



The PNCWA Spring Summit is a series of half-day workshops hosted by PNCWA committees. Two 4-hour workshops run concurrently during each session and there is a networking lunch provided on Thursday.

If viewing as a PDF, click each session below to view full description, speaker bios, and schedule.

PNCWA Spring Summit Overview Agenda

<p>Thursday, March 7 8 AM-12 PM</p>	<p>Communicating Biosolids</p> <p><i>After learning about biosolids, workshop participants will get to apply their knowledge to biosolids scenarios and receive feedback from a panel of biosolids professionals.</i></p>
	<p>Unlocking Your Potential: A Comprehensive Guide to Your Strengths</p> <p><i>Please join us for an energetic and highly interactive Gallup CliftonStrengths workshop where you will have an opportunity to gain greater understanding of your natural talents and how to use them to their fullest potential in your everyday life.</i></p>
<p>Thursday, March 7 1 PM – 5 PM</p>	<p>Building Equity into Our Water Infrastructure</p> <p><i>This workshop centers on integrating equity into water infrastructure projects with interactive presentations covering inclusive culture building, partnering with Indigenous communities, and engaging underrepresented communities.</i></p>
	<p>From Policy to Practice: Addressing Challenges of Emerging Contaminants</p> <p><i>Untangle the underwater web of emerging contaminants! Explore challenges faced by clean water utilities in monitoring and managing contaminants such as PFAS and 6PPD-q. Learn practical solutions, policy updates, and future trends in this interactive workshop.</i></p>
<p>Friday, March 8 8 AM – 12 PM</p>	<p>Expelling Gas: Practical Approaches to Reducing Greenhouse Gases</p> <p><i>What is the water sector's role in GHG emissions and what can the typical wastewater treatment plant in the US do to reduce emissions, save energy, and reduce their operating costs? This workshop will work with you to develop ideas and actions to save money, energy and reduce the carbon footprint of wastewater treatment plants.</i></p>
	<p>Aeration Control for Practitioners: Optimization of Aeration, Process, and Energy</p> <p><i>This workshop will focus on aeration system optimization at conventional and nutrient removal plants to meet current and future treatment demands.</i></p>

Spring Summit Workshop : Communicating Biosolids

Description of Workshop/Seminar

Biosolids are a complex topic that is often misunderstood by the public – which makes it important for wastewater professionals to understand and effectively communicate about biosolids. This workshop will begin with two hours of presentations covering PFAS in biosolids, risks of biosolids, end uses, incorporating biosolids into local systems, and some communication techniques. Presentations by Todd Williams, Cameron Clark, Dr. Sally Brown, and Catherine Gowan.

During the second half of the workshop, the audience will be split into small groups and each group will be given a biosolids scenario. These scenarios will be designed to allow participants to apply the information from the presentations in the first half of the workshop. Groups will discuss their scenarios, potential solutions/actions, and how to effectively communicate that information to the public. Each group will then present their ideas to the rest of the participants and a panel of biosolid specialists. After each presentation, the panel will offer feedback, additional solutions/actions, and examples of similar real-life scenarios. Panelists include Rich Dickerson and Cameron Clark.

Learning Objectives

After attending this workshop, participants should be able to apply the information presented about biosolids treatment options, end uses, risks, and local systems to real life scenarios. Participants should be able to come up with solutions to biosolid related issues and effectively communicate those solutions to the public.

Target Audience

This workshop will provide valuable information for any wastewater professional but is best suited for those who interact with the public (customer service, news/media, education, etc.).

Speakers

Todd Williams

- Company/institution: Jacobs
- Mailing Address: 2020 S.W. Fourth Avenue, Portland, Or 97201
- Phone Number: 804-833-9122
- Email: todd.williams3@jacobs.com
- Biography: Mr. Williams has a 43-year career in environmental engineering with operating and design experience and specific emphasis in residuals and biosolids management. Todd has supported dozens of biosolids and residuals management master plans in his career which include adaptive planning to manage emerging contaminants such as PFAS. Todd is an

engineering graduate of Virginia Tech and previously served as the Chair of the Water Environment Federation's Residuals and Biosolids Committee. He is currently the chair of NCOne Residuals and Biosolids Committee. Todd works out of Jacobs Charlotte, North Carolina office where he serves as Jacob's Global Principal for Residuals Resource Recovery and Biosolids Management.

- Presentation Title: "Impact of Several Biosolids Stabilization Technologies on PFAS"
- Presentation Description: This presentation will provide information regarding the measured concentrations of PFAS in wastewater solids, dried biosolids, pyrolyzed biosolids and biosolids based compost products. PFAS precursor analyte presence and concentrations in the input solids as well as the wastewater treatment process used to generate these products will also be presented. This information will be useful for those considering methods to reduce or eliminate PFAS in their own wastewater solids or other input wastewater solids at existing or planned biosolids management operations to ensure the lowest feasible PFAS concentrations in end products can be achieved.

Cameron Clark

- Company/institution: Carollo Engineers
- Mailing Address: 1200 5th Ave, Suite 900, Seattle, WA 98101
- Phone Number: 206-947-5573
- Email: cclark@carollo.com
- Biography: Cameron is a solids and energy technologies at Carollo. He specializes in anaerobic digestion, biosolids handling, and digester gas handling.
- Presentation Title: Biosolids Beneficial-Use/Disposal Practices and Processing Approaches
- Presentation Description: Overview of solids processing technologies in municipal wastewater treatment systems, including the quality of solids produced, beneficial end use options, and additional considerations.

