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Approval Details:

Illinois has approved WEFTEC 2025® for Continuing Education Credits. Please see attached listing for approved session details.

IEPA ID#	Session #	Title	Description
22466		AEESP Master Lecture	
22467	207	Anaerobic Treatment of High Strength Industrial Wastewater	Anaerobic treatment strategies can be an effective approach for high-strength industrial wastewater. This session will examine the use of anaerobic treatment for landfill leachate, distillery wastewater, and swine wastewater, with a focus on biogas generation and MBR applications. Together, these papers will highlight the benefits of anaerobic treatment in improving efficiency, sustainability, and resource recovery across diverse industrial wastewater streams.
22469	210	Applications and Optimization of MBR Technology	This session will showcase different applications and optimization of MBR technology. First, a case study of a unique tertiary MBR demonstration scale system to achieve nitrification-denitrification (NdN) tertiary using glycerol as the carbon source. Next, another case study of the design, construction, and commissioning of a 32 MGD greenfield BNR and MBR facility. The third case study will look at MBR performance after commissioning by presenting long-term operating data for a full-scale MBR plant to characterize fouling and its interaction with air scour control.
22470	201	Biosolids Planning from WRF to the WRRF	Embarking on a biosolids planning and implementation program can be a daunting effort for many utilities. A need to navigate a range of existing infrastructure conditions, a rapidly evolving landscape of regulations and technologies, and a drive for operational efficiency combine together to create significant uncertainty for utilities moving into the process. This session starts with an update on WRF-developed tools for assessing biosolids treatment approaches, moves into a case study focused adapting planning to a constantly changing environment, and wraps up with a specific case study several years into operation showing real-world impacts of the previously completed planning efforts. Faciliated Dicussion
22471	214	Capital Planning: A Springboard for Effective Project Delivery	Join us as we bring together utility leaders focused on capital planning and delivery within their organizations. Each leader will share key strategies that have transformed their organizational approaches and driven successful CIP planning and execution. Bring your questions and enthusiasm for CIP planning and delivery! Panel Discussion
22472	204	Densified Activated Sludge (DAS) Fundamentals	Densified activated sludge (DAS) has been recognized as an effective approach to enhance sludge settleability. Beyond settling benefits, DAS systems with a physical selector may provide the ability to decouple the SRT of floc versus granule fractions. However, decoupling aerobic SRT, role of flocs and different size granules impact on process performance and design remain uninvestigated. These presentations aim to advance the development of intensified treatment strategies for the design and optimization of biological nutrient removal (BNR) facilities.
22473	203	Disinfection is FUN-damental	Disinfection is often the final step in the treatment process, but it's also the most essential for protecting public health. This session dives into the core principles—or 'fun-damentals'—of disinfection, offering an overview of the core disinfection practices and the pathogens they treat. Understanding these critical processes not only safeguards communities but also creates a ripple effect of safety that extends far beyond the treatment plant.
22474	208	Extreme Reuse: Industrial Water Reuse Cases and Advances	The session begins with an overview of minimum liquid discharge and zero liquid discharge concepts. Water reuse case studies in USA pulp & paper, and Canadian food industries are then presented. Finally a relatively new recirculating reverse osmosis process is presented that allows for extreme reuse of high scaling-potential wastewater.
22475	209	Freedom! Liberating Nutrients from Industrial Byproducts for Agricultural Reuse	The circular water economy presents an opportunity for stakeholders to work together to recover nutrients from waste products for reuse, reducing costs and strain on natural resources. Nitrogen-rich industrial wastes can be beneficially reused as a nutrient source in agriculture; however, these waste products often require treatment to meet quality requirements and stabilize nutrients. This session will examine three different industrial waste sources and their associated treatment to demonstrate beneficial agricultural reuse as part of the circular water economy.
22476	205	Funding Water Infrastructure: The \$64 Trillion Dollar Question	Funding water infrastructure needs across the globe is a major challenge under traditional financial practices and models. State and federal agencies are facing a pressing need to: renew aging water infrastructure; upgrade existing and creating new assets for higher levels of service and increasing populations; increase water systems resilience to natural hazards; and proactively address the anticipated impacts of a changing climate. These agencies must utilize a variety of funding sources – both public and private – in order to deliver water infrastructure solutions fit for the 21st century.
22477	211	Low SRT Performance of Membrane Aerated Biofilm Reactors (MABR)	In this session three presentations will demonstrate the biological process capacity advantage that MABR (Membrane Aerated Biofilm Reactor) processes provide by achieving nitrification in systems with very low solids retention times (SRTs). The first presentation describes a theoretical basis for predicting nitrification with MABRs supported by process modelling. The second and third presentations are each case studies of MABRs plants (both international) that demonstrate that low-SRT nitrification is observed at operational WRRFs, resulting in an increase in process capacity.
22478	215	Mastering Critical Asset Management for Long-Term Success	Let's explore two critical aspects of wastewater infrastructure management! The first presentation focuses on Washington D.C.'s innovative strategies to safeguard its critical wastewater system, emphasizing resilience-building efforts, climate change adaptation, and addressing aging infrastructure through advanced technologies and data-driven planning. The second presentation tackles the challenges utilities face in renewing and upgrading aging assets to meet modern demands, including navigating budget constraints, regulatory requirements, and environmental concerns. Attendees will learn about innovative renewal strategies, best practices in asset management, and how utilities can prepare for the future through technology and strategic planning to ensure long-term system sustainability and efficiency.
