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Approval Details:

Illinois has approved WEFTEC 2024® for Continuing Education Credits. Please see attached listing for approved session details.

IEPA ID#	Session #	Title	Description
20839	OGS	Opening General Session	The Water Environment Federation (WEF) envisions a world where everyone lives life free of water challenges. Our members work every day to realize this vision and lead the future of water. The primary water challenges we all face are related to quality, quantity, variability, and accessibility. In this year's Opening General Session, speakers will share their personal water stories, highlighting these critical issues and providing hope and inspiration for the future.
20840	200	Water Policy Update Part 1	This session will address the key priorities from the Biden Administration related to water and will provide the perspectives from subject matter experts on federal policies. Senior federal officials from the US EPA and other federal agencies will address regulatory and policy topics such as PFAS, cybersecurity, infrastructure funding, water quality standards and other important regulatory and policy issues. A short presentation on the WEF Water Advocates Program will also be included. The session will be divided into 2 parts, each with a different focus that will be announced in July.
20841	235	Water Policy Update Part 2	This session will address the key priorities from the Biden Administration related to water and will provide the perspectives from subject matter experts on federal policies. Senior federal officials from the US EPA and other federal agencies will address regulatory and policy topics such as PFAS, cybersecurity, infrastructure funding, water quality standards and other important regulatory and policy issues. A short presentation on the WEF Water Advocates Program will also be included. This regulatory update is divided into 2 parts with details coming later in July on the specific topics in each part.
20842	201	THP: Downstream Process and Maintenance Challenges	As more thermal hydrolysis facilities come into operation and more experiences are gained, process and maintenance challenges downstream of THP have been identified. This session presents lessons learned from operation and maintenance of THP system as well as impacts to downstream processes and potential solutions. Interactive Session | Facilitated Discussion
20843	202	The Ultimate Collection Systems Basics Trivia Challenge 3.0	If you have an appetite for fun and aren't afraid of a quiz, this is the session for you! Come and test your knowledge on collection systems basics. This year we are focusing on pipe rehabilitation technologies, including cured-in-place pipe and grouting. You might even learn (and earn) something new! Interactive Session | Trivia
20844	203	Improving Disinfection Processes through Machine Learning	How are advancements in predictive modeling and machine learning being applied to disinfection operations? Come learn how soft sensor development and machine learning based model predictions are revolutionizing wastewater and reuse disinfection systems and reducing the risk of noncompliance. Early results indicate the potential for increased efficiency and stability, and future prospects are unlimited!
20845	204	Real Life PFAS Issues: WRRF to Watershed to Biosolids	Since PFAS can be complicated, this session gives an overview on how to look at PFAS. One utility pursues the mass balance approach including the watershed while another evaluates the affects at a land disposal site of biosolids.
20846	205	Leveraging Automation and Analytics for Better Situational Awareness and Optimization: Part I	Are you interested in leveraging the power of your current automation systems for better process stability and resource optimization? The session focuses on demonstrating the use of existing and additional instrumentation, analytics, and simple to advanced process control techniques and tools including the use of operational digital twins. Interactive Session | Facilitated Discussion
20847	206	Building a Hydrogen Future	New opportunities for using green hydrogen, from providing an overview of the status, synergies, and pitfalls of the technology, to an applied feasibility study showcasing how wastewater treatment plants can leverage hydrogen to achieve a circular water economy. The case of hydrogen supporting HPO facilities to transition to nutrient removal is also included. Interactive Session | Facilitated Discussion

20848	207	DE&I: Representation and Impact	Our speakers will endeavor to elucidate the complex interconnection between Environmental Justice and Water Equity, highlighting the pronounced ramifications stemming from inadequate representation in perpetuating these multifaceted issues. By exploring into diverse perspectives encompassing historical antecedents, contemporary community experiences, and the proactive measures undertaken by utility agencies, this presentation aims to furnish a comprehensive understanding of the dynamics at play. Interactive Session | Facilitated Discussion
20849	208	Solutions and Ideas From Award Winning Industrial Experts	We will hear from and honor this year's recipients of the distinguished Wes Eckenfelder Award, as well as the Industrial Water Quality Achievement Award. The topics and featured project 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. Interactive Session | Panel Discussion
20850	209	Ceramic Membranes for Industrial Water Reuse and Recovery	Pilot studies of hard-to-treat industrial water were run to determine efficacy and viability of ceramic membranes for clean water recovery. One paper deals with reduction of electro-finishing water while another paper deals with reuse of produced water from oil production.
