wef Education & Training Events

RESIDUALS & BIOSOLIDS *AND* INNOVATIONS IN TREATMENT TECHNOLOGY CONFERENCE

CONFERENCE PROGRAM

WEF.ORG/RBITT

MAY 6-9, 2025
BALTIMORE, MD

Residuals & Biosolids *and* **Innovations in Treatment Technology Conference 2025**

May 6-9, 2025
Baltimore Convention Center
Baltimore, Maryland

www.wef.org/rbitt
#RBITT

Download the conference mobile app using this QR code for the most up-to-date version of the program. Sponsored by Jacobs.

Complimentary Wi-Fi is available in convention center meeting rooms, lobbies, and public areas on the 200 - 400 levels via "Guest", no password required.

This conference is hosted by the Water Environment Federation in cooperation with the Chesapeake Water Environment Association.

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CONFERENCE COMMITTEES

WEF would like to thank our conference co-chairs, the members of our conference steering committee and program committee, and all those who reviewed abstracts for their contributions to the technical program. We would not be able to produce high quality events year after year without the assistance of dedicated volunteers. Thank you!

Leon Downing
Black & Veatch
ITT Co-Chair

Pam Racey
Synagro
RB Co-Chair

Elsayed Elbeshbishy
Toronto Metropolitan University
RB Co-Chair

Tanja Rauch-Williams
Metro Water Recovery
ITT Co-Chair

To see the full list of volunteers who helped create the technical program, please visit www.wef.org.rbitt and view the online program.

SOCIAL MEDIA POLICY

WEF strongly encourages the use of social media to share your experiences at our event. This includes sharing interesting quotes or information, taking pictures with colleagues, and using the event hashtag: #RBITT. However, to protect intellectual property, videotaping, filming, or live-streaming of any technical session is prohibited. Any participant violating this policy must relinquish the media and may be removed from the conference. Also, promotional or commercial use of photographs taken at WEFTEC and other WEF conferences is strictly prohibited. If you are interested in content, materials, or products, please consider talking to the speaker who may provide the information or grant permission.

CODE OF CONDUCT

WEF is committed to providing a professional, safe, and welcoming environment during its in-person and virtual events for all participants. WEF expects all attendees, moderators, panelists, and speakers to uphold our commitment to diversity and inclusion by helping us provide a positive environment for everyone.

As a participant you agree to the following:

- To treat all individuals with respect and create a collegial, inclusive, and professional environment.
- To value a diversity of views and opinions by communicating openly with respect for others.
- Not to verbally abuse any individual or to discriminate, harass, or intimidate on the basis of gender, race, gender identity and expression, sexual orientation, physical or mental disability, physical appearance, age, religion, national origin, veteran status, citizenship, or professional rank.

Anyone requested to stop unacceptable behavior is expected to comply immediately. WEF management may take any action deemed necessary and appropriate, including removal from the event (and any remaining portions thereof) without warning and without refund of registration fee.

Additionally, if you are a WEF member, you agree to uphold the WEF Member Code of Conduct while attending WEF events.

Reporting Concerns
To report a Code of Conduct violation, you may email the WEF Executive Director, at: **executivedirector@wef.org.**

WEF Events Code of Conduct

WEF Member Code of Conduct

CONFERENCE SAFETY AND SECURITY

Baltimore Convention Center
1 West Pratt Street, Baltimore, MD 21201

- **CALL 911** for life-threatening situations and fire (smoke, flames).
- For non-life-threatening first-aid occurrences or security emergencies, contact **Public Safety** at 410-649-7055.
- **First Aid** will be located in the **Charles Street Lobby.**
- The official evacuation assembly area is outside the convention center across the street, depending on where you exit. Baltimore Convention Center staff will keep you informed of the evacuation status and notify you when the facility has been cleared for re-entry.

Hyatt Regency Inner Harbor Hotel
300 Light Street, Baltimore, MD 21202

- **CALL 911** if the situation is an emergency.
- If the matter is NOT an emergency, dial "0" from any Hotel phone or call 410-528-1234 then press 0 from your mobile phone, ask to speak to the Manager on Duty, and report the matter accordingly.

Renaissance Baltimore Harborplace Hotel
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- **CALL 911** if the situation is an emergency.
- If the matter is NOT an emergency, dial "0" from any Hotel phone or call 410-547-1200 then press 0 from your mobile phone, ask to speak to the Manager on Duty, and report the matter accordingly.

RECEPTIONS AND MEAL FUNCTIONS

Staff have arranged to have a variety of food options to accommodate vegan and vegetarian preferences. Please advise staff if you have additional special dietary requirements.

Networking Luncheons
Lunch will be provided for all registered attendees on both full days of the RBITT Conference. Use this opportunity to meet fellow participants from across the country and abroad while enjoying a luncheon.

Wednesday, May 7 and Thursday, May 8
Exhibit Hall A - C
11:45 AM – 1:30 PM

Friends of Biosolids and ITT Welcome Social
Join conference attendees for a welcome social hosted by the Chesapeake Water Environment Association. Registration is $35 and includes 2 drink tickets and hors d'oeuvres. Learn more and register at:
https://www.memberleap.com/members/evr/reg_event.php?orgcode=CWEA&evid=43763165

Tuesday, May 6 – 6:00 – 9:00 PM
Engineer's Club
11 West Mount Vernon Place

WEF Networking Reception
Join fellow attendees, speakers, and exhibitors in the Exhibit Hall to network and relax while enjoying a complimentary beverage and light hors d'oeuvres.

Wednesday, May 7
Exhibit Hall A - C
5:00 PM – 6:30 PM

Networking Breaks
Sponsored by: Parsons
Take the opportunity to explore the exhibit hall without missing any technical sessions while enjoying a cup of coffee or tea.

Wednesday, May 7 and Thursday, May 8
Exhibit Hall A - C
10:00 AM – 10:45 AM and 3:00 PM – 3:45 PM

The Networking Break on **Friday, May 9** will take place outside the technical session rooms from 10:00 AM – 10:30 AM.

COMMUNITY MEETINGS

Tuesday – May 6, 2025

Research and Innovation (RISE) Community Meeting
4:30 PM – 5:30 PM Ministry of Brewing
1900 E Lombard St, Baltimore, MD 21231

Wednesday – May 7, 2025

RBC - Bioenergy Technology Focus Group Meeting
12:00 PM – 12:30 PM Room 304

RBC - Solids Separation Focus Group Meeting
1:00 PM – 1:30 PM Room 304

MABA Member Meet-Up Meeting
3:15 PM – 4:45 PM Room 304

Thursday – May 8, 2025

Regional Biosolids Associations Representatives Small Group Meeting10:15 AM – 10:45 AM Room 304

RBC - Young Professionals Focus Group Meeting
12:00 PM – 12:30 PM Room 304

MRRDC
12:00 PM – 1:00 PM Room 305

RBC - Greenhouse Gas Focus Group Meeting
12:30 PM – 1:00 PM Room 304

RBC - Biosolids Product Use & Communications Focus Group + National Biosolids Partnership Focus Group Combined Meeting
1:00 PM – 1:30 PM Room 304

RBC - Association of Biosolids and Byproducts Associations Focus Group Meeting
3:15 PM – 3:45 PM Room 304

Full Residuals and Biosolids Community Meeting
4:45 PM – 5:45 PM Room 315

CONTINUING EDUCATION

Continuing Education Credits
Participating attendees will receive an email within 2 weeks after this event informing them when CE Credit files are available. Attendees will be able to download a certificate and transcript detailing their participation using the link provided. These details are also posted under events on www.WEF.org.

How Do I Receive Credit For this Conference?
To receive credit for participation in educational sessions, attendees will be required to scan their badge when entering and exiting each session room. Credits obtained during this event will be available using the link provided in the post event email and WEF site listed above.

Pre-Conference Workshops:
WEF offers Continuing Education Units (CEUs) for participation in workshops. One CEU is the equivalent to 10 hours of training or formal instruction. These are distributed for structured, relevant professional training above and beyond that of initial certification or employment in a particular field.

Technical Sessions:
WEF offers Professional Development Hours (PDHs) for participation in technical sessions. A PDH is defined as one hour spent engaged in an activity that contributes to the advancement or enhancement of professional skills or scientific knowledge of a professional engineer or operator.

General Contact Hours:
These credits are issued for participation in the Opening General Session, Technology Spotlights and in Facility Tours. A contact hour is defined as one hour spent engaged in an activity that contributes to the professional skills of the participant. Licensing boards will vary in approval of these sessions.

When Will I Receive Credits For this Conference?
Certificates and transcripts are available for download as soon as the CE Credit link is made available. WEF will send an email after the conference to inform attendees where they can obtain their credits. Please keep in mind that most state licensing boards require the individual licensees to report their continuing education credits.

Are WEF Continuing Education Credits Approved in My State?
Most state engineering boards will accept WEF event credits as issued by WEF. WEF will be happy to work with individuals and Member Associations for additional state or agency approvals upon request. In addition, WEF has been approved as a Training Provider through the following: The Florida Board of Professional Engineers, the New York State Department of Education, and the Ohio EPA.

Please visit www.wef.org for specific state approval information for each event.

CONTINUING EDUCATION

What Else Do I Need to Know?
WEF follows the International Association of Continuing Education and Training (IACET) guidelines along with strict state-specific CE Credit regulations. We strive to maintain these policies and procedures regarding our Continuing Education Program to meet with and receive state recognition of our events. WEF calculates education credits following a standardized method that is the most widely accepted by certification and licensing agencies. However, many states differ in the type and/or number of credits they will approve for educational events. Because of this, participants are responsible for exploring their state requirements and for ensuring that WEF conference credits are accepted.

Note: Educational Credits will not be recorded, and documentation will not be distributed unless the attendee is a confirmed registrant of this event and the proper steps are completed as indicated in the directions provided.

Service and Support:
WEF maintains a database of all continuing education files for a minimum of 7 years. You may contact WEF's Customer Service Team between the hours of 8:30 a.m. and 5:00 p.m. EST, Monday through Friday for questions related to WEF Programs - 1-800-666-0206 or csc@wef.org.

State Credit Calculations:
Each state licensing board has its own set of CE credit requirements. Some states use different acronyms for approved training credits. In most cases the credits issued by WEF can be converted to meet state specific requirements that vary from the system used by WEF. This is usually managed at the state level using the following conversion:

1.0 CEU = 10 Hours of session time
1.0 PDH = 1 Hour of session time
1.0 General Contact Hour = 1 Hour of session time

For example: **1.7 CEU** Credits = **17.0 PDH** depending on individual state regulations.

**CEU will be converted to PDH credits for Workshops attended by Professional Engineers licensed in the state of New York (NYSED).*

Important: Sessions that are not related to professional practice, such as accounting/financial planning, basic Auto CAD, general office management, insurance, marketing, real estate, risk management, DE&I, etc. are not approved for CE credits by some state licensing boards, including the NYSED.

For more information regarding WEF's Continuing Education Program, please visit the Events & Education tab at www.WEF.org.

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SESSIONS-AT-A-GLANCE

Session Number	Session Title	Start Time	End Time	CE Credits
Wednesday, May 7, AM Sessions				
OGS	Opening General Session	8:30 AM	10:00 AM	1.5 GCHs
Networking Break in Exhibit Hall		10:00 AM	10:45 AM	
RB Session 01	Water Research Foundation Projects to Understand PFAS Management in Biosolids	10:45 AM	11:45 AM	1.0 PDH
RB Session 02	Academic Advancements in Digestion and Fugitive Greenhouse Gas Emissions	10:45 AM	11:45 AM	1.0 PDH
RB Session 03	Exploring Pathways to Dried Biosolids	10:45 AM	11:45 AM	1.0 PDH
RB Session 04	Practical Considerations in Digestion	10:45 AM	11:45 AM	1.0 PDH
ITT Session 01	Navigating the Early Stages of a Career in Water	10:45 AM	12:15 PM	1.5 PDH
ITT Session 02	Nitrogen Removal Dynamics with Stored Carbon	10:45 AM	12:15 PM	1.5 PDH
ITT Session 03	Monitoring and Modeling of N2O	10:45 AM	12:15 PM	1.5 PDH
Networking Luncheon in Exhibit Hall		11:45 AM	1:30 PM	
TS I	Technology Spotlight I	12:40 PM	1:25 PM	

SESSIONS-AT-A-GLANCE

Session Number	Session Title	Start Time	End Time	CE Credits
Wednesday, May 7 PM Sessions				
RB Session 05	Considerations for Long-Term Biosolids Planning	1:30 PM	3:00 PM	1.5 PDHs
ITT Session 04	How DO Setpoints and Control Impacts Performance and Emissions	1:30 PM	3:00 PM	1.5 PDHs
ITT Session 05	How do we get to know our Flocs and Granules Better? Method Development for DAS Systems	1:30 PM	3:00 PM	1.5 PDHs
ITT Session 06	Mitigation of N_2O Part 1: Innovations in Quantification and Measurements	1:30 PM	3:00 PM	1.5 PDHs
RB Session 06	Utility Experience Using Incineration as a Proven Solids Management Technology	1:30 PM	4:45 PM	2.5 PDHs
RB Session 07	Case Studies for Optimizing THP, Dewatering, and Digestion	1:30 PM	4:45 PM	2.5 PDHs
RB Session 08	Fugitive Methane Investigation and Abatement	1:30 PM	4:45 PM	2.5 PDHs
Networking Break in Exhibit Hall		3:00 PM	3:45 AM	
TS II	Technology Spotlight II	3:15 PM	3:40 PM	
RB Session 09	PFAS Equity: Coalition Efforts to Ensure Polluters Pays; Ratepayers Protected	3:45 PM	4:45 PM	1.0 PDH
ITT Session 07	Design and Control of Low Energy Nutrient Removal for Nutrient Performance and Emissions	3:45 PM	5:15 PM	1.5 PDHs
ITT Session 08	How do you DAS?	3:45 PM	5:15 PM	1.5 PDHs
ITT Session 09	Sidestream Management and Nutrient Recovery	3:45 PM	5:15 PM	1.5 PDHs
Networking Reception in Exhibit Hall		4:45 PM	6:15 PM	

SESSIONS-AT-A-GLANCE

Session Number	Session Title	Start Time	End Time	CE Credits
Thursday, May 8, AM Sessions				
RB Session 11	Drones, Satellites, Sensors, Oh My!: Advances in Fugitive Methane Monitoring	8:30 AM	10:00 AM	1.5 PDHs
ITT Session 10	Introduction to Machine Learning Approaches and Methods	8:30 AM	10:00 AM	1.5 PDHs
ITT Session 11	Low DO Biological Nutrient Removal: Theory, Planning, Implementation, and Results	8:30 AM	10:00 AM	1.5 PDHs
ITT Session 12	Control and Emission Considerations with Nitrite Production and Anammox Processes	8:30 AM	10:00 AM	1.5 PDHs
RB Session 10	Innovations in Sludge Management: Enhancing Anaerobic Digestion and Phosphorus Control	8:30 AM	11:45 AM	2.5 PDHs
RB Session 12	Understanding EPA's Risk Assessment Process and Its Impact on Biosolids Regulations	8:30 AM	11:45 AM	2.5 PDHs
RB Session 13	Some Like It Hot - Diving into Incineration, Pyrolysis, and Gasification	8:30 AM	11:45 AM	2.5 PDHs
Networking Break in Exhibit Hall		10:00 AM	10:45 AM	
TS III	Technology Spotlight III	10:15 AM	10:40 AM	
RB Session 14	Optimizing Resource Recovery: Biogas and Nutrient Reuse	10:45 AM	11:45 AM	1.0 PDH
ITT Session 13	Are Forever Chemicals Really Forever?	10:45 AM	12:15 PM	1.5 PDH
ITT Session 14	Intensification of Anaerobic Digestion	10:45 AM	12:15 PM	1.5 PDH
ITT Session 15	Balancing Nutrient Removal, Settleability, and Emissions	10:45 AM	12:15 PM	1.5 PDH
Networking Luncheon in Exhibit Hall		11:45 AM	1:30 PM	

