

Workshops

Continuing Education Program

W01 - It's Just a Game: Lean into Innovation

Meeting the countless challenges of today requires a culture of innovation. From developing new products like fertilizer or water reuse to internal initiatives like digital twins, utilities (and all types of organizations) can learn valuable lessons from the Lean Startup method. This 6-hour game simulation of the Lean Startup method lets you work as an entrepreneur or intrapreneur to build, measure, and learn as you develop your Minimum Viable Product and grow your initiative. Learn the techniques by playing Startup Mundi and transform your organizational culture with a new innovation and digital mindset.

Member Rate: \$149 Non-Member Rate: \$199

Tuesday, October 12, 2021 - 12:00 PM - 06:00 PM

W02 - Creating a World Class Program Whether You're Class A or Class B (ONLINE)

Beneficial use of biosolids continues to be contested across the country. The first step in defending the use of biosolids as a valuable product is by running a strong biosolids program. However, utilities often struggle to identify what a mature, proactive biosolids program looks like. This workshop intends to address the gap that can exist in biosolids programs between technical excellence and program maturity, allowing participants to assess their own programs, and identify discrete steps towards improvement.

Member Rate: \$79 Non-Member Rate: \$99

Wednesday, October 13, 2021 - 01:00 PM - 05:00 PM

| 1:00 PM | Introduction and Learning Goals for the Day N. Sierra |
|---------|--|
| 1:30 PM | Maturity Model Concept and Programmatic Implementation (San Francisco Example) |
| | M. Fisher, K. Ving |
| 2:00 PM | Self-Evaluation: Live Polling and Introduction to Tool |
| | M. Fisher, K. Ving, N. Sierra |
| 2:15 PM | Live Polling Results and Instructions for Breakout |
| | N. Sierra, K. Ving |
| 2:25 PM | Breakout: Program Area #1 |
| 2:45 PM | Report Out |
| 3:00 PM | Networking Break |
| 3:15 PM | DC Water Case Study: Advancing Maturity in Beneficial Use |
| | C. Peot |
| 3:30 PM | Breakout: Working on Maturity in A Different Program Area (Program Area #2) |
| 3:50 PM | Report Out on Breakouts |
| 4:00 PM | Networking Break |
| 4:15 PM | OCSD Case Study: Advancing Maturity in Operational Controls with a BMS |
| | D. Bingman |
| 4:30 PM | Panel Q&A |
| | M. Fisher, C. Peot, D. Bingman |
| 4:45 PM | Wrap Up: Including How to Use the Tools on Your Own |
| | K. Ving, N. Sierra |

W04 - Understanding PFAS: Developing Management Practices and Treatment Options for Industry

PFAS are a group of synthetic chemicals that have been in use for nearly 80 years in a variety of consumer products and industrial processes. They are ubiquitous in the environment and public concern is rapidly increasing. Evidence suggests that exposure above specific levels of some PFAS may lead to adverse health effects. Experts will help attendees understand the PFAS challenges facing industries that may be a source of these compounds and develop management solutions.

Member Rate: \$229 Non-Member Rate: \$259

| 8:30 AM | Introduction to PFAS, Chemistry & Toxicology R. Kirkland, H. Azam, E.D. White |
|------------|--|
| ~ ~- ~ ~ ~ | |
| 8:45 AM | National Update of PFAS Regulations |
| | E.D. White |
| 9:00 AM | Legal Ramifications for Industrial and Commercial Stakeholders |
| | F. Andes |
| 9:30 AM | Sampling & Analysis Challenges |
| | G. Pellechia |
| 10:00 AM | Networking Break |
| 10:30 AM | Biosolids & Residuals |
| | T.O. Williams |
| 11:00 AM | PFAS Treatment in Water Reuse Applications |
| | W.B.Dowbiggin |
| 11:30 AM | Group Case Study Part I |
| 12:00 PM | Lunch |
| 1:30 PM | Industrial Treatment Options: Overview |
| | K. Jenkins |
| 1:40 PM | Industrial Treatment Options: Source Control |
| | A.K. Da Silva |
| 1:55 PM | Industrial Treatment Options: Carbon/Ion Exchange |
| | M. Hicks |
| 2:10 PM | Industrial Treatment Options: Reverse Osmosis |
| 2.101101 | J. Peichel |
| 2:25 PM | Industrial Treatment Options: Emerging Technologies |
| 2.23 FIVI | S. BASU |
| 2.40 DM | |
| 2:40 PM | Industrial Treatment Options: Facilitated Discussion |
| | |