20851	210	Optimization of MBR Technology	Come listen in as our speakers highlight the advances in MBR technology. The first highlights how sludge densification, by means of an external biomass selector, helps maximize sludge densification and quality, thereby improving biological performance. The second proposes a new metric that indicates the air scour requirements under varying operating conditions. The third highlights how MBRs can be designed using a flexible approach that allows the facility to be optimized for current treatment needs, while preserving expandability to meet future requirements.
20852	211	Innovative Approaches to Address Traditional Operational Challenges	Our three presentations will provide innovative approaches to address all-too-common operational challenges at water resource recovery facilities. Process testing protocols to tackle and resolve the loss of nitrification; address and better describe secondary settling behavior; and to best monitor and control densified activated sludge process will be presented. These protocols result from case studies that incorporate both traditional, updated approaches and new concepts and innovations.
20853	212	WEF/AEESP Master Lecture: Tanja Rauch-Williams	The Water Environment Federation (WEF), in collaboration with the Association of Environmental Engineering and Science Professors (AEESP), are pleased to present the 2024 WEFTEC Master Lecturer, Dr. Tanja Rauch-Williams, Chief Innovation Officer at Metro Water Recovery in Denver, Colorado. This prestigious lecture is given each year by a selected researcher alternating between an academic and a practitioner; Dr. Rauch-Williams was selected this year for her significant contributions to the water sector from the viewpoint of a practitioner. The Master Lecturer is asked to speak about trends and ideas developed as a result of many years of endeavors in the water sector.
20854	213	Case Studies Implementing Stormwater Parks and Green Infrastructure Across North America	Explore the intersection of stormwater management, community development, and economic revitalization through the implementation of stormwater parks and green infrastructure projects. Discover how integrating green spaces into urban landscapes enhances water management practices, fosters social cohesion, promotes economic growth, and addresses environmental justice concerns. Case studies will showcase successful approaches, challenges, and lessons learned from diverse communities across America. Interactive Session | Case Study Analysis
20855	214	Leveraging Digital Technologies to Make Better Decisions	Our speakers will provide three distinct examples on the use of technology to make more informed decisions. We will cover optimizing capital investments, condition assessment, and workforce planning.
20856	215	Decentralized Systems: Wastewater Management for Small Communities	Join our discussion of decentralized systems and management options for small communities! The presentations will consist of a case study in the Black Belt region of Alabama, a case study along the coast of North Carolina, and dialog of WEF's Decentralized Wastewater Infrastructure Initiative. Small communities face unique challenges and addressing wastewater needs and alternatives for these communities will benefit public health while maintaining the tax base and improving environmental quality.

20857	216	Effective Strategies for Managing Organics in IPR/DPR Systems	Organic compounds found in the feed water to IPR/DPR advanced treatment processes pose challenges to both treatment system and purified water quality requirements. This session will provide the latest findings in addressing issues with organic compounds through water purification systems with MBR-RO trains, and an innovative water purification system configuration for organics and salinity reduction. Three pilot studies are presented, each addressing issues with organic compounds in water purification systems.
20858	217	Navigating Nutrient Dynamics: Modeling for Water Quality Excellence	Dive into the world of water quality modeling to explore the intricate pathways of nutrient dynamics and pollution mitigation strategies. Beginning with an in-depth examination of advanced modeling techniques, this session delves into how predictive tools inform decision-making in water resource management. From the development of receiving water models in urban environments to the reassessment of Total Maximum Daily Loads (TMDLs), this session presents creative approaches to addressing nutrient pollution challenges. Interactive Session | Facilitated Discussion
20859	218	Managing Biosolids for Tomorrow: Infinite Resources, Finite Uses	Intended to describe drivers and mechanisms, this session will serve as a guide for attendees to evaluate a standalone or regionalized biosolids management facility. Considerations for such facilities may include multiple parties, state or regulatory agencies, and other key stakeholders. Planning factors such as financial incentives, economic analysis, and non-financial criteria are also examined.