SESSIONS-AT-A-GLANCE

Session Number	Session Title	Start Time	End Time	CE Credits
Thursday, May 8, PM Sessions				
RB Session 16	Navigating Land Based Biosolids Management	1:30 PM	3:00 PM	1.5 PDHs
RB Session 18	RBC Young Professional Growth and Development Forum	1:30 PM	3:00 PM	1.5 PDHs
ITT Session 16	Mitigation of N_2O Part 2: Balancing N_2O and Intensification	1:30 PM	3:00 PM	1.5 PDHs
ITT Session 17	Advanced Technologies for the Destruction of Emerging Contaminants in Water and Wastewater Treatment	1:30 PM	3:00 PM	1.5 PDHs
ITT Session 18	Different Approaches to Diverting COD Upstream of Nutrient Removal Facilities	1:30 PM	3:00 PM	1.5 PDHs
RB Session 15	Digestion Process Intensification and Sidestream Management Strategies	1:30 PM	4:45 PM	2.5 PDHs
RB Session 17	Improving Pre-Digestion Hydrolysis (THP)	1:30 PM	4:45 PM	2.5 PDHs
Networking Break in Exhibit Hall		3:00 PM	3:45 PM	
RB Session 19	Optimizing Biogas Production and RNG: Microaeration and Sulfur Management	3:45 PM	4:45 PM	1.0 PDH
RB Session 20	Advances in Process Modeling: Aeration, Scaling, and Anaerobic Digestion Dynamics	3:45 PM	4:45 PM	1.0 PDH
ITT Session 19	Mitigation of N_2O Part 3: How do we Achieve Low Energy, Low Influent Carbon, and Low N_2O BNR?	3:45 PM	5:15 PM	1.5 PDHs
ITT Session 20	Electrified Resource Recovery and PFAS Remediation	3:45 PM	5:15 PM	1.5 PDHs
ITT Session 21	Why Would You Implement MABR? Treatment, Capacity, and Emissions Considerations	3:45 PM	5:15 PM	1.5 PDHs
Networking Reception in Exhibit Hall		4:45 PM	6:15 PM	

SESSIONS-AT-A-GLANCE

Session Number	Session Title	Start Time	End Time	CE Credits
Friday, May 9 Sessions				
RB Session 21	Triple Bottom Line of Biosolids Master Planning	8:30 AM	10:00 AM	1.5 PDHs
RB Session 22	Innovations in Waste-to-Value Technologies: Carbon Management and Resource Recovery	8:30 AM	10:00 AM	1.5 PDHs
RB Session 23	Advancements in Thickening Technologies: Operational Optimization and Cost Savings	8:30 AM	10:00 AM	1.5 PDHs
ITT Session 22	Plan for it, Hope for it, and then Optimize it: Working Toward EBPR Optimization in Carbon Limited Systems	8:30 AM	10:00 AM	1.5 PDHs
ITT Session 23	Automation, Analytics, and Decision Support for Operational Stability and Optimization	8:30 AM	10:00 AM	1.5 PDHs
ITT Session 24	Beyond Process: PdNA Design Innovations and Challenges	8:30 AM	10:00 AM	1.5 PDHs
RB Session 24	Quantifying your WRRF's Greenhouse Gas Emissions - From Desktop Inventories to Direct Measurement	8:30 AM	11:45 AM	3.0 PDHs
Networking Break in Session Foyer		10:00 AM	10:15 AM	
RB Session 25	Advanced Thermal Processes for Sustainable Biosolids Management: Case Studies and Innovations	10:15 AM	11:45 AM	1.5 PDHs
RB Session 26	Advancing Biogas and RNG: Innovations and Regulatory Challenges	10:15 AM	11:45 AM	1.5 PDHs
RB Session 27	Polymer Optimization: How to Get the Most Bang for your Buck	10:15 AM	11:45 AM	1.5 PDHs
ITT Session 25	Management of Carbon to Maximize Phosphorus Removal	10:15 AM	11:45 AM	1.5 PDHs
ITT Session 26	Different Paths to the Same Goal: Intensification of Biological Processes	10:15 AM	11:45 AM	1.5 PDHs
ITT Session 27	Application of Partial Denitrification in High Strength Wastewater	10:15 AM	11:45 AM	1.5 PDHs

WORKSHOPS AND TOURS

Additional fees apply

SOLD OUT! Tour-shop A: Poop to Power! Piscataway BioEnergy Facility - Overview and Tour of WSSC's Innovative Biosolids to Energy Facility
Tuesday, May 6, 2025
8:30 AM - 5:00 PM

Workshop B: Thickening Optimization - Process Improvements and Plant Benefits
Tuesday, May 6, 2025
8:30 AM - 5:00 PM

Workshop C: Biogas to Renewable Natural Gas - System Startups and Safety Protocols
Tuesday, May 6, 2025
8:30 AM - 12:00 PM

Workshop D: The Intersection of Collaborative Delivery and Biosolids Resource Recovery Projects
Tuesday, May 6, 2025
1:30 PM - 5:00 PM

SOLD OUT! Workshop E: Thermal Drying: State of the Practice, Advancements, and Future Applications
Tuesday, May 6, 2025
1:30 PM - 5:00 PM

Workshop F: From Static Data to Dynamic Decisions: Building Frameworks for Online Process Data Integrity
Tuesday, May 6, 2025
8:30 AM - 5:00 PM

Workshop G: Design Considerations for the Implementation of Low Dissolved Oxygen BNR
Tuesday, May 6, 2025
8:30 AM - 5:00 PM

Tour: Commercial-Scale Pyrolysis Demonstration at the Synagro Drying Facility in collocated at the City of Baltimore Back River WWTP
Friday, May 9, 2025
12:15 PM – 2:30 PM

OPENING GENERAL SESSION

Opening General Session
Wednesday, May 7 — Room 307-309
8:30 a.m. - 10:00 a.m. — 1.5 GCHs

8:30 AM **Welcome and Introductions – Co-Chairs of RBITT**
Leon Downing, Black & Veatch, ITT Co-Chair
Elsayed Elbeshbishy, Toronto Metropolitan University, RB Co-Chair
Pam Racey, Synagro, RB Co-Chair
Tanja Rauch-Williams, Metro Water Recovery, ITT Co-Chair

8:40 AM **WEF Welcome**
Brian Persing, WEF Board of Trustees

8:45 AM **Chesapeake WEA Welcome**
Alana Gildner, CWEA President-Elect

8:50 AM **One Environment Approach to Decision Making**
Mickey Conway, Metro Water Recovery

9:20 AM **Facilitated Panel Discussion on Decision Making in the Face of Uncertainty**
Facilitators: Leon Downing and Pam Racey
Chris Andres, City of Orlando
Mickey Conway, Metro Water Recovery
Karen Henry, Anne Arundel County Water
George Sprouse, Metropolitan Council

9:55 AM **Closing**

10:00 a.m. **Session Adjourns for Networking Break in Exhibit Hall**

RB Session 01: Water Research Foundation Projects to Understand PFAS Management in Biosolids

Wednesday, May 7, 2025 Room: 314
10:45 AM - 11:45 AM 1.0 PDH

Moderator: Lynne Moss, Black & Veatch

Per- and Polyfluoroalkyl Substances (PFAS) have dramatically shifted the biosolids management landscape, with one state already passing a ban on land application due to PFAS in biosolids. Thus, there is a great research need to understand the regulatory status, management options, and technology impacts on the fate of PFAS in biosolids. Therefore, the Water Research Foundation (WRF) has supported this important research need. This session will highlight findings from four WRF projects that focus on PFAS in biosolids.

10:45 AM **Update on WRF 5170: State of the Science and Regulatory Acceptability for PFAS Residual Management Options**
Mahsa Modiri, EA Engineering, Science, and Technology, Inc., PBC

10:50 AM **Update on 5211: Understanding the Value Proposition for Thermal Processes to Mitigate PFAS in Biosolids**
Patrick McNamara, Black & Veatch, Marquette University

11:10 AM **Update on WRF 5107 – Understanding Gasification for PFAS Removal**
Mohammad Abu-Orf, Hazen & Sawyer

11:20 AM **Update on WRF 5111 – Studying the Fate of PFAS through Sewage Sludge Incinerators**
Lloyd Winchell, Brown & Caldwell

11:30 AM **Panel Discussion**

11:45 AM **Session adjourns for Networking Luncheon**

RB Session 02: Academic Advancements in Digestion and Fugitive Greenhouse Gas Emissions

Wednesday, May 7, 2025 Room: 315
10:45 AM - 11:45 AM 1.0 PDH

Moderators: Bhargavi Subramanian, Kennedy Jenks; Janine Burke-Wells, North East Biosolids & Residuals Association

10:45 AM **Not Every Utility is Equal: How Operational Patterns, Influent Characteristics, and Compliance Limits Shape Fugitive GHG Emission Variability in Wastewater Treatment Plants**
Ahmed Alsayed, Northwestern University; Ahmed Elsayed, Mostafa Khalil, Toronto Metropolitan University; Mohamed Zaghloul, United Arab Emirates University; Farokh Laqa Kakar, Katherine Bell, John Willis, Brown and Caldwell; Elsayed Elbeshbishy, Toronto Metropolitan University

11:05 AM **Long-Term Effects of Cycle Time and Volume Exchange Ratio On Poly(3-Hydroxybutyrate-Co-3-Hydroxyvalerate) Production from Food Waste Digestate by Haloferax Mediterranei Cultivated in Sequencing Batch Reactors**
Xueyao Zhang, Zhaohui An, Jiefu Wang, Virginia Tech; Stephanie Lansing, Naresh Kumar Amradi, University of Maryland; Md Sazzadul Haque, Zhiwu Wang, Virginia Tech

11:25 AM **Rumen-Inspired Anaerobic Dynamic Membrane Bioreactor Enhances Hydrolysis in Food Waste and Sludge Digestion**
Renisha Karki, Renata Starostka, Narasimman Lakshminarasimman, Pedro Puente, Timothy Fairley-Wax, Kuang Zhu, Steven Skerlos, Lutgarde Raskin, University of Michigan

11:45 AM **Session Adjourns for Networking Luncheon**

RB Session 02: Academic Advancements in Digestion and Fugitive Greenhouse Gas Emissions

Wednesday, May 7, 2025 Room: 315
10:45 AM - 11:45 AM 1.0 PDH

Alternate **Enhancing Anaerobic Digestion of Sewage Sludge Through Strategic Bioaugmentation with Optimized Microbial Consortia**
Abir Hamze, Toronto Metropolitan University (TMU); Basem Zakaria, University of Alberta; Mohamed Zaghloul, Toronto Metropolitan University; Andreas Ganatsios, Hydrotech Environmental L.P; Dimitrios Chrysochoou, TraderWorks Environmental Inc; Bipro Dhar, University of Alberta; Elsayed Elbeshbishy, Toronto Metropolitan University

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RB Session 03: Exploring Pathways to Dried Biosolids

Wednesday, May 7, 2025 Room: 316
10:45 AM - 11:45 AM 1.0 PDH

Moderators: Joseph Schuler, Kiewit; Ahmad Bitar, AECOM

10:45 AM **Transforming THP Cake into Soil and Halving the Tonnage Using the New Dune Aerated Static Pile Process**
Todd Williams, Zac Alexander, Bart Kraakman, Jacobs

11:05 AM **Evaluating Sludge Drying Reed Beds as a Nature Based Solution for Biosolid Management in Wastewater Treatment Facilities**
Thomas Drummond, Adrian O'Connor, AECOM; Dara White, Uisce Eireann (formerly Irish Water)

11:25 AM **Successful Startup, Commissioning, and Operation of a New Regional Biosolids Drying Facility**
Nelson Heringer, Adam Parmenter, HDR; David Cox, City of Hickory

11:45 AM **Session Adjourns for Networking Luncheon**

Alternate **Low Temperature Conductive Drying: Enhancing Thermal Efficiency in Biosolids Treatment**
Jon Orr, Heartland

TECHNICAL SESSIONS

RB Session 04: Practical Considerations in Digestion
Wednesday, May 7, 2025 Room: 317
10:45 AM - 11:45 AM 1.0 PDH

Moderators: Erik Larson, Vaughan; Raegan Swartz, Burns & McDonnell

10:45 AM **Are Your Digesters Up to the Task? Aligning Resource Recovery Planning with Reality**
Natalie Sierra, Christopher Muller, Brown and Caldwell

11:05 AM **Beneath the Surface: Comprehensive Condition Assessment Techniques to Fortifying Tankage for the Future**
Brad Stuart, HDR; Abdiel Picazo, Eastern Municipal Water District; Sean Hoss, Teigan Gulliver, HDR

11:25 AM **The Struvite Scourge: Practical Operations & Maintenance Considerations for Handling Nuisance Struvite Formation**
Dustin Craig, CDM Smith

11:45 AM **Session Adjourns for Networking Luncheon**

RB Session 05: Considerations for Long-Term Biosolids Planning
Wednesday, May 7, 2025 Room: 314
1:30 PM - 3:00 PM 1.5 PDHs

Moderators: Mahmudul Hasan, Baltimore City Department of Public Works; Manuel Moncholi, GHD

1:30 PM **Not all Master Plans are the Same: Understanding Local Drivers to Develop a Unique and Dynamic Roadmap**
Tracy Chouinard, Tom Schwartz, Brown and Caldwell

1:50 PM **A Road Map for Navigating Biosolids Disposal Challenges at SESD Through Application of Existing and Emerging Technologies**
Nick Avila, C. Goss Jr., Matthew Ribeiro, Matthew Formica, AECOM; Mike Wilson, Peter Pommersheim, South Essex Sewerage District

2:10 PM **Addressing Practical Barriers to Large-Scale Co-Digestion to Improve Sustained Feasibility**
Rashi Gupta, Christine Polo, Elizabeth Charbonnet, Carollo Engineers

2:30 PM **Evaluating Innovative and Sustainable Treatment Options for Biosolids (WRF Project #5169)**
Micah Blate, Anne Sun, Mohammad Abu-Orf, Paul Knowles, Asa Lewis, Hazen and Sawyer

2:50 PM **Discussion**

3:00 PM **Session Adjourns for Networking Break**

Alternate **Evaluating Feasibility of Implementing Co-digestion at San Francisco International Airport**
Ganesh Rajagopalan, AECOM; Matthew Higgins, Bucknell University; Michael Hummel, Stok, LLC; John Mahoney, Tanner Pacific; Erin Cooke, San Francisco International Airport

RB Session 06: Utility Experience Using Incineration as a Proven Solids Management Technology

Wednesday, May 7, 2025 Room: 315
1:30 PM - 4:45 PM 2.5 PDHs

Moderator: Marcel Pomerleau, EnviroCare International

Incineration is a WEF supported, proven, and valuable technology option for wastewater agencies to meet their biosolids processing goals. This session is designed to allow municipal wastewater treatment plant owners, operators, managers, and industry subject matter experts to network and learn about best practices and emerging trends in sewage sludge incineration (SSI).