- 3:30 PM Group Case Study Part II
- 4:20 PM Group Challenge Session & Discussion
- 4:50 PM Workshop Wrap R. Kirkland, H. Azam, E.D. White

W05 - Advanced Data Analytics to Better Understand WRRF Operations

This workshop will provide the audience with up-to-date information on available practical methods and algorithms that are useful for examining WRRF plant-operational and performance data. The attendees will learn how to choose a data algorithm and will gain hands-on experience in using various methods for data analysis. Focus will be given to fault detection and assigning causes to special events found in data sets. Both experts and novices will gain insight from this workshop on the application of control charting, multivariate statistics, and neural networks.

Member Price: \$229 Non-Member Price: \$259

| 8:30 AM | Welcome and Introductions |
|-----------|---|
| | I. Miletic, C.B. Bott |
| 8:40 AM | Modelling Trends in the Water Industry |
| | M.J. Wade |
| 9:00 AM | WRRF Perspectives on Data Analytics: Current Needs and Applications |
| | H. De Clippeleir |
| 9:30 AM | Data Modeling Fundamentals: How to Make Use of Control Charts |
| 5.50 AM | A. Gagnon |
| 10:00 AM | 6 |
| 10:00 AN | Networking Break |
| 10.20 444 | Madifications to Dasis Data Madels and Algorithm Calestian |
| 10:30 AM | Modifications to Basic Data Models and Algorithm Selection |
| | K. Villez |
| 11:00 AM | Interactive Session 1: Design and Use of Data Models at WRRF's |
| | |
| 12:00 PM | Lunch |
| | |
| 1:30 PM | Methods for Fault Isolation and Diagnostics with WRRF data |
| | I. Miletic |
| 2:00 PM | Interactive Session 2: Team Exercise |
| | |
| 3:00 PM | Networking Break |
| 0.001.00 | |
| 3:30 PM | Interactive Session 2: Team Exercise (continued) |
| 3.30 F W | interactive Session 2. Team Exercise (continued) |
| 4:30 PM | Moderated Discussion and Close |
| 4.30 PIVI | |
| | C.B. Bott, I. Miletic |

W07 - Using Online Analyzers to Meet Stringent Nitrogen and Phosphorus Limits

Attendees will learn how to use on-line analyzers to meet increasingly stringent nutrient limits. Vendorneutral fundamentals of analyzers will be presented along with how they can be integrated into different strategies for nutrient control. Hands-on exercises will be used to demonstrate analyzer technology limitations, misapplications, and trouble-shooting. Proper instrument placement for different process configurations will also be presented. Various control strategies using on-analyzers for to meeting permit requirements while optimize costs will be discussed. Real world case studies where on-line analyzers have been used to control nutrient removal processes will be presented.

