventory for primacy agency review. Information on the Lead and Copper Rule Improvements (LCRI), expected to be released shortly prior to the PNWS-AWWA Conference, will be presented if available. This presentation will serve as Part I of a combined presentation block with co-author Damon Roth. Damonâ€™s presentation should immediately follow mine is the same session. It will focus on other aspects of the LCRR beyond the service line material inventory.

CEU Relevance Statement: This presentation will inform water system operators, managers, and other water industry professionals on how to prepare for compliance with the service line material inventory requirements of the LCRR. Attendees will leave this presentation with an understanding of the regulatory requirements, as well as best practices for compilation of a service line material inventory. This information is directly applicable to water system staff and other water industry professionals, as all community water systems will be required to submit a service line material inventory to their primacy agency by the October 16, 2024 compliance date.

Author: Helene Baribeau **Author's Job Title:** Distribution System Water Quality Leader

Email: hbaribeau@BrwnCald.com **Phone:** 8585716713

Organization: Brown and Caldwell

Primary Job Duties: I started working in the drinking water industry in 1989. Throughout my career, I have focused on disinfection processes and disinfection byproducts (DBPs), microorganism inactivation and control, corrosion control, impact of treatment processes on distribution system water quality, and regulatory compliance.

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Vancouver, WA 98687
T 503-760-6460
F 360-254-0695
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Related Prior Employment: Prior to joining Brown and Caldwell in summer 2019, I worked for the State of California (State Water Resources Control Board, Division of Drinking Water, Regulatory Development Unit). I was independent consultant before working for the state.

Registrations or Certifications: CA PE, CA WTP Operator Grade 3, CA Advanced WTP Grade 3, AWWA member

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Session ID: WQDistFAM03 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Preparing for LCRR Compliance Part II: Beyond the Service Line Material Inventory

Abstract: With the compliance date for the Lead and Copper Rule Revisions (LCRR) fast approaching, water systems are largely focused on preparing the service line material inventories that will need to be submitted to their primacy agency by October 16, 2024. However, the LCRR includes many requirements beyond the service line inventory, which will require water systems to prepare for compliance by the first sampling period beginning January 1, 2025. This presentation will describe the LCRR requirements beyond those related to the service line material inventory, with emphasis placed on updating LCR sampling locations, find-and-fix program requirements, and expanded public education and consumer notification requirements. This presentation will serve as Part II of a combined presentation block with co-author HÃ©IÃ¨ne Baribeau, with Part I focusing on the service line material inventory and this presentation focusing on other aspects of the LCRR beyond the service line material inventory.

CEU Relevance Statement: This presentation will inform water system operators, managers, and other water industry professionals on how to prepare for compliance with LCRR. Attendees will leave this presentation with an understanding of the regulatory requirements, as well as best practices for updating LCR compliance sampling locations, recommendations for preparing to comply with find-and-fix requirements, and information on the expanded public education and consumer notification requirements. This information is directly applicable to water system staff and other water industry professionals, as all community water systems will be required to submit a service line material inventory to their primacy agency by the October 16, 2024 compliance date.

Author: Damon Roth **Author's Job Title:** National Specialty Leader, Drinking Water Process Engineering

Email: droth1@brwncald.com **Phone:** 5097704322

Organization: Brown and Caldwell

Primary Job Duties: As Brown and Caldwell's National Specialty Leader for Drinking Water Process Engineering, Damon works with process engineers across the company to engage BCâ€™s subject matter specialists, digital technologists, and company leadership to continue to advance and set BCâ€™s Drinking Water Strategy. Damon also serves as a subject matter specialist on a variety of projects ranging from optimization of existing facilities to design of a wide range of water treatment processes,

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with additional focus on lead and copper corrosion control as well as water treatment residuals management.

Related Prior Employment:

Registrations or Certifications: PE, BCEE

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F 360-254-0695
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2023 Annual Conference, Kennewick, WA May 3 – 5

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Session ID: WQDistFAM04 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Lead and Copper Rule Revisions â€“ Find-and- Fix Assessments, Even Without Lead Pipes.

Abstract: Find-and-fix assessments for tap sample sites that exceed the lead action level (Title 40 CFR 181.82) was added to the Lead and Copper Rule Revisions (LCRR). The assessments are required regardless of the service line material or corrosion control treatment status and include water quality monitoring, in-home monitoring and assessment, and identification of fixes or actions to reduce lead levels. This presentation will provide guidance to utilities on how to complete these find-and-fix assessments and how the data could be interpreted. It will be based on the recent article Lead and Copper Rule Revisions: Consider Find-and-Fix Assessments (Salo-Zieman et al., July/August 2022 Opflow).

CEU Relevance Statement: Operators, water quality staff, and water system managers will be required to complete these assessments once the rule is in effect and likely have no previous experience in in-home lead sampling or collecting and interpreting water quality parameters in their systems. This presentation will provide recommendations and guidance on how to successfully complete these assessments including examples on proper sampling techniques, data interpretation, available fixes, and steps they can take to be better prepared.

Author: Virpi Salo-Zieman **Author's Job Title:** Project Engineer

Email: virpi@confluence-engineering.com **Phone:** 4252081921

Organization: Confluence Engineering Group

Primary Job Duties: As a project engineer I evaluate data, provide detailed analyses, and recommendations for clients on various drinking water quality-related topics. The projects have covered all aspects of water quality from source to tap including planning and emergency preparedness. I am also often consulted on drinking water-related regulatory requirements.

Related Prior Employment: I used to work as a regional engineer with the Washington State Department of Health. I administered the drinking water regulations in several different geographical areas and specialized in lead and copper rule and arsenic treatment.

Registrations or Certifications: AWWA member, PE License in Washington State

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Session ID: WQDistFAM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Guidance for Using PipeÂ Rigs to Inform Lead and Copper Corrosion Control Treatment Decisions - Program Drivers

Abstract: The federal Lead and Copper Rule Revisions protects the health of all water utility customers by reducing lead exposure in drinking water. A key aspect of the Revisions is the potential need for all utilities to implement corrosion control studies prior to making any treatment changes. This presentation discusses the results of Water Research Foundation project 5081: Guidance for Using Pipe Loops to Inform Lead and Copper Corrosion Control Treatment Decisions. This abstract is part 1 of 2 abstracts and specifically addresses the reasons utilities need to conduct pipe loop studies based on a comprehensive literature review and 14 utility case studies.

CEU Relevance Statement: The federal Lead and Copper Rule Revisions affects all drinking water utilities, with the first of many compliance deadlines coming in October 2024. This presentation helps all water industry staff better understand the new federal requirements and be better prepared to maintain water quality compliance. This abstract is especially important to water quality analysts, treatment operators, designers, and regulators when dealing with treatment and/or water quality changes.