Dr. Sally Brown

- Company/institution: University of Washington
- Mailing Address:
School of Environmental and Forest Sciences
University of Washington
Seattle, WA 98195
- Phone Number: 206-755-1396



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- Email: slb@uw.edu
- Biography: Sally Brown is a research professor at the School of Environmental and Forest Sciences at the University of Washington. She has a BA from Williams College and a MS and PhD from the University of Maryland in Soil Science. Her research focuses on different aspects of the use of biosolids and other residuals including risks associated with contaminants, in situ restoration of contaminated sites, carbon balance for different end use options, and integration of residuals use in green urban infrastructure. She is a Fellow and former Board member in the Soil Science Society of America, a former Board member in the US Compost Council, and was a two term member of the National Academy of Science Standing Committee on Soil Science. She was a member of the NAS committee on the bioavailability of contaminants in soils and sediments. She has co-edited two books on urban agriculture and is a member of the USDA Committee on Urban and Innovative agriculture.
- Presentation Title: Biosolids Use in Local Systems

Catherine Gowan

- Company/institution: King County Wastewater Treatment Division
- Mailing Address: 201 S Jackson St #500, Seattle, WA 98104
- Phone Number: 206-263-0746
- Email: cgowan@kingcounty.gov
- Biography: Cat Gowan is, first and foremost, a poop champion. She is also a member of the Resource Recovery team at the King County Wastewater Treatment Division, as their Research Coordinator. Previously, she was part of the Loop biosolids program, connecting all aspects of the program from science communication to permitting to land application. Never anticipating finding a home in wastewater, Cat got a BA in political science and spent the next decade: working as a bird biologist in central Texas, studying wolf management to earn her master's degree in the Human Dimensions of Natural Resource Management at the University of Washington, and conducting stakeholder research for a project turning poplar trees into jet fuel. She joined the Resource Recovery team in 2018 and has never looked back. Cat also serves on the Board of Northwest Biosolids, a regional trade association devoted to supporting biosolids research and education.

In her spare time, Cat makes sure the singers in her barbershop chorus and the curlers in her curling league know all about what happens when they flush their toilets.

- Presentation Title (draft): Communicating biosolids with the public



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Rich Dickerson

- Company/institution: JACOBS
- Mailing Address: P.O. Box 362, Council, Idaho 83612
- Phone Number: 678/858-3220
- Email: Rich.Dickerson@jacobs.com
- Biography:
 - BS degree Eastern Oregon University – Ag. Business Management
 - 30 Years with JACOBS/CH2M Hill
 - 20 Years as the Companywide Biosolids Compliance Coordinator

Agenda

8:00–8:05 am	Welcome and Introductions	Host Hannah Thomascall
8:05-8:40 am	Impact of Several Biosolids Stabilization Technologies on PFAS	Todd Williams
8:40-9:15 am	Biosolids Beneficial-Use/Disposal Practices and Processing Approaches	Cameron Clark
9:15-9:50 am	Biosolids Use in Local Systems	Dr. Sally Brown
9:50-10:25 am	Communication Biosolids with the Public	Catherine Gowan
10:25-10:40 am	Break	
10:40-11:10 am	Small group discussion of scenarios	Host Hannah will facilitate
11:10-12:00 pm	Presentations from each group and feedback from the panel	Host Hannah will facilitate



Spring Summit Workshop: Unlocking Your Potential: A Comprehensive Guide to your Strengths

Description of Workshop/Seminar

One key to success is to fully understand how to apply one's greatest talents and strengths in everyday life. A person's talents – those thoughts, feelings, and behaviors that come naturally – are the source of your true potential and power.

This energetic and highly interactive Gallup CliftonStrengths workshop will foster a greater opportunity gain greater understanding of people's talents and how they can use them them in your everyday life.

There are three discussion blocks during the workshop, each with its own set of activities. The blocks include:

1. CliftonStrengths Orientation and connecting strengths identification to the individual
2. Identifying the strengths in others and using that knowledge to successfully build and work within teams.
3. Understanding how to effectively use strengths in the individual's role and professional aspirations.

As part of your registration, individuals will receive a CliftonStrengths assessment code to complete the assessment prior to the workshop. The assessment code will pay for the Top 5 strengths. Individuals can make the choice to unlock the full 34 strengths, at an additional cost to them, should they wish to do so.

During our time we will explore how to develop talents into strengths and uncover how to aim talents at career goals. Ultimately the activities, discussion and discovery, will allow individuals to develop Strengths-based goals.

Learning Objectives

At the end of the workshop, attendees should be able to:

1. Relay the 4 Domains of CliftonStrengths and one primary attribute of each domain
2. Be able to recite their Top 5 Strengths and share one example of their strengths in action.
3. Have identified at least 1 CliftonStrength that they can use to achieve their professional goals in a team setting.

Target Audience

All PNCWA members are part of the target audience. Individuals of all levels of industry experience as well as area of focus (e.g., operations, engineering, administration) can apply

Speaker

Stephanie White

Stephanie is HDR’s Strategic Communications Director and Organizational Development practice lead. She is a skilled facilitator and gifted storyteller known for her energy, humor and extraordinary creativity in solving problems and motivating teams. In addition to her tenured background in infrastructure projects, Stephanie is a certified Gallup CliftonStrengths Coach. She uses the CliftonStrengths principles daily to bring out the best in herself and others.