22479	206	Natural Disaster Response and Recovery: Sharing Lessons Learned	When utilities experience natural disasters, they face the reality of whether their preparation efforts were enough to respond to and manage the effects of the events – and they often wish they knew then what they know now. A panel discussion will explore lessons learned from response to natural disasters (earthquakes, hurricanes/flooding, and wildfires). These speakers will answer the question: what would I tell myself 5 years ago? Panel Discussion
22480	202	Real Results with Real Time Control	Real-Time Control (RTC) is revolutionizing stormwater and wastewater management by optimizing infrastructure performance and reducing environmental impacts. This session highlights case studies from the UK and France, demonstrating how RTC improves storage, mitigates combined sewer overflows (CSOs), and enhances system resilience. Experts will share key insights, including cost savings, regulatory compliance, and operational efficiencies. Attendees will learn about real-world challenges, successes, and lessons from RTC deployment. Discover how data-driven automation is transforming water management and delivering measurable results. Case Study Analysis
22481	216	Tackling the PFAS Puzzle: Addressing Wastewater Effluent Concerns for Reuse	As PFAS regulations extend beyond drinking water and into wastewater systems, utilities face increasing pressure to adopt effective and economical treatment solutions. This session brings together recent research and pilot studies focused on enhancing PFAS removal in municipal wastewater effluent. Presentations explore performance comparisons of adsorbents like GAC, IX, and novel media; the impact of effluent organic matter on adsorption efficiency; and the value of pretreatment technologies such as ozone and biological activated carbon. Attendees will gain insight into cutting-edge treatment configurations for future regulatory compliance and water reuse applications. Conversation and Input

22482	217	Training and Retaining Tomorrow's Workforce	Tomorrow's workforce will need to be more technical and engaged than ever before. How can we reinvigorate programs and integrate new tools to develop our teams and set them up for success? Join us to learn about apprenticeship programs, training simulations, and career development to invest in employees from day one through retirement. Conversation and Input
22483	213	Transforming Stormwater Management with Next-Generation Digital Technologies	This session illustrates the transformative potential of digital applications and innovative technologies in safeguarding water resources and urban spaces. Session presentations include examples of new tools such as AI, 3D printing, and adaptive stormwater management to dynamically design and manage stormwater. Facilitated Discussion
22484	234	Balancing Act: Nutrients, Water Quality, and Ecosystems	Attendees will experience an in-depth exploration of the complexities surrounding nutrient management in aquatic ecosystems, featuring three distinct yet interconnected topics. The discussion will begin with an examination of the paradox of stormwater infiltration in arid-urban environments, highlighting its unintended consequences on downstream water quality in Lake Elsinore, California. Following this, the session will address Illinois' Nutrient Loss Reduction Strategy, focusing on the development and implementation of the Nutrient Assessment Reduction Plan (NARP) and the critical role of stakeholder engagement in this process. Finally, the session will investigate the establishment of science-based nutrient goals for reservoir TMDLs in South Carolina, emphasizing the relationship between chlorophyll-a concentrations and beneficial uses. Collectively, these presentations will illuminate the challenges and innovative strategies essential for achieving effective nutrient management and improving water quality.
22485	527	Bringing Bugs into Focus: Microbial and Genetic Tools for Optimizing WRRF Performance	Listen in as we highlight the innovative approaches for integrating microbial community analysis and genetic monitoring tools into wastewater treatment process optimization. Presenters will share how techniques such as machine learning, amplicon sequencing, and functional gene tracking can enhance predictive modeling, operational control, and biological nutrient removal performance.
22486	222	Data in Action! Data-Driven Optimization Models	Multiple examples of data being successfully leveraged and applied will be discussed. The first step is developing a data integration and optimization process. These processes are then implemented in real-world facilities ranging from 10-200 MGD, followed by an in-depth analysis at one facility. Facilitated Discussion
22487	231	Decarbonizing Water: International Efforts to Measure and Reduce Process N2O Emissions	Come engage with researchers working on full-scale N2O monitoring and reduction! The first two presentations cover full-scale measurement from 15 and 21 WRRFs, respectively. The third presentation takes a deeper dive into how liquid-phase measurements correlate with actual emissions by use of four different methodologies and KLa's for N2O against measured N2O emissions from a four-pass, activated-sludge system. This session will kick-off the Water Decarbonization Journey at WEFTEC. Panel Discussion
22488	232	Efficient Flow: Innovative Strategies for Asset Management	Our presenters will cover key strategies for enhancing asset management during this session. The first explores integrating proactive maintenance practices like predictive, preventive, and corrective maintenance to improve system resilience, reduce downtime, and boost service reliability. The second highlights the importance of human capital in executing successful Condition Assessment Programs (CAP), focusing on the need for skilled personnel, training, and effective resource allocation to ensure accurate assessments and long-term asset performance. Finally, Evansville Water and Sewer Utilities shares its journey toward asset management excellence, emphasizing strategies, tools, and best practices that improve operational efficiency, reduce costs, and extend infrastructure lifespan through data-driven decision-making and continuous improvement.
22489	226	Full-Scale Shortcut Nitrogen Removal	These case studies present shortcut nitrogen removal in full-scale plants. Advanced nitrogen removal strategies will be evaluated by comparing effluent quality, air requirements and capital costs for both sidestream and mainstream. Participants will apply key findings from a demonstration plant to develop the detailed design of a full-scale facility that achieves energy neutrality. The final case study couples densified activated sludge (DAS) with PdNA in tertiary MBBRs to meet stringent nutrient limits. Participants will identify lessons learned and considerations to support DAS/PdNA operation. Case Study Analysis
22490	221	How Do Upstream Processes Impact Disinfection Systems?	As the final process in traditional wastewater treatment facilities, disinfection is naturally impacted by the water quality produced by upstream processes. In particular, the operation of secondary treatment systems has significant effects on disinfection requirements. This session will address the impacts of implementing biological nutrient removal (BNR), membrane bioreactors (MBRs), and nano-bubble technology on disinfection operations.