1:30 PM **Introduction**
Marcel Pomerleau, EnviroCare International

1:35 PM **Incineration: MHF and FBI Technologies**
John Yu, Chavond-Barry

1:55 PM **Fate of PFAS: WEF Water Research Foundation Project #5111**
Lloyd Winchell, Brown & Caldwell

2:10 PM **Evolution of Incineration at St. Louis MSD's Bissell Point and Lemay WWTF's**
Webster Hoener, Black & Veatch/St. Louis MSD

2:35 PM **Operating and Maintaining FBIs – NEORSD's Experience**
Nicholas Merchant-Wells, NEORSD

3:00 PM **Networking Break**

3:45 PM **The Road to Adding a Fourth Incinerator at 130 DTP Capacity**
Stephen Norton, Metropolitan Council Environmental Services

RB Session 06: Utility Experience Using Incineration as a Proven Solids Management Technology

Wednesday, May 7, 2025 Room: 315
1:30 PM - 4:45 PM 2.5 PDHs

4:10 PM **Extending the Life of Aging Incinerator Facilities**
Jason David, Region of Peel; Connor Smith, Black & Veatch

4:35 PM **New Fluidized Bed Incineration**
Gwyneth Jordan, Veolia

4:45 PM **Session adjourns for Networking Reception**

Alternate **Beneficial Reuse of Ash**
Persephone Ma, Brown & Caldwell

RB Session 07: Case Studies for Optimizing THP, Dewatering, and Digestion

Wednesday, May 7, 2025 Room: 316
1:30 PM - 4:45 PM 2.5 PDHs

Moderators: Dawn Taylor, Cambi; Kwok-Wai Richard Tsang; CDM Smith

1:30 PM **Seeding, Startup, and Commissioning of Three THP Systems at Various WRRFs**
Laurel Schaich, Daniel Bond, CDM Smith; Seyed Mohsen Sadatiyan Abkenar

1:50 PM **Enhancing Biosolids Management with THP: From Startup to Optimization and Troubleshooting at HRSD's Atlantic Treatment Plant**
Dana Gonzalez, Carollo Engineers; Holly Anne Matel, Barbara Ward, Jeffrey Nicholson, Christopher Wilson, Charles Bott, Hampton Roads Sanitation District (HRSD)

2:10 PM **A Week Becomes a Day: New Ideas and O&M Collaboration Leads to the Shortest THP Shutdown on Record**
Stephanie Spalding, HDR; Shane Dearborn, Dylan Woolard, David Ewing, Jeffrey Powell, Hampton Roads Sanitation District

2:30 PM **Piscataway WRRF Bioenergy - Owner and PDB Collaborative Sampling during Startup and the Transition into Operational Sampling**
Eric Krentel, HDR; William Mapes, WSSC Water

2:50 PM **Discussion**

3:00 PM **Networking Break**

3:45 PM **HRSD's ROCI Project: Identifying and Fast-Tracking Improvements to Meet Solids Process Reliability and Community Needs**
Holly Anne Matel, Hampton Roads Sanitation District (HRSD); Lynne Moss, Engin Guven, Black & Veatch

RB Session 07: Case Studies for Optimizing THP, Dewatering, and Digestion

Wednesday, May 7, 2025 Room: 316
1:30 PM - 4:45 PM 2.5 PDHs

4:05 PM **Centrifuge Operational Adjustments Result in Cost Saving Opportunities at NEORSD**
Adam Parmenter, HDR; Nicholas Merchant-Wells, Northeast Ohio Regional Sewer District

4:25 PM **I Spy Fugitive Methane: A Look at 3-Years of Leak Detection Surveys**
Trung Le, Brown and Caldwell

4:45 PM **Session Adjourns for Networking Reception**

Alternate **Forecasting Volatile Solids Reduction of Municipal Sludge Using 32 Years of Data**
Antoine Picard, Danielle Trap, SUEZ; Damien Batstone, University of Queensland; Roman Moscoviz, Mathieu Haddad, SUEZ

RB Session 08: Fugitive Methane Investigation and Abatement

Wednesday, May 7, 2025 Room: 317

1:30 PM - 4:45 PM 2.5 PDHs

Moderators: Bill Brower, Brown and Caldwell; David Ponder, US Water Alliance

1:30 PM **Introduction, Drivers, and Regulations State of Fugitive Methane**
Bill Brower, Brown and Caldwell

1:50 PM **NSERC: Integrating Multi-Scale Observations with Wastewater Process Simulations for Measuring, Monitoring, and Modelling GHG Emissions in Canadian Sewers and WRRFs**
Elsayed Elbeshbishy, Toronto Metropolitan University

2:10 PM **Emerging and Available Quantification Technologies**
Jason Ren, Princeton University

2:30 PM **Practical Case Study Pt 1 Fugitive Methane Quantification and Source Identification**
Alex Fuentes, WSSC Water

3:00 PM **Networking Break**

3:45 PM **Practical Case Study Pt 2 Whole Utility Approach to Reducing Climate Impact**
Tyler Schweinfurth, City of Columbus; Dante Fiorino, Brown and Caldwell

4:05 PM **Practical Case Study Pt 3**
Jeff Prevatt, Pima County

4:25 PM **Panel Discussion**
David Ponder, US Water Alliance

4:45 PM **Session Adjourns for Networking Reception**

RB Session 09: PFAS Equity: Coalition Efforts to Ensure Polluters Pays; Ratepayers Protected

Wednesday, May 7, 2025 Room: 314
3:45 PM - 4:45 PM 1.0 PDH

Moderator: Layne Baroldi, Synagro Technologies

This WEF Session will provide an update on the Coalition's legislative, regulatory, legal and outreach efforts to protect the industry as an essential public service from unjustifiable liability. Future action items include a specific provision to ensure that the organizations we represent are explicitly recognized as 'passive receivers' of PFAS and afford these essential public services a narrow exemption from CERCLA liability. Absent such relief, designation of certain PFAS as CERCLA hazardous substances would shift the 'polluter pays' principle of the law to that of a 'community pays' model, placing the unjustified burden of compliance and cleanup onto ratepayers and the public at-large.

3:45 PM **Federal Legislative and Regulatory Developments**
Eric Sapirstein, ENS Resources, Inc.

4:00 PM **State Legislative and Regulatory Developments**
Layne Baroldi, Synagro Technologies

4:15 PM **PFAS Litigation Update**
Hilary Jacobs, Beverage & Diamond, P.C.

4:30 PM **PFAS Communications and Outreach**
Kip Cleverly, Synagro Technologies

4:40 PM **Questions and Answers**

4:45 PM **Session Adjourns**

RB Session 10: Innovations in Sludge Management: Enhancing Anaerobic Digestion and Phosphorus Control

Thursday, May 8, 2025 Room: 314
8:30 AM - 11:45 AM 2.5 PDHs

Moderators: Adrian Romero, Jacobs; Stephanie Spalding, HDR

8:30 AM **Pima's Plural Purposes for PONDUS**
Adam Parmenter, HDR; Jeff Prevatt, Pima County

8:50 AM **2nd Generation THP – Intermediate THP at a Large WWTP**
Ester Rus, Davy Ringoot, Jacek Kosciukiewicz, Andreas Lillebo, Cambi

9:10 AM **IntensiCarb® for Anaerobic Digestion Intensification: A Techno-economic Analysis**
Alexander Seidel, Maxwell Armenta, Farokh Laqa Kakar, Ahmed Al-Omari, Brown and Caldwell; Ali Khadir, Western University; Chris Sheculski, Trojan Technologies; Domenico Santoro, Western University/USP Technologies; Katie Bell; Chris Muller, Brown and Caldwell

9:30 AM **Enhancing Anaerobic Digestion with MHP**
Madeleine Fairley-Wax, Stephanie Cope, David Parry, Jacobs

9:50 AM **Discussion**

10:00 AM **Networking Break**

10:45 AM **Effect of Pre- and Post-AD-THP on Dewaterability, COD Solubilization, and Formation of Refractory Compounds**
Anne Helene Sandsmark, Anne-Line Bakke, Alexandru Botan, Hans Rasmus Holte, Andreas Lilleboe, Cambi

RB Session 10: Innovations in Sludge Management: Enhancing Anaerobic Digestion and Phosphorus Control

Thursday, May 8, 2025 Room: 314
8:30 AM - 11:45 AM 2.5 PDHs

11:05 AM **Phosphorus Sequestration in Biosolids, Nuisance Struvite Control via PAD and Chemical Addition to TH-AD Digestate**
Caitlyn Harris, Brown and Caldwell; Dana Gonzalez, Carollo; Arba Williamson, Jeffrey Nicholson, BJ Ward, Holly Anne Matel, Charles Bott, Christopher Wilson, Hampton Roads Sanitation District (HRSD)

11:25 AM **Full-Scale Implementation of Coagulant Dosing for Recalcitrant Nitrogen and Orthophosphate Control During Dewatering of Thermal Hydrolysis Pretreatment-Enhanced Anaerobic Digester Sludge**
Yitao Li, Virginia Tech; Malcolm Taylor, Caroline Nguyen, WSSC Water; John Novak, Zhiwu Wang, Virginia Tech

11:45 AM **Session Adjourns for Networking Luncheon**

Alternate **Sustainable Sludge Management by Control of Microbial Population Dynamics**
Rob Whiteman, ABS Inc.

RB Session 11: Drones, Satellites, Sensors, Oh My!: Advances in Fugitive Methane Monitoring

Thursday, May 8, 2025 Room: 315
8:30 AM - 10:00 AM 1.5 PDHs

Moderators: Ruth Spierling, LACSD; Rasha Maal-Bared, CDM Smith

8:30 AM **Determining the Carbon Footprint of Biogas Production from Sewage Sludge**
William Barber, Cambi

8:50 AM **Drone-Based Imaging and Sensing: Quantification of Fugitive Methane Emissions from Full-Scale Wastewater Treatment Facility**
Omar Abdelrahman, Ahmed Elsayed, Toronto Metropolitan University; Ahmed Alsayed, Northwestern University; Mostafa Khalil, Toronto Metropolitan University; Mohamed Zaghloul, United Arab Emirates University; Farokh Laqa Kakar; Katherine Bell, Trung Le, John Willis, Brown and Caldwell; Elsayed Elbeshbishy, Toronto Metropolitan University

9:10 AM **Use of Satellite Imagery for Characterizing the Temporal Dynamics of Fugitive Methane Emissions from Biosolids Treatment Processes**
Seyed Mostafa Mehrdad, University of Calgary; Bo Zhang, Stantec; Ke Du, University of Calgary; Abbey Sweeney, Stantec

9:30 AM **Continuous Monitoring of Fugitive Methane in Wastewater Treatment Plants Using Ground Sensors**
Ahmed Elsayed, Toronto Metropolitan University; Ahmed Alsayed, Northwestern University; Omar Abdelrahman, Toronto Metropolitan University; Mostafa Khalil, United Arab Emirates University; Mohamed Zaghloul, Toronto Metropolitan University; Farokh Laqa Kakar; Katherine Bell, Trung Le, John Willis, Brown and Caldwell; Elsayed Elbeshbishy, Toronto Metropolitan University

9:50 AM **Discussion**

10:00 AM **Session Adjourns for Networking Break**

RB Session 12: Understanding EPA's Risk Assessment Process and Its Impact on Biosolids Regulations

Thursday, May 8, 2025 Room: 316
8:30 AM - 11:45 AM 2.5 PDHs

Moderator: Natalie Sierra, Brown and Caldwell

Per-and polyfluoroalkyl substances (PFAS) have received considerable public attention in recent years. The potential for biosolids to release PFAS to the environment led EPA to include risk assessments for land applied and incinerated biosolids in its overall PFAS roadmap. This session aims to provide attendees with fundamental knowledge about how risk assessments have been used over time to develop the regulatory framework around biosolids management. Attendees will be exposed to general risk assessment principles and how these have been applied to develop 40 CFR 503, including EPA's most recent work on PFOS and PFOA. The session is structured to help attendees understand what EPA's updated risk assessment framework means for future regulations, including how updated assumptions and inputs have informed EPA's risk assessment for PFOS and PFOA.

8:30 AM **Introduction and Purpose of Session**
Natalie Sierra, Brown and Caldwell

8:35 AM **History of Risk Assessment in Formulating the Current Limits in 40 CFR 503**
Greg Kester, California Association of Sanitation Agencies

9:00 AM **The Science Behind Risk Assessment**
Drew McAvoy, University of Cincinnati

9:30 AM **Regulator Presentation (title TBD)**
Stephanie Kammer, Michigan EGLE

10:00 AM **Networking Break**

10:45 AM **Implications of the PFOS/PFOA Risk Assessment for Land Application Program**
Chris Peot, DC Water

11:15 AM **Facilitated Panel Discussion**

11:45 AM **Session Adjourns**

TECHNICAL SESSIONS

RB Session 13: Some Like It Hot - Diving into Incineration, Pyrolysis, and Gasification

Thursday, May 8, 2025 Room: 317
8:30 AM - 11:45 AM 2.5 PDHs

Moderators: Pam Racey; Synagro Technologies; Thor Young, GHD

8:30 AM **Comparative Analysis of Mass and Energy Balances in Incineration, Anaerobic Digestion, THP, Drying, Pyrolysis, and Gasification Processes for Municipal Biosolids Treatment**
Karthik Manchala, GHD

8:50 AM **Rethinking The Impact of PFAS Emissions in Biosolids Thermal Processes through a Holistic Life Cycle Assessment**
Leah Pifer, Francesca Cecconi, Andrew Shaw, Webster Hoener, Lynne Moss, Black & Veatch; Patrick McNamara, Marquette University/Black & Veatch

9:10 AM **Achieving Carbon Neutrality at the Largest Fluidized Bed Biosolids Gasification Facility in the World**
Amir Alansari, Steven Lobo, Ilke Erdogan, Stantec; Joel Thornton, Aries Clean Technologies

9:30 AM **Evaluation of Sewage Sludge for Autothermal Pyrolysis Prior to Pilot Test**
Philip Pedros, Mott McDonald; Tannon Daugaard, Iowa State University; Sean McKelvey, Mekhana Scaria, Philadelphia Water Department

9:50 AM **Discussion**

10:00 AM **Networking Break**

10:45 AM **Siloxanes in Producer Gas from Pyrolysis of Sewage Sludge, Operational Problems and a Solution**
Philip Pedros, Mott McDonald; Ulrich Knoerle, Eliquo Technologies; Ankit Kukreja, Dürr Systems, Inc.

TECHNICAL SESSIONS

RB Session 13: Some Like It Hot - Diving into Incineration, Pyrolysis, and Gasification

Thursday, May 8, 2025 — Room: 317
8:30 AM - 11:45 AM — 2.5 PDHs

11:05 AM **Commercial-Scale Pyrolysis Demonstration for PFAS Destruction, Syngas Recovery, and Biochar Production at the Synagro Drying Facility, City of Baltimore Back River WWTP**
Donald Song, Synagro; Mahmudul Hasan, Baltimore City Department of Public Works

11:25 AM **Biosolids Incineration in the Times of PFAS**
Peter Burrowes, Gokul Bharambe, Todd Williams, Ohis Ahanmisi, Jacobs

11:45 AM **Session Adjourns for Networking Luncheon**

Alternate **Is Biosolids Gasification and Pyrolysis Living up to the Hype?**
Terry Goss, AECOM

RB Session 14: Optimizing Resource Recovery: Biogas and Nutrient Reuse

Thursday, May 8, 2025 — Room: 315
10:45 AM - 11:45 AM — 1.0 PDH

Moderators: Greg Woodward, Burns & McDonnell; Joyce Chang, Jacobs

10:45 AM **Aligning Cogeneration Sizing With Everyone's Goals (Big WRRF Edition)**
Christian Chiodo, Brown and Caldwell

11:05 AM **A Sustainable Biogas and Hydrogen LOOP**
Amanda Lake, Jacobs; Suzy Hill, United Utilities; Rebecca Haylock, Jacobs; Richard Clarke, United Utilities; MIke Lloyd, Levidian; Lisa Mansell, United Utilities

11:25 AM **Refining Phosphorus Recovery: Practical Improvements for Water Resource Recovery Facilities**
Rudy Maltos, Daniel Freedman, Liam Cavanaugh, Tanja Rauch-Williams, Rylee Rubino, Metro Water Recovery

11:45 AM **Session Adjourns for Networking Luncheon**

RB Session 15: Digestion Process Intensification and Sidestream Management Strategies

Thursday, May 8, 2025 Room: 314
1:30 PM - 4:45 PM 2.5 PDHs

Coordinator: Alex Fuentes, WSSC Water

Water resource recovery facilities (WRRFs) continue to evaluate alternate treatment options in response to increasing price escalations. In addition, WRRFs are under pressure to meet increasingly stringent discharge limits for nitrogen and phosphorus. Quite often, greater economies of scale can be realized by addressing sidestream treatment processes where pollutants tend to be concentrated. Technologies that are typically sought are those capable of providing significant in capital costs savings as well as operation and maintenance (O&M) cost savings. However, when combining technologies, each may not be entirely compatible and can significantly impact one another as well as downstream processes presenting new challenges and opportunities for improvements.