20860	219	Advances in Anaerobic Digestion	In this session, three emerging approaches for enhancing anaerobic digestion will be presented and discussed in an interactive session. These include the hyper-thermophilic post digestion hydrolysis utilizing Microbial Hydrolysis Process (MHP), side-stream vacuum evaporation, and a Pilot Digestion Optimization Facility (PDOF). Participants will be given the opportunity to engage in an open conversation with the speakers on how these processes could be adapted to benefit their facilities. Interactive Session | Facilitated Discussion
20861	220	Unleashing the Power of Digital Tools for Your Collection System	Attendees will learn unique perspectives from domestic and international public utilities that are utilizing real-time data driven solutions and predictive operations and maintenance strategies to create a more robust collection system. In addition, attendees and presenters will discuss how different technologies can be integrated to create a more resilient and dynamic system. This interactive session will focus on utilities optimizing their collection systems through predictive maintenance, machine learning technologies and visualization tools. Interactive Session | Panel Discussion
20862	221	Reducing Wet Weather Flows Using Public and Private I/I Removal Solutions	During this session, attendees will hear the speakers highlight both public and private I/I issues and solutions that include funding, public engagement and rehabilitation programs. Speakers will present projects from different areas of the country will showcase results.
20863	222	Microplastics in WRRFs: Research, Risk, and Regulation Updates	Microplastics contamination in both aquatic ecosystems and wastewater treatment systems has surged to the forefront of discussions in the water industry. This session will delve into key topics such as the development of a comprehensive risk management framework customized for aquatic environments, comparison of microplastic extraction techniques, and an examination of the presence, behavior, and analysis of microplastics in biosolids treatment streams. Join us as we explore these critical facets of microplastics management, offering valuable insights and potential solutions to address this ever-growing concern.
20864	223	Integrated Resilience and Reliability Planning	Learn how utilities are incorporating reliability and resiliency from initial design through to operations and maintenance activities.
20865	224	Leveraging Automation and Analytics for Better Situational Awareness and Optimization: Part II	Are you interested in leveraging the power of your current automation systems for better process stability and resource optimization? The session focuses on demonstrating the use of existing and additional instrumentation, analytics, and simple to advanced process control techniques and tools including the use of operational digital twins. Interactive Session | Facilitated Discussion

20866	225	Community-based Approach to Generate Equitable and Just Outcomes through Infrastructure Planning	Attendees will have the opportunity to see how two major agencies, The Buffalo Sewer Authority and Prince George County, Maryland developed and implemented equity and environmental justice community-based models and business practices to address issues that affect the water management. These programs are intended to directly impact their communities social and economics through improvements of the public water infrastructure. This session is intended to allow attendees to provide the tools to operationalize best practices that can be utilized in their own communities and organizations. Interactive Session | Conversations and Input
20867	226	Emerging Technical and Regulatory Issues in Petroleum Refinery Wastewater Management	In this session, our speakers will examine technical and regulatory issues related to selenium in petroleum refinery wastewater discharges, introduce a modification to established technology that intensifies refinery wastewater treatment processes, and consider the arguments for updating refinery effluent guidelines under the USA's Clean Water Act.
20868	227	EBPR Pulse: Current Trends, Full-Scale Optimization, Model for Sustainability	Our speakers will engage the audience with the current state and new trends in the EBPR process regarding the optimization techniques and using different feedstocks to enhance the side-stream fermentation process. Dr. Annalisa will begin by introducing EBPR practices and fundamentals and will touch on some optimizations and side-stream fermentation techniques. This will be followed by more in-depth discussion on optimization techniques followed by fermentation which includes modelling as well.