Author: Melinda Friedman **Author's Job Title:** President

Email: melinda@confluence-engineering.com **Phone:** 2065276832

Organization: Confluence Engineering Group

Primary Job Duties: Owner and president of water quality-focused engineering company

Related Prior Employment: Project manager and water quality section leader at HDR Engineering; project manager and principal of Economic and Engineering Services

Registrations or Certifications: PE - Washington

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Session ID: WQDistFAM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Guidance for Using PipeÂ Rigs to Inform Lead and Copper Corrosion Control Treatment Decisions - Design

Abstract: The federal Lead and Copper Rule Revisions protects the health of all water utility customers by reducing lead exposure in drinking water. A key aspect of the Revisions is the potential need for all utilities to implement corrosion control studies prior to making any treatment changes. This presentation discusses the results of Water Research Foundation project 5081: Guidance for Using Pipe Loops to Inform Lead and Copper Corrosion Control Treatment Decisions. This abstract is part 2 of 2 abstracts and specifically addresses design requirements, tips and tricks, and pitfalls based on a comprehensive literature review and 14 utility case studies.

CEU Relevance Statement: The federal Lead and Copper Rule Revisions affects all drinking water utilities, with the first of many compliance deadlines coming in October 2024. This presentation helps all water industry staff better understand the new federal requirements and be better prepared to maintain water quality compliance. This abstract is especially important to water quality analysts, treatment operators, designers, and regulators when dealing with treatment and/or water quality changes.

Author: Pierre Kwan **Author's Job Title:** Water Treatment Business Director

Email: pierre.kwan@hdrinc.com **Phone:** 2068264735

Organization: HDR Engineering, Inc.

Primary Job Duties: Technical oversight of all of HDR's drinking water projects around the world

Related Prior Employment: None. 22 years at HDR starting as project engineer and worked my way up

Registrations or Certifications: Professional Engineer - Washington, Oregon, New Mexico, British Columbia

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Session ID: WQDistFPM01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Oversight and Communication for Implementing Improved Corrosion Control Treatment

Abstract: After decades of meeting Lead and Copper Rule requirements through the Lead Hazard Reduction Program, the Portland Water Bureau transitioned to reduce lead in water through enhancing corrosion control treatment. The Improved Corrosion Control Treatment project came online in April 2022 and uses soda ash and carbon dioxide to raise the pH of Bull Run water higher than previously possible and purposefully increases alkalinity for the first time. This talk will discuss the decision-making process used to direct the treatment targets for the new facility intended to meet regulatory requirements and lower lead in water risks. Public outreach and communication were vital to helping customers be prepared for new water chemistry. Insights will be shared on allocating resources and staff to enact new monitoring programs. Suggest pairing this talk with Part 2 focused on monitoring results.

CEU Relevance Statement: Managers, operators, and engineers from utilities of all sizes will benefit from lessons learned on commissioning a new full scale treatment facility, allocating resources to monitor its effectiveness, and decision making to ensure it met its objectives. Attendees will gain ideas for making informed decisions in the face of uncertainty, learn methods for establishing new monitoring programs, and improve communication between internal staff and stakeholders and with external contractors.

Author: Yone Akagi **Author's Job Title:** Water Quality Manager

Email: yone.akagi@portlandoregon.gov **Phone:** 5038237648

Organization: Portland Water Bureau

Primary Job Duties: Ensure the highest water quality and regulatory compliance for the largest drinking water utility in the state of Oregon. Manage a team of 30 people who oversee source water and distribution system sampling, flushing, treatment pilot operations, water quality communication, and regulatory reporting.

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

Registrations or Certifications: Professional Engineer

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Session ID: WQDistFPM02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Regulatory, In Home, and Installation Monitoring for Implementing Improved Corrosion Control Treatment

Abstract: To reduce risk of lead in water, a complete overhaul of Portlandâ€™s corrosion control facility was completed in April 2022. Extensive monitoring including regulatory LCR and TCR monitoring observed if pH and alkalinity changes at the entry point carried through the distribution system. A new in-home lead sampling program with customer volunteers took repeated samples to show changes in lead levels. New corrosion monitoring stations were installed through the distribution system with controlled operational patterns. Each of these programs was run for at least a year before the treatment change to establish a baseline, during commissioning to inform decisions on treatment targets, and for a year afterward to verify results. The monitoring effort successfully informed treatment target decisions, quantified benefits of the completed improvements, and reduced risk of lead in water for customers. Suggest pairing this talk with Part 1 focused on project management.

CEU Relevance Statement: Engineers and operators from utilities of all sizes will benefit from lessons learned on implementing a new complex treatment regime and how to produce and use monitoring information to make decisions. Attendees will develop skills in developing monitoring plans that both meet regulatory requirements and also inform operational decision making. Attendees will take away ideas for monitoring pH and reducing lead levels in distribution systems of any size.

Author: Mac Gifford **Author's Job Title:** Water Quality Engineer

Email: mac.gifford@portlandoregon.gov **Phone:** 5038231507

Organization: Portland Water Bureau

Primary Job Duties: Ensure water quality and regulatory compliance for the largest drinking water utility in the state of Oregon. Serves as technical stakeholder and lead pilot operator on water treatment projects, including the Improved Corrosion Control Treatment and Bull Run Filtration.

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

Registrations or Certifications: Professional Engineer

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Session ID: WQDistFPM03 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Rockwood Pipe Loop Study: Pilot Testing Challenges for Corrosion Control Optimization

Abstract: Rockwood Water Peopleâ€™s Utility District and the City of Gresham recently formed the Cascade Groundwater Alliance (CGA) to develop new groundwater (GW) sources. The CGA will switch from being mostly surface water (Portland Water Bureau) to 100% GW. CGA GW will be treated for manganese removal, chlorine disinfection, and potentially corrosion control. The CGA is currently conducting pipe loop testing to optimize corrosion control treatment. The pipe loops are a flow-through configuration to mimic real-world conditions for both water mains (cast iron, ductile iron) and premise plumbing (copper). Five pipe loop rigs were constructed to compare different water quality scenarios. This presentation will provide a road map for utilities experiencing similar water quality issues and will highlight how pipe loop testing can provide useful insight to the planning and design of treatment infrastructure.

CEU Relevance Statement: The information provided in this presentation will provide a road map for utilities experiencing similar water quality issues and will highlight how pipe loop testing can provide useful insight to the planning and design of treatment infrastructure. Pipe loop testing allows water agency management to make confident decisions related to water treatment infrastructure planning. The presentation will also benefit operators and maintenance staff who may have questions regarding the treatment process and optimization of treatment strategies.

Author: Aaron Gress **Author's Job Title:** Civil Engineer

Email: aaron.gress@murraysmith.us **Phone:** 5596792986

Organization: CONSOR

Primary Job Duties: Aaron manages projects and conducts design work for drinking water treatment plants.

Related Prior Employment: Prior to working at CONSOR as a civil engineer, Aaron was a water (treatment) engineer for a total of 8 years at two other Firms. Aaron also has water treatment operating experience.

Registrations or Certifications: Registered professional engineer in Oregon and California.