1:30 PM **Sidestream Overview Processes Comparison**
Dan Freedman, Metro Water Recovery; Blair Wisdom, Hazen and Sawyer; Larry Li, Veolia

2:00 PM **Upstream Impacts on Sidestream Processes**
Jeff Prevatt, Pima County; Alex Fuentes, WSSC Water

2:30 PM **WSSC Bio Energy Facility Implementation Discussion of Cambi THP, ANITA™Mox-IFAS Facility Startup and Lessons Learned**
Alex Fuentes, WSSC Water

3:00 PM **Networking Break**

3:45 PM **Pima County Tres Rios WRF Implementation Discussion of PONDUS THP, NuReSys, ANITA™Mox-MBBR Process Interactions and Lessons Learned**
Jeff Prevatt, Pima County

4:15 PM **Metro Water Recovery Implementation MagPrex, ANITA™Mox-MBBR Process Interactionsn and Lessons Learned**
Dan Freedman, Metro Water Recovery; Blair Wisdom, Hazen and Sawyer

FACILITY TOUR

RB Session 16: Navigating Land Based Biosolids Management
Thursday, May 8, 2025 Room: 315
1:30 PM - 3:00 PM 1.5 PDHs

Moderators: Phil Greenwood, City of Sioux Falls; Pranoti Kikale, Arcadis

1:30 PM **Harvest Time is Here! Biosolids' Unspoken Role in Improving Our Declining Soil Health – A Literature Review to Enhance Communication Tools for Biosolids Managers**
Ilke Erdogan, Stantec Inc.; Giovanna Portiolli, Muriel Steele, Joseph Lockler, Charlotte Water

1:50 PM **Beneficial Use Dashboard: Biosolids Data Management**
Nicole Laurita, South Platte Renew

2:10 PM **Regulatory Update: An Analysis of Regulatory Changes and Trends at the Federal and State Level Surrounding PFAS in Biosolids**
Nickolas Hines, Material Matters

2:30 PM **Getting a Biosolids Strategy Across the Finish Line: Engaging Elected Officials for Informed Decision-Making**
Megan Ross, Kiewit Water Facilities Florida

2:50 PM **Discussion**

3:00 PM **Session Adjourns for Networking Break**

Alternate **Silver Spring Township's Journey to Beneficial Use**
Lisa Challenger, Material Matters

RB Session 17: Improving Pre-Digestion Hydrolysis (THP)
Thursday, May 8, 2025 Room: 316
1:30 PM - 4:45 PM 2.5 PDHs

Moderator: Tom Nangle, Brown and Caldwell

WEF's Research and Innovation Community initiated the RISE (Research and Innovation for Strengthening Engagement) program to accelerate adoption of innovative technology within the water industry by integrating utilities, academia, and consultants in the discussion. One of these RISE focus groups has been working on 'Improving Pre-Digestion Hydrolysis'. This focus group brought together equipment suppliers, leading researchers in the field from academia, consultants, and most of the North American utilities that have incorporated hydrolysis into their program or are interested in doing so.

The group started identifying the main questions, concerns and challenges associated with implementing thermal hydrolysis pretreatment systems through several interactive meetings. These concerns were prioritized and consolidated into the following themes:

- Improve operability and process performance
- End product considerations
- Health and safety (H&S)/staffing considerations

The goal of this technical session is to highlight lessons learned and bring the interactive discussions being held in this focus group to the larger WEF community.

1:30 PM **Background and Intro to Session**
Tom Nangle, Brown and Caldwell

1:35 PM **Simplifying THP**
Diran Adalian, Chris Peot, DC Water

1:50 PM **Overcoming Challenges**
Raudel Jaurez, Trinity River Authority

2:05 PM **Making THP Work for You**
Chris Wilson, HRSD

2:20 PM **Panel Discussion – What Would You Have Done Differently?**

RB Session 17: Improving Pre-Digestion Hydrolysis (THP)
Thursday, May 8, 2025 Room: 316
1:30 PM - 4:45 PM 2.5 PDHs

3:00 PM	**Networking Break**
3:45 PM	**2nd Gen THP – Updates and Lessons Learned from Recent Startups** Erika Bailey, Raleigh Water; Joshua Ma, WSSC Water
4:15 PM	**Panel Discussion – How Did Early Adopters' Lessons Learned Influence Your Approach?**
4:45 PM	**Session Adjourns**

RB Session 18: RBC Young Professional Growth and Development Forum
Thursday, May 8, 2025 Room: 317
1:30 PM - 3:00 PM 1.5 PDHs

Speakers: Alexander Seidel, Brown and Caldwell; Madeleine Fairley-Wax, Jacobs; Bernadette Drouhard, Sarah Guzman, Black & Veatch; Manav Baid, AECOM

Join us for an engaging 2-part session designed specifically for young professionals (YPs) in the biosolids industry! This session offers practical advice and clear next steps for YPs looking to grow their careers and become more engaged in RBC activities.

The session begins with a panel and open Q&A featuring experienced professionals from across the residuals and biosolids industry, including consulting, public utilities, and regulatory agencies. Our panelists will share their own career journeys, lessons learned, and strategies for success. Whether you're navigating early career choices or looking to take the next step, this discussion will provide valuable insights and tips for advancing in the biosolids sector.

Following the panel, RBC Focus Group 101: A Guide to Getting Involved will give YPs the opportunity to meet with leaders from every RBC focus group. Each leader will facilitate small roundtable discussions focusing on the group's mission and work and will provide YPs with concrete ways to increase their engagement.

RB Session 19: Optimizing Biogas Production and RNG: Microaeration and Sulfur Management

Thursday, May 8, 2025 Room: 315
3:45 PM - 4:45 PM 1.0 PDH

Moderators: Elaine Hung, Trinity River Authority of Texas; John Maley, HDR

3:45 PM **Cleaning up Biogas for Free at Lander Street WRF: New Insights on Microaeration for Anaerobic Digestion**
Adrian Romero, Jacobs Engineering; Kylle Walkoski, City of Boise Public Works Department; Jeff Hodson, Matthew Noesen, William Leaf, Jacobs Engineering

4:05 PM **Digester Microaeration: A Comprehensive Full-Scale Case Study**
Matt Seib, Madison Metropolitan Sewerage District

4:25 PM **Innovations in Biogas Management: Overcoming Challenges in the Anaerobic Lagoon Startup in South Sioux City**
Dillon Devitt, HDR

4:45 PM **Session Adjourns**

Alternate **Critical Pathways to Success: Developing and Operating Biogas-to-RNG Systems in Water and Resource Recovery Facilities**
Amir Ghasdi, Dilshad Mondegarian, GHD

RB Session 20: Advances in Process Modeling: Aeration, Scaling, and Anaerobic Digestion Dynamics

Thursday, May 8, 2025 Room: 317
3:45 PM - 4:45 PM 1.0 PDH

Moderators: Bruce Johnson, Jacobs; Stephanie Fevig, Brown & Caldwell

3:45 PM **Comparing Modeling Tools Visual MINTEQ and OLI Studio to Evaluate Scaling Tendency of Aerated Anaerobically Digested Solids: A Pilot Study**
Caitlyn Harris, Shubhashini Oza, Brown and Caldwell; Jeffrey Nicholson, BJ Ward, Holly Anne Matel, Charles Bott, Hampton Roads Sanitation District; Christopher Muller, Brown and Caldwell; Christopher Wilson, HRSD

4:05 PM **Monod Kinetic Parameters for Different Anaerobic Digesters Vary over a Wide Range: Implication for Modelling and Correlation with Microbial Community Data**
Antonio Martins, Mercedes Cruz, Nicholas Benn, Christopher Marshall, Daniel Zitomer, Marquette University

4:25 PM **Modelling the Impact of the Aerobic Sludge Age on Thermally Pretreated Wastewater Biosolids**
Amr Ismail, Elsayed Elbeshbishy, Toronto Metropolitan University; George Nakhla, Western University

4:45 PM **Session Adjourns**

RB Session 21: Triple Bottom Line of Biosolids Master Planning
Friday, May 9, 2025 Room: 314
8:30 AM - 10:00 AM 1.5 PDHs

Moderators: Pranoti Kikale, Arcadis; Nick Hines, Material Matters

8:30 AM **Navigating the PFAS Hype: Biosolids Planning Through the Uncertain Regulatory Climate**
Gunner Mitchell, Pinellas County Utilities; K. Richard Tsang, CDM Smith

8:50 AM **Assessment of Economic, Social and Environmental Benefits (Circularity) of Biosolids Recovery Options at WRRFs: A Screening Tool**
Caroline Samberger, Joseph Jacangelo, Joan Oppenheimer, Stantec

9:10 AM **Financial Fuel: Leveraging the Investment Tax Credit to Fund Columbus™ Bioenergy Project**
DJ Wacker, Brown and Caldwell; Geoffrey Schweinfurth, City of Columbus Department of Public Utilities; Alison Nojima, Dante Fiorino, Brown and Caldwell

9:30 AM **Finding Sustainable, Cost-effective and Practical Solutions for Wastewater Solids Disposal at the City of Rio Rancho Facilities: A Case Study**
Steve Gallegos, City of Rio Rancho, Rahul Subramanian, Emma Haskell, Rachel Knobbs, Charlie Leder, Hazen and Sawyer

9:50 AM **Discussion**

10:00 AM **Session Adjourns for Networking Break**

Alternate **We're on the Road to Somewhere in Paradise: A Roadmap for Novel and Sustainable Biosolids Management at the Sand Island WWTP, Honolulu, Hawaii**
Shyam Sivaprasad, Stantec; Manuel Moncholi; Yueyun Tse, Pooja Sinha, Steven Lobo, Stantec; Tyler Tsuchida, Jaime Nishikawa, R.M. Towill Corporation; Heather Stephens, Bob Armstrong, Stantec

RB Session 22: Innovations in Waste-to-Value Technologies: Carbon Management and Resource Recovery

Friday, May 9, 2025 Room: 315
8:30 AM - 10:00 AM 1.5 PDHs

Moderators: Chelsey Shepsko, American Water; Tim Abbott, AECOM

8:30 AM **City of Grand Junction and Mesa County's Collaboration to Compost Biosolids and Food Waste**
Ashley Firl, City of Grand Junction; Jennifer Richardson, Mesa County; Christine Polo, Leanne Hyatt, Sophie Woods, Carollo Engineers

8:50 AM **A Techno-Economic Analysis on Water Resource Recovery Facilities Employing Carbon Capture Strategies in Biogas Upgrading Practices**
Alison Nojima, Peibo Guo, Trung Le, Alexis Valenti, Adam Ross, Brown and Caldwell

9:10 AM **To Digest or Not to Digest – An Updated Evaluation of an Age-old Question of Carbon Management in Water Resource Recovery Facilities**
Greg Knight, Dylan Christenson, Russell Tate, Kamyar Sardari, Rachel Swezy, Garver

9:30 AM **Fermenting Organic Wastes to Produce Volatile Fatty Acids (VFAs) as a Carbon Sources or Alternate High Value Product**
David Cham, Denny Halim, Maedeh Soleimanifar, Krishnamurthy Ramalingam, City College of New York; Eugenio Giraldo, Carbon Materials LLC; Natalia Perez, NYCDEP; John Fillos, City College of New York

9:50 AM **Discussion**

10:00 AM **Session Adjourns for Networking Break**

RB Session 23: Advancements in Thickening Technologies: Operational Optimization and Cost Savings

Friday, May 9, 2025 Room: 316
8:30 AM - 10:00 AM 1.5 PDHs

Moderators: Kelly Duffy, Caitlin DeYoung, RK&K

8:30 AM **Thickening Impacts and Optimization when Transitioning to BNR – Salt Lake Case Study**
Terry Goss, AECOM; Jose Rubalcaba, Salt Lake City Corp; Grant Davies, Kirsten Muehlbrad, Erika Bender, AECOM; Michelle Barry, Jamey West

8:50 AM **DAFT Optimization – Success and Struggles of Operating DAFTs without Polymer**
Brianna Miller, South Platte Renew

9:10 AM **Advanced Thickening Upgrades: Maximizing Existing Assets by Integration of New Technology**
Jeffrey Zahller, Oskar Agustsson, Patrick Roe, HDR; Kip Summers, Tyle Zuchowski, LOTT Clean Water Alliance

9:30 AM **Thickening through Suspended Air Application Aims to Reduce Energy Consumption**
Onder Caliskaner, Derya Dursun, Yuanbin Wu, Caliskaner Water Technologies

9:50 AM **Discussion**

10:00 AM **Session Adjourns for Networking Break**

RB Session 24: Quantifying your WRRF's Greenhouse Gas Emissions - From Desktop Inventories to Direct Measurement

Friday, May 9, 2025 Room: 317
8:30 AM - 11:45 AM 3.0 PDHs

Moderator: Christine Polo, Carollo Engineers

Wastewater utilities have a significant role to play in mitigating climate change by cutting their greenhouse gas (GHG) emissions. This 2.5-hr session will cover GHG emissions assessments, from baseline inventories to direct real-time monitoring of GHG emissions. This session is targeted to any wastewater utilities interested in quantifying and reducing their GHG emissions and the consultants, manufacturers, and academics interested in supporting that mission. Through a series of case studies and interactive exercises, attendees will learn about several tools available for desktop inventorying and direct measurement of GHG emissions, as well as about the most impactful measures utilities can take to reduce their emissions.

8:30 AM **Session Intro**

8:35 AM **Introduction to GHG Accounting & ERWSD's GHG Inventory**
George Kontos, Carollo Engineers

9:00 AM **Break**

9:05 AM **Direct Measurement of GHG Emissions**
Amanda Lake, Jacobs

9:30 AM **One Tool for Real Time Monitoring of N_2O Emissions & Live Demo**
Sam Reifsnyder, Carollo Engineers

9:55 AM **Open Discussion**

10:00 AM **Networking Break**

10:15 AM **DSRSD's Stratefy to Cut Their GHG Emissions by Two Thirds**
Christine Polo, Carollo Engineers

RB Session 24: Quantifying your WRRF's Greenhouse Gas Emissions - From Desktop Inventories to Direct Measurement

Friday, May 9, 2025 Room: 317
8:30 AM - 11:45 AM 3.0 PDHs

10:35 AM **Break**

10:40 AM **BEAM Model & Interactive Brainstorming Session**
Janine Burke-Wells, NEBRA; Christine Polo, Carollo Engineers

11:10 AM **Open Discussion**

11:15 AM **Session adjourns**

RB Session 25: Advanced Thermal Processes for Sustainable Biosolids Management: Case Studies and Innovations

Friday, May 9, 2025 Room: 314
10:15 AM - 11:45 AM 1.5 PDHs

Moderators: Brian Balchunas, HDR; Nathan Gebhardt, Centrysis/CNP

10:15 AM **SCWO for Orlando: A Case Study on Commissioning Supercritical Water Oxidation for the Treatment of Biosolids to Eliminate PFAS and Reduce Reliance on Biosolids Land Application**
Sudhakar Viswanathan, Matt Saba, Jackie Schlageter, Naomi Senehi, Daniel Suits, 374Water Inc.; Alan Oyler, City of Orlando

10:35 AM **Innovation and Business Case for Hydrothermal Liquefaction as a Solids Management Solution**
Lillian Zaremba, Marie Taponat, David Blair, Zeno Farinelli, Metro Vancouver; Lucy Cotter, Derek Lycke, Ruth Roxburgh, Jacobs

10:55 AM **Feasibility Study for the Implementation of Hydrothermal Liquefaction in Southeast Michigan: Considering Environmental, Economic, and Social Aspects**
Xavier Fonoll Almansa, University of Texas at Austin; John Norton, Andrew Marcus, Great Lakes Water Authority; William Wehner, University of Texas at Austin; Shuyun Li, Yuan Jiang, Timothy Seiple, Pacific Northwest National Laboratory; Yongli Wager, Wayne State University

11:15 AM **Fate and Partitioning of Contaminants of Emerging Concern (CECs) during Hydrothermal Liquefaction of Wastewater Sludge**
Tim Abbott, Jesse Yuzik, Mohammad Islam, University of British Columbia; Paul Kadota, David Blair, Metro Vancouver; Cigdem Eskicioglu, University of British Columbia

11:45 AM **Conference Adjourns**

Alternate **Thinking Outside the Box to Implement Advanced Biosolids Technologies**
Amy Hanna, Matt Van Horne, Hazen and Sawyer

RB Session 26: Advancing Biogas and RNG: Innovations and Regulatory Challenges

Friday, May 9, 2025 Room: 315
10:15 AM - 11:45 AM 1.5 PDHs

Moderator: Raj Chavan, Ardurra

10:15 AM **Alternative Approach to Accelerate Beneficial Biogas Utilization and RNG Production**
Giovanna Portiolli, Charlotte Water; Laurel Schaich, CDM Smith

10:35 AM **Grappling with the Biogas Regulatory Reform Rule: How RNG Projects are Responding to the Recent Shake Up from the EPA**
Shayla Allen, Arcadis; Lauren Whittaker, City of Mesa; Eric Auerbach, Arcadis