Agenda

Time:	Item:
8:00-8:15 am	Welcome and Introductions
	<ul style="list-style-type: none"> • Agenda Overview • Introductions
8:15-9:30 am	Finding your Strengths
	<ul style="list-style-type: none"> • The Science of Strengths • Theme Overview • First Impressions
Activity	Name it, Claim it, Aim it
9:30-10:45 am	Strength in Teams*
	<ul style="list-style-type: none"> • How to Identify Strengths in Others • Building Partnerships
Activity	With whom do you partner
10:45- 11:45 am	Strengths in Action
	<ul style="list-style-type: none"> • How to use your strengths in your role • Setting goals from your strengths foundation
Activity	What you do Best Expectations
11:45- 12 pm	Wrap-up and Adjourn
*break will be provided at approximately 10am	

Spring Summit Workshop: Building Equity into Our Water Infrastructure

Workshop Description:

Infrastructure Introductory Session: Why Equity Matters

Members of the RSJ Committee will lead a discussion of why integrating equity into our water infrastructure projects is important. Attendees will:

- Learn about broader trends in equity in the region.
- Share equity policies and initiatives at their organizations and learn about initiatives at other agencies.
- Participate in an exercise to explore the limitations of individual experience

Topic: Building Inclusive Organizational Culture, with Marcela Diaz-Garcia

This session will focus on building inclusive culture inside utility and private organizations. The session will draw on Marcela’s native ancestral practice of restorative circles and actively engage participants through a learning process. If the workshop is confirmed, additional information and learning objectives will be provided by Marcela.

Topic: Partnering with Indigenous Communities, with Serina Fast Horse

This session will focus on building reciprocal partnerships with Indigenous community. Serina will share the historical context for land and water sovereignty and the land back movement. Attendees will learn about case studies of successful utility partnerships with local indigenous communities, focusing on applications of Indigenous Traditional Ecological and Cultural Knowledge (ITECK).

Panel Session: Working with Community Based Organizations: Turning Community Input into Community Outcome

This panel session will be a collaborative session in a Q&A format focused on centering public outreach gained from underrepresented community members and community-based organizations. Panelists will share examples of effective engagement and the resultant outcomes. Panelists and attendees will also share lessons learned from efforts that may have been well-intentioned, but did not achieve the desired community outcomes.

Learning Objectives

Attendees will:

- Provide participants with helpful tools for building a stronger culture of equity within their organizations.
- Explore how restorative practices can be applied to address conflicts, build relationships, and promote inclusivity.
- Understand how to engage Indigenous community in ways that create reciprocal

benefits for utilities and Indigenous community members.

- Be able to describe examples of positive partnerships between utilities and Indigenous communities.
- Understand best practices for engaging underrepresented communities.
- Describe lessons learned from past utility engagement with underrepresented communities.

Target Audience

- Leaders seeking to better understand and implement equity practices within their organization.
- Utility and consultant professionals tasked with developing and implementing equitable practices on capital improvement projects.
- Any water professional interested in improving water utilities' ability to create substantive change in the communities they serve.

Speakers

Building Inclusive Organizational Culture

Marcela Diaz-Garcia

marcela@thevidaagency.com

ESJ Director, The Vida Agency

Seattle, WA

Marcela has been shaping the public conversation about Equity and Social Justice in the Northwest for the last 20 years. As a grassroots leader, she is renowned and respected throughout Washington State, and works with public and private institutions, non-profits, community-based organizations, and multicultural communities. Her native ancestral practice of restorative circles leads TVA's clients through transformative processes to foster a positive and holistic environment for everyone. Whether in a workplace or community, her process helps encourage trust, nurture relationships, and create a safe space for change. As an expert in diversity, equity and inclusion practices and strategies, and conflict mediation, her goal is to advocate for others and to leverage diversity to promote a growth mindset. She has led projects for King County, Whatcom County and City of Seattle, among others, where her expertise in conflict mediation has helped to heal discord, address institutional biases, and resolve differences.

Partnering with Indigenous Communities

Serina Fast Horse

serina@kimimelaconsulting.com

Owner, Kimimela Consulting

Portland, OR

Serina Fast Horse is Lakota and Blackfeet and a lifelong member of the urban Indigenous community of Portland. Her educational background is interdisciplinary but focused on social and environmental matters from an Indigenous perspective, including a Bachelor of Science degree in Indigenous Nations Studies and Community Development. She has years of experience working with the City of Portland



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and other public agencies on collaborative partnerships with Indigenous community, including serving as the tribal relations intern for the former Tribal Relations office. She serves many roles in her community and is recognized as a young emerging leader.

Panel: Working with Community Based Organizations/ Turning Community Input into Community Outcomes

Facilitator: PNCWA RSJ Committee

Panel Members:

Fabiola Casas

fabiola@espousalstrategies.com

Senior Community Engagement Manager, Espousal Strategies Portland, OR

With over 15 years of experience, Fabiola Casas is a dedicated professional who has worked with multicultural communities in Portland, Seattle, New York, Chicago, London, and Togo (West Africa). Specializing in group facilitation, diversity, equity, and inclusion training, strategic planning, and cross-cultural, trauma-informed communication, Fabiola currently serves as a Senior Community Engagement Manager at Espousal Strategies, LLC. In this role, they are committed to advancing equity initiatives and enhancing community engagement for local public projects.

Allison Carvalho

Allison@theformationlab.com

Associate, The Formation Lab
2823 SE Taylor Street, Portland, OR 97214

Allison Carvalho is a former domestic worker, housing organizer, curriculum designer, facilitator and Chief of Staff turned strategy consultant. She has worked with small businesses, academic institutions, residents, nonprofits and governments to develop strategic partnerships, equity strategies, community engagement opportunities and communication plans. Equity, accessibility and healing are at the heart of her work and the communities she comes from. Allison has designed workforce trainings for public assistance recipients in New York City, led affordable housing policy and small business retention programs in Chicago and led public private partnerships for nonprofits and public agencies in Oregon. As an empathetic but direct facilitator with experience in non-profits, small business development, public policy and public relations, Allison has a knack for identifying and improving equity across sectors.