22491	227	Innovative Approaches to Design and Optimization	Participating in this session will provide an opportunity for you to explore innovative approaches to design and optimization. The use of frameworks for facilitating design decisions, the use of digital twins to reduce capital cost, and the development of a digital protocol to optimize nutrient removal performance will all be explored. Knowledge Development Forum (KDF)
22492	233	MBR: What It Can Do For You	MBR technology gaining popularity lately due to the stringent effluent discharge criteria and water reuse. You should be utilizing wisely the certain features of the MBR technology. This session will share experience and lessons learned how you can get the most out of this advanced technology. Knowledge Development Forum (KDF)
22493	219	Navigating Consent Orders and Master Plans	Join us and explore the challenges and strategies involved in implementing consent orders and master plans for collection system improvements. Many communities facing sewer overflows must comply with regulatory mandates, requiring careful planning from initial negotiations through project execution and certification. Attendees will gain valuable insights into navigating the complexities of consent orders, avoiding common pitfalls, meeting performance criteria, and adapting to population projection and system demand changes. Case studies will provide real-world examples of effective planning and compliance strategies.
22494	224	Navigating the Challenges and Changing Landscape of Strategies, Policies and Inclusive Practices in Water	Let's explore the evolving challenges and opportunities in developing and implementing strategies, policies, and inclusive practices within the water sector. From addressing social equity to adapting to environmental and policy shifts, attendees will gain insights into how various parts of the water ecosystem are navigating these uncertainties. This session will bring perspectives from the public sector, private sector and broader water community to bring collective awareness. Panel Discussion
22495	218	PFAS in Wastewater and Biosolids: Novel Measurement Methods and Fate During Thermal Processes	Join us in exploring the intricate world of PFAS and biosolids by navigating the various measurement methods and cutting-edge research on the fate of PFAS during thermal treatment processes. This session will cover the different types of PFAS measurement methods. Participants will learn what conclusions can and cannot be drawn from the results of each method and how to select the most suitable method tailored to their specific needs. The session will highlight the fate of PFAS. Drying reduces PFAS concentration in biosolids, whereas pyrolysis and gasification generate transformation byproducts that appear in effluent liquid and gaseous products. Don't miss this opportunity to broaden your knowledge and stay at the forefront of advancements in the complex realms of PFAS analysis. Panel Discussion

22496	230	Rewriting the Rules: Smarter Approaches to Stormwater Compliance	Our speakers will highlight practical solutions to compliance gaps and challenges using three case studies of post-construction stormwater management and watershed-scale approaches. Speakers will share practical guidance and tools that support flexible design solutions for non-infiltrating sites, transitioning temporary sediment controls into long-term BMPs, and completing early-stage project evaluation using GIS and regional coordination frameworks. Highlighting Florida DOT's WATERSS process and Oakland County, MI's MEP standards and stormwater reuse strategies, this session highlights how agencies and designers can embrace innovation and integrated planning in practical ways. Attendees will gain knowledge of replicable models for regulatory clarity, cost-effective compliance, and watershed-scale compliance. Facilitated Discussion
22497	225	Solutions and Ideas From Award Winning Industrial Experts	We will hear from and honor this year's recipients of the distinguished Wes Eckenfelder Award, the Industrial Water Quality Achievement Award, the McKee Groundwater Award and the Rudolf'ss Paper Award. The topics and featured projects will be of interest to those in the industrial wastewater community. At the conclusion of this featured session, we invite you to join us at the annual Industrial Reception for recognition of each of our industrial awards recipients, and to enjoy some refreshments with our colleagues and friends.
22498	220	Techniques for Modeling I/I Source Reduction Benefits	Predicting the effectiveness and cost of I&I reduction approaches presents challenges for utilities as they develop their capital improvement programs/master plans/regulatory corrective action plans because there are no recognized standards for this. This session will present a range of techniques used when modeling proposed I/I reductions. This session will explore methods for both assigning I&I reduction values and for adjusting parameters within the model to represent various combinations of source reduction measures. This session seeks to engage subject matter experts (SMEs) and attendees in a debate of the pros and cons of the different approaches and work to definition of standard practices for this important aspect of planning. Knowledge Development Forum (KDF)
22499	228	Understanding Clarifier Settleability from Fundamental to Intensification Process	As climates are changing, WRRFs operations are challenged by increased wastewater flow (wet weather flow) and facilities must need to optimize and evaluate clarifier capacity intensification. This session presents a comprehensive view of clarifier settleability performance for secondary clarifier and biologically enhanced carbon diversion process clarifier (1st stage of two-stage process). Pilot scale and full-scale research highlight the performance of clarifier for conventional activated sludge, densified activated sludge and high-rate activated sludges operating at low SRT.