10:55 AM **Next Evolution of Biogas Upgrading - RNG System with Heat Recovery**
Becky Luna, Tyler Dougherty, Darrell Buhman, Carollo; A.D. Norford, Daniel Freedman, Metro Water Recovery

11:15 AM **Biogas/RNG Project Lifecycle**
John Maley, HDR

11:45 AM **Conference Adjourns**

RB Session 27: Polymer Optimization: How to Get the Most Bang for your Buck

Friday, May 9, 2025 Room: 316
10:15 AM - 11:45 PM 1.5 PDHs

Moderators: Chris Endryas, RK&K; Thomas Drummond, AECOM

10:15 AM **Polymer Optimization Using Machine Learning**
Joshua Registe, John Rickermann, Nick Pfister, Heidi Bauer, John Myers, Jacobs Engineering

10:35 AM **Multifaceted approach for optimizing polymer demand for belt filter press dewatering**
Haydee De Clippeleir, Khoa Nam Ngo, Tu Duong, DC Water; Parnia Behbahani, Arash Massoudieh, Catholic University; Jeffrey Proctor, John McKinley, Jun Fang, Shawna Martinelli, Nicholas Passarelli, DC Water

10:55 AM **Unveiling the Science of Polymer Activation: Exploring the Benefits through Applications**
Patrick Gallagher, Cleanwater

11:15 AM **Improving Polymer Demand and Filtrate Quality through Use of Diluted Polymer for Final Dewatering**
Khoa Nam Ngo, DC Water; Parnia Behbahani, Catholic University; Tu Duong, DC Water; Arash Massoudieh, Catholic University of America; Jeffrey Proctor, John McKinley, Diran Adalian, Jun Fang, Shawna Martinelli, Nicholas Passarelli, Haydee De Clippeleir, DC Water

11:45 PM **Conference Adjourns**

ITT Session 01: Navigating the Early Stages of a Career in Water
Wednesday, May 7, 2025 Room: 301
10:45 AM - 12:15 PM 1.5 PDHs

Coordinators: Brett Wagner, AECOM, Demi Ladipo-Obasa, DC Water; Lee Pinkerton, Metropolitan Council; Yewei Sun, Hazen and Sawyer; Sela Maka, Watercare

Speakers: Sela Maka, Watercare; Yewei Sun, Hazen and Sawyer; Bria Jameson, US Department of Energy; Kindle Williams, Stanford University; Antonio Martins, Marquette University; Megan Wittmann, University of Kansas

This session will kick off with an introductory presentation on how to get involved and volunteer with the Water Environment Federation (WEF). This presentation will highlight the many opportunities available to contribute, grow professionally, and connect with others in the water sector.

Following the presentation, a panel of young professionals and recent graduates will share their experiences, insights, and advice on navigating the early stages of a career in water. This session will offer a welcoming space for conversations, networking, and Q&A specifically geared toward young professionals and people new to the industry.

TECHNICAL SESSIONS

ITT Session 02: Nitrogen Removal Dynamics with Stored Carbon
Wednesday, May 7, 2025 Room: 302
10:45 AM - 12:15 PM 1.5 PDHs

Moderators: Matt Seib, Madison MSD; Stephanie Klaus, HRSD

10:45 AM **Deciphering the Role of PHA and Glycogen in Internally Stored Carbon Post-Denitrification Across Three WRRFs**
Riley Doyle, Alexandria Gagnon, Hampton Roads Sanitation District (HRSD); Erik Coats; Peter Vanrolleghem, Université Laval; Charles Bott, Hampton Roads Sanitation District (HRSD)

11:00 AM **Nitrous Oxide Dynamics and Carbon Dosing Optimization in Low Dissolved Oxygen Biological Nutrient Removal**
Bishav Bhattarai, Leah Pifer, Fabrizio Sabba, Prachi Salekar, Leon Downing, Black & Veatch

11:15 AM **What Have We Learned About Low DO Operation? Nitrifiers Adapt, PAOs Thrive, and SND is Not Guaranteed**
Lilian McIntosh, Kester McCullough, Haley Morgan, Alexandria Gagnon, Stephanie Klaus, Hampton Roads Sanitation District (HRSD); Peter Vanrolleghem, Université Laval; Charles Bott, Hampton Roads Sanitation District (HRSD)

11:30 AM **Low Nitrous Oxide Water Resource Recovery Facilities - Tales From Two United Kingdom Water Industry Projects**
Amanda Lake, Jacobs; Andres Nemeth, OxyMem; Giulia Pizzagalli, Anglian Water Services; Blessing Mobolaji, Boyang Wang, Cranfield University; Ajay Nair, Microvi; Aderlanio Cardoso, Peter Vale, Severn Trent Plc; Ana Soares, Cranfield University

11:45 AM **Facilitated Discussion**

12:15 PM **Session Adjourns for Networking Luncheon**

TECHNICAL SESSIONS

ITT Session 03: Monitoring and Modeling of N_2O

Wednesday, May 7, 2025 Room: 303

10:45 AM - 12:15 PM 1.5 PDHs

Moderators: David Ponder, US Water Alliance; Ashwin Dhanasekar, Brown & Caldwell

10:45 AM **Nitrous Oxide Emissions Monitoring Experience at the Los Angeles County Sanitation Districts**
Ruth Spierling, Adam Horn, Raymond Tsai, Ariana Coracero, Los Angeles County Sanitation Districts; Matt Robinette, Los Angeles County Sanitation Districts; Rachel Deco, LA County Sanitation District; Alisha Ly, Los Angeles County Sanitation Districts; Philip Ackman, LA County Sanitation District; Bruce Mansell, Los Angeles County Sanitation Districts

11:00 AM **Two Birds, One Test: Off-gas Testing for Assessing Scope 1 and Scope 2 Emissions**
Samuel Reifsnyder, Greg Stanczak, Maya Pruett, Jorge Zambrano, Samarth Suresh, Michelle Young, Malachai Woodiwiss, Jess Brown, Carollo Engineers

11:15 AM **Hybrid Modeling and Diagnosis to Reduce Nitrous Oxide Emissions at Water Resource Recovery Facilities - Insights from the First Two Long-term Measurements in Ontario**
Emma Shen, Jacobs; Jesus Flores; Lucas Brandimarte Molleta, Ivan Miletic, Leiv Rieger, Jacobs Engineering; Joe Green, Regional Municipality of Durham; Jeff Medd, Regional Municipality of Waterloo

11:30 AM **Technical Brief: A proven N_2O reduction framework for assessing, measuring, reducing, and monitoring nitrous oxide emissions from WRRFs**
Jose Porro, Cobalt Water Global, Inc.; Mostafa Khalil, modelEAU, Laval University; Julia Porro, Cobalt Water Global, Inc.

11:35 AM **Facilitated Discussion**

12:15 PM **Session Adjourns**

ITT Session 04: How DO Setpoints and Control Impacts Performance and Emissions

Wednesday, May 7, 2025 Room: 301
1:30 PM - 3:00 PM 1.5 PDHs

Moderators: Tanja Rauch-Williams, Metro Water Recovery; Manav Baid, AECOM

1:30 PM **Full-Scale Low DO Implementation - Adapting Microbes and Operations**
Lee Pinkerton, Hannah Molitor, Kelsey Hogan, Yabing Nollet, Metropolitan Council; George Sprouse, Philip Sturm, Alexa Chesley, Metropolitan Council Environmental Services

1:45 PM **Distinguishing Comammox and AOB/NOB Kinetics within Low Dissolved Oxygen Wastewater Treatment**
Megan Wittman, Belinda Sturm, Yasawantha Hiripitiyage, University of Kansas; Jose Jimenez, Mark Miller, Kayla Bauhs, Brown and Caldwell

2:00 PM **Online In-Situ Nitrification Rate Measurement Using Existing Sensors for Kinetic Parameter Estimation and Control**
Kester McCullough, Lilian McIntosh, Alexandria Gagnon, Haley Morgan, Stephanie Klaus, Hampton Roads Sanitation District (HRSD); Peter Vanrolleghem, Université Laval; Charles Bott, Hampton Roads Sanitation District (HRSD)

2:15 PM **Technical Brief 1: Pursuing Low-Cost Operational Changes to Mitigate Nitrous Oxide at Two Halton Region WRRFs**
Jeremy Kraemer, GHD; John Duong, Chandra Baker, Sanjeev Oberoi, Lizanne Pharand, Halton Region; Jose Porro, Cobalt Water Global, Inc.; Mikkel Andersen, Unisense; Liu Ye, University of Queensland; David de Haas, Bhavin Bhayani, Ben Beelen, Aby Sabzwari, GHD

ITT Session 04: How DO Setpoints and Control Impacts Performance and Emissions

Wednesday, May 7, 2025 Room: 301
1:30 PM - 3:00 PM 1.5 PDHs

2:20 PM **Technical Brief 2: Process Modeling and Aeration Control Design with ABAC for A/O SND Process with Densification**
Sara Arabi, Stantec; Cole Sigmon, Christopher Marks, City of Boulder; Chris Machado, Nathan Brown, Cody Charnas, Shelley Trujillo, Vrunda Patel, Yuan Fang, Stantec

2:25 PM **Facilitated Discussion**

3:00 PM **Session Adjourns**

ITT Session 05: How do we get to know our Flocs and Granules Better? Method Development for DAS Systems

Wednesday, May 7, 2025 Room: 302
1:30 PM - 3:00 PM 1.5 PDHs

Moderators: Bipin Pathak, Fairfax County; Derya Dursun, CWT

1:30 PM **Understanding the Kinetics of Densified Activated Sludge: Implications in Design and Optimization**
Kayla Bauhs, Jose Jimenez, Ahmed Al-Omari, Mark Miller, Manel Garrido, Brown and Caldwell; Daniel Freedman, Rudy Maltos, Metro Water Recovery; Patrick McGowan; Belinda Sturm, University of Kansas

1:45 PM **Theoretical Understanding and Successful Implementation of Kinetic Selection to Achieve Full-Scale Densified Activated Sludge (DAS)**
Yewei Sun, Haley Noteboom, Wendell Khunjar, Paul Pitt, Ron Latimer, Hazen and Sawyer

2:00 PM **Getting to Know Your Sludge Flocs - Density, Activity, and Morphology**
Keith Sears, AECOM

2:15 PM **Evaluating Full-Scale Impacts of Densified Activated Sludge on Disinfection Efficacy**
Brian Hilts, CDM Smith; Josh Goldman, Metro Wastewater Reclamation District; Rudy Maltos, Metro Water Recovery

2:30 PM **Facilitated Discussion**

3:00 PM **Session Adjourns**

ITT Session 06: Mitigation of N_2O Part 1: Innovations in Quantification and Measurements

Wednesday, May 7, 2025 Room: 303
1:30 PM - 3:00 PM 1.5 PDHs

Moderators: Amanda Lake, Emma Shen, Jacobs

1:30 PM **Introduction to Session and Overview**
Amanda Lake, Emma Shen, Jacobs

1:35 PM **Overview of Liquid Phase N_2O Measurement – Progress, Innovation, and Challenges**
Mikkel Holmen Andersen, Unisense Environment A/S

1:45 PM **Overview of Gas Phase N_2O Measurement – Progress, Innovation, and Challenges**
Sam Reifsnyder, Carollo Engineers

1:55 PM **Filling in the Data Gaps**
Jose Porro, Cobalt; Mostafa Khalil, DHI

2:05 PM **Utility Progress and Experience – A Case Study**
Ruth Spierling, Adam Horn, Los Angeles County Sanitation Districts

2:10 PM **Panel Discussion and Audience Quiz**

3:00 PM **Session Adjourns for Networking Break**

ITT Session 07: Design and Control of Low Energy Nutrient Removal for Nutrient Performance and Emissions

Wednesday, May 7, 2025 Room: 301
3:45 PM - 5:15 PM 1.5 PDHs

Moderators: Elizabeth Schrandt, Metropolitan Council; Nerea Uri Carreno, N118 Consulting

3:45 PM **Breaking Through the Low DO Barrier: Practical Design Guidance for Low DO and Suboxic Biological Nutrient Removal**
Michelle Young, Natalie Beach, Samuel Reifsnyder, Bella Dreher, Carollo Engineers; Tanja Rauch-Williams, Metro Water Recovery

4:00 PM **Practical Guidelines for Optimizing Aeration Control to Enhance Nitrogen Removal: A Case Study and Novel Control Approach**
Jacob Hatcher, George Washington University; Khoa Nam Ngo, DC Water; Chengpeng Lee, Northwestern University; Rahil Fofana, DC Water; George Wells, Northeastern University; Rumana Riffat, George Washington University; Haydee De Clippeleir, DC Water

4:15 PM **N2O Emissions from a Full-scale Wastewater Treatment Plant: Effects of Flow Modes and Key Operational Parameters.**
Marwan Al Saleh, Toronto Metropolitan University; Mostafa Khalil, modelEAU, Laval University; Ahmed Elsayed, Toronto Metropolitan University; Ahmed Alsayed, Northwestern University; Mohamed Zaghloul, Toronto Metropolitan University; Farokh Kakar, Katherine Bell, Shannon Cavanaugh, Ahmed Al-Omari, Brown and Caldwell; Elsayed Elbeshbishy, Toronto Metropolitan University

ITT Session 07: Design and Control of Low Energy Nutrient Removal for Nutrient Performance and Emissions

Wednesday, May 7, 2025 Room: 301
3:45 PM - 5:15 PM 1.5 PDHs

4:30 PM **Technical Brief 1: Microbial Dynamics and Nitrification-Denitrification Performance in a Unique Tertiary MBR System Once Dominated by Comammox**
Colin Fitzgerald, Jacobs; Michael Liu, LA County Sanitation District; Bryce Danker, Hazen and Sawyer; Rachel Deco, Bruce Mansell, Los Angeles County Sanitation Districts; Shannon Maceiko, MWD; Alan Ronn, Dian Tanuwidjaja, Joyce Lehman, Metropolitan Water District of Southern California; Timothy Constantine, Jacobs; Paul Pitt, Hazen and Sawyer

4:35 PM **Technical Brief 2: Balancing carbon, energy, and nutrients in activated sludge processes**
McKenna Farmer, Carolyn Coffey, Leon Downing, Black & Veatch; Cindy Qin, MWRD; Joseph Kozak, MWRD of Greater Chicago At Cicero Stickney WTP; Levi Straka, Metropolitan Water Reclamation District of Greater Chicago

4:40 PM **Facilitated Discussion**

5:15 PM **Session Adjourns**

ITT Session 08: How do you DAS?

Wednesday, May 7, 2025 Room: 302

3:45 PM - 5:15 PM 1.5 PDHs

Moderators: Yewei Sun, Hazen and Sawyer; Patrick O'Donnell, INVENT

3:45 PM **The Many Side Quests of DAS: Full-Scale Design Considerations and Operational Insights**
Rudy Maltos, Daniel Freedman, Metro Water Recovery; Wendell Khunjar, Blair Wisdom, Anna Scopp, Ryan Priest, Alonso Griborio, Ron Latimer, Haley Noteboom, Yewei Sun, Alyssa Mayer, Hazen and Sawyer

4:00 PM **Controlling Densification at Best Operating Points for MBR and Clarifiers: Lessons Learned from Two-year of Operation at Full-scale Plants**
Sylvain Donnaz, Hui Guo, Christopher Shaw, Niclas Astrand, Jean Gagnon, Sheila Fyfe, Matt Reeve, Veolia Water Technologies & Solutions

4:15 PM **Hydrocyclone enabled sludge densification in full scale application without an anaerobic zone.**
Pranta Roy, Zhiwu Wang, Virginia Tech

4:30 PM **Investigation of Granules in a Flow-Through Activated Sludge System via Biological Selectors**
Kam Law, William Marten, Donohue & Associates, Inc.