20869	228	Optimizing Design for Increased Capacity	Three case studies of innovative design approaches to increase plant capacity- hydrocyclones, CFD modeling to optimize design, and conversion to plug flow A/O with degassing will be presented during this session. The first presents Johnson County's lessons learned from 15 years of experience to achieve 3Q treatment at their Middle Basin Treatment Facility, through construction of a fourth BNR train and piloting of InDENSE hydrocyclones. The second covers CFD modeling at HRSD's Nansemond Treatment Plant to optimize design of an influent distribution box, backflow for PdNA, AAA basin, and SC influent distribution box and how the improvements were implemented during construction. The Central WRF converted existing 30ft deep aeration tanks from draft tube diffusers to fine bubble diffusers and two-pass complete mix reactors to plug-flow A/O, which required field testing to determine alpha values for deep aeration tanks and implementation of coarse bubble diffusers at mid-depth of the aerobic zone to degas the mixed liquor prior to the secondary clarifiers and improve settleability.
20871	229	Standing on the Shoulders of Giants: Revisiting Seminal WER Papers	This annual is presented by the Research & Innovation Symposium and seeks to revisit a pioneering paper that was published in Water Environment Research and present modern contributions to the topic. This year's inaugural session will revisit the paper 'Cycling of Volatile Organic Sulfur Compounds in Anaerobically Digested Biosolids and its Implications for Odors,' contributed by Matt Higgins. The session will be anchored by Matt Higgins and will include 2-3 modern supporting papers, presented by the authors of those contributions.
20872	230	Revolutionizing PFAS Treatment: Harnessing the Power of Media Technologies	The first presentation introduces a new PFAS treatment method, NanoSorbâ„¢, employs a modified membrane bioreactor (MBR) and enmeshes a carbon-based additive into biological floc, providing a cost-effective solution with high PFAS removal capacity for challenging wastewaters like landfill leachate. The second presentation explains the efficiency of Granular Activated Carbon (GAC) in removing Total Organic Carbon (TOC) and PFAS, aiming to optimize GAC media, calculate breakthrough bed volumes, and develop a predictive tool for full-scale GAC design using data from Rapid Small Scale Column Testing (RSSCT). The bench and pilot-scale work were conducted at Anne Arundel County, MD's advanced water treatment (AWT) pilot. The third presentation outlines spent media disposal options beyond conventional disposal methods like landfilling, hazardous waste incineration, or granular activated carbon (GAC) reactivation. The comprehensive analysis aims to provide valuable insights into the full management pathway, design considerations, and comparative energy usage of various spent media disposal options, supporting planning and decision-making for both existing and future PFAS treatment systems in industrial wastewater facilities.

20873	231	Stormwater Infrastructure Operation and Maintenance: Management and Funding	Green infrastructure program leaders in major metropolitan cities with varying climates and funding resources across the country will be featured during this session. The interactive session will feature presentations by the speakers regarding types of green infrastructure practices deployed, resiliency measures, and the funding mechanisms in place for maintenance. Interactive Session | Conversations and Input
20874	232	Consumer Education Fights Back at Collection Systems Under Attack	For years, utilities' collection systems have been under attack from 'flushable wipes', trash, and FOG. In this session, we'll hear from two utilities and one WEF member association on how they're proactively and creatively educating their consumers on what should (or should not) go down the drain. Traveling from homes to capital hill, NACWA will give an update on wipes legislation. Interactive Session | Conversations and Input
20875	233	Shaping the Future of Potable Reuse	During this technical session, speakers will offer a rich tapestry of insights into Direct Potable Reuse (DPR) implementations across the United States. Presentations highlighted the experiences between regions, from Cloudcroft, NM's small community, challenges from the North Carolina DPR project, to broader pretreatment program strategies in Colorado and California. This cross-regional exchange emphasized the diversity of challenges and innovative solutions in water reuse, showcasing projects that reflect the unique environmental, technical, and social landscapes they operate within.
20876	234	Nutrient Management: GET OUT (The Nutrients)!	Come explore regulatory methods and integrated approaches to removing nutrients from waste streams and the resultant impacts to watersheds, coastal ecosystems, and estuarine ecosystems. From integrated approaches to innovative strategies, the case studies presented in this session will increase the audience's knowledge of nutrient removal dos and don'ts! Interactive Session | Facilitated Discussion
20877	235	Water Policy Update: Part 2	This session will address the key priorities from the Biden Administration related to water and will provide the perspectives from subject matter experts on federal policies. Senior federal officials from the US EPA and other federal agencies will address regulatory and policy topics such as PFAS, cybersecurity, infrastructure funding, water quality standards and other important regulatory and policy issues. A short presentation on the WEF Water Advocates Program will also be included. This regulatory update is divided into 2 parts with details coming later in July on the specific topics in each part.