22500	223	What Stinks? Community Engagement to Odor Solutions	Advancements in tools and technologies are enhancing community engagement, modeling, monitoring, and mitigation of odor and corrosion issues in wastewater systems. This session will present three case studies showcasing innovative approaches, including crowdsourced odor feedback, sulfide generation, ventilation, and dispersion modeling, odor compound monitoring, and the evaluation and implementation of effective odor control solutions. Case Study Analysis
22501	313	Advancing Resilience through Innovative Sustainable Practices	Extreme weather events are causing water sector utilities to explore opportunities to explore, research, pilot test, adopt, and scale sustainable energy management efforts to make water and wastewater infrastructure resilient to climate impacts. This facilitated session will focus on three utility case studies where utilities have adopted different sustainability efforts to achieve organization resilience. Example sustainability topics include - adoption of sustainable industry standards such as ISI and ESG, and energy management and optimization. Facilitated Discussion
22502	303	Condition Assessment from Laterals to Interceptors	Effective condition assessment is essential for maintaining sewer system performance, minimizing failures, and prioritizing rehabilitation efforts. This session explores best practices and emerging technologies for assessing infrastructure at all levels—from small-diameter laterals to large interceptors. Experts will discuss inspection methods, data analytics, and risk-based approaches to evaluate asset condition, optimize maintenance, and extend service life. Case studies will highlight successful assessment programs and innovative tools that enhance decision-making. Attendees will gain practical insights into improving system reliability and planning cost-effective interventions. Case Study Analysis
22503	307	Decarbonizing Water: Mitigating N2O at Your WRRF	Global progress in measuring and reducing GHG emissions from wastewater treatment in recent years has highlighted the challenges and real costs of mitigating nitrous oxide emissions. Developing business cases and return on investment is challenging for water utilities. This session allows participants to gain the best knowledge, using real full scale case studies of how to mitigate N2O. It includes speakers from utilities and industry with varying levels of N2O understanding and shows how their mitigation has been designed and undertaken, including quantified cost and carbon benefits. It provides participants with understanding of N2O mitigation which will deepen with each speaker presentation and be put to test in the interactive session. Facilitated Discussion
22504	315	Don't Feed the Algae! Watershed Management for Nutrient Control	Attendees will be provided with a narrative overview of the meaningful impacts that watershed management practices can have for nutrient control. Going from monitoring to impact assessment and remediation, these case studies arrange a compelling discussion of the overlooked challenges in nutrient control.
22505	311	From Machine Learning to Agentic AI: Exploring the Journey for Utilities and their Workforce	As artificial intelligence gains momentum in the water industry, confusion remains around what constitutes machine learning, AI, and emerging agentic systems, including how it synergizes with the workforce. This session will demystify the terminology and technologies by showcasing real-world utility experiences. With insights from an AI technology provider, an academic, and a utility champion, the session will illustrate the full arc of the digital journey—from early-stage machine learning applications to the adoption of agentic AI tools. Attendees will gain clarity, practical knowledge, and inspiration to advance AI initiatives within their organizations, including ways to address workforce challenges such as training, succession planning, knowledge retention, and future-readiness. Panel Discussion
22506	312	Innovative Strategies for Urban Flood Mitigation in Combined and Separated Systems	Join us for an engaging session that explores innovative strategies for urban flood mitigation through case studies from Lancaster, PA, Dearborn, MI and Alexandria, VA. Participants will gain insights into the challenges posed by combined sewer systems and learn how stormwater separation projects can help control flooding while reducing combined sewer overflows. We will delve into the use of optimization software to evaluate flood control technologies and discuss the integration of cloud-based tools in designing resilient infrastructure. This session emphasizes the importance of cost-effective solutions and interdisciplinary collaboration in addressing the impacts of climate change on urban flooding.
22507	301	Innovative THP Startup and Biosolids Finishing	Seeding and feeding THP digesters during startup include balancing multiple variables and risks. This session includes two case studies that present innovative methods to improve startup and troubleshooting of initial operations. The third case study presents a novel approach to THP biosolids finishing by taking advantage of natural biological process to generate heat and achieve drying to up to 60% solids. Case Study Analysis
22508	308	Insights Gained from Installations of PFAS Capture and Destruction Technologies	As PFAS regulations tighten for various geographies and industries, the PFAS treatment landscape is beginning to shift its focus from treatment technology development to optimization through pilot and full-scale implementation. Increasing numbers of industrial facilities are installing PFAS capture and destruction technologies, which is offering an opportunity for the industrial community to gain insights into the practical considerations associated with successfully installing and operating PFAS treatment systems. This session will explore results and learnings from three different PFAS capture and destructions systems treating wastewater from a variety of sources and industries.

22509	310	Microbial Selection and Performance Under Low DO Conditions	Come participate in the exploration of the impact of low dissolved oxygen conditions on microbial selection and performance in BNR systems. Experts will present research and case studies demonstrating how low DO environments influence the biomass community dynamics, enhancing nitrogen and phosphorus removal while reducing energy demands. Panel Discussion
22510	309	Municipal-Industrial Synergy: Innovations in Wastewater Treatment	We will highlight the collaborative efforts between municipal and industrial sectors to innovate and improve wastewater treatment processes during this session. Join in as we explore cutting-edge methods and technologies in industrial wastewater treatment and reuse, featuring presentations on algae-based nitrogen removal, semiconductor impact on municipal systems, and sustainable carbon sourcing from whiskey distilleries. The session emphasizes the mutual benefits of these industrial/municipal partnerships and the innovative approaches developed to ensure sustainable and efficient water management. Panel Discussion
22511	306	Overcoming Challenges to Implement Advanced Aeration	Does your facility have limitations that prevent you from performing advanced aeration? This session will report on three successful approaches to overcome existing challenges at water resource recovery facilities ranging from 12 to 200 MGD. Facilitated Discussion
22512	314	Ozonation Dynamics: Exploring Micropollutant Formation and Effective Removal	Let's delve into the dynamics of ozonation in advanced wastewater treatment, providing participants with valuable insights into the formation of nitromethane in ozone-based potable reuse plants. It will explore the innovative approach of photolytic ozonation for effective micropollutant removal, highlighting its advantages in enhancing treatment efficiency. Additionally, the session will cover ozone reactor design utilizing CFD-AMOZONE technology, which optimizes performance while minimizing byproduct formation. This session will delve into the dynamics of ozonation in advanced wastewater treatment, providing participants with valuable insights into the formation of nitromethane in ozone-based potable reuse plants. It will explore the innovative approach of photolytic ozonation for effective micropollutant removal, highlighting its advantages in enhancing treatment efficiency. Additionally, the session will cover ozone reactor design utilizing CFD-AMOZONE technology, which optimizes performance while minimizing byproduct formation. Case Study Analysis
22513	302	Pass the Gas: Digester Rehab, Intensification, and Innovation	Our speakers will explore the pressing challenges in anaerobic digester operations, focusing on issues related to structural integrity and capacity limitations. It features a data-driven condition assessment of existing anaerobic digesters. The discussion then transitions to intensification alternatives of anaerobic digestion processes. Among the innovative approaches highlighted is the microbial hydrolysis process, aimed at enhancing the efficiency and performance of anaerobic digesters.