Erich Pacheco

Economic Equity and Policy Manager; Public Works Charter Transition
Strategy Lead Portland Water Bureau

Erich Pacheco is a solutions-driven, multi-lingual professional working on the nexus of equity, economic development, and natural resource management. He is a systems thinker and a pragmatic change leader with expertise in strategic management, prioritization, inclusive planning, and values-centered and data-informed decision-making. Erich brings sixteen years of experience in fostering organizational change and building partnerships for equitable economic development and



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environmental stewardship in over 25 countries, including his current work with Portland Water Bureau and on City-wide equity initiatives.

Agenda

1:00-1:15	Intro: Welcome and Introductions	RSJ Member
1:15-2:10	Speaker: Building an Inclusive Culture	Marcela Diaz-Garcia, The Vida Agency
2:10-3:00	Speaker: Partnering with Indigenous Communities	Serina Fast Horse, Kimimela Consulting
3:00-3:15	Refreshment Break	
3:15-4:45	Panel: Turning Community Input into Community Panel Members:	Facilitator: RSJ Committee Member
	<ul style="list-style-type: none">○ Fabiola Casas○ Allison Carvalho○ Erich Pacheco○ Other	
4:45-5:00	Closing	RSJ Committee Member



Spring Summit Workshop: From Policy to Practice: Addressing the Challenges of Emerging Contaminants

Description of Workshop/Seminar

Clean water utilities are increasingly tasked with management of new and previously unknown contaminants in our built and natural environments. This workshop aims to provide attendees with a broad understanding of how emerging contaminants are impacting utilities and how utilities can better equip themselves to manage these contaminants. We will hear a roundup of the “state of the science,” to include ongoing research efforts and emerging trends, provide education regarding practical management methods (monitoring, treatment, etc.), provide updates from WEF regarding national policy positions, offer insights from state level policy insiders, and touch on best practices related to communicating risks to the public. Under this umbrella, we expect to discuss current contaminants of emerging concern such as PFAS and 6PPD-q and also translate how we can take what we’ve learned from these issues to be better prepared for emerging contaminants of the future. The workshop will include interactive components such as audience polling to gauge their understanding, experience, and questions related to the topic at hand. We will also keep the topic light by engaging our audience in PFAS and emerging contaminants trivia to see what they really know!

Learning Objectives

The workshop aims to provide attendees with a few key learning objectives:

1. Gain an understanding of the current state of emerging contaminants, broadly as well as those specific/important to the Pacific Northwest region
 - a. Workshop attendees will delve into the current state of emerging contaminants through a diverse array of perspectives, from Dr. Sally Brown's sustainable waste research to insights from regional experts like Dr. Katie Holzer and Torrey Lindbo from the City of Gresham. The focus on the Pacific Northwest ensures a nuanced understanding of region-specific challenges, enabling participants to apply contextually relevant solutions in their professional roles.
2. Learn about the fate and transport of emerging contaminants
 - a. Katie Holzer’s contributions from the City of Gresham will illuminate the intricate dynamics of the fate and transport of emerging contaminants. Coupled with Scott Mansell’s perspectives, attendees will gain insights into the movement and behavior of contaminants in water systems, empowering them with knowledge crucial for effective monitoring and mitigation strategies.
3. Explore how utilities can best manage contaminants

- a. David Clark's wealth of consulting experience will contribute strategic insights, offering attendees actionable methods for monitoring, treatment, and overall utility management in the face of emerging contaminants.
4. Discover technologies being developed or currently implemented to treat contaminants
 - a. Workshop participants will discover innovative solutions, gaining a forward-looking perspective on technology advancements in wastewater treatment.
5. Obtain insight on policy and lawmaker approaches to managing contaminants
 - a. Insights from Steve Dye's role at the Water Environment Federation will provide workshop participants with an understanding of policy and lawmaker approaches to managing contaminants. Attendees will gain insights into legislative landscapes, facilitating informed decision-making in their roles within the water sector.
6. Determine how utilities can best communicate risk and safety of contaminants to the public
Participants will learn how utilities can transparently and responsibly communicate information about contaminants to the public, addressing concerns and fostering a sense of safety within their communities.

Target Audience

Our target audience is industry professionals that need to maintain a basic understanding of water quality issues. Our goal is to make this workshop approachable for attendees that may have minimal exposure to this topic, but need to raise their awareness. We also want to bring together thought leaders in this area to begin a dialogue about how we apply lessons learned from current issues to a forward-looking approach towards management of issues to come.

Speakers

- **Dr Sally Brown, Ph.D. | University of Washington**

Sally Brown is focused on identifying resources in wastes—turning discards from homes into a tool for sustainability. She has worked on studies involving soil health, climate change mitigation, biosolids recycling and wastewater treatment. At the root of her work, she believes that soil amendments, in the form of residuals from different industries (composts, for example), offer the potential to help us to live in a more sustainable manner. Her goal is to turn cities green by making the use and re-use of wastes part of our daily vocabulary. She has received a number of awards for her work, including the Rufus Chaney Research Award from the U.S. Composting Council, special recognition from the Environmental Protection Agency, and the Green Globe Award for outstanding achievement in environmental stewardship. She is a Fellow in the Soil Science Society of America and was a member of the National Academy of Science Committee on Soil Science.