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Session ID: WQDistFPM04 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Setting the Standard: City of Lacey pH Treatment Projects

Abstract: The City of Lacey owns 20 active groundwater sources that supply approximately 70,000 residents from Lacey and Thurston County with potable water. To meet system-wide corrosion control requirements associated with the Federal Lead and Copper Rule, the City is required to perform pH adjustments at several of its major well sites. To treat groundwater from six existing wells, the City engaged Murraysmith, now part of CONSOR, for two separate projects to design new pH treatment systems using packaged aeration systems. By resourcefully using common design elements such as process control schemes, treatment technologies, and facility construction, our teamâ€™s approach provided the City lasting system operation benefits and water quality improvements. The presentation will discuss leveraging selective standardization across multiple, simultaneous design projects to increase efficiency and minimize operating costs while remaining flexible to meet the needs of the individual sites.

CEU Relevance Statement: This presentation is relevant to the operation, maintenance, and management of water systems because it provides an example of selective design standardization of water treatment facilities. Certified operators can use this information to improve water quality, water supply, and public health protection by understanding how selective standardization across projects may improve operational consistency and enhance maintenance efficiency. By standardizing selective design elements such as process control methods and treatment technologies, operations may benefit from a reduced body of knowledge and training required to operate multiple facilities, reducing the potential for errors due to conflicting operational differences. This presentation will also provide a background on how pH can impact compliance with the Federal Lead and Copper Rule, and how packaged aeration systems may provide an option that does not involve chemical treatment.

Author: Nathan Rostad **Author's Job Title:** Senior Engineer

Email: Nathan.rostad@murraysmith.us **Phone:** 4844332644

Organization: CONSOR

Primary Job Duties: Project Manager for design of drinking water treatment, storage, and pumping facilities. Nathan also serves as a group manager, providing mentorship for multiple team members.

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Related Prior Employment: Nathan has an MS in Civil Engineering from Drexel University and 15 years of experience as an engineering consultant. He relocated from Pennsylvania in 2017 to join Murraysmith, now part of CONSOR as a Civil Engineer, and have experience with planning, design, and construction of water infrastructure projects.

Registrations or Certifications: Professional Engineer (WA & PA), Project Management Professional (PMP)

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Session ID: WQDistFPM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Water Quality: Seriously Consider the System

Abstract: Discrete drinking water infrastructure projects are often envisioned and implemented without a full evaluation of how they may affect water quality in the larger system. Focused organizational responsibilities, complex systems, cost control, and constrained consultant scopes can all contribute to this outcome. While most infrastructure projects are successful, failures in this area can range from inconvenient to disastrous.

This presentation focuses on incorporating a system-wide review when developing new infrastructure projects by examining real and potential impacts to water quality. Specific considerations when implementing projects that incorporate this wider system evaluation of water quality impacts are presented using real world case studies with applicable recommendations for system owners.

CEU Relevance Statement: This training meets WDOH relevancy criteria by providing information related to water system water quality, system operation, and system management through a discussion of real-world case studies, and important considerations when implementing water system improvements.

Author: Chris McMeen **Author's Job Title:** Senior Project Manager

Email: chris@confluence-engineering.com **Phone:** 2533778739

Organization: Confluence Engineering

Primary Job Duties: Provide analytical review, and consulting advice to public water system clients on a variety of drinking water system related topics.

Related Prior Employment: Served in an executive management role at a large public water utility (Tacoma Water), responsible for water quality, treatment and supply.

Registrations or Certifications: Professional Engineer (WA), Level 4 Water Treatment Plant Operator, Level 4 Water Distribution Manager, Cross Connection Control Specialist

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Session ID: WQDistFPM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Using Bench-Scale Testing and Field Activities to Identify Distribution System Destabilization Risks from Water Supply and Treatment Changes

Abstract: Water systems are increasingly being required to meet customer demands by integrating new water sources. Introducing new sources and changing bulk-water quality conditions can be detrimental to legacy pipe scale chemistry in distribution systems. To anticipate impact from these changes, novel bench-scale studies - coupled with flushing activities that measure hydraulically mobile accumulation (HMA) - have been applied to assess pipe scale stability and the potential for destabilization and water quality upsets. This presentation will describe testing used for City of Turlock, CA to evaluate distribution system impacts from changes in chlorination strategy and addition of a new surface water source. Discussion will compare work to previously published information and summarize project results and next steps.

CEU Relevance Statement: This presentation quantifies the type and amount of legacy pipe scale and hydraulically mobile accumulated material that can impact a water system and cause water quality upset events if they go unchecked, or ignored prior to hydraulic and water chemistry changes. This information is very important for operators, O&M activities, and water system managers to understand such that upsets do not occur that can impact both water aesthetics and public health (these upsets can contain elevated levels of regulated contaminants such as from accumulated arsenic, manganese, and other heavy metals). Methods to characterize, prevent, and remove this accumulation will be presented. These methods can be incorporated into utility O&M and system planning activities.

Author: Alex Mofidi **Author's Job Title:** Sr. Project Manager

Email: alex@confluence-engineering.com **Phone:** 2068664562

Organization: Confluence

Primary Job Duties: Alex has over 30-years of experience completing various water supply, treatment, distribution system, and premise plumbing optimization projects. Alex regularly supports water utilities in their efforts to identify and remove water supply contaminants, improve treatment processes for contaminant removal, optimize supply blending and treatment changes to reduce risk of negative impacts to the distribution system, and assist "after the meter" clients in identifying and minimizing risk related to premise plumbing pathogens and in-building water quality upsets.

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Related Prior Employment: Employed with Confluence since 2016. Before confluence, I was a water quality and treatment lead for AECOM from 2009 to 2016. I worked for a small firm Water Quality and Treatment Solutions (WQTS) from 2007 to 2009 conducting similar work, and prior to that, worked from 1991 to 2007 for Metropolitan Wat. Dist. of So. Cal. as an engineer and one of their water quality purification managers.

Registrations or Certifications: PE in CA, WA, OR, ID, TX and licensed water treatment operator T3 in CA.

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Session ID: DivEBF01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Responsive Support for Disadvantaged Businesses

Abstract: As more agencies commit to social equity in contracting, requirements to include firm mentorship and capacity-building efforts in professional services contracts are becoming commonplace. How can we move beyond rote mentorship activities to address the barriers faced by new and growing disadvantaged businesses? This presentation provides insight into the barriers that small businesses face and outlines quantifiable and proactive approaches to supporting increases in technical, managerial, and workforce capacity. Case studies and lessons learned will be shared.

CEU Relevance Statement: This presentation is not targeted toward Operators.

Author: Jessie Maran **Author's Job Title:** Principal

Email: jessie@theformationlab.com **Phone:** 5109325963

Organization: The Formation Lab

Primary Job Duties: Jessie Maran is a Principal with The Formation Lab, a small firm dedicated to increasing equity for people of color and women in the AEC industry. Her primary focus has been the firmâ€™s DMWESB support programsâ€”designed to enhance the capacity of smaller minority- and woman-owned firms to succeed in winning, managing, and delivering work.

Related Prior Employment: Prior to co-founding The Formation Lab, Jessie was a project manager engaged in downtown, neighborhood, and station area master planning focused on reducing reliance on the auto and improving the climate resiliency of urban areas.

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Session ID: DivEBF02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Improving Disability and Language Access

Abstract: Portland Water Bureau will share examples and strategies they are using to increase the accessibility of communications. From improving translation of text to remediating their communications to work better for people who use assistive technologies, you'll hear how one utility is working to learn and implement more accessible communications. Do they have all the answers? Nope, but the team is excited to share progress. Examples will be focused on water quality, water efficiency and emergency communications.