22514	304	Preparing for Change in Sewer Construction Projects	Projects will not always proceed as planned, so it becomes wise to anticipate changes and prepare for them with contract contingencies, contract allowances, rebidding, contractor teaming for flexible methods and approaches, and initiating a project hiatus for financing or alternative delivery preparations. This session will be based around completed tunnel and drop shaft construction projects in Niagara Falls, NY. Facilitated Discussion
22515	401	A Story of Struvite Survival and a Sidestream Saga	Sidestreams cause operational and process challenges within the treatment process. The presentations in this session will describe the impact of sidestreams on issues such as nuisance struvite formation and inhibition from thermal hydrolysis. Furthermore, the presentation will describe operation and maintenance methods to reduce or remove these negative impacts. Facilitated Discussion
22516	404	Advances in UV Disinfection Technologies	UV technologies continue to gain popularity for disinfection and advanced treatment. Stay up to date on the latest advancements in UV including supercritical UV, UV-AOP, and UVC-LED.
22517	412	Collaborative Case Studies: Design-Build for Effective Capital Delivery	Join us for an engaging session packed with real-world case studies on collaborative project delivery. Featuring a diverse array of projects, you'll discover the key factors that led owners to choose design-build, explore the challenges and successes encountered along the way, and gain valuable insights into how teams effectively engaged operations staff to drive better outcomes.
22518	405	Decarbonizing Water: N2O Modeling - From Low DO to HPO	Join this interactive forum where different approaches to model N2O will be discussed. Processes spanning the full range of dissolved oxygen will be included. Knowledge Development Forum (KDF)
22519	409	Exploring the Capability and Flexibility of MABRs	Consisting of three presentations, this session will provide a new perspective on the capability and flexibility of the MABR process. The first presentation will provide a new approach to design intended to take advantage of the benefits MABR processes provide. The second presentation will focus the resulting benefits that MABRs can provide to WRRF owners and operators, and the limits of those benefits. The third presentation then expands the advantages of MABRs by combining the process with another innovative process, PDNA. These protocols result from case studies that incorporate both traditional, updated approaches and new concepts and innovations.
22520	411	Flood Modeling: Saving Cities, One Storm at a Time	In this session, we will explore three significant flood risk studies. The City of Madison's Watershed Study Program, initiated after a historic storm in 2018, aims to mitigate flooding in the East Isthmus Watershed. The Philadelphia Water Department is addressing aging infrastructure by using 1D/2D modeling to assess flood risks across its service area. And, flood risks evaluation for the Neom project in Saudi Arabia, developing flood zone maps and a severity grid to guide sustainable urban planning and emergency response.
22521	410	Fundamentals of Physical and Chemical Phosphorus Removal	Join us for an introduction to fundamentals of physical and chemical phosphorus removal processes. Presentations include information related to chemical phosphorus removal optimization and use of cloth media filtration for effective solids removal. Future directions and research trends in physical and chemical phosphorus removal processes will also be highlighted.
22522	415	Innovative Carbon-Based Advanced Treatment Solutions: Transforming Water Reuse	Current and emerging practices of carbon-based advanced treatment (CBAT) will be discussed in this interactive session. The session will include a presentation of pilot studies to guide through full-scale implementation, cutting edge approaches for designing utilizing machine learning, and the state of knowledge on the removal of PFAS and other emerging contaminants with CBAT systems. The interactive session will include a facilitated discussion with the presenters. Facilitated Discussion
22523	413	Integrating Decentralized Assessments, Technologies and Management into Infrastructure	Small and decentralized wastewater systems are increasingly viewed as a part of the water infrastructure. This session presents models for assessing available options, performance of specific technology and a method for life cycle assessments of decentralized systems. This session addresses the plethora of issues associated with implementation of decentralized approaches to wastewater management. Facilitated Discussion
22524	406	Know What's Coming In: Source-Tracking of PFAS	Per- and polyfluoroalkyl substances have become a rising concern mainly due to the widespread use in manufacturing, household products and operations. Given their persistent nature and the cost of treatment at WRRFs, one of the best management practices promoted by EPA is source control. This session will walk through the importance of characterization of PFAS sources and lays emphasis on implementation of source control rather than removal alternative. One case-study will showcase the importance of quantification and PFAS identification with guidance on monitoring and sampling for source identification. The session will also explore machine learning algorithms that can be used for PFAS source identification which can help save time, efforts and eventually cost. Conversation and Input

22525	407	Leveraging DE&I Strategies, Emerging Best Practices, Guides, and Tools for Our Water Industry	Our speakers will highlight findings from two recent completed nationwide studies on DEI best practices (one focused on hiring and workforce development, and the other on equitable water management, organizational strategies, and community engagement) along with a new guidebook, implementable tools, and other resources that utility practitioners can use within their own organization. This session will also highlight the plans and steps from the Water Environment Federation to embed DEI throughout the organization, in alignment with the WEF Strategic Implementation Plan. Finally, this session will promote peer-to-peer community-building and further advancement of DEI within the water industry.
22526	403	Next-Gen Sewer Operations: Digitizing Data, Resilience, and Action	Utilities face increasing pressure to modernize infrastructure, enhance operational efficiency, and improve resiliency against climate events and system failures. This session brings together three critical elements—digital transformation, real-time monitoring, and operational resiliency—to help utilities navigate these challenges effectively.