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- **Dr Scott Mansell, Ph.D. | Clean Water Services**

Scott Mansell is a principal engineer in the Research and Innovation Program at Clean Water Services.

mansells@cleanwaterservices.org | 503-681-4466

- **Dr Katie Holzer, Ph.D. | City of Gresham**

Katie Holzer is a Watershed Scientist with the City of Gresham. Torrey Lindbo is the Water Resources Science & Policy Manager at the City of Gresham

Katie.holzer@greshamoregon.gov | 503-618-2377

- **Torrey Lindbo | City of Gresham**

Torrey considers himself fortunate to have spent the past 16 years at the City of Gresham, where he focuses on stormwater management related to MS4 and UIC permit compliance. His current work focuses on updating stormwater development standards and helping identify and implement retrofit strategies to reduce pollutant loads from existing development. As a former ACWA Groundwater committee co-chair (he is currently the ACWA Board Chair), he has worked closely with DEQ and other Oregon permittees to develop implementable stormwater compliance strategies.

Torrey.lindbo@greshamoregon.gov

- **Dr Tyler Radniecki, Ph.D. | Oregon State University**

Tyler Radniecki's research interests include sustainable biological wastewater treatment processes, stormwater treatment by green infrastructure and wastewater-based epidemiology. Of particular interest is understanding how to shape the microbiomes in these systems and how microbiome shape affects treatment performance. Additional interests include using wastewater microbiomes to predict disease burdens in a community. Current projects include the shaping of anaerobic digester microbiomes to enhance methane production, creating advanced stormwater bioswales to remove emerging contaminants and predicting community disease burdens through the monitoring of SARS-CoV-2 and other pathogens in wastewater.

Tyler.radniecki@oregonstate.edu | 541-737-7265

- **David Clark, PE | HDR Engineering**

David Clark is Senior Vice President and serves as HDR Engineering, Inc.'s Market Sector Director for Wastewater. He has more than 40 years of consulting experience and currently leads strategic efforts in understanding wastewater regulatory issues as they affect wastewater utilities. Mr. Clark was the regulatory liaison for the Water Research Foundation (WRF) Nutrient Challenge research program and the lead author on regulatory issues. He is



the Principal Investigator for the WRF Holistic Approach to Improved Nutrient Management research project (WRF4974).

Dave.clark@hdrinc.com

- **Steve Dye | Water Environment Federation**

Since 2011 Steve Dye has played a central role within the Government Relations Department of the Water Environment Federation (WEF), first as Legislative Director, and currently as Senior Director of Government Affairs. Steve represents the Federation before Congress and Executive Branch agencies, monitors key legislation and regulatory policies, develops and executes legislative and regulatory strategies and proposals, and maintains WEF’s excellent reputations before public and private interests in the water sector. He also leads WEF’s Water Advocates Program, a grassroots program designed to train and mobilize WEF members to advocate for water issues before federal, state, and local officials.

- **Holly Tichenor, Brown & Caldwell**

Holly Tichenor is the Management Consulting Practice Leader for Brown and Caldwell.

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Agenda

Time	Topic	Speakers
1:00-1:10	Workshop introduction & interactive poll & Emerging Contaminant Trivia	Workshop Chairs
1:10-1:50	PFAS toxicology primer	Sally Brown, UW
1:50-2:15	Monitoring of CECs in recycled water land applied natural areas	Scott Mansell, CWS
2:15-2:40	Retaining More Stormwater and Protecting Water Resources by Infiltrating Deeper	Katie Holzer, City of Gresham/ Torry Lindbo, City of Gresham
2:40-3:05	Proactive PFAS Management for Wastewater Utilities	Dave Clark, HDR
3:05-3:15	Break	
3:15-3:35	Presentation on Emerging Technology treating CECs	Tyler Radniecki, OSU
3:35-3:55	Federal policy update, WEF positions	Steve Dye
3:55-4:35	State policy updates and how to approach your lawmakers	Steve Dye
4:35-4:55	Communicating risk and safety to the public	Holly Tichenor
4:55-5:00	Close	Workshop Chairs



Spring Summit Workshop: Expelling Gas: Practical approaches to reducing Greenhouse Gases

Description of Workshop/Seminar

For over 400 years, our energy use and infrastructure has centered mainly on burning the remains of living things that died a few hundred million years ago. In the next 50 years, there will be a profound shift towards energy derived from sources that don't involve combustion. It is imperative that greenhouse gas (GHG) emissions are reduced globally. What is the water sector's role in GHG emissions and what can the typical wastewater treatment plant in the US do to reduce emissions, save energy, and reduce their operating costs?

This workshop will explain the big picture of the energy transition and the magnitude of the issue, both regionally, nationally, and internationally.

Based on the collective experience with greenhouse gas inventories for wastewater treatment facilities, we will describe how the inventory protocols align with the steps in the treatment process, as well as describe the relative magnitudes of GHG emissions within a plant and within an organization overall.

Participants will work with the experienced team in small groups to evaluate different measures within the plant process to reduce greenhouse gases. We will focus on aeration, nutrient removal, and solids.

Back in a large group setting, we will explore where changes and upgrades can have the biggest impact on GHG emissions.

We'll then discuss how water and wastewater facilities and organizations can play an active role in helping the massive transformation to reducing greenhouse gases starting with low- and no-cost changes that can be implemented in facilities to reduce energy use. This helps guide operators deploy renewables more rapidly (and we'll explain how) while lowering the plant's monthly costs. We will discuss how longer-term investments, including optimization upgrades, can help lower emissions while improving operations. We will discuss how major upgrades, replacements, and expansions can be ranked for GHG impact as well as positioned to take advantage of the funding available through our friends IRA and BIL.