4:45 PM **Facilitated Discussion**

5:15 PM **Session Adjourns**

ITT Session 09: Sidestream Management and Nutrient Recovery
Wednesday, May 7, 2025 Room: 303
3:45 PM - 5:15 PM 1.5 PDHs

Moderators: Gerhard Forstner, Centrysis/CNP; Derek Lycke, Jacobs

3:45 PM **Navigating the Challenges of Sidestream Nitrogen Removal: Insights from the Fond du Lac Wastewater Treatment & Resource Recovery Facility**
Carolyn Coffey, Isaac Avila, Black & Veatch; Cody Schoepke, City of Fond Du Lac; Leon Downing, Black & Veatch

4:00 PM **Put the Lime in the Blended Sludge and Shake it all up: Centrate P Removal Improves Secondary Performance**
Heather Stewart, Derek Lycke, Mengfei Li, Colin Fitzgerald, Allen Gelderloos, Jacobs; Keith Sanders, Nicholas Jaworski, City of Ann Arbor WWTP; Jennifer Drinan, OHM Advisors

4:15 PM **Post Digestion Solids Treatment: Lessons Learned and Future Directions**
Thomas Worley-Morse, Metro Water Recovery

4:30 PM **Technical Brief 1: Resource Recovery in Controlled Environment Agriculture Using Integrated Anaerobic/Aerobic Membrane Bioreactors**
Kelsey Vought, Kennedy Jenks; Haimanote Bayabil, University of Florida; Ana Martin-Ryals

4:35 PM **Technical Brief 2: Bioremediation and Supplementation of Phosphorus Using Biochar from Genetically Modified DDP1 Plants**
Shashwat Dhanuka, Zhiwu Wang, Virginia Tech; Catherine Freed, UWM

4:40 PM **Facilitated Discussion**

5:15 PM **Session Adjourns**

ITT Session 10: Introduction to Machine Learning Approaches and Methods

Thursday, May 8, 2025 Room: 301
8:30 AM - 10:00 AM 1.5 PDHs

Moderators: Heather Stewart, Jacobs; Ashwin Dhanasekar, Brown & Caldwell

8:30 AM **One Size Does Not Fit All: Navigating the Changing Landscape of Platforms and Approaches for Digital Twins in Wastewater Treatment**
Patrick Dunlap, Aryan Emaminejad, Chinmay Gaidhani, Isaac Avila, Kaming Leung, Caitlin Ruff, Eric Redmond, Leon Downing, Black & Veatch

8:45 AM **Designing and Implementing a Control Hierarchy for Full-Scale Hybrid Digital Twin Control: From Piloting to Safe and Highly Efficient Digital Twin Operation**
Leiv Rieger, Uri Papukchiev, Ivan Miletic, Dennis Gallien, Timothy Mason, Bruce Johnson, Jacobs

9:00 AM **Monitoring Pathogen Removal across RO on Cloud--a Systematic Approach to Data-Driven Process Monitoring and Controls**
Yoko Koyama, Carollo Engineers; Andrew Huang, Orange County Water District; Kyle Thompson, Carollo Engineers; Megan Plumlee, Han Gu, Jana Safarik, Orange County Water District

9:15 AM **Recurrent neural network based wastewater influent flow forecasting**
Binay Dahal, Ricky Arora, Metropolitan Council

9:30 AM **Facilitated Discussion**

10:00 AM **Session Adjourns**

ITT Session 11: Low DO Biological Nutrient Removal: Theory, Planning, Implementation, and Results Based on a Full-Scale Operations

Thursday, May 8, 2025 Room: 302
8:30 AM - 10:00 AM 1.5 PDHs

Moderator: Tanja Rauch-Williams, Metro Water Recovery

This session will cover recent developments in operating biological nutrient removal (BNR) facilities at low dissolved oxygen (DO) levels, focusing on the potential for energy savings and system efficiency. Traditional BNR facilities typically maintain DO levels of 1.5-4 mg/L to ensure sufficient oxygen for ammonium oxidation, with aeration accounting for approximately 50% of a wastewater resource recovery facility's (WRRF) energy usage. Reducing DO is an area of growing interest due to its potential to significantly reduce this energy footprint. The session is anchored on findings from the Department of Energy-funded project, 'Transforming Aeration Energy in Water Resource Recovery Facilities through Suboxic Nitrogen Removal,' conducted by the Los Angeles County Sanitation Districts (LACSD) and Carollo Engineers. LACSD's Pomona Water Reclamation Facility (POWRF), a 15-mgd Modified Ludzack-Ettinger (MLE) activated sludge plant. Hydraulic loads into PWRF are relatively steady; however, PWRF receives high diurnal TKN influent load spikes. POWRF's goal was to operate its aeration basins under suboxic conditions, with DO concentrations maintained at or below 0.7 mg/L.

8:30 AM **Introduction**
Tanja Rauch-Williams, Metro Water Recovery

8:35 AM **National Low DO Overview**
Michelle Young, Carollo Engineers

8:40 AM **Controls Considerations for Low DO Operations**
Alex Ekster, Ekster & Associates

9:05 AM **T Implementation and Operations at LACSD**
Tom Weiland, Phil Ackman, LACSD

9:40 AM **Panel Discussion**

10:00 AM **Session adjourns for Networking Break**

ITT Session 12: Control and Emission Considerations with Nitrite Production and Anammox Processes

Thursday, May 8, 2025 Room: 303
8:30 AM - 10:00 AM 1.5 PDHs

Moderators: Michael Liu, LACSD; Shakthi Jayavelu, World Water Works

8:30 AM **Primary Effluent- and Glycerol-Driven PdNA for Large-Scale Potable Reuse: Maximizing Benefits from MBBR to IFAS Transition**
Yewei Sun, Hazen and Sawyer; Mojtaba Farrokh Shad, Bruce Mansell, Ariana Coracero, Los Angeles County Sanitation Districts; Wendell Khunjar, Paul Pitt, Ron Latimer, Yian Sun, Hazen and Sawyer

8:45 AM **Startup of Partial-denitrification/anammox in an IFAS System with Low TIN Discharge Compliance**
Chengpeng Lee, Northwestern University; Khoa Nam Ngo, Md al Sadikul Islam, Jacob Hatcher, DC Water; Rumana Riffat, George Washington University; Hossain Azam, The University of the District of Columbia; George Wells, Northwestern University; Haydee De Clippeleir, DC Water

9:00 AM **Integrating Modified 3-Stage Process and PdNA with Arrested Anaerobic Digestion to Reduce GHG Emission from WRRFs**
Yewei Sun, Hazen and Sawyer; Rahamat Tanvir, University of Missouri; Zhangtong Liao, Virginia Tech; Yebo Li, quasar energy group; Matt Wiatrowski, National Renewable Energy Laboratory; Zhiqiang Hu, Univ of Missouri Columbia; Zhiwu Wang, Virginia Tech; Violeta Nogue, National Renewable Energy Laboratory; Xumeng Ge, quasar energy group

ITT Session 12: Control and Emission Considerations with Nitrite Production and Anammox Processes

Thursday, May 8, 2025 Room: 303
8:30 AM - 10:00 AM 1.5 PDHs

9:15 AM **Technical Brief 1: What's in the Box? Is Mainstream Anammox the Key to Solving South Platte Renew's Future Nutrient Challenges?**
Stephanie Fevig, City of Englewood, Colorado; Anna Schroeder, Brianna Miller, Mason Manross, South Platte Renew; Deena Davidson, Tetra Tech Inc; Jim McQuarrie, AECOM

9:20 AM **Technical Brief 2: The Impact of Carbon Source on Nitrite Accumulation During Biological Nitrogen Removal**
Leah Pifer, Bishav Bhattarai, Fabrizio Sabba, Leon Downing, Black & Veatch

9:25 AM **Facilitated Discussion**

10:00 AM **Session Adjourns**

ITT Session 13: Are Forever Chemicals Really Forever?
Thursday, May 8, 2025 Room: 301
10:45 AM - 12:15 PM 1.5 PDHs

Moderators: Guangbin Li, University of Maryland; Persephone Ma, Brown and Caldwell

10:45 AM **A statewide analysis of per- and polyfluoroalkyl substances in Municipal Wastewater treatment plants in the State of Minnesota-Attribution of individual PFAS to specific industrial users**
Parnian Izadi, Caitlin Glover, Dr. Joe Jacangelo, Henry Croll, Stantec; Donald Ryan, Marquette University

11:00 AM **Elucidating PFAS Removal Mechanisms in Electrochemical Reactors: Overcoming Landfill Leachate Competition and Confirming PFAS Destruction.**
Omar Mohamed, Martha Dagnew, Western University

11:15 AM **Bench-Scale Comparison of PFAS Removal and Destruction Technologies in Landfill Leachate: A Comprehensive Study**
Fabrizio Sabba, Christian Kassar, Synthia Mallick, Gary Hunter, Leon Downing, Black & Veatch

11:30 AM **QACs: The Emerged Contaminants Nobody Is Talking About But Many Are Struggling With**
Andrew Shaw, Black & Veatch; Patrick McNamara, Marquette University; Ulrich Bazemo, Black & Veatch

11:45 AM **Facilitated Discussion**

12:15 PM **Session Adjourns**

ITT Session 14: Intensification of Anaerobic Digestion
Thursday, May 8, 2025 Room: 302
10:45 AM - 12:15 PM 1.5 PDHs

Moderators: Karthik Manchala, GHD; Gerhard Forstner, Centrysis/CNP

10:45 AM **Pushing Feed Rates Beyond Limits to Accelerate Startup of THP Digestion: Insights from an In-Situ Pilot Study**
Yitao Li, Virginia Tech; Mary Strawn, Lisa Racey, Fasil Haile, Arlington County Water Pollution Control Bureau; Brian Balchunas, Chris Moline, HDR Engineering Inc.; Matthew Higgins, Bucknell University; John Novak, Zhiwu Wang, Virginia Tech

11:00 AM **Supercharging or Souring your Digesters: How you feed HSW matters**
Emma Guertin; Savanna Smith, North Carolina State University

11:15 AM **Evaluating the Economic and Operational Viability of Pre- and Post-Digestion Thermal Hydrolysis Processes with Thermal Drying at New York City WRRFs**
Alex Rosenthal, Krishnamurthy Ramalingam, The City College of New York; John Fillos, City College; Roland Jezek; Natalia Perez, NYCDEP; Sudhir Murthy, NEWhub Corp; Keith Hamilton, SEVAR AG

11:30 AM **Combining Thermal Hydrolysis with Advanced Thermal Conversion Processes for Micro-Contaminant Destruction**
William Barber, Cambi

11:45 AM **Facilitated Discussion**

12:15 PM **Session Adjourns**

ITT Session 15: Balancing Nutrient Removal, Settleability, and Emissions
Thursday, May 8, 2025 Room: 303
10:45 AM - 12:15 PM 1.5 PDHs

Moderators: Demi Ladipo-Obasa; DC Water; Caroline Nguyen, WSSC Water

10:45 AM **Understanding Emissions, Densification, and Nutrient Performance while Transitioning to Low Energy BNR at the Full Scale**
Gretchen Gutenberger, Leon Downing, Sara Sadreddini, Black & Veatch; Tyler Biese, Joe Watson, New Water, Green Bay Metro Sewerage District; Sarah Elger, John Koch, Taylor Jordan, EnviroMix

11:00 AM **Bringing It All Together: Designing a Densified AO/SND Process for Efficient Biological Nutrient Removal**
Nathan Brown, Sara Arabi, Stantec; Cole Sigmon, Christopher Marks, City of Boulder; Cody Charnas, Chris Machado, Shelley Trujillo, Stantec Consulting

11:15 AM **Towards Unifying Densification and Low TN / TP Operation at the South Durham Water Reclamation Facility**
David Wankmuller, Hazen and Sawyer; Dirk Cartner, Charles Cocker, City of Durham; Patricia Stiegel, Katya Bilyk, Yewei Sun, Ankit Pathak, Wendell Khunjar, Haley Noteboom, Hazen and Sawyer

11:30 AM **Technical Brief: Maximizing Efficiency and Augmenting Operational Decision Making: A Case Study of Hybrid Modeling at Fond du Lac Wastewater Treatment & Resource Recovery Facility**
Chinmay Gaidhani, Carolyn Coffey, Aryan Emaminejad, Patrick Dunlap, Isaac Avila, Black & Veatch; Keaton Lesnik, Maia Analytica; Cody Schoepke, City of Fond Du Lac; Leon Downing, Black & Veatch

11:35 AM **Facilitated Discussion**

12:15 PM **Session Adjourns**

ITT Session 16: Mitigation of N_2O Part 2: Balancing N_2O and Intensification

Thursday, May 8, 2025 Room: 301
1:30 PM - 3:00 PM 1.5 PDHs

Moderators: Amanda Lake, Jacobs; Michelle Young, Carollo Engineers

1:30 PM **Introduction to Session and Overview**
Amanda Lake, Jacobs; Michelle Young, Carollo Engineers

1:35 PM **Key Learnings about Intensification and N_2O...So Far**
Nerea Uri Carreno, N118 Consulting; Narasimman Lakshminarasimman, University of Waterloo

1:45 PM **What Do We Know about N_2O and Biofilms?**
Fabrizio Sabba, Black & Veatch

1:55 PM **Innovating for Intensification and Low N_2O**
Daniel Coutts, Veolia

2:05 PM **Lessons to Date**
Sela Maka, Watercare

2:10 PM **Panel Discussion**

3:00 PM **Session adjourns for Networking Break**

ITT Session 17: Advanced Technologies for the Destruction of Emerging Contaminants in Water and Wastewater Treatment

Thursday, May 8, 2025 Room: 302
1:30 PM - 3:00 PM 1.5 PDHs

Moderators: Todd Williams, Jacobs; Lloyd Winchell, Brown and Caldwell

As the water/wastewater/waste management sector faces growing pressure to address emerging contaminants, technologies such as plasma gasification, supercritical water oxidation, pyrolysis, gasification, and incineration offer promising pathways for effective destruction. Each technology presents unique advantages and challenges, from energy recovery to emissions control. This paper provides a comparative analysis of these technologies, focusing on their ability to destroy persistent contaminants and the potential environmental and economic benefits they offer.

1:30 PM **Introduction**
Todd Williams, Jacobs

1:40 PM **Pyrolysis**
Stefano Pessina, Bioforcetech Corporation

1:50 PM **Gasification**
Michael Nicholson, Ecoremedy LLC

2:00 PM **Incineration**
Levant Takmaz, Veolia Water Technologies

2:10 PM **SCWO**
Naomi Senehi, 374Water Inc.

2:20 PM **Plasma**
Jim Henderson, Heartland Water Technology, Inc.

2:30 PM **Panel Discussion**
All speakers plus Sudhakar Viswanathan, 374Water; Garrett Benisch, Bioforcetech; Jon Orr, Heartland Water Technology

2:50 PM **Outro**
Lloyd Winchell, Brown and Caldwell

3:00 PM **Session adjourns**

ITT Session 18: Different Approaches to Diverting COD Upstream of Nutrient Removal Facilities

Thursday, May 8, 2025 Room: 303
1:30 PM - 3:00 PM 1.5 PDHs

Moderators: Marija Peric, Rachel Hanson, AECOM

1:30 PM **Innovative approach for replacing chemically enhanced with optimal conventional primary treatment**
Hany Gerges, HDR; Jackie Yee, Steve Delight, Dublin San Ramon Services District; Michael Falk, HDR

1:45 PM **Optimization of Advanced Primary Treatment Technologies for Carbon Diversion and Management at Water Resource Recovery Facilities**
Onder Caliskaner, Derya Dursun, Yuanbin Wu, Everardo Martinez, Caliskaner Water Technologies; George Tchobanoglous, UC Davis; Brian Davis, Linda County Water District

2:00 PM **Understanding Settleability in High-Rate Activated Sludge Systems Using Video Analysis**
Yuang Li, DC Water; Arash Massoudieh, Catholic University of America; Rumana Riffat, George Washington University; Hossain Azam, The University of the District of Columbia; Khoa Nam Ngo, Haydee De Clippeleir, DC Water; Sakib Ahmad, The George Washington University; Arame Diop, Catholic University of America; Maria Ramirez, University of the District of Columbia; April Gu, Cornell University

2:15 PM **Evaluating Clarifier Capacity and Performance of a High-Rate Activated Sludge System**
Sakib Ahmad, The George Washington University; Yuang Li, Khoa Nam Ngo, DC Water; Arame Diop, Catholic University of America; Maria Mendoza, The University of the District of Columbia; Arash Massoudieh, Catholic University of America; Hossain Azam, The University of the District of Columbia; April Gu, Cornell University; Rumana Riffat, George Washington University; Haydee De Clippeleir, DC Water

2:30 PM **Facilitated Discussion**

3:00 PM **Session Adjourns**

ITT Session 19: Mitigation of N_2O Part 3: How do we Achieve Low Energy, Low Influent Carbon, and Low N_2O BNR?