CEU Relevance Statement: This is relevant to anyone communicating about water quality or communicating with the public in any way. It will address our responsibilities under the ADA and Title IV of the Title VI of the Civil Rights Act of 1964. I don't know enough about operator roles to know if it would be relevant for CEUs, but feel free to reach out if you'd like to talk through this.

Author: Penny Milton **Author's Job Title:** Water Efficiency Coordinator

Email: penny.milton@portlandoregon.gov **Phone:** 5038656415

Organization: Portland Water Bureau

Primary Job Duties: The Residential Water Efficiency Coordinator oversees all aspects of the residential Water Efficiency and Water Leak Repair programs including program development, program management, contract management, program evaluation, communications, and direct customer technical assistance to ensure compliance with the bureauâ€™s Water Management and Conservation Plan.

Related Prior Employment: Outreach Director / Columbia Slough Watershed Council, Graduate Assistant / Lewis and Clark College, Office of Institutional Research, Volunteer Coordinator / Oregon Museum of Science and Industry

Registrations or Certifications:

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Session ID: DistEBF01 **Date:** 5/5/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Use of Fusible PVC in Adverse Conditions: corrosive soils, expansive soils, slope stability and for seismic resiliency.

Abstract: This presentation will provide an overview of how fusible PVC can be used in various challenging conditions including corrosive and expansive soils, trenchless installations including HDD and pipe-bursting, in unstable slopes, and in seismic locations. The presentation will also present the results of seismic resiliency testing.

CEU Relevance Statement: This presentation will give operators, managers, and engineers another option in their toolbox when dealing with installing pipelines in adverse conditions. It is intended to provide operators and system managers information to improve their systemâ€™s resiliency, thereby protecting the public health and water quality.

Author: Jeffrey Rosenlund **Author's Job Title:** Water Resources Engineer

Email: jrosenlund@dowl.com **Phone:** 3077516235

Organization: DOWL

Primary Job Duties: Planning, hydraulic modeling, and design and construction of water systems.

Related Prior Employment: Jeff has worked for DOWL for 25 years as a water resources engineer and project manager.

Registrations or Certifications: PE, PTP, AWWA, Engineering Modeling Applications Committee, Transient Analysis Subcommittee and AWWA M17 fire hydrant committee.

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Session ID: EngEBF01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: No Exceptions Taken: Construction Submittal Review 101

Abstract: Once projects enter the construction phase, submittals, RFIs, and change requests can come fast and furious. Submittal review often requires as much diligence as it does expedience; submittal packages are frequently tens to hundreds of pages, and must be completed in a timely and thorough manner to meet the needs of the project. This presentation will help unpack some lessons learned from junior and senior staff with tips to maintain quality reviews under pressure. Additionally, this presentation seeks to dissect the intent behind common submittal responses, such as â€œNo Exceptions Taken (NET)â€, â€œReject/Resubmit (R&R)â€, and â€œFor Information Only (FIO)â€.

CEU Relevance Statement: A more complete understanding of submittal review procedures is essential to operations and utility personnel involved with the construction review processes. The experience gained from submittal review frequently informs and expedites the O&M design review process for new facilities. Lessons learned from previous submittal issues arising during construction allows the operations team to pinpoint overlooked design issues, suggest design revisions, account for any necessary equipment warranties, and train less-experienced staff in identifying areas of concern.

Author: Josh Yung **Author's Job Title:** Structural EIT

Email: josh.yung@stantec.com **Phone:** 8323672824

Organization: Stantec

Primary Job Duties: As a structural EIT at Stantec, my responsibilities include structural analysis and design, construction document review, structural inspections, and coordination with field staff during the construction phase.

Related Prior Employment: Before joining Stantec, I spent 2 years as a structural engineer with MRCE in New York City, where I performed structural design and inspections of below-grade structures. I have additionally served as a diagnostics intern at both Walter P Moore (Dallas, Atlanta) and Wiss, Janney, Elstner Associates (Austin), where I supported field observation and analysis for structural rehabilitation projects.

Registrations or Certifications: EIT

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Session ID: EngEBF02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Engineering Departments Going Digital. Moving beyond spreadsheets, blueprints and paper maps.

Abstract: Getting engineers to move beyond the tools of the past and into the 21st century. A look at some of the new and powerful tools Northshore Utility District uses to help manage the Engineering Department as well as other departments of the District, including Monday.com, Dashpivot, Bluebeam and ArcGIS.

CEU Relevance Statement: Having the proper tools to manage projects and tasks is critical. Being able to create, manipulate and share information is a key task in doing this. Learning about the new digital tools available to do this will enable engineers and operators to better complete their work.

Author: Stephen Dennehy **Author's Job Title:** Engineering Director

Email: sdennehy@nud.net **Phone:** 4255213725

Organization: Northshore Utility District

Primary Job Duties: Responsible for all Engineering Department activities and operations relating to the planning, design, and construction management of improvements to the Districtâ€™s water distribution and wastewater collection systems, and District Headquarters and the Second EOC facilities. Coordinates with, and supports, other District departments. Participates in the overall planning and management of the District as a member of the Management Team.

Related Prior Employment: Previous experience includes working in the municipal sector overseeing development review activities, as well as private sector experience in the consulting and contracting fields.

Registrations or Certifications: PE

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Session ID: EngFAM01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Upgrading Pendleton's Infrastructure to Support Development at the Top of Its Water System

Abstract: The City of Pendleton has drawn interest from developers of unmanned aircraft systems, or aerial dronesâ€”due to its airportâ€™s operation areas and well-equipped facilities uniquely licensed to these systemsâ€™ use. With the recent (and welcome) influx of these companies to the Cityâ€™s Airport area, there is a need to rapidly meet the large fire flow and domestic water demands associated with this developments. The City has undertaken significant water system planning, design, and construction efforts to address the need for large-scale improvements and provide growth for its community. This presentation will discuss those planning efforts that allowed the City to design and construct the water supply system improvements to support ongoing industrial development. Additionally, we will discuss common challenges associated with the design of large-scale water storage, pumping, and transmission main improvements, and the creative solutions the City and Consultant developed to overcome them.

CEU Relevance Statement: This project not only provides the City with redundant finished water storage for its main pressure zone, but also a new booster pump station to increase efficiencies in the existing distribution system. By constructing a new and robust facility, the City was able to eliminate vulnerable system operations that use double-pumping to higher pressure zones. The presentation will discuss the challenges that came along with integrating new facilities into existing system operations, and how the project team addressed them.

Author: Taylor Spencer **Author's Job Title:** Engineering Designer

Email: taylor.spencer@murraysmith.us **Phone:** 5033147898

Organization: CONSOR

Primary Job Duties: Taylor has been an engineering designer with Murraysmith since 2018. Taylor provides support on potable water design and planning projects, including transmission main and reservoir design, site design and grading, and construction project management and inspection.