Member Rate: \$229 Non-member Rate: \$259

| Welcome and Introduction: Introduction to MOP-21 |
|---|
| C.K. Aycock |
| Analyzers Fundamentals including Hands-on Demonstration |
| T.A. Doane |
| Networking Break |
| Analyzers Fundamentals including Hands-on Demonstration |
| T.A. Doane, S. Smith, B. Dabkowski |
| Successful Applications I: Ammonia |
| R. Suzuki |
| Successful Applications II: Nitrates |
| N.J. Passarelli |
| Lunch |
| Process Control Systems Using Dynamic Models: Intro |
| L.P. Rieger |
| Modeling Activity Using Simulators |
| Plenum Discussion: Review Results Observed During Hands-on Activity |
| Networking Break |
| Problem Solving Using Fundamentals |
| S. Smith, B. Dabkowski |
| Cost of Ownership |
| C.K. Aycock |
| Plenum and Panel Discussion: Requirements for Successful Use of On-line Sensors |
| Wrap Up |
| C.K. Aycock |
| |

W08 - WEF/WRF Dewatering Optimization: Practical Ways to Improve Performance

Are you being asked to improve dewatering performance? This workshop will focus on practical ways to get better cake solids and capture, reduce polymer consumption, and reduce O&M costs. We will cover dewatering and polymer '101,' show videos of sludge/polymer flocculation, present successful case studies, and describe proven optimization measures that you can implement. Whether you are a plant manager, operator, consultant, or manufacturer, this workshop is for you.

Member Rate: \$199 Non-member Rate: \$229

| 8:30 AM | Introduction D.W. Oerke |
|----------|--|
| 8:40 AM | Goals for Workshop: Attendee Dewatering Challenges and Questions |
| 9:15 AM | The Essence of Dewatering and WRF Study Results M.J. Higgins |
| 10:00 AM | Networking Break |
| 10:30 AM | Dewatering Equipment Basics: How Does It Work? D. Fronhofer |
| 10:45 AM | Mechanical Optimization of Dewatering Equipment A. Parmenter |
| 11:15 AM | Interactive Breakout Session Discussion from Operators: 'What Has Worked,' Lessons Learned and Automation Options |
| 12:00 PM | Lunch |
| 1:30 PM | Polymer 101 Y. Kim |
| 2:00 PM | State-of-the-Practice in Biosolids/Polymer Blending: FWHWRC Gwinnett County Case Study D.W. Oerke |
| 2:30 PM | Video Presentation of Jar Testing and Polymer Makedown Mixing with BPR and Non-BPR Solids G. Tichenor |
| 3:00 PM | Networking Break |
| 3:30 PM | Successful Dewatering Equipment Optimization Completed by a Utility M. Gates, C. Maher |
| 4:00 PM | EMWD Dewatering Optimization Case Study R. Gupta |
| 4:30 PM | Panel Discussion:Questions, Challenges, and Discussion on Dewatering Optimization Issues |

W09 - HOLD THE FLOW! Wet-weather Storage Solutions: Planning through Operations

This workshop focuses on the conceptualization and implementation of wet-weather storage projects for collection systems including tanks, pipelines and tunnels. Participants will explore the benefits of wet weather storage solutions and gain further understanding of the analysis needed to site and properly size a wet-weather storage facility. Lastly, we will address planning and design considerations, including the fundamentals of storage tank and tunnel design, construction, operation, and maintenance using real project case studies.

Members Rate: \$199 Non-Members Rate: \$229

| 8:30 AM | Welcome/Introductions |
|-----------|---|
| 8:45 AM | C. Toro-Escobar, A. Lukas Wat Weather Storage Solutions Querview |
| 0.45 AIVI | Wet Weather Storage Solutions Overview B. Rogne |
| 9:15 AM | Breakout Session #1 |
| 5.15 AM | A. Lukas, C. Toro-Escobar |
| 9:30 AM | Storage Flow Management Experience (Henrico County, VA) |
| 51007411 | B. Chan |
| 10:00 AM | Networking Break |
| 10:30 AM | Breakout Session #2 |
| | E. Phillips, C. Toro-Escobar |
| 11:00 AM | Wet Weather Planning Using Flow Monitoring, Modeling, and Machine Learning to |
| | Optimize the Use of Storage: The LA Story |
| | C. Heinrich- Josties |
| 11:30 AM | Regulatory Framework and Current Wet Weather Trends |
| | A. Lukas |
| 12:00 PM | Lunch |
| 1:30 PM | Wet Weather Storage Cost- Effective Considerations, Project Sizing, and Optimization |
| | R. Cronin |
| 2:00 PM | Storage Tank Design, Procurement, and Long-Term Care Considerations: The Vendor |
| | Perspective |
| | K. Leininger |
| 2:30 PM | Breakout Session #3 |
| | B. Rogne, C. Toro-Escobar |
| 3:00 PM | Networking Break |
| 3:30 PM | Lessons Learned in the Design, Implementation, and Operation Flexibility of HRSD Regional |
| | Wet Weather Storage Tanks |
| | R.J. Brewster |