Thursday, May 8, 2025 Room: 301
3:45 PM - 5:15 PM 1.5 PDHs

Moderators: Amanda Lake, Jacobs; Fabrizio Sabba, Black & Veatch

3:45 PM **Welcome and Introduction**
Amanda Lake, Jacobs; Fabrizio Sabba, Black & Veatch

3:50 PM **Lessons to Date from Full Scale Low DO**
Michelle Young, Carollo Engineers

3:55 PM **Microbial Distinctions and Learnings for Low DO and Low N_2O**
Belinda Sturm, University of Kansas

4:05 PM **What Does Shortcut N Mean for N_2O Based on What We Know Now?**
Charles Bott, Hampton Roads Sanitation District

4:15 PM **What Else Can We Do?**
Ahmed AlSayed, Northwestern University

4:25 PM **Panel Discussion**

5:15 PM **Session Adjourns**

ITT Session 20: Electrified Resource Recovery and PFAS Remediation
Thursday, May 8, 2025 Room: 302
3:45 PM - 5:15 PM 1.5 PDHs

Moderator: Nick Zou, Auburn University

The wastewater industry faces growing pressure to enhance sustainability by recovering valuable resources, such as critical nutrients and metals, generating renewable energy, and producing reusable freshwater. Electrochemical engineering presents a promising solution to these challenges, but its practical application in wastewater treatment remains underdeveloped. This session will explore key challenges, including overcoming the electrochemical limitations of wastewater, efficiently converting persistent pollutants, and improving the recovery of diluted nutrients, metals, and organics. The focus will be on bridging electrochemical technologies with wastewater process engineering to drive real-world progress.

3:45 PM **Welcome and Introduction**

3:50 PM **Electrochemical-Driven Partial Denitrification Anammox (ePdNA) Process for Nitrogen Removal in Wastewater Treatment**
Yewei Sun, Hazen and Sawyer

4:05 PM **National Alliance for Water Innovation's Efforts in Electrified Treatment of Selenium-Impaired Wastewaters**
Nick Zou, Auburn University; Thomas Igou, WaterTectonics

4:20 PM **Wastewater Management for Dissolved Metals Using Electrochemical Methods**
James Landon, ElectraMel

4:35 PM **Treatment of PFAS in Water by Electrochemical Oxidation with Titanium Suboxide Anodes**
Qingguo (Jack) Huang, University of Georgia

4:50 PM **Beginning of the End: Piloting electrochemical oxidation for PFAS destruction in NM**
Conner Murray, Hazen and Sawyer

5:05 PM **Facilitated Discussion**

5:15 PM **Session adjourns**

ITT Session 21: Why Would You Implement MABR? Treatment, Capacity, and Emissions Considerations

Thursday, May 8, 2025 Room: 303
3:45 PM - 5:15 PM 1.5 PDHs

Moderators: Raj Chavan, Ardurra; Edward Becker, Arcadis

3:45 PM **MABRs are neat , but how do I design them? A practical design methodology for hybrid MABR/AS**
Matt Reeve, Veolia Water Technologies & Solutions; Dwight Houweling, Dynamita North America Inc.; Eric Redmond, Francesca Cecconi, Black & Veatch

4:00 PM **Membranes Vs Concrete: Defining the value and limitations of hybrid MABR retrofits**
Jon Liberzon, Francesca Ceccone, Leah Pifer, Gretchen Gutenberger, Black & Veatch; Neri Nathan, Fluence; Leon Downing, Black & Veatch; Chever Ben Yosef, Yuval Nevo, Fluence

4:15 PM **Assessing the benefits of MABR for warm and cold climates**
Komal Rathore, Carollo Engineers; Nick Guho, University of Idaho; Anne Conklin, Andre Gharagozian, Carollo Engineers

4:30 PM **Solving the process intensification & N_2O emission puzzle with MABR**
Daniel Coutts, Zebo Long, Jeff Peeters, Sylvain Donnaz, Veolia

4:45 PM **Facilitated Discussion**

5:15 PM **Session Adjourns**

ITT Session 22: Plan for it, Hope for it, and then Optimize it: Working Toward EBPR Optimization in Carbon Limited Systems

Friday, May 9, 2025 Room: 301
8:30 AM - 10:00 AM 1.5 PDHs

Speakers: Leon Downing, Black & Veatch; Adrienne Menniti, Clean Water Services; Cameron Colby, Fox River Water Reclamation District; Cody Schoepke, City of Fond du Lac

This session will focus on three case studies where new approaches to understanding and optimizing EBPR processes will be discussed. The three core topics will be: rate testing to better understand the impacts of carbon type of EBPR performance and storage products; investigating production versus elutriation in fermentation to produce the right type and quantity of carbon; EBPR testing to understand storage compounds, uptake rates, and impacts of carbon type For several years, Clean Water Services has routinely measured the residual phosphorus uptake (RPU) rate as an operational tool to gauge BPR stability.

ITT Session 23: Automation, Analytics, and Decision Support for Operational Stability and Optimization

Friday, May 9, 2025 Room: 302
8:30 AM - 10:00 AM 1.5 PDHs

Moderator: Prabhushankar Chandrasekeran, Arcadis

This session will delve into the latest trends and best practices in automation, analytics, and decision support for wastewater professionals. Participants will gain a comprehensive understanding of how these technologies can be leveraged to achieve operational stability, optimize processes, and make data-driven decisions. The workshop will cover a range of topics, including:

- Automation Technologies: Explore the various automation technologies available for wastewater treatment plants, such as programmable logic controllers (PLCs), supervisory control and data acquisition (SCADA) systems, and advanced process control (APC) systems.
- Data Analytics and Machine Learning: Learn how to use data-driven approaches to identify trends, anomalies, and potential issues before they escalate. Explore the use of predictive analytics to forecast future performance and optimize maintenance schedules.
- Decision Support Systems: Gain insights into the development and implementation of decision support systems (DSS) tailored to the specific needs of wastewater treatment plants.
- Case Studies and Real-world Applications: Explore real-world case studies showcasing the successful implementation of automation, analytics, and decision support technologies in wastewater treatment plants.

8:30 AM **Topic Introduction**
Prabhu Chandrasekeran, Arcadis

8:40 AM **Utility and Vendor Case Studies:**

- Zonetta English, Louisville MSD
- Brian Persing, WSSC Water
- Dekalb DWM
- Tanush Wadhawan, Dynamita
- Schneider Electric

9:30 AM **Panel Discussion and Interactive Session**

10:00 AM **Session adjourns for Networking Break**

ITT Session 24: Beyond Process: PdNA Design Innovations and Challenges

Friday, May 9, 2025 Room: 303
8:30 AM - 10:00 AM 1.5 PDHs

Speakers: Pusker Regmi, Stantec; Ahmed Al-Omari, Brown and Caldwell; Christine deBarbadillo; Haydee De Clippeleir, DC Water

The adoption of Partial Denitrification-Anammox (PdNA) systems has marked a significant shift in the wastewater treatment sector, moving from a focus on process optimization to the complexities of system design. This session will explore this transition by presenting three distinct perspectives on the critical aspects of PdNA implementation: operations, design, and technology integration. Attendees will gain valuable insights into the practicalities of scaling PdNA technologies, and the collaborative efforts required to bring these systems from research to real-world application.

ITT Session 25: Management of Carbon to Maximize Phosphorus Removal

Friday, May 9, 2025 Room: 301
10:15 AM - 11:45 AM 1.5 PDHs

Moderators: Anna Cleaver, AECOM; Travis Meyer, CDM Smith

10:15 AM **Enhancing Biological Phosphorus Removal: A Two-Year Comparative Study of a Full-Scale S2EBPR Process**
Khashayar Aghilinasrollahabadi, University of Maryland; Caroline Nguyen, Yerman Saavedra, WSSC Water; Birthe Kjellerup, Guangbin Li, Francis Schmidt, University of Maryland

10:30 AM **Interrogating EBPR Performance Data and Process Metrics to Refine Process Monitoring and Future Process Designs for Two Clean Water Services EBPR WRRFs**
Erik Coats, University of Idaho; Adrienne Menniti, Peter Schauer, Clean Water Services

10:45 AM **Evaluating Primary Sludge Fermentation in Existing Full-Scale Gravity Thickeners**
Shafkat Islam, George Washington University; Khoa Nam Ngo, DC Water; Jaydev Zaveri, Alexander Fitenko, Cornell University; Joshuan Mensah, The Catholic University of America; Rumana Riffat, George Washington University; Arash Massoudieh, Catholic University of America; April Gu, Cornell University; Haydee De Clippeleir, DC Water

11:00 AM **Full Scale Testing of Fermentation in Illinois**
Ethan Yen, Patrick Dunlap, Leon Downing, Black & Veatch

11:15 AM **Facilitated Discussion**

11:45 AM **Session Adjourns**

ITT Session 26: Different Paths to the Same Goal: Intensification of Biological Processes

Friday, May 9, 2025 Room: 302
10:15 AM - 11:45 AM 1.5 PDHs

Moderators: Patrick O'Donnell, INVENT; Phil Ackman, Los Angeles County Sanitation Districts

10:15 AM **Full Scale Hydrocyclone Demonstration at Charlotte Water's McDowell Creek WRRF: Case Study - Using Image Analysis to Quantify Foaming to Supplement Settleability and Treatment Performance Evaluation**
Muriel Steele, Charlotte Water; Isaac Avila, Black & Veatch; Christine deBarbadillo

10:30 AM **Implementation of kenaf as a ballasting agent for quick rescue to accidental loss of sludge settleability.**
Pranta Roy, Virginia Tech; Matt Brooks, Robert Angelotti, UOSA; Zhiwu Wang, Virginia Tech

10:45 AM **Insights from Biofilm Characterization in a Full-Scale Hybrid Membrane Aerated Biofilm Reactor**
Narasimman Lakshminarasimman; Michelle McKnight, Josh Neufeld, Wayne Parker, University of Waterloo

11:00 AM **Technical Brief 1: Designing hybrid MABRs to achieve intensified nutrient removal and low nitrous oxide emissions**
Kevan Brian, Waterco New Zealand; Sela Maka, Watercare; Nerea Uri Carreno, N118 Water Consulting

11:05 AM **Technical Brief 2: Reducing Capital Cost in Process Design with Digital Twins: A Case Study at Marine Park WRRF**
Cheng Yang, Bruce Johnson, Miaomiao Zhang, Matthew Noesen, Corey Klibert, Ivette Pinochet Troncoso, Jacobs; Frank Dick, City of Vancouver WA - Public Works

11:10 AM **Facilitated Discussion**

11:45 AM **Session Adjourns**

ITT Session 27: Application of Partial Denitrification in High Strength Wastewater

Friday, May 9, 2025 Room: 303
10:15 AM - 11:45 AM 1.5 PDHs

Moderators: Brett Wagner, AECOM; Shakthi Jayavelu, World Water Works

10:15 AM **Pilot Scale Application of Partial Nitritation Anammox and Partial Denitrification Anammox Treating Industrial Waste with High Ammonia and Nitrate**
Joseph Wooten, Michael Parsons, Stephanie Klaus, Megan Bachmann, Hampton Roads Sanitation District (HRSD); Chandler Johnson, World Water Works, Inc.; Charles Bott, Hampton Roads Sanitation District (HRSD)

10:30 AM **Partial Denitrification-Anammox Treatment of Reverse Osmosis Concentrate**
Bruce Mansell, Ariana Coracero, Los Angeles County Sanitation Districts

10:45 AM **Advancing Ion Exchange-Enhanced Anammox: Applications in High- and Low-Strength Wastewater Treatment**
Zhangtong Liao, Zhiwu Wang, David Kuhn, Virginia Tech; Leiyu He, Meng Wang, Penn State University

11:00 AM **Centrate Treatment Optimization: Alternative process control transitions to nitritation-denitritation and halves methanol consumption**
Matt Kowalski, AECOM

11:15 AM **Facilitated Discussion**

11:45 AM **Session Adjourns**

POSTER PRESENTATIONS

Poster Presentations
Wednesday, May 7, 10:00 a.m. – 6:15 p.m.
Thursday, May 8, 10:00 a.m. – 3:45 p.m.

The following poster presentations will be set up for viewing in the exhibit hall during hall hours, including during networking breaks, luncheons, and receptions:

Evaluating Effects of Backwashing GAC on PFAS and TOC Breakthrough
Erin Love, Virginia Tech

Integrated Approaches for Nutrient Capture and Recovery from Wastewater
Karthik Manchala, Virginia Tech

Microaerating Anaerobic Digesters Reduces Hydrogen Sulfide in the Biogas
Manav Baid, AECOM/University of Wisconsin-Madison

Predicting Protein Rejection in Membrane Separations Using Machine Learning Techniques
Gbenga Daniels, Louisiana State University

Pilot-scale conversion of food waste to Poly-(3-hydroxybutyrate-co-3-hydroxyvalerate) based bioplastics by using Haloferax Mediterranei
Mingxi Wang, Virginia Tech

Robust pretreatment of industrial wastewater using a 3D electrochemical reactor
Zilan Yang, Auburn University

Understanding water matrix effects and energy efficiency in electrooxidation of PFAS in aqueous waste streams
Jiaxiang Zhao, Auburn University

Biomethane Methane Production Potential of Different Industrial Wastes: The Impact of Food-To-Microorgranism(F/M) Ratio
Ahmed El Sayed, Toronto Metropolitan University (formerly Ryerson University)

Machine Learning for Predicting and Optimizing Nitrous Oxide Emissions
Gnanaraj Augustine, Columbia University

POSTER PRESENTATIONS

Poster Presentations
Wednesday, May 7, 10:00 a.m. – 6:15 p.m.
Thursday, May 8, 10:00 a.m. – 3:45 p.m.

The following poster presentations will be set up for viewing in the exhibit hall during hall hours, including during networking breaks, luncheons, and receptions:

Synergizing Novel Bioaugmentation Technology with Hydrothermal Pretreatment to Intensify AD from Municipal Sewage Sludge
Meagan Morrow, Toronto Metropolitan University

Method Calibration and Data Scarcity in Greenhouse Gas Monitoring of Wastewater Systems
Yuqing Yan, Princeton University

Integration of Fenton Chemistry and White Rot Fungi into wastewater treatment for recalcitrant organic pollutant degradation.
Shelby Hackenburg, Columbia University

Sensitivity Analysis of Nitrous Oxide Emission Factors in a Sidestream Nitritation-Denitritation Process Model
Lauren Prudhomme, The City College of New York

Why LCFAs are the Primary Bottleneck in Anaerobic Co-Digestion: Implications of Saturated and Unsaturated Fatty Acid Content on Key Microbial Communities Involved in Lipid Degradation
Julia Ann Funk, Clemson University, Jacobs Engineering

Reducing the Inhibitory Effects on Ammonia Oxidizing Bacteria in Thermally-hydrolyzed + Anaerobically-digested Biosolids Sidestream Treatment
Michaela Morales, North Carolina State University, Hazen and Sawyer

Advanced Oxidation Pretreatment (AOP) of Industrial Wastewater for Alleviating Nitrification Inhibition
Tasmin Binty, University of Kansas

The Advantages of Granular Sludge in Treating Hydrothermal Liquefaction Wastewater: A Bench to Pilot Study
Cyrus Li, Virginia Tech

TECHNOLOGY SPOTLIGHTS

Technology Spotlight I
Wednesday, May 7
12:40 p.m. – 1:25 p.m.

The three exhibitors listed below will hold a 20-minute presentation twice each. Participants are invited to attend a different presentation at each of the times listed below. Choose the presentation you would like to attend. Each presentation happens at the exhibitor's booth. Presentations kick off concurrently at: ***12:45 p.m.*** *in each of the three booths.*

12:40 p.m.	Technology Spotlight Introduction at entrance to exhibit hall
12:45 p.m.	3 Simultaneous Presentation A
1:05 p.m.	3 Simultaneous Presentation B

Booth 2014 **Live Demonstration of Liquid Turning Supercritical**
Naomi Senehi, Sudhakar Viswanathan, 374Water Inc.

Booth 2118 **Biosolids Biochar – The Australian Experience with Commercial Production and Value Realisation**
Deric Dignon, Pyrocal

Booth 2214 **Transforming Biosolids Management: Energy Recovery & Waste Elimination Through Gasification**
Shyla Lindner, Aries Clean Technologies

TECHNOLOGY SPOTLIGHTS

Technology Spotlight II
Wednesday, May 7
3:15 p.m. – 3:40 p.m.