Related Prior Employment:

Registrations or Certifications: Engineer-in-Training

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Session ID: EngFAM02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Evaluation and Improvements Design of the Cloud Cap Inn Water System, Mt Hood, Oregon

Abstract: This was a project that began as an evaluation of an existing spring water system on Mt Hood National Forest that supplies water for the Cloud Cap Campground, Historic Cloud Cap Inn and the Snow Shoe Club. The results of the evaluation were documented in an engineering report for the Hood River Ranger Station, USDA Forest Service. The resulting evaluation presented three water source improvement alternatives and three distribution system alternatives. The Forest Service selected rehabilitation and redevelopment of the spring source and full replacement of the distribution system in the design phase of this project.

CEU Relevance Statement: This presentation involves a small private water system that utilizes a spring source that is sensitive to weather and climate conditions. The improvements design of the spring source included protection of the spring water source from stormwater runoff and security considerations due to its location on Forest Service property. Freeze potential and protection of the distribution system and services along with access to the source and distribution appurtenances was also a key consideration of the design.

Author: Alex Bargmeyer **Author's Job Title:** Civil Engineer

Email: alex.bargmeyer@murraysmith.us **Phone:** 4065816593

Organization: CONSOR

Primary Job Duties: Responsibilities include managing projects and providing technical design support on drinking water, wastewater infrastructure projects in the NW. Management of projects for municipalities that include planning, design, permitting and construction management elements. Other technical responsibilities include support of hydraulic, mechanical and civil design elements.

Related Prior Employment: Previous related employment included research and design of drinking water and irrigation projects in Montana. Experience included design of small community well and distribution systems, irrigation system storage systems rehabilitation and groundwater monitoring of various mining operations.

Registrations or Certifications: Professional Engineer - OR

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Session ID: EngFAM03 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: ShakeAlert and Water Systems: What Would You Do With 10 Seconds of Earthquake Early Warning?

Abstract: The ShakeAlert Earthquake Early Warning System empowers water and wastewater systems to be resilient when the Big One hits. ShakeAlert can provide up to tens of seconds of warning before shaking begins. It can also trigger pre-programmed actions that protect employees and critical infrastructure. For example, utilities across the Pacific Northwest are already using ShakeAlert to automatically close reservoir output valves in order to prevent extreme water loss from burst pipes. This presentation provides step-by-step guidance for identifying opportunities for automated protective actions, securing leadership buy-in and funding, and integrating ShakeAlert messages into existing IT infrastructure.

CEU Relevance Statement: This presentation connects water systems with technology, expertise, and communities of practice that will help to improve their disaster preparedness and post-disaster operational effectiveness. After this presentation, certified operators will be able identify and implement low-cost improvements that protect water supply and quality during and after an earthquake. This presentation will be relevant to all individuals who operate and manage water systems in the Pacific Northwest.

Author: Kelly Missett **Author's Job Title:** ShakeAlert Regional Coordinator

Email: kmissett@uoregon.edu **Phone:** 4342497608

Organization: The Oregon Hazards Lab (University of Oregon)

Primary Job Duties: As Oregon's ShakeAlert Coordinator, Kelly engages and supports stakeholders across the state in implementing earthquake early warning technology. She also oversees the Oregon Hazards Labs's other outreach and communications efforts.

Related Prior Employment: Before joining the Oregon Hazards Lab, Kelly spent several years working for the U.S. Forest Service. She coordinated programs related to public-private partnerships, digital and traditional media, and visitor information.

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Session ID: EngFAM04 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: A scenario approach to supply system planning positions Portland Water Bureau for a sustainable future

Abstract: The City of Portland relies on two major sources for its water supply: a dedicated watershed and associated surface storage reservoir and groundwater well fields.

The purpose of the Supply System Master Plan (SSMP) project is to produce a short-term (5-10 year) capital improvement plan that is informed by a thorough investigation of plausible future conditions. In addition, the Water Bureau hopes to re-align its planning framework to a more adaptive approach. This roadmap provides a framework for making decisions further into the planning period and will be regularly reviewed and updated as the future unfolds.

Recognizing the inherent uncertainty of forecasting future conditions, the Water Bureau elected to take a new approach – using scenario planning to develop multiple plausible futures to construct an adaptive roadmap. This presentation will describe the approach taken, discuss the results of the study, and lessons learned after one year of plan implementation.

CEU Relevance Statement: As a regional water purveyor, Portland Water Bureau's future demand depends on several factors including organic growth, urban land use changes, effects of conservation and long-term contracts with wholesale customers. Risks to system performance include earthquake, wildfire, flood, long-term drought, aging infrastructure and changing climate, among others.

The Supply System Master Plan takes a multi faceted approach that incorporates scenario planning, a multi-variable analysis, and dynamic system cost modeling tools to determine robust strategies of action for PWB that ensures the continued reliable and cost-effective delivery of water supplies to the community under a wide range of future conditions.

Author: Mark Anderson **Author's Job Title:** Vice President

Email: Mark.Anderson10@jacobs.com **Phone:** 5033670673

Organization: Jacobs

Primary Job Duties: Principal Technologist and Project Manager

Related Prior Employment: Employed with Jacobs since 2002

Registrations or Certifications: PE in Oregon and Washington

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Session ID: EngFAM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Funding Your Next Risk Mitigation Project

Abstract: Over the past two years, water utilities across the country have engaged in risk and resilience planning efforts in response to Americaâ€™s Water Infrastructure Act that have identified new actions and projects for the utility to undertake to plan and prepare for threats and emergencies. Now, utilities are faced with the immense task of including these projects in the multitude of needs faced by the utility. The most frequently asked question is â€œhow do I pay for risk mitigation projects?â€ The answer is utilization of State and Federal funding opportunities. Participants will leave this session with new knowledge of risk mitigation funding opportunities and a toolbox to guide them through the process of funding their next risk mitigation projects to increase resilience, prepare for emergencies and protect the health of the communities they serve.

CEU Relevance Statement: This presentation provides information on funding options for capital improvements for water utilities, including State and Federal hazard mitigation funding opportunities. The presentation will include a summary of water utility risk mitigation funding sources, which types of projects are most applicable, timelines for submissions and how to craft an application so that it has the greatest chance of being successfully funded. Valuable insights will be presented including how projects are selected, how to group/bundle projects, considerations for combining funding from multiple sources and preparing your application. Participates will leave with new knowledge and a toolbox to guide them through the process of funding their next risk mitigation projects to increase resilience, prepare for emergencies and protect the health of the communities they serve.

Author: Sarah Lingley **Author's Job Title:** Water Business Line Lead

Email: sarah.lingley@wsp.com **Phone:** 5034782804

Organization: WSP

Primary Job Duties: I manage the water business for WSP in Oregon. I am a professional engineer and have 14 years experience in civil engineering planning, design and project management. I spent 2 years supporting water utilities with risk and resilience assessments and evaluating funding opportunities to support implementation of risk mitigation projects.

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Related Prior Employment: I have worked as a consulting engineer for 14 years and been involved in all aspects of water, wastewater and stormwater planning and design mostly for municipal clients. I worked at Woodard & Curran, AECOM and HDR prior to my current role at WSP.