Wastewater facilities and collection systems can also be active players in the load-shifting and load-shedding space, and we'll share ideas and practices from facilities that have participated in demand management programs. Again, this helps the grid by reducing localized congestion, and it usually

provides revenue, too. On a more capital-intensive note, facilities that utilize anaerobic digestion have a window in time now where renewable gas projects can be incredibly cost-effective – and may be one of the last places where we will see combustion continue. Throughout the presentation, we will share some of the more interesting and diverse projects that have been initiated across the country. We will also discuss some "coming attractions" in the energy and greenhouse gas space that could have impact on your bottom line.

Learning Objectives

After attending the workshop, participants will have a better understanding of our industry's place in the energy transition already underway and a better understanding of where and how we create GHG emissions. We guarantee leaving with at least five ideas implementable immediately and five more to consider as part of a capital improvements plan. Participants will share out five ideas to the group at the end of the workshop.

Target Audience

Wastewater Plant Managers
Wastewater Operators
Process Analysts
Process Engineers

Speakers

John Phillips, Chair, Parametrix

John has been working in the water industry since 1999 and is the Director of Integrated Watershed Management with Parametrix. He has experience in emergency planning, long range planning, climate change science, climate adaptation, wet weather issues, green infrastructure, and co-benefit analysis. John has an extensive background in climate adaptation and applying climate science to proactive actions. He worked with the University of Washington Climate Impacts Group, scoping specific studies to better understand how science impacts on urban planning and utility planning.

David Ponder, Co-Chair US Water Alliance (Climate Director)

David Ponder is the Director of Climate Action at the US Water Alliance, a national nonprofit organization advancing policies and programs that build a sustainable water future for all. David leads efforts to address climate change, increase resilience, and decrease greenhouse gas emissions in the water sector. Prior to joining the Alliance, David worked for the Metropolitan Council, where he was responsible for managing sustainability initiatives such as greenhouse gas reporting, climate action planning, and ensuring infrastructure resilience while incorporating environmental justice considerations. David also worked as a Sustainability Consultant at Good Company, supporting decision-makers in the public and private sectors in improving sustainability outcomes. Earlier in his

career, David worked as a grassroots organizer advocating for energy, environmental, and consumer issues. He is also the Chair of the Water Environment Federation’s GHG Focus Group. David holds a Master of Public Administration and a BA in Interdisciplinary Studies with a focus on sustainable development from Appalachian State University.

Anne-Louise F. Christensen, Senior Commercial Advisor, Water, WTA, Embassy of Denmark in the USA

Anne-Louise leads the Danish Water Technology Alliances government to government and strategic partnerships, water, and environmental policy knowledge exchange, working to further policies and solutions that are good for the climate, the environment, and Denmark.

Claudia Denton, GHG Lead Analyst, Good Company a Division of Parametrix

Claudia is an experienced climate change professional providing clients with technical research and analysis in both the public and private sectors. Project work includes 35 GHG inventories, CAP and mitigation analysis, life-cycle analysis, and management/technical tool development. She has a vested interest in diversity, equity, and inclusion as the former equity procurement lead at the City of Eugene. Claudia is highly outcome-oriented and flexible, as well as a skilled communicator. She acts as a GHG tool developer for Good Company’s carbon calculator for operations and communities and recommends and implements updates.

Layne McWilliams, Principal Energy Consultant, Parametrix

Layne works with cities, utilities, designers, and regulatory bodies to pave the path for implementation of projects and adoption of Strategic Energy Management (SEM). He identifies and evaluates energy conservation and carbon reduction opportunities within wastewater collection, treatment, disposal, and reuse infrastructure. Layne has a diverse background in municipal engineering, construction, and law. With such experience, he brings multiple tools to the climate and energy puzzle, particularly where wastewater regulations, operations, and technical matters intertwine. He has completed over 80 wastewater efficiency, plant optimization, and energy audit projects in the last decade.

Agenda

08:00-08:20	Welcome & Ice Breaker	John Phillips
08:20-08:55	US Water and Reducing GHG	David Ponder
09:00-09:30	Achieving Carbon Reduction in Denmark	Anne-Louise Christensen
09:30-09:55	Energy and GHG in PNW	John Phillips
10:00-10:15	Refreshment Break	
10:20-11:10	How to Save Yourself (Interactive)	Claudia Denton
11:10-12:00	Five Ideas & Wrap Up (Interactive)	All participants

Spring Summit Workshop: Aeration Control for Practitioners: Optimization of Aeration, Process, and Energy

Speakers / Facilitators:

1. Adam McClymont, Operator IV, Jacobs; Adam has 17 years of experience and is currently an Operations Specialist with Jacobs. He is a wastewater treatment plant operator and was previously the plant manager for the Cities of Gresham and Spokane. He has recently performed a series of plant visits and assessments for a number of treatment plants in the Puget Sound as part of the nutrient removal general permit plant assessments.
2. Jeff Semigran, PE, City of Portland, Bureau of Environmental Services (BES); Jeff has 9 years of experience as both a consultant and as an engineer and project manager in the public sector. He is currently working as a Process Engineer for the City of Portland, BES and is working on several improvement projects to their secondary treatment system including pilot testing of new low-pressure membranes.
3. Anne Conklin, PhD, PE; Carollo; Anne has been with Carollo Engineers, Inc. for 19 years and leads Carollo's wastewater process group. Through her time at Carollo, Anne has worked with clients throughout the northwest on facility planning, design and optimization projects. Most recently, Anne led the process evaluation for a large blower replacement project for the City of Portland.
4. Elizabeth Goltiao, EIT, Parametrix; Elizabeth brings 4 years of experience with Parametrix working on the design and construction management of aeration and process system improvements. She has performed air and gas modeling for several plant upgrade projects.
5. Jennifer E. Murphy, PE, CSE; Parametrix; Jen serves as the Treatment Practice Lead at Parametrix, Chair of the MRRDC I&C workgroup, and Co-chair of the Member Services Committee for PNCWA. She has 17 years of experience as a Consultant and Contractor and has helped design, construct, integrate, start-up, and optimize aeration and treatment systems at several US WRRFs with flows from 50,000 gallons per day to 800 MGD. Jen has helped organize several workshops, short-schools, and presentations. She was a facilitator of last year's WEFTEC workshop on "Aeration Control for Practitioners: Optimization of Aeration, Process, and Energy".

Workshop Description: Aeration control is a complex process control system in Water Resource Recovery Facilities. Proper aeration control drives nitrification reliability, nutrient removal

performance, sludge settleability, and energy costs. Many facilities operate inefficient aeration control systems that lack accuracy. Proper design, programming, tuning, and set point selection requires a knowledge of treatment process dynamics, mechanical system components, control programming options, instrumentation, and set points as well as how all of these components interact and communicate with each other.

This workshop is based on a similar successful workshop provided at WEFTEC 2023 and is tailored to wastewater operators, EI&C, design, mechanical, SCADA, and process engineers, and equipment suppliers to practice identifying causes for common aeration control inefficiencies and systematic methods for tuning and optimizing control accuracy to improve process performance and lower energy costs. While many aeration control systems could be improved through capital replacements (smaller blowers, better control valves and actuators, etc.) this workshop will emphasize opportunities facility staff has to maximize aeration control performance through no or low-cost improvements, such as system tuning, setpoint selections, programming, or operational changes and instrumentation placement.

This workshop is set up in three main parts:

1. *Section 1 - Aeration Control Systems Components*

In this section participants will see all relevant components of aeration systems and understand how improper coordination and communication among these components can result in control inefficiencies and how to overcome these common issues. This will be done through 4 rotating breakout stations focused on several system components.

2. *Section 2: A Systematic Approach to Optimizing Aeration Control Performance*

Based on gained knowledge in the earlier section(s), participants will be guided through several scenarios, analyzing real field data examples to identify common aeration control issues and learn how to systematically implement appropriate solutions. The final selection of examples analyzed in this session will be informed by the priority issues of participants shared at the beginning of the workshop.

3. *Section 3: Selecting and Implementing Aeration Control Approaches*

Participants will be guided through facilitated modeling exercises to understand the difference between different conventional and advanced aeration control approaches, the relevance of instrumentation sensors and their placement in the process, and how to interpret monitoring data to diagnose control inefficiencies.

At the conclusion of this workshop, participants will be able to analyze aeration control systems for inefficiencies, identify the contributing factors for inefficiencies and apply formulaic approaches to optimize aeration control performance challenges in the field or in their designs.

Learning Objectives:

At the conclusion of this workshop, attendees will be able to

- Identify root causes of suboptimal aeration control systems,
- Apply solutions for common programming, setpoint, and tuning challenges, and
- Determine how infrastructure system components (instruments, valves, blowers, controllers) must properly communicate and be designed for aeration systems to perform optimally.

Specific learning objectives under each workshop section are summarized below:

Section 1

- Identify components of their aeration control system and their types of equipment.
- Summarize common issues with each component, how system components are mechanically or electrically (controls) connected and interdependent, and identify how it impacts overall performance.
- Classify system problems that can be solved through control / operations approaches, which issues require investments, and potential solutions for issues related to equipment / system limitations where feasible.
- Identify issues with representative systems and determine appropriate troubleshooting actions.

Part(s) 2 and 3:

- Define traditional and emerging aeration control approaches for activated sludge.
- Identify well-functioning control systems and understand how to troubleshoot sub-optimal systems.
- Classify and describe the differences, benefits, and limitations of blower control approaches when coupled with different aeration control strategies (e.g., constant header pressure, constant air flow, MOV)

Target Audience:

- WRRF staff (operations, SCADA, programming, mechanical) who would like a more complete understanding of how to improve aeration control, process, and energy performance at their facilities.
- Design engineers (mechanical, process, electrical, instrumentation and controls (EI&C)) engaged in the planning, optimization, and design of wastewater treatment facilities.
- Aeration system component vendors, suppliers, and developers who seek to better understand the application and interconnectedness of aeration system components.
- Energy-efficiency professionals interested in implementing energy-efficiency and power-demand reduction measures at wastewater treatment facilities.