20878	301	Thickening and Dewatering: Design Considerations	This session includes three cases studies that explore challenges and innovations in thickening and dewatering. The first case study showcases the effectiveness of using plant-specific rheological data in designing thickened and dewatered sludge systems. Rheological studies are crucial for understanding the non-Newtonian behaviors of wastewater sludges, leading to improved hydraulic designs. The second presents the evaluation of alternative thickening technologies for the high volume of primary sludge resulting from primary filtration. The final case study delves into sludge dewatering, highlighting the advantages of screw presses and proposing a novel approach for comparing the throughput capacity between manufacturers. Interactive Session | Case Study Analysis
20880	302	Planning Techniques to Support I/I Mitigation, Master Plans and Design	Tired of hearing modelers drone on about how beautiful their calibration is? Have we got a session for you! Practical applications of models and other planning techniques will be explore to illustrate the value of these tools for applications from planning to design to daily operations. Presenters will provide case studies of different applications and engage the audience in their experience, concerns, and benefits. Interactive Session | Conversations and Input
20881	303	Translating PFAS Risk Assessment into Regulation and Action	Research on PFAS removal and transformation has been accelerating in recent years, but human health-based risk assessments are still advancing to develop the regulatory basis for PFAS water quality standards. This session will highlight the recent EPA regulatory advances that will guide the coming years. It will also highlight the important role of source control as a basis for PFAS control and a recent utility success story in PFAS management. Interactive Session | Facilitated Discussion

20882	304	Intercepting Odors and Corrosion: Modeling, Mitigation, and Monitoring	Odors and corrosion are challenges for operators of gravity interceptors, and these challenges are usually closely related. Hydrogen sulfide and other compounds cause corrosive conditions within interceptors and cause foul odors when they escape to the surroundings. Attendees of this session will learn about real-world experiences of modeling sulfide generation and odor release from interceptors, mitigating impacts to extend asset life and improve public relations, and monitoring conditions and mitigation performance long-term. Interactive Session | Case Study Analysis
20883	305	Energy Conservation: From a Want to a Must	What would you do if your plant faced power shortages? What if you need a whole plant upgrade but must have a financial payback? Is it possible to improve your current operation? This session focuses on planning, executing and reporting successful energy conservation efforts at WRRF's, from some that want to conserve to those that must reduce. Interactive Session | Facilitated Discussion
20884	306	Assessing Climate Risk and Its Impact on Utility Operations: Financial Resilience and Insurability	Waster sector utilities are experiencing more costly operational and financial impacts from the increased frequency and severity of climate change-related disasters. EPA's Creating Resilient Water Utilities (CRWU) initiative and Climate Finance Workgroup members will discuss existing tools and resources and future work to help utilities reduce risks associated with climate-related hazards and financial impacts. This session will highlight the suite of climate data maps and risk assessment tools available through real-world case study examples of climate adaptation planning in action and a discussion of the findings of the Climate Finance Workgroup, including a panel of the utility, financial, and insurance industry expert workgroup members.
20885	307	Petroleum Refinery Problem Wastewater Constituent Removal Advances	Innovative techniques for refinery wastewater problem-constituent removal are presented. i) A case study quantifies removal of benzene using moving bed bioreactor (MBBR) technology. ii) Testing various grades of iron media yielded efficacy of selenate removal. iii) Determination of microbial populations using RNA data and statistical methods demonstrate the possibility of optimization of refinery wastewater treatment.
20886	308	Driving the Circular Water Economy by Reusing Industrial and Municipal Effluents	Water is a critical resource utilized by all industrial sectors. Ensuring a resilient water supply allows operating facilities to profitability thrive and grow. Securing a resilient water supply can also become a competitive advantage for siting new production facilities. This session will focus on identifying, evaluating, and developing resilient water solutions for existing industrial facilities using 'inside the fence' ZLD/MLD recycle systems as well as 'outside the fence' opportunites to utilize reclaimed municipal wastewater for siting new Sustainable Aviation Fuel (SAF) production and Technology / Data Center facilities.