Registrations or Certifications: Professional Engineer in Washington and Oregon

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Session ID: EngFAM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Diving into Water Rates and Project Financing - end of PAYGO?

Abstract: With the current economic climate, water rates are always top of mind. Construction escalation has pushed a lot of utilities to the brink of pay-as-you-go (PAYGO) or traditional revenue bond financing. This presentation provides a look at how regional water rates have changed over the past decade and what it might mean for utilities looking to finance large capital projects. What are the remaining tools when everything seems maxed out?

CEU Relevance Statement: Water and wastewater utilities must maintain proper rate structures to support the operation of their facilities, on-going maintenance, and future capital projects. This presentation will help inform attendees with select case studies about how some utilities are tackling rate increases that balance affordability while providing the needed investment to secure the future of utilities' systems. Will also inform about different financing options and how rates have been tracking in the PNW.

Author: Susan Burke **Author's Job Title:** Senior Economist

Email: susan.burke@cardno.com **Phone:** 5304004458

Organization: Cardno, now Stantec

Primary Job Duties: Provide economic and financial analysis expertise with over 15 years of experience working on water resource issues in the Puget Sound.Â Frame clients' resource management challenges in financial and economic terms, deepening the understanding of their resource management choices.Â Experience includes estimating water rate impacts, preparing bond reports as well as considering the benefits and costs of potential changes in public policy and environmental regulation.

Related Prior Employment:

Registrations or Certifications:

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Session ID: UMEBF01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Navigating Supply Chain Disruptions and Inflation with Estimating and Scheduling

Abstract: Public agencies are facing market volatility caused by supply chain disruptions and accelerating inflation exacerbated by pandemic impacts. This presentation will cover how our team effectively navigates this volatility to bring best-value solutions to projects and municipalities. Some of the trends we closely monitor are lead times, material and labor cost, logistics, transportation impacts, bid results, and current construction market conditions. This data is used to update project cost models utilizing software tools by HCSS, such as Heavy Bid and Preconstruction Services. By integrating this data into our strategy, we can provide more complete and accurate estimates to our municipal partners for all disciplines and project stages. This presentation outlines how public agencies and consultants can navigate the challenge of developing reliable cost estimates during these market conditions to minimize risk, increase efficiency, keep pace with project timelines, and stay on budget.

CEU Relevance Statement: This presentation outlines how public agencies and consultants can navigate the challenge of developing reliable cost estimates during the unprecedented current market conditions exacerbated by the pandemic to minimize risk, increase efficiency, keep pace with project timelines, and stay on budget.

Author: Bob Griesinger **Author's Job Title:** Senior Cost Estimator

Email: Bob.Griesinger@murraysmith.us **Phone:** 5032259010

Organization: CONSOR

Primary Job Duties: Bob is deeply engaged with the construction market to proactively address material and labor cost changes. His responsibilities include negotiating prices, organizing bids, preparing cost reports, coordinating design-build projects, and developing schedules and cash flow forecasts.

Related Prior Employment: Bob is a Certified Professional Estimator with nearly 30 years of construction experience focused on civil engineering and construction management across seven states and five countries, including 20 years of experience working as cost estimator.

Registrations or Certifications: CPE

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Session ID: UMEBF02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: The Future Ain't What it Used to Be: Dealing with uncertainty in climate projections

Abstract: Preparing for more heavy rain is difficult. Utilities in Western Washington and Oregon are responsible for a considerable amount of water that protects human health and the environment. Understanding climate change impacts on that infrastructure and the differing agency missions driving infrastructure investment is essential to ensuring effective service delivery now and in the future. This presentation discusses adaptation approaches being used to address these impacts and uncertainty.

CEU Relevance Statement: Understanding how climate change may impact a utility system is fundamental to future operation and meeting clean water and public health standards. Dealing with uncertainty in climate projections is an issue that operators, engineers and public officials have to contend with. This presentation provides information on how to rationally address uncertainty in future operations of utility systems.

Author: John Phillips **Author's Job Title:** Director of Integrated Watershed Management

Email: Jmphillips@parametrix.com **Phone:** 2063943638

Organization: Parametrix

Primary Job Duties: I am the Parametrix Director of Integrated Watershed Management an approach to natural resources and infrastructure development in watershed planning, management, restoration, and climate change adaptation.

Related Prior Employment: King County Combined Sewer Overflow Control Program Manager. Over a 19-year career, I managed and developed the Green Stormwater Infrastructure (GSI) and Climate Change Adaptation programs at King County. My climate work has been referenced in both the IPCC and National Climate Assessment reports.

Registrations or Certifications: ENV SP

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Session ID: UMFAM01 **Date:** 5/5/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Understand The Tools in Being a Good leader

Abstract: Understanding some of the essential tools as a leader for new supervisors and aspiring employees wanting to take on the role of leadership. Exposing attendee's to the different needed skills and abilities of a leader. Discussing effective ways to lead when understanding the differences and personalities in managing people.

CEU Relevance Statement: This presentation is directed towards the up and coming employees having the goal to be a leader or has recently accepted a leadership position. Sharing with attendees the needed skill sets of a good leader, the critical thinking in order to be as effective as possible by understanding the different styles of leadership. Helping attendees understand the value of being effective leader will help them make a positive impact in building the needed respect of employees which translates to a better organization inside and out.

Author: Randy Black **Author's Job Title:** General Manager

Email: rblack@lakewoodwater.org **Phone:** 2535884423

Organization: Lakewood Water District

Primary Job Duties: My position leads the overall operation of our District to ensure compliance with federal and state statutes. I am responsible for the leadership and management of the overall operations, construction, maintenance, and administrative practices, employees, facilities, programs, projects, and planning of the District.

Related Prior Employment: Been with my present employer for 38 years.

Registrations or Certifications: In Washington : CCS, WDM4, WTPO1

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Session ID: UMFAM03 **Date:** 5/5/2023 **Length of Session:** 60 Minutes

Area of Relevancy: Both

Presentation Title: Emergency! Who's In Charge?

Abstract: Utilities serving populations greater than 3,300 have completed their initial RRAs and ERPs. This presentation is designed to be a utility self-assessment of the adequacy of the ERP based on the observations of the Tetra Tech teamâ€™s assistance in the preparation of sixteen ERPs. The presentation will walk attendees through key elements that should be addressed in a functional ERP and their importance. These questions include, What type of emergencies are addressed? What is the command and control structure? Is there a clear chain of command at all levels? Where does the emergency response begin? Does everyone know the plan? How is the plan rehearsed? Is interagency cooperation addressed?

CEU Relevance Statement: This presentation addresses the emergency planning response needed to maintain service following broad scale emergencies.

Author: Brian Murphy **Author's Job Title:** Vice President

Email: brian.murphy@tetratech.com **Phone:** 5038662203

Organization: Tetra Tech

Primary Job Duties: Assisting utility clients in addressing planning and distribution system issues related to water quality, operations, security, master planning, emergency response planning, and regulatory compliance

Related Prior Employment: I have been working exclusively in the public drinking water industry for 30 years for AWWA and as a consultant

Registrations or Certifications: Licensed professional engineer in Oregon and Washington

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Session ID: UMFAM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Building Effective and Efficient Project Management Teams

Abstract: At Stantec, we design with community in mind. As we develop our project teams we desire to shape and benefit the future of our communities by providing excellent quality services and trust to our clients. This presentation will provide an overview of the structure, management procedures, and tools implemented to deliver quality services our clients can count on and trust. The audience will learn about the advantages of this project management approach, and how they can implement these processes to their own project teams.