22527	414	Smart Asset Management: Digital Tools for Efficiency and Reliability	Discover how digital tools are transforming asset management by improving efficiency, reliability, and decision-making. This session explores best practices for leveraging data analytics, risk management, and automation to optimize asset performance and lifecycle management. Learn how utilities and industries can enhance maintenance strategies, reduce costs, and maximize operational resilience with a digital-first approach.
22528	402	Thickening to Drying: Optimizing Solids Handling Through Innovation	Highlighting the practical and innovative strategies for optimizing thickening, dewatering, and drying in biosolids management will be the focus of this session. Speakers will present on upgrading aging infrastructure, dialing in polymer performance, and integrating new technologies like self-aspirating pumps and low-temperature dryers. Through full-scale implementation stories, pilot testing outcomes, and operations-focused improvements, attendees will explore how facilities are reducing energy use, chemical consumption, and manual effort—while improving solids handling efficiency across the board. The session spans the solids processing train, from thickening to drying, and offers actionable insights for utilities of all sizes. Conversation and Input
22529	408	Water Reuse Strategies at Scalable Data Center Operations	As artificial intelligence scales, the environmental impact of data centers – particularly their water usage – has come under increased scrutiny. In response, data centers are moving towards innovate water reuse strategies to minimize environmental impact and support sustainability goals. This session explores a practical model and real world case studies demonstrating how reclaimed water can be effectively used in data center cooling operations. Attendees will gain insights into both environmental and economic benefits, including significant reductions in both operational costs and fresh-water consumption. Facilitated Discussion
22530	426	Advances in Biofilm Research from WER Journal	Keep up with trends in biofilm research by attending this session featuring the authors of cutting-edge research from Water Environment Research journal. TL/DR? No problem! Come to hear directly from authors of hot papers published in WER about their recent work and where the field is going. Facilitated Discussion
22531	428	Big Solutions for Big Storms	Come and explore how major U.S. cities are designing and implementing next-generation infrastructure to manage stormwater at scale. Presentations will showcase high-capacity stormwater pump stations, large underground storage tanks, and integrated systems that combine blue, green, and gray infrastructure. Drawing from complex projects in Houston, Somerville, and New Orleans, this session emphasizes solutions to protect vulnerable urban areas from flooding. Conversation and Input
22532	427	Challenges and Innovation in Sludge Processing	We will explore the challenges and opportunities in managing hydrothermal liquefaction (HTL) byproducts within wastewater treatment and anaerobic digestion systems. It examines the inhibitory effects of specific compounds, their impact on biological processes, and potential strategies to mitigate toxicity over time. Additionally, the session includes a presentation that compares an emerging vacuum evaporation enhanced digestion technology with thermal hydrolysis to assess effectiveness in improving digestion performance. Through experimental findings and comparative analysis, this session provides valuable insights into optimizing waste conversion and resource recovery.
22533	417	Concept to Completion: Pump Station Improvement and Construction	Our speakers will discuss exploring strategies for designing, improving, and constructing pump stations and interceptors. Attendees will be exposed to advancements in assessing and retrofitting aging pump stations, addressing challenges in interceptors and tunnel crossings, pump station replacements, and integrating new infrastructure within existing systems. The session highlights pump station and interceptor improvement projects from multiple utilities.
22534	419	Decarbonizing Water: Mathematical Modeling and Digital Twins to Reduce N2O Emissions from WWTP	Our speakers will present their findings which illustrate the use of digital solutions to support decisions and optimize the operation of WWTPs for N2O reduction. This session will also present advanced modeling on full-scale treatment plants for optimization of N2O reduction. Facilitated Discussion
22535	424	Densified Activated Sludge Full Scale Performance and Optimization	Join the discussion as we cover experiences with densified activated sludge (DAS) from multi-year full-scale implementations. Four case studies will present performance results, lessons learned, modifications for process optimization, and future work. Case studies include densification in conventional activated sludge as well as MBR and MABR processes. A panel discussion will follow the four case studies. Panel Discussion
22536	421	Global Environmental Best Practices: Lessons Learned from the Past for the Future	Indigenous communities from around the globe developed traditions that were suited to their specific environments. This session includes a panel of indigenous speakers from different countries explaining their cultural values and traditional practices and how modern utilities can embrace indigenous knowledge into their management practices. We will explore the drivers and logic behind the traditional practices, their barriers, and how they might inform contemporary solutions for a sustainable future. Panel Discussion
22537	432	Investing in Multi-Benefit Green Stormwater Infrastructure for Scale and Impact	Rain gardens, bioretention, and other green stormwater infrastructure integrated into climate resilient landscapes manages rain where it falls and improves water quality. These strategies can supplement more centralized approaches and provide multiple benefits--green jobs, reduced water demand, increased wildfire resilience, enhanced biodiversity, improved local air quality, and reduced heat stress. Urban stormwater managers can maximize these co-benefits by investing at scale and opening the door to co-funders and other partners. This session highlights how to value multiple benefits of climate resilient landscapes in Los Angeles County and how to leverage these values into co-funding. It also explores equitable, affordable financing.
22538	429	Mature Stormwater Programs: Assessment and Enhancement Opportunities	Stormwater utilities are facing increasing pressures and expectations from a variety of perspectives such as evolving regulatory, financial and revenue challenges and political and customer viewpoints. To help meet these challenges, stormwater programs need to evolve to ensure they are delivering fiscally responsible and effective stormwater management services. This session will discuss and present various opportunities for stormwater utilities to assess key aspects of their stormwater program to identify opportunities for enhancement and meet the challenges of today and the future.