20887	309	Internal Stored Carbon for Nutrient Removal	In the activated sludge process, internal stored carbon plays a crucial role in nutrient removal by facilitating the uptake of nitrogen and phosphorus by microorganisms. These microorganisms utilize stored carbon as an energy source for denitrification and phosphorus uptake, contributing to the overall effectiveness of wastewater treatment. Efficient management of internal stored carbon levels is essential for maintaining optimal nutrient removal performance in activated sludge systems.
20888	310	Fundamentals of Biofilm Reactor Design and Operation	This session serve as an introduction to biofilm reactors: the technologies, the applications, and the drivers for selection. The session will illustrate how biofilm technologies can provide process intensification and support unique microbial ecologies. Design and operational considerations for biofilm reactors will be covered. There will be an interactive component, where attendees will be exposed to biofilm reactor design considerations and key performance indicators for an MBBR. The session is intended to be an overview and will make recommendations on where the attendee where can expand their learning.
20889	311	Financing Stormwater Infrastructure in Communities	An overview of the WIFIA program and WIFIA's water infrastructure-related eligibilities, plus other funding sources focusing on stormwater will be discussed. The City of San Diego's Stormwater Capital Improvement Program will be presented regarding the WIFIA loan for the design and construction of stormwater improvement projects including pump stations, green infrastructure, stormwater rehabilitation, stream revitalization, and stormwater capture. Examples of mega-scale greening programs via SRFs and private finance instruments will be discussed. The Safe, Clean Water Program provides local, dedicated funding to increase our local water supply, improve water quality, and protect public health. Los Angeles County will discuss the program to date and lessons learned. Interactive Session | Panel Discussion

20890	312	Tools for Urban Flood Management and Forecasting	Explore innovative approaches to urban flood protection, stormwater management, and hydrological restoration in this dynamic session. Learn from case studies in Grand Forks, Toronto, and Aiken, highlighting strategies for adapting current plans, leveraging digital tools for event forecasting, and restoring predevelopment hydrology. Discover how cities are using advanced modeling, real-time monitoring, and smart controls to build resilience in the face of changing climate patterns and urban development.
20891	313	Resilient Communities Tackling Climate Challenges	Join us for a comprehensive session exploring innovative strategies and real-world projects aimed at enhancing resilience against climate change impacts. Discover how coastal regions, urban areas, and communities are implementing flood protection programs, wet-weather management flow and interactive visualization tools to mitigate risks and engage the public in building a more resilient future.
20892	314	Advancing Your Condition Assessment Program through Digital Technologies	Three examples of leveraging different condition assessment technologies will be provided during this session. Utilities will be provided examples on how other utilities are leveraging AI for condition assessments.
20893	315	Enhancing Water Safety: MBR & RO Technologies for Achieving LRV Credits	The interest in crediting proper log reduction values (LRVs) for the membrane bioreactor (MBR) process is becoming a critical part of IPR/DPR process design. This session provides information on how LRVs may be credited for the MBR process and RO process through water quality monitoring and membrane integrity monitoring. Through four presentations, participants will identify what LRVs can be demonstrated by operational plants that are using MBR and advanced treatment technologies. Interactive Session | Facilitated Discussion
20894	316	Innovative Approaches to Wastewater and Stormwater Permitting	New wastewater technologies and management strategies have emerged that could allow communities to meet the goals of the Clean Water Act and related state laws with greater efficiency, at lower cost, and often with multiple additional benefits. Wastewater permitting benefits from clear communications between regulators and permittees based on a mutual understanding regarding the permitting process, its requirements, and its potential to support new ideas. This interactive panel session will feature a lively discussion with utility and regulator perspectives reinforced by case studies and examples of successful permitting approaches. Attendees will have the opportunity to ask questions as well as offer their own examples that can inform future efforts on this topic. Interactive Session | Panel Discussion
20895	317	Data to Decisions: Leveraging Machine Learning, Advanced Remote Sensing, and Automation to Develop Environmental Solutions	The use of drones, high-resolution satellites, automation, and machine learning are revolutionizing the ability to collect and analyze robust digital data sets. These tools are rapidly transforming the scale and