CEU Relevance Statement: This presentation will provide an overview of how traditional PMs and Technical Leads/PMs can join forces to deliver quality project management. Effective project management skills are critical to the smooth operation and maintenance of utility assets. This presentation will help the audience learn different ways projects can be delegated, delivered, and managed more effectively and efficiently.

Author: Rachel McGinn **Author's Job Title:** Project Manager

Email: rachel.mcginn@stantec.com **Phone:** 5032205433

Organization: Stantec Consulting Services, Inc.

Primary Job Duties: I serve at Stantec as a Project Manager with a focus on commercial project management. I authorize internal contract deliverables, and monitor scope, schedule, and budget deliverables. I work closely with the Technical Lead/PMs to verify we are monitoring and controlling the project through all phases.

Related Prior Employment: Prior to Stantec, I served in program management with the North Atlantic Treaty Organization in Brussels Belgium and with the U.S Army in Vicenza, Italy. I planned and managed complex systems across multiple phases while coordinating program, schedule, and budget processes.

Registrations or Certifications: Project Management Professional (PMP)

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Session ID: UMFAM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Aligning Strategic Priorities and Level of Service to Improve Project Outreach Effectiveness

Abstract: Water utility leaders face an array of demands and uncertainties that include stabilizing rates, replacing aging infrastructure, confronting public trust issues, and complying with changing regulations. Effectively addressing these complex and competing needs requires a wholistic approach to planning and communication. In this session we will share how integrating an effective process early in a project/program cycle can inform critical decisions, effectively engage stakeholders and communities, and align with broader utility/city strategic planning processes. The presentation will integrate relevant examples of how strategic program definition and proactive communications planning work has benefitted Pacific Northwest municipalities.

CEU Relevance Statement: This session will highlight strategic and LOS planning best practices for utility leaders.

Author: Holly Tichenor **Author's Job Title:** Oregon Local Leader

Email: htichenor@brwncald.com **Phone:** 5037395414

Organization: Brown and Caldwell

Primary Job Duties: Ms. Tichenor's current job responsibilities include leading Brown and Caldwell's strategic planning and communications work and overseeing the company's Oregon operations. Relevant current work includes developing creative messaging and branding that enhances utility performance, inter-agency collaboration, stakeholder participation, and new water program development. Ms. Tichenor is an active volunteer in water/wastewater professional organizations including the Association of Clean Water Agencies (OR ACWA) Board Member and Education Committee Chair and active volunteer in PNW WateReuse.

Related Prior Employment: Ms. Tichenor brings 23 years of strategic communications experience for water utility projects and programs across the U.S. She has led strategic planning and stakeholder engagement work for several Pacific Northwest water utility client projects, including Clackamas Water Environment Services, Tualatin Valley Water District (TVWD), and City of Beaverton, Oregon.

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Session ID: WRFAM01 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Developing a Strategic Source Water Protection Plan for Oregonâ€™s Largest Watershed

Abstract: The Tualatin Valley Water District and cities of Hillsboro, Wilsonville, Sherwood, Beaverton, and Tigard formed the Willamette Intake Facilities Commission to manage a water intake along the Willamette River. This intake serves approximately 40,000 Wilsonville and Sherwood residents through the existing Willamette River Water Treatment Plant but will expand to serve an additional 400,000 customers when the Willamette Water Supply System is completed in 2026. The Commission has established a strong model for shared ownership of the water supply asset which also supports working together to maintain water rights, develop a watershed protection plan, initiate stakeholder collaboration, and plan for expanded operations. This presentation will review outcomes of a multi-agency project to establish a strategic Mission, Vision, Values, and Goals framework for planning and decision making as the Commission looks to become a basin-wide partner in watershed protection for the Willamette River.

CEU Relevance Statement: Attendees will learn about other utilities experiences in developing strong partnerships, creating strategic plans. Key takeaways will be the methodology for building internal as well as stakeholder collaboration and consensus, and measurements of future success.

Author: Christina Walter **Author's Job Title:** WWSP Permitting and Outreach Manager

Email: christina.walter@tvwd.org **Phone:** 2092986539

Organization: Tualatin Valley Water District

Primary Job Duties: Overall management and oversight of the permitting acquisition, regulatory compliance planning/assurance, mitigation, regulatory reporting, community relations, public outreach, and public affairs programs to enable success of the WWSP. As the Tualatin Valley Water District is the managing agency of the Water Intake Facilities, I provide support in its watershed planning and management efforts.

Related Prior Employment: For 10 years as Program Manager with the City of Stockton (California) Municipal Utilities Department I managed all regulatory activities for the Cityâ€™s Stormwater Utility and Storm Drainage Maintenance Assessment Districts. I coordinated all the watershed protection

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activities for compliance with the Cityâ€™s MS4 Stormwater National Pollutant Discharge Elimination System (NPDES) Phase I Permit.

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Session ID: WRFAM02 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Development of a Watershed Protection, Monitoring, and Outreach Plan for the Willamette Intake Facilities Commission

Abstract: The Willamette Intake Facilities (WIF) Commission is developing a Watershed Protection, Monitoring, and Outreach Plan, which will identify both water quality risks and opportunities for source water protection partnerships, projects, and initiatives. In Phase 1 of developing this plan, we analyzed relevant water quality data, focusing on the area near the WIF intake, but also analyzing the larger Willamette Basin, including demonstrating the effects of the Willamette Valley Project Reservoirs on basin-wide water temperatures and water quality. Ongoing technical Phase 2 work includes additional analysis of water quality risks, completing case studies to identify monitoring strategies relevant to source water protection for the WIF, and facilitated stakeholder engagement. Attendees will learn more about the history and current water quality status of the Willamette Basin and prioritization of future analysis relevant to use of the Willamette River as a water supply source.

CEU Relevance Statement: This information is highly relevant to managers and administrators who use or may use the Willamette Basin as a water supply source, particularly the mainstem. This presentation is also relevant for any agency considering developing or extending a source water protection plan.

Author: Jacob Krall **Author's Job Title:** Project Engineer

Email: jkrall@geosyntec.com **Phone:** 5034128538

Organization: Geosyntec Consultants

Primary Job Duties: Jacob is a water resources engineer who focuses on water supply and water quality projects, often supporting municipalities in source water protection and water quality modeling projects.

Related Prior Employment:

Registrations or Certifications: Member, AWWA and ASCE

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Session ID: WRFAM03 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Forecasting Daily Streamflow to Maintain a Critical Minimum Streamflow Target

Abstract: Often referred to as conjunctive management, holistic administration of surface water and groundwater is imperative when the two systems are hydraulically connected, as changes to one directly impacts the other. For example, groundwater pumping and decreases to aquifer recharge due to changes in irrigation practices decrease aquifer water levels, in turn decreasing baseflow to streams. Changes to aquifer sources and sinks complicate the ability to forecast streamflow, challenging water administrators and water users to develop accurate conjunctive management tools. An accurate streamflow forecast months ahead of an irrigation season can help water managers plan and develop water use decision protocols in times where groundwater extraction is out of balance with aquifer recharge, a common situation in arid and semi-arid regions. To that end, we developed an approach to forecast daily streamflow using predictions of sources and sinks to the aquifer.