The two exhibitors listed below will each hold a 20-minute presentation once each. Participants are invited to attend a different presentation at each of the times listed below. Choose the presentation you would like to attend. Each presentation happens at the exhibitor's booth. Presentations kick off concurrently at: ***3:20 p.m.*** *in each of the two booths.*

3:15 p.m.	Technology Spotlight Introduction at entrance to exhibit hall
3:20 p.m.	2 Simultaneous Presentation A

Booth 1807 **Maximizing the Efficiency of Dewatered Biosolids Transport: Discover an innovative approach that combines pneumatic dense-phase conveying with progressive cavity pumping**
Westyn Bennington, SEEPEX

Booth 1907 **Using Computational Fluid Dynamics (CFD) in the Design of Mixing Solutions**
Erik Larson, Vaughan Company

Technology Spotlight III
Thursday, May 8
10:15 a.m. - 10:40 a.m.

The two exhibitors listed below will each hold a 20-minute presentation once each. Participants are invited to attend a different presentation at each of the times listed below. Choose the presentation you would like to attend. Each presentation happens at the exhibitor's booth. Presentations kick off concurrently at: ***10:20 a.m.*** *in each of the two booths.*

10:15 a.m.	Technology Spotlight Introduction at entrance to exhibit hall
10:20 a.m.	2 Simultaneous Presentation A

Booth 1714 **Performic Acid (PFA) Onsite Generator (DEX unit) and Online Detection of Residual PFA**
Iris Porat, Kemira Water Solutions

Booth 2415 **Sidestream ammonia recovery for digestion intensification: electrochemical ammonia stripping for decreased footprint and chemical feedstocks**
Kindle Williams, Recovered Potential/Stanford University

EXHIBITION INFORMATION

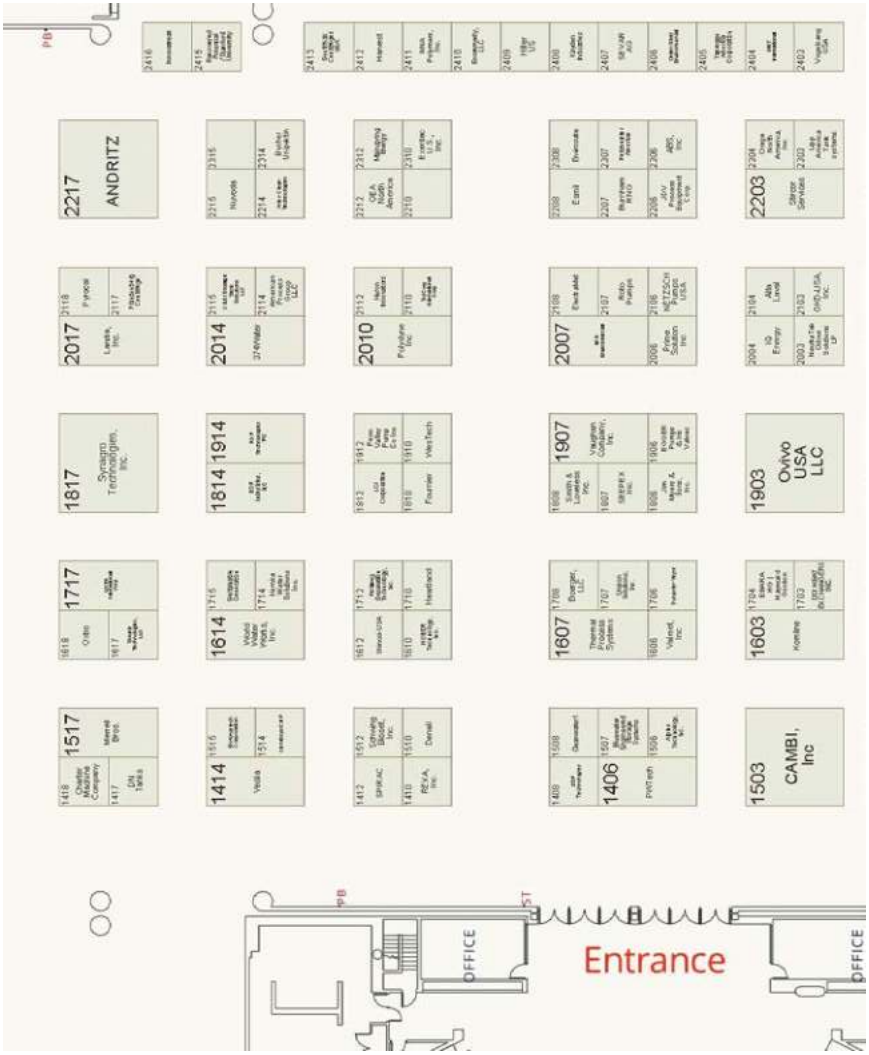
Exhibition Schedule

Wednesday, May 7	**10:00 am – 6:30 pm**	**Exhibit Hall Open**
	10:00 am – 10:45 am	Networking Break
	11:45 pm – 1:30 pm	Networking Luncheon
	12:40 pm – 1:25 pm	Technology Spotlight I
	3:00 pm – 3:45 pm	Networking Break
	3:15 pm – 3:40 pm	Technology Spotlight II
	4:45 pm – 6:30 pm	Networking Reception
Thursday, May 8	**10:00 am – 3:45 pm**	**Exhibit Hall Open**
	10:00 am – 10:45 am	Networking Break
	10:15 am – 10:40 am	Technology Spotlight II
	11:45 pm – 1:30 pm	Networking Luncheon
	3:00 pm – 3:45 pm	Networking Break

Individuals under 18 entering the Exhibition must be accompanied by a parent or guardian at all times. The parent or guardian must obtain a badge at registration, and assumes all risk and responsibility for the minor's safety.

Due to the proprietary nature of the displays, photography of displays and materials is forbidden without exhibitors' express permission.

EXHIBIT HALL FLOOR PLAN



EXHIBITOR DIRECTORY

As of April 24, 2025

For Company Descriptions, view Exhibitors in the mobile app.

374Water..... Booth 2014
https://374water.com/

ABS, Inc..... Booth 2306
Onsiteferm.com

Alfa Laval, Inc..... Booth 2104
https://www.alfalaval.us/

Alpine Technology, Inc..... Booth 1506
https://www.alpinetechnology.com

American Process Group LLC..... Booth 2114
https://www.amprocessgroup.com

ANDRITZ..... Booth 2217
https://www.andritz.com/separation-en/industries/environment

Aries Clean Technologies..... Booth 2214
https://ariescleantech.com/

BCR Environmental..... Booth 2007
http://www.bcrinc.com/

BDP Industries, Inc..... Booth 1814
https://www.bdpindustries.com/

Bioforcetech Corporation..... Booth 1515
http://www.bioforcetech.com/

Bluewater Engineered Storage Systems..... Booth 1507
https://bwtanks.com/

Boerger, LLC..... Booth 1708
https://www.boerger.com/

Bucher Unipektin..... Booth 2314
http://bucherunipektin.com/

Burnham RNG..... Booth 2207
https://www.burnhamrng.com/

EXHIBITOR DIRECTORY

CAMBI, Inc ..... Booth 1503
https://cambi.com/

CB&I Storage Tank Solutions LLC ..... Booth 2115
https://www.cbi.com/

Centrisys/CNP ..... Booth 1514
https://www.centrisys-cnp.com/

Charter Machine Company ..... Booth 1418
https://www.chartermachine.com/

Cleanwater1 ..... Booth 1508
https://www.cleanwater1.com/

DDI HEAT EXCHANGERS INC. ..... Booth 1703
http://www.ddi-heatexchangers.com/

Denali ..... Booth 1510
https://www.denalicorp.com/

DMT International ..... Booth 2404
https://dmt-international.com/

DN Tanks ..... Booth 1417
https://www.dntanks.com/

Dumpster-Veyor ..... Booth 1706
https://www.cordellmfg.com/

EBARA HG | Hayward Gordon ..... Booth 1704
www.ebarahg.com

Ecoremedy, LLC ..... Booth 2410
https://ecoremedyllc.com/

EGGER Pumps & Iris Valves ..... Booth 1906
https://www.eggerpumps.com/

ElectraMet ..... Booth 2108
www.electramet.com

EXHIBITOR DIRECTORY

Envirosuite ..... **Booth 2308**
https://www.envirosuite.com/

Esmil ..... **Booth 2208**
www.esmil.us

Exentec U.S., Inc. ..... **Booth 2310**
www.exentec.net

Flottweg Separation Technology, Inc. ..... **Booth 1712**
https://www.flottweg.com/

Fournier ..... **Booth 1810**
http://fournierindustries.com/en/

Franzenburg Centrifuge ..... **Booth 2117**
https://www.frznbrg.com/

GEA North America ..... **Booth 2212**
https://gea.com/

GKD-USA, Inc. ..... **Booth 2103**
http://www.gkd-group.com

Green Steel Environmental ..... **Booth 2406**
https://www.greensteelenvironmental.com/

Harvest ..... **Booth 2412**
www.harvest.llc

Heartland ..... **Booth 1710**
http://www.oneheartland.com

Heron Innovators ..... **Booth 2112**
https://heroninnovators.com/

Hiller US ..... **Booth 2409**
www.hiller-us.com

HUBER Technology, Inc. ..... **Booth 1610**
https://www.huber-technology.com/

EXHIBITOR DIRECTORY

Innovatreat ..... Booth 2416
www.innovatreat.com

IQ Energy..... Booth 2004
https://www.iqenergy.ca

JDV Process Equipment Corp..... Booth 2206
JDVEquipment.com

Jim Myers & Sons, Inc. ..... Booth 1806
https://www.jmsequipment.com/

Kayden Industries..... Booth 2408
www.kaydenindustries.com/

Kemira Water Solutions Inc. ..... Booth 1714
https://www.kemira.com/

Komline ..... Booth 1603
https://komline.com/

Landia, Inc..... Booth 2017
https://www.landiainc.com/

LCI Corporation..... Booth 1812
https://www.lcicorp.com/sludge-drying/thin-film-sludge-dryer

Lipp America Tank Systems..... Booth 2303
https://www.lipp-ats.com/

Lystek International Corp..... Booth 1717
https://www.lystek.com/

Mainspring Energy ..... Booth 2312
www.mainspringenergy.com

Merrell Bros ..... Booth 1517
https://www.merrellbros.com/

NETZSCH Pumps USA ..... Booth 2106
https://pumps-systems.netzsch.com/

NeutraTek Odour Solutions LP..... Booth 2003
https://neutratek.com/

EXHIBITOR DIRECTORY

NNA Polymers, Inc ..... Booth 2411
https://www.nuoer.com

Nuvoda ..... Booth 2215
https://www.nuvodaus.com/

Orege North America, Inc ..... Booth 2304
https://www.orege.com/en/

Ovivo USA LLC ..... Booth 1903
https://www.ovivowater.com/

Oxbo..... Booth 1618
https://oxbo.com/

Penn Valley Pump Co Inc..... Booth 1912
http://www.pennvalleypump.com/

Polydyne Inc ..... Booth 2010
polydyneinc.com

Prime Solution Inc..... Booth 2006
https://www.psirotary.com/

Putzmeister..... Booth 2307
https://www.putzmeisteramerica.com/

PWTech..... Booth 1406
https://www.pwtech.us/

Pyrocal ..... Booth 2118
https://www.pyrocal.com.au/

RDP Technologies Inc..... Booth 1914
https://rdptech.com/

Recovered Potential / Stanford University ..... Booth 2415
https://www.recoveredpotential.com

REXA, Inc. ..... Booth 1410
https://www.rexa.com/

EXHIBITOR DIRECTORY

Roto Pumps..... Booth 2107
https://www.rotopumps.com/

Schwing Bioset, Inc. ..... Booth 1512
https://www.schwingbioset.com/

SciCorp International Corp..... Booth 2110
https://scicorp.net/

SEEPEX Inc..... Booth 1807
https://www.seepex.com/en-us/

Sentrimax Centrifuges USA..... Booth 2413
https://www.sentrimax.com/

SEVAR AG ..... Booth 2407
www.sevarag.com

Shincci-USA..... Booth 1612
http://www.shincci-usa.com/

Smith & Loveless Inc. ..... Booth 1808
https://www.smithandloveless.com/

Source Technologies, LLC. ..... Booth 1617
https://www.sourcetechnologiesllc.com/

SPIRAC..... Booth 1412
https://www.spirac.com/

Stircor Services ..... Booth 2203
www.stircor.com

Sustainable Generation..... Booth 1715
https://sustainable-generation.com/

Synagro Technologies, Inc. ..... Booth 1817
https://www.synagro.com/

Taprogge America Corporation..... Booth 2405
WWW.TAPROGGE.COM

Thermal Process Systems. ..... Booth 1607
https://www.thermalprocess.com/

EXHIBITOR DIRECTORY

Unison Solutions, Inc. ..... **Booth 1707**
https://www.unisonsolutions.com/

USP Technologies ..... **Booth 1408**
https://www.usptechnologies.com/

Valmet, Inc ..... **Booth 1606**
https://www.valmet.com/

Vaughan Company, Inc. ..... **Booth 1907**
http://www.chopperpumps.com/

Veolia ..... **Booth 1414**
https://www.veoliawatertech.com/expertise/municipal-solutions

Vogelsang USA ..... **Booth 2403**
https://www.vogelsang.info/en-us/

WesTech ..... **Booth 1910**
https://westech-inc.com/

World Water Works, Inc. ..... **Booth 1614**
https://www.worldwaterworks.com/

CONFERENCE SCHEDULE AT-A-GLANCE

Tuesday, May 6

7:30 AM – 5:00 PM	Registration
8:30 AM – 5:00 PM	Workshops A, B, F, G
8:30 AM – 12:00 PM	Workshop C
1:30 PM – 5:00 PM	Workshops D, E

Wednesday, May 7

7:30 AM – 5:00 PM	Registration
8:30 AM – 10:00 AM	Opening General Session
10:00 AM – 6:15 PM	Exhibit Hall Hours
10:45 AM – 11:45 AM	RB Sessions 1, 2, 3, 4
10:45 AM – 12:15 PM	ITT Sessions 1, 2, 3
11:45 AM – 1:30 PM	Networking Luncheon
12:40 PM – 1:25 PM	Technology Spotlight I
1:30 PM – 3:00 PM	RB Session 5, ITT Sessions 4, 5, 6
1:30 PM – 4:45 PM	RB Sessions 6, 7, 8
3:15 PM – 3:40 PM	Technology Spotlight II
3:45 PM – 4:45 PM	RB Session 9
3:45 PM – 5:15 PM	ITT Sessions 7, 8, 9
4:45 PM – 6:15 PM	Networking Reception

Thursday, May 8

8:00 AM – 5:00 PM	Registration
8:30 AM – 10:00 AM	RB Session 11, ITT Sessions 10, 11, 12
8:30 AM – 11:45 AM	RB Sessions 10, 12, 13
10:00 AM – 3:45 PM	Exhibit Hall Hours
10:15 AM – 10:40 AM	Technology Spotlight III
10:45 AM – 11:45 PM	RB Session 14
10:45 AM – 12:15 PM	ITT Sessions 13, 14, 15
11:45 AM – 1:30 PM	Networking Luncheon
1:30 PM – 3:00 PM	RB Sessions 16, 18, ITT Sessions 16, 17, 18
1:30 PM – 4:45 PM	RB Sessions 15, 17
3:45 PM – 4:45 PM	RB Sessions 19, 20
3:45 PM – 5:15 PM	ITT Sessions 19, 20, 21

Friday, May 9

8:00 AM – 12:00 PM	Registration
8:30 AM – 10:00 AM	RB Sessions 21, 22, 23, ITT Sessions 22, 23, 24
8:30 AM – 11:45 AM	RB Session 24
10:15 AM – 11:45 AM	RB Sessions 25, 26, 27, ITT Sessions 25, 26, 27
11:45 AM	Conference Adjourns
12:15 PM – 2:30 PM	CHAR Pilot Tour

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WEF would like to thank the following committee members for their contributions to the technical program. We would not be able to produce high quality events year after year without the assistance of dedicated volunteers. Thank you!

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