- 4:15 PM Storage Tunnel Design, Construction Techniques and Procurement Strategies: From Concept to RFQ to Alternative Delivery Options S. Njoloma
- 4:45 PM Final Questions & Closing Remarks A. Lukas, C. Toro-Escobar

W10 - Pathogens and Microconstituents: Recent Scientific and Technology

The wastewater and water reuse industry continues to advance the scientific understanding of the risks, fate and control of pathogens and constituents of emerging concern (CECs). This workshop will provide the latest information on risks, fate and control of pathogens and CECS including, antibiotic resistant genes and bacteria, hormonally active substances, pharmaceuticals, microplastics, personal care products, per- and poly-fluorinated alkyl compounds (PFAS) (including fire-fighting foams) in wastewater, non-potable reclaimed water, and purified reclaimed water for potable water reuse.

Members Rate: \$229 Non-Member Rate: \$259

| 8:30 AM | Opening |
|----------|---|
| 8:45 AM | Contaminants of Emerging Concern During De Facto Water Reuse S.T.Glassmeyer |
| 9:10 AM | PFAS/PFOS in Wastewater |
| 9:35 AM | Quantitative Microbial Risk Assessment (QMRA) and Probabilistic Assessment of Treatment Train Performance (PATTP) for Direct Potable Reuse Systems D. Gerrity |
| 10:00 AM | Networking Break |
| 10:30 AM | Antibiotic Resistance Bacteria Research K. Hamilton |
| 11:00 AM | HRSD SWIFT Project: The Research Aspect G. Salazar- Benites |
| 11:30 AM | Development of Analytical Protocols for Bioassays to Analyze Chemicals of Emerging Concern S. Snyder |
| 12:00 PM | Lunch |
| 1:30 PM | Disinfection Byproduct Formation at Potable Reuse and Water Reclamation Plants L. Schimmoller |
| 1:55 PM | Minimizing Pathogen Risk Through a Combination of Real Time Monitoring Systems A. Salveson |
| 2:20 PM | Public Outreach and Communications for Water Reuse L. Barker |
| 2:40 PM | Schematic Design Competition: Part I (Conceptual) |
| 3:00 PM | Networking Break |
| 3:30 PM | Schematic Design Competition: Part II (Detailed) |

- 4:10 PM Break-Neck Competitive Gaming
- 4:45 PM Panel Discussion & Closing

W11 - Membranes for Water Reuse- Past, Present, and Future: A Barrier to PFAS and Pathogens

Membrane technologies play and will be playing an important role in the water reuse industry. In particular, membrane technologies have become an integrated component for DPR and IPR. Membrane roles and limitations will be discussed to benefit those who are considering to expand water supply portfolios by water reuse or those who want to improve the existing water reuse facilities.