22539	418	Navigating the Storm: Disinfecting Wet Weather Events	Let's examine the impacts of wet weather events on disinfection processes at WRRFs and in combined sewer systems. We will explore technologies used to mitigate challenges of high suspended solids and pathogen concentrations that occur during storm conditions. We'll present case studies highlighting effective approaches to managing water quality and compliance. Join us to discover strategies for maintaining water quality during wet weather events. Facilitated Discussion

22540	430	One Water in the Spotlight! Getting Creative with Community Engagement	This session spans three campaigns that put water front and center in communities across the country through creative engagement efforts focused on water, wastewater, and stormwater. A non-profit in a large, fast-growing city developed programs to reinforce collective responsibility for sustainable water and wastewater management. A familiar storm drain program used environmental psychology principles to support growth and evolution, while a utility crafted strong visuals to simplify the wastewater collection system for multiple audiences.
22541	422	Passing the Test: Improving Whole Effluent Toxicity Compliance from Industrial Wastewater Treatment	Whole Effluent Toxicity (WET) testing is a critical process for evaluating the potential toxic effects of wastewater discharges on aquatic organisms in surface waters. but can be challenging to pass for industrial dischargers due to utilization of complex chemical mixtures, high salinity, and presence of biogenic compounds and the regulatory context in which they operate. Using common analytical tools and site-specific desktop tools, Molson Coors was able to improve their WET compliance. This session will review the challenges of passing WET testing, how to identify toxicants present in effluent and process waste streams and best practices for identifying and eliminating potential toxicants from their facilities.
22542	423	PFAS Removal Technologies for Leachate and Complex Wastewaters	Come explore the application of several novel technologies for removal and destruction of PFAS from landfill leachate and other complex waste streams. The performance of foam fractionation for three different leachate matrices will be compared, and the novel use of modified coal fly ash for PFAS adsorption will be explored. The application of foam fractionation combined with three destructive technologies, electrochemical oxidation, supercritical water oxidation, and thermal plasma, will also be described. Case Study Analysis
22543	425	Resiliency and Effectiveness of Wet Weather Flow Management and Treatment	WRRFs are adapting their treatment operations for wet weather flow management using various non-biological advanced technologies. This session presents a comprehensive overview of evaluating various wet weather treatment technologies for peak flow management and treatment. Full-scale performance and CFD modeling highlight the treatment efficiency of various technologies including pile cloth media filter, and ballasted sedimentation.
22544	416	RNG-Codigestion, Carbon Capture, and Fugitive Methane	Renewable natural gas (RNG) remains an attractive value-added alternative to biogas at WRRFs. This session explores new approaches to leverage opportunities to further improve the economic performance of RNG facilities while mitigating carbon emissions. These opportunities include the first non-prescriptive D3/D5 administrative split, carbon capture from RNG tail gas, and reduction in fugitive methane to increase revenue from RNG. Facilitated Discussion
22545	420	Squeezing the Tube to the End: Maximizing Capacity	Come and listen in as our speakers discuss process tools applied to capacity analysis. The presented case studies will include dynamic modeling and clarifier capacity analysis.
22546	431	Water Reuse: Today's Landscape and Tomorrow's Path	In partnership with the Water Reuse Association and the Water Research Foundation, this session will offer diverse perspectives from across the water reuse community. We will explore key topics such as regulations, advocacy, program funding, and the current landscape of water reuse regulations throughout the United States. Panel Discussion

IEPA ID#	Session #	Workshops	Description
22447	W01 and W08	Wastewater Microbiology	
22448	W02	Exploring Disinfection Validation in Water Reuse Scenarios	This full-day interactive workshop will dive into the core processes of disinfection validation for water reuse applications. Expert speakers will guide groups of participants to concentrate on understanding and critically evaluating various aspects of the disinfection process, with hands-on exercises centered around the scientific and operational aspects; regulatory considerations; and validation tests result reporting. The workshop will also cover broader topics, such as general water reuse scenarios and regulations, incorporating only key elements that directly influence disinfection validation. The focus will be on real-time application, data collection, and decision-making processes for effective validation.
22449	W03	Integrated Flood Planning: Managing the Storms of the Future	As the impacts of climate change continue to lead to oftentimes devastating storms that result in flooding, it is becoming increasingly important for utility managers to plan ahead and be prepared to respond, rather than react, to these events. This workshop equips utility managers with the tools to bridge advanced flood modeling and actionable policies, enabling communities to prepare for and mitigate future flood risks
22450	W04	Strategies for Measuring and Mitigating Fugitive Methane	This interactive workshop will focus on providing participants with a foundation on fugitive methane concepts, monitoring methods, and mitigation strategies through applied theory, and will include interactive equipment demonstrations and case studies analysis. Workshop participants will engage with regulators, technology providers, utilities, consultants, the Department of Energy, and universities to better understand different points of views on this highly relevant topic. Interactive demonstrations will provide hands-on engagement with technology providers and data platforms to better understand applications of fugitive methane measurement.â€
22451	W05	Thickening Optimization: Process Improvements and Plant Benefits	This workshop will focus on practical solutions to improve thickening performance for primary and waste activated sludge, including achieving thicker solids, better solids capture, reduced polymer consumption, reduced operation and maintenance costs, enhanced biological phosphorus removal, and smaller or more efficient downstream solids handling processes. The workshop will be of primary interest to plant managers, superintendents, operators, and maintenance staff from municipalities. This topic is critical and timely to the industry, as municipalities are feeling more pressure to reduce their budgets or to 'do more for less,' in addition to addressing the challenges of increasing polymer and solids processing costs.
22452	W06	Using Process Simulators for Operator Training and Decision-Making	Process simulators are a valuable teaching tool because they allow water professionals to explore the consequences of operational decisions across a resource recovery facility in an interactive, risk-free way. This workshop will demonstrate the strength of simulators to illustrate fundamental resource recovery concepts to water professionals by offering simulator-based training on: use of steady-state and dynamic modeling to assess the impacts of secondary clarifier operation on process performance and use of steady-state and dynamic modeling to operate a nitrifying activated sludge system to achieve year-round nitrification.