CEU Relevance Statement: Understanding processes and procedures to forecast water supply conditions will help managers manage their water supply. A general overview of analytical, statistical, and numerical water management procedures will be provided.

Author: Kevin Boggs **Author's Job Title:** Vice President

Email: kevin.boggs@jacobs.com**Phone:** 0

Organization: Jacobs

Primary Job Duties: I develop tools and designs to support drinking water infrastructure. My work primarily involves groundwater modeling and water production well design and maintenance.

Related Prior Employment:

Registrations or Certifications: professional/Registered geologist: Washington No. 2749; Oregon No. G2230; Idaho No. 1085; California No. 7678

Certified hydrogeologist: Washington No. 2749; California No. 1007

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Session ID: WRFAM04 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Source Water Protection Planning in an Agricultural Watershed

Abstract: The Clackamas River Water Providers (CRWP) is a coalition of municipal water providers in Oregon that draw drinking water from the Clackamas River to serve more than 300,000 people. The CRWP received a grant from the Natural Resources Conservation Service (NRCS) to develop a Source Water Assessment Plan (SWAP) for the portion of the Clackamas River watershed where the predominant land use is agriculture. This presentation will provide background on the basin and an overview of the analyses conducted as part of the SWAP development including a contaminant source and risk assessment, with an emphasis on agricultural sources of pesticides and nutrients. The completion of this SWAP paves the way for outreach to local producers and additional support from the NRCS to implement non-point source pollution mitigation strategies identified in the SWAP.

CEU Relevance Statement: This presentation is relevant to operators, engineers and managers because it discusses the engineering analyses conducted to identify and characterize risks to drinking water source water and strategies to reduce risk.

Author: Joanna Lewis **Author's Job Title:** Water Resources Senior Staff

Email: jmlewis@geosyntec.com **Phone:** 2405774602

Organization: Geosyntec Consultants

Primary Job Duties: I support municipal and industrial clients with a wide variety of water resources projects. These include watershed planning efforts, source water protection planning and risk analysis, hydrologic and hydraulic modeling, and stormwater design and evaluation.

Related Prior Employment: I served as a Water, Sanitation, and Hygiene Volunteer with Peace Corps Panama where my primary responsibilities included facilitating access to rural drinking water supplies.

Registrations or Certifications: Engineer in Training (EIT)

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Session ID: WRFAM05 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Drinking Water

Presentation Title: Tualatin River Drinking Water Source Area Impoundment Identification and Prioritization

Abstract: The Joint Water Commission (JWC) is the primary drinking water supplier in Washington County, Oregon, supplying safe drinking water for over 450,000 customers. The JWC has been working with the Tualatin River Watershed Council and initiated a project to reduce threats to their drinking water supply from surface water impoundments that can seed algal blooms downstream. The study focuses on identifying and characterizing impoundments within the Drinking Water Source Area (DWSA) which may contribute to the formation of cyanobacteria blooms (harmful algal blooms, or HABs) and which may endanger the drinking water supply. The study involved developing an inventory of the impoundment features with the DWSA, characterizing the risk factors associated with HABs for each impoundment feature, and then prioritizing the impoundments to coordinate outreach efforts. This presentation will discuss the analysis and key findings from the study and how the information will be used for next steps.

CEU Relevance Statement: This is relevant to operators, engineers and manager because it discusses the engineering analyses conducted to identify and characterize the impoundments and guide next steps on reducing risks to the water supply.

Author: Austin Orr **Author's Job Title:** Project Engineer

Email: AOrr@Geosyntec.com **Phone:** 9712715933

Organization: Geosyntec Consultants, Inc.

Primary Job Duties: Project Engineer serving as Project Manager and lead engineer executing and supervising technical work.

Related Prior Employment: Worked at Geosyntec since 2013, Prior employment at University of Utah

Registrations or Certifications: PE in OR and CA

American Water Works Association
Pacific Northwest Section

PO Box 872467
Vancouver, WA 98687
T 503-760-6460
F 360-254-0695
www.pnws-awwa.org

2023 Annual Conference, Kennewick, WA May 3 – 5

Three Rivers Convention Center 7016 W Grandridge Blvd. Kennewick, WA 99336

Session ID: WRFAM06 **Date:** 5/5/2023 **Length of Session:** 30 Minutes

Area of Relevancy: Both

Presentation Title: Upper Tualatin Wildfire Protection Plan

Abstract: This presentation will discuss the development of a Wildfire Protection Plan for the Joint Water Commission and Clean Water Services. This plan is intended to serve as a guidance document for management of key assets and resources to protect against and mitigate the impacts of wildfire. The talk will discuss the important resources and assets that the document identifies as vulnerable to wildfire, and actions that can be taken before, during, and after a wildfire event to mitigate the impacts. The plan builds on previous research conducted by Oregon State University Extension Service Fire Program as well as the experiences of local utilities impacted by the 2020 wildfire season.

CEU Relevance Statement: Wildfire is an increasing risk for water and wastewater utilities. This presentation will be highly relevant to managers seeking to understand how wildfire risk can be quantified, and for understanding potential impacts to water quality.

Author: Jacob Krall **Author's Job Title:** Project Engineer

Email: jkrall@geosyntec.com **Phone:** 5034128538

Organization: Jacob Krall

Primary Job Duties: Water resources and water quality evaluations. Numerical modeling of water temperature and water quality.

Related Prior Employment:

Registrations or Certifications: Member AWWA and ASCE, PE

PNWS-AWWA
Water 2023
Kennewick, WA • May 3-5

Attendee: <First Name> <Last Name>

Thank you for attending the 2023 PNWS-AWWA Annual Conference held in Kennewick, WA.
Your commitment to the water works industry was evidenced by your attendance at the workshops and sessions as listed below.

Below is the electronic record that was gathered by scanning your bar-coded name badge when you entered and left each of the sessions. While every effort was made for accurate accounting of the attendance, if you should find an error, please contact Lori Servin from Action Registration at lori@actionreg.com.

For your information, the maximum Continuing Education Units (CEUs) that you could have obtained for the entire conference was 2.0 drinking water in Oregon and Washington, including pre-conference seminars. For those who track Professional Development Hours (PDHs), 1 CEU = 10 hours instruction. If a listed course shows none, then it was not eligible for CEUs, but may still be eligible for PDHs.

We recommend you keep this letter for your files.

Thank you again for attending the 2023 PNWS-AWWA Conference, and we look forward to seeing you at our conference next year in Spokane, WA from May 1-3, 2024.

Date/Time	**Session Title**	**OR Water #«OR_Water_Ref» CEUs Earned**	**WA Water# «WA_Water_Ref» CEUs Earned**
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Kyle Kihs, Executive Director