Members Rate: \$229 Non-Members Rate: \$259

| 8:30 AM | Introduction to Team and Topic T.C. Gualandri |
|----------|---|
| 9:00 AM | The Facts from Operating a Membrane Facility for Decades: OCWD Water Factory 21 and Groundwater Replenishment System M.H. Plumlee |
| 9:45 AM | Introduction to Onsite Membrane Demonstrations T.C. Gualandri |
| 10:00 AM | Networking Break |
| 10:30 AM | Onsite Membrane Demonstration A. Zamarro, G. Cohen, S. Katz |
| 11:30 AM | Panel Discussion Regarding Membrane Systems |
| 12:00 PM | Lunch Break |
| 1:30 PM | Topic 1 Breakout & Presentation: The Facts Regarding Membranes as a Barrier for Pathogens (Understanding the Importance of Membrane Integrity) V.S. Frenkel, Y. Cohen |
| 3:00 PM | Networking Break |
| 3:30 PM | Topic 2 Breakout & Presentation: The Facts Regarding Membranes as a Barrier for PFAS Compounds |
| 4:15 PM | M.H. Plumlee, V.S. Frenkel Report Outs from Breakout Groups |
| 4:30 PM | Wrap Up Discussion on the Future Role Membranes could be serving Water Resource Recovery Systems T.C. Gualandri |

W12 - Solving Stormwater Synergistically from Coast to Coast

The workshop is a combination of lecture, interactive breakout session led by speakers/facilitators, and facilitated group exercises that allow attendees to go through their ongoing plans and receive feedback from speakers/facilitators as well as attendees. The ultimate goal is to provide insight and feedback to attendees so they can begin/update their approaches. Discussions will be led by utility leaders in the stormwater management arena to describe how they have planned for stormwater management areas; how they have learned through years of operating grey, green, and blue infrastructure; and how unique aspects of their locations have required one-of-a-kind approaches. Participants will learn about 'hot topics' in the field related to challenges with operations and maintenance of tunnel and green infrastructure to how sea level rise will impact stormwater management. Participants will be engaged through break-away sessions to focus on topical areas most relevant to attendees.

Member Rate: \$99 Non-Member Rate: \$129

| 8:30 AM | Setting Goals and Review of Agenda for Today's Workshop |
|----------|---|
| | R.F. David |
| 8:40 AM | Identifying Your Stormwater Path Forward |
| | J.R. Kratzer |
| 9:15 AM | Selecting a Technical Approach that Works for Your Stormwater Situation/Goals. |
| | W. Tam |
| 9:50 AM | Interactive Breakout 01: Starting/Updating the Plan for your Utility |
| | R.F. David, W. Tam |
| 10:20 AM | Networking Break |
| 10:50 AM | Considerations as Your Operate and Maintain Your Stormwater Infrastructure. R. Fisher |
| 11:25 AM | Interactive Breakout 02: Post- Construction Considerations |
| | R.F. David, W. Tam |
| 11:55 AM | Workshop Conclusions and Takeaway Messages |
| | R.F. David |

W13 - Transforming into Communities of the Future through Water Equity

The workshop will focus on understanding existing dynamics, and considering innovative approaches and partnerships to transforming into communities' of the future through a water equity mission, and maximizing community benefits with water infrastructure investment through: possibilities of community and utility partnerships/outreach, expanding collaboration and supplier diversity, affordability programs for vulnerable communities, facilitating community resilience in the face of climate change, and integrating these triple bottom line factors into long-term watershed management and planning.

Member Rate: \$99 Non-Member Rate: \$129

| 1:30 PM | Introduction to Equity and Partnerships: Why It Matters |
|---------|---|
| 1:45 PM | Facilitator Case Study Presentations |
| 2:30 PM | Activity I: Breakout Group Discussions |
| 3:00 PM | Networking Break |
| 3:30 PM | Activity II: Action Plan Breakout Teams |
| 4:10 PM | Activity III: Breakout Groups Report Out |
| 4:40 PM | Wrap-up/Audience Q&A |

W14 – WISE Approach to Improvement: Considering People and Processes

The workshop will present business process modeling methods, standards, and practices. A modeling framework will be presented that can be used to document, analyze, and improve the performance of water sector utilities utility. The workshop will also present the results of research regarding workforce and organizational culture, components that have a profound impact on an organization's ability to implement changes and achieve improvements.