22597	W07	Activated Sludge and Biological Nutrient Removal Process Control	This comprehensive workshop is presented by leading practitioners, sharing their experiences in an interactive environment. The all-star cast of presenters will cover Activated Sludge/BNR/Digestion basics and then focus on solving the practical design problems that have plagued many systems. Process control parameters, side-stream considerations and tips for identifying microorganisms and establishing a healthy biomass will all be part of the day's demonstrations. The format is informal and real-life examples and questions are welcomed. Note, the workshop is held outdoors at a wastewater treatment plant.
22453	W09	WEF and WRF: Practical Application of Instrumentation and Controls for Aeration and Nutrient Removal	This workshop provides training for operators, designers, and utility staff on aeration system components, as well as aeration and nutrient removal controls. The workshop will feature hands-on exercises to explore and reinforce different aeration concepts and control strategies through breakout discussions with posters, group problem-solving scenarios, an interactive app, and computer simulation. Additionally, utility leaders will share their experiences with instrument-based controls for nutrient removal, highlighting performance, operation and maintenance, and costs via a facilitated discussion.â€
22455	W11	Breaking Barriers for Industrial Water Reuse: Industry and Utility Approach	Join industry leaders at the 'Breaking Barriers for Industrial Water Reuse' workshop to explore innovative solutions for industrial water challenges. This interactive session features case studies from four industries, offering insights into overcoming barriers and implementing effective water reuse strategies. Participants will engage in case study analysis exercises, collaborate on solutions, and learn from experts in the field. Ideal for engineers, facility managers, and water resource professionals seeking to enhance their knowledge and network with peers.â€
22457	W12	Demystifying Nitrous Oxide (N2O) Measurement and Quantification Nitrous oxide	Nitrous oxide (N2O) is a sign of stressed nitrification and biomass 'unhappiness' and is a potent greenhouse gas. N2O in activated sludge and biological nutrient removal systems must be measured to understand how it relates to a facility's operating conditions. Hosted at the Stickney Water Reclamation Plant, participants will experience a practical introduction to N2O measurement and mitigation. Participants will interact with N2O measurement technology demonstrations focusing on operations, maintenance, and troubleshooting.â€
22459	W13	Game-Based Modeling of Water Resource Recovery Facilities	The objective of this workshop is to provide a high-level understanding of the most widely used, commercially available modeling platforms including BioWin, SUMO, SIMBA#, GPS-X, and WEST for individuals who are interested in learning how models are used and applied for the design, operation, and optimization of water resource recovery facilities. The intent is not to teach the attendees how to use any one software package or build a specific plant model, but rather to demonstrate the capabilities and limitations of all the modeling platforms through an interactive game-based approach.
22459	W14	Leveraging Algae to Provide Cost-Effective Treatment Solutions for Your Community	Come learn how to design an algae-based wastewater system to meet strict carbonaceous biochemical oxygen demand and nutrient limits, while decreasing energy use, operation and maintenance costs, and greenhouse gas emissions.â€ Algae-based systems have been operating in the United States for more than 15 years and meeting U.S. EPA NPDES standards. This workshop will offer interactive opportunities with consulting engineers, owners, and manufacturers who will help participants design and implement algae-based wastewater treatment systems.â€
22460	W15	Controlling PFAS by Membrane Technologies	Join our 'Controlling PFAS by Membrane Technologies' workshop to explore the role of membrane technologies in addressing PFAS contaminated waters. This workshop covers membrane functionality, application scenarios, and PFAS disposal strategies. By focusing on some real-world water chemistries, attendees will learn and work collaboratively to select solutions to challenges involving the use of membranes to treat PFAS.
22461	W16	A Climate Adaptation Workshop: Building a Resilient Future	Communities nationwide are already experiencing the impacts of climate change, which is increasingly straining the resilience of utility systems. This workshop will equip participants with a methodology to assess the potential impacts of climate change, even those beyond their direct experience. By visualizing 'what-if' scenarios, participants can explore and evaluate viable adaptation options to address both current and future climate challenges. The workshop will also showcase successful examples of climate adaptation measures.
22462	W17	Thermal Drying: State of the Practice, Advancements, and Future Applications	Given rising disposal costs and regulations, many utilities are considering biosolids drying to create sustainable solutions. This workshop will unite operators, technologists, and engineers to explore drying technologies, considerations for dryer implementation, and future areas of collaboration. Focus will be given to how dryers can be successfully integrated into existing utility programs and water resource recovery facilities and future considerations for drying technology advancement, including compatibility with PFAS treatment.
22463	W18	Transform Your Leadership: A Growth Plan for Everyone	Effective leadership starts with identifying and refining your innate strengths. In this workshop, we'll guide you in developing a personalized Leadership Development Plan that aligns with your career and personal goals. Through self-assessments, career mapping, and leadership coaching, you'll gain the insight and tools to progress as a leader. Whether you are new to the wastewater industry or have extensive experience, this workshop is designed to help chart your unique leadership journey.â€
22464	W19	Biogas to Renewable Natural Gas: System Startups and Safety Protocols	This workshop will highlight the challenges encountered during the startup and commissioning of two biogas upgrading technologies and lessons learned, with an emphasis on the establishment of safety practices associated with the generation of biogas and upgrading to renewable natural gas. Interactive activities will include a discussion of strategies and equipment used for leak detection and exercises for purging systems out of service for maintenance and service purge training protocols, all with active roles for participants.
22465	W20	W20 Facility Tours: Communicating with Public Officials (Off-site)	Negative headlines shouldn't be the reason the public wonders where their wastewater goes. Facility tours provide good publicity and empower your community. What's moreâ€ people want to see the magic of water resource recovery facilities! This workshop focuses on exchanging practical information from seasoned experts (an operator, an engineer, and an educator) to participants new to giving facility tours and/or those who already give tours but desire to make lasting connections with their communities.