<u>Exercise Duration</u>	<u>Total Duration</u>	<u>Description / Format of Activities</u>	<u>Facilitator</u>	<u>Learning Goal</u>
15 mins	15 mins	INTRODUCTIONS: Presentation of Agenda, Facilitator Introductions; Participant sharing of background and personal goals for the workshop.	Jen Murphy	The experience of workshops participants and the knowledge that participants and facilitators bring.
1 hour, 35 mins		PART 1: Major Aeration System Components and Considerations Participants break out into small groups and rotate through each of the below stations. Stations will be provided with a series of posters to help facilitate discussions and walk through individual components. If needed, certain components may be combined to limit the decrease the number of stations.		Familiarity and deeper knowledge of each system component.
15 mins	30 mins	Station 1: Diffusers (may be combined with air distribution valves and air flow measurement) <ul style="list-style-type: none"> • Minimum airflow, determining actual air mixing requirements. • Periodic mixing cycles, on-off control, etc. • Impact of bubble size, low pressure loss diffusers, alpha factor, etc. 	Jeff Semigran	Importance of various operating parameters, impacts of process on diffuser performance, diffuser layout and configuration limitations, and no/low cost means of optimization.
5 mins	35 mins	Transition Time		
15 mins	50 mins	Station 2: DO and Nutrient Probes and Analyzers, control panels <ul style="list-style-type: none"> • Impact of limit of detection, responses times, sample frequency, calibration frequency. • Different types of probes (ISE, IR, etc.), general application and limitations. • Cleaning frequency, common issues, etc. 	Adam McClymont	General probe types and their limitations. Impact of the process and probe location on performance.
5 mins	55 mins	Transition Time		
15 mins	1 hour, 10 mins	Station 3: Control System Configurations and Types <ul style="list-style-type: none"> • Control system hierarchy and configuration, impact on troubleshooting • Transmitters ranges • Local correction factors • Most open valve control, header pressure control, etc. 	Jen Murphy	Control system arrangements and configurations, common issues during commissioning and component replacement, tuning limitations of different system configurations
5 mins	1 hour, 15 mins	Transition Time		

<u>Exercise Duration</u>	<u>Total Duration</u>	<u>Description / Format of Activities</u>	<u>Facilitator</u>	<u>Learning Goal</u>
15 mins	1 hour, 30 mins	Station 4: Station 1: Blowers, headers, and air distribution <ul style="list-style-type: none"> Air valve types, accuracy, tuning solutions, intermittent aeration Turndown limitations and cost-effective mitigation strategies Blower energy efficiencies and adequately designed VFDs Pressure distribution and aeration system choke points 	Anne Conklin	Tradeoffs of different types of control valves, key parameters impacting air measurement performance. Sizing limitations and operation of multiple blowers on a common header, impacts of surge and transition points.
50 mins		PART 2: A Systematic Approach to Optimizing Aeration Control Performance Identification of common tuning challenges and corrective actions for systematic tuning – Analysis of real plant data, disclosed in a progressive manner. After each portion of data is revealed, groups will talk through identification of potential issues and where additional data may be helpful.		General approach to application of individual component knowledge to system troubleshooting.
10 mins	1 hour, 40 mins	Introduction presentation to general troubleshooting process, common starting places, and method of information gathering.	Anne Conklin	
20 mins	2 hours	Case Study 1: Hunting of controlled variables (discharge pressure, blower airflow rate, basin/zone airflow rate, DO concentration) and identification of potential tuning modifications.	Jen Murphy and Anne Conklin	The importance of data in determining the complete picture of aeration system performance and impact of an incomplete picture.
15 min		<u>BREAK</u>		
20 mins	2 hours, 35 mins	Case Study 2: The use of probes AND lab data on operation and optimization of an aeration basin operating to perform biological nutrient removal (BNR).	Adam McClymont and Kitsap County	The importance of operator observations, lab data, and SCADA data in developing a complete picture of aeration system performance.

<u>Exercise Duration</u>	<u>Total Duration</u>	<u>Description / Format of Activities</u>	<u>Facilitator</u>	<u>Learning Goal</u>
1 hour, 5 mins		PART 3: Simulation Exercise: Impact of Aeration System on Energy and Process Each table or group of participants if tables are not available, will be paired up with a facilitator running simulation software to walk through exercises to show the impact of various design or control decisions on system performance. Each simulation exercise will allow participants to modify a handful of system parameters and the resulting effluent water quality and system energy usage will be noted by the participants. Participants will “compete” to see who can achieve the highest effluent quality (lowest BOD, Total Inorganic Nitrogen, etc.) and the lowest energy usage.		How to apply knowledge gained in the previous two exercises to troubleshoot and/or optimize system performance for process and/or energy.
5 mins	2 hours, 40 mins	Introduction to Simulation Exercise, goals, and objectives. After each exercise the effluent quality and energy usage will be reported to the group.	Jeff Semigran	Understand that different plants and systems may optimize systems differently. System performance must be catered to the goals of each facility.
15 mins	2 hours, 55 mins	Exercise 1: Impact of tuning parameter modifications on valve positions and aeration demand.	All serving as facilitators of exercises.	Signs of a poorly tuned system and identification of impact of poorly chosen PID gains.
5 mins	3 hours	Report out of exercise 1.		
15 mins	3 hours, 15 mins	Exercise 2: Operation of aeration system with Most Open Valve vs. Constant Header Pressure Control.	All serving as facilitators of exercises.	The impact that most open valve control can have on energy usage and system performance.
5 mins	3 hours, 20 mins	Report out of exercise 2.		
15 mins	3 hours, 35 mins	Exercise 3: Number and location of DO probes within a plug flow reactor, impact of Ammonium Based Aeration Control (ABAC).	All serving as facilitators of exercises.	Optimal location if DO probes are limited or if there is limited time for calibration.
5 mins	3 hours, 40 mins	Report out of exercise 3.		

<u>Exercise Duration</u>	<u>Total Duration</u>	<u>Description / Format of Activities</u>	<u>Facilitator</u>	<u>Learning Goal</u>
20 mins	4 hours	<u>CLOSING</u> : Brief overview of continued advancements in aeration control and participant report out of lessons learned.	Jen Murphy and Anne Conklin	Items learned by participants shared more broadly. Awareness of continued advances in aeration control.