Member Rate: \$199 Non-Member Rate: \$229

| 8:30 AM | Welcome and Introduction to the Workshop |
|---------|---|
| | C. Vitasovic |
| 8:35 AM | WISE: Vision, Framework, Scope |
| | C. Vitasovic |
| 8:45 AM | Business Process Modeling |
| | M.W. Barnett |
| 9:00 AM | Water Sector Value Model Status: Overview |
| | M.W. Barnett |
| 9:10 AM | Business Case Evaluation |
| | G. Melsew, K.C. Kharkar |
| 9:35 AM | CIP Delivery |

W15 - Odor Control for Positive Public Relations*

Does your facility or collection system have neighbors angry about odor? This workshop will focus on interaction with the public, especially irate neighbors and those who are being asked to pay for system improvements. The workshop will progress from dealing with individuals to system-wide programs for public relations and justification of capital improvements. During the workshop you will develop strategies of your own in conjunction with other workshop participants.

Member Rate: \$99 Non-member Rate: \$129

Monday, October 18, 2021 - 01:30 PM - 05:00 PM

| 1:30 PM | Introduction and Objectives of Workshop S. Cowden |
|---------|---|
| 1:35 PM | Sources of Odors and Complaints Public Relations Horror Stories R.J. Pope |
| 2:00 PM | Additional Sources & Horror Stories |
| 2:10 PM | Interaction with Complainants: Turn 'Victims' into Partners R. Porter |
| 2:40 PM | Networking Break |
| 2:50 PM | Turning Irate Neighbors into Your Fan Club |
| 3:20 PM | Role-playing/Dealing with Irate Neighbors |
| 3:35 PM | Elements of An Effective PR Program P. Tennyson |
| 4:05 PM | Developing A District: Wide Odor Technical Resource and Effectively Handling Odor Complaints D. Apgar |
| 4:35 PM | Developing A District-wide Resource R. Porter |
| 4:55 PM | Closing Remarks S. Cowden |

W17 - How to Increase Diversity and Foster Inclusion in Your Organization

Organizations with more diverse and inclusive workforces are seeing better candidate attraction and more engaged employees, driving performance and increasing their competitive advantage. If organizations desire results, diversity and inclusion is exactly where they should focus their energy. We invite utility managers, utility staff, and workforce development professionals to participate in this interactive workshop on how to increase diversity and foster inclusion in your workforce. Participants will leave the workshop with a ready to implement toolkit as well as a greater understanding of what steps they can take to make actionable change in their organization.

Members Rate: \$99 Non-Members Rate: \$129

Monday, October 18, 2021 - 01:30 PM -05:00 PM

| 1:30 PM | Introductions and Learning Outcomes: Glossary of Terms M. Fisher |
|---------|--|
| 2:00 PM | Importance of Diversity and Inclusion in the Water and Wastewater Sector J. Jarrell |
| 2:10 PM | Definitions: What Do We Mean When We Say Diversity, Equity, Inclusion, and Justice? V. Johnson |
| 2:15 PM | Interactive Breakout Sessions J. Rice, V. Johnson, R. Willette, D. Tao, M. Fisher |
| 2:30 PM | Report Out on Discussions/Feedback D. Tao |
| 2:40 PM | Networking Break |
| 2:55 PM | Intro to Bias: What Is It and How Does It Impact Our Work? T. Kelley |
| 3:05 PM | Interactive Breakout Sessions: Discuss/Reflect on Our Personal Biases J. Rice, V. Johnson, R. Willette, D. Tao, M. Fisher |
| 3:25 PM | Report Out on Discussions/Feedback M. Fisher |
| 3:35 PM | What is Water Equity? V. Johnson, K. Powell |
| 4:05 PM | Networking Break |
| 4:20 PM | Government Alliance on Race and Equity (GARE) J. Serrano |
| 4:35 PM | Roadmap to Embedding D&I in Your Organization J. Rice |
| 4:50 PM | Stantec Case Study R. Willette |
| 5:00 PM | Speaker Q&A M. Fisher |

5:00 PM Next Steps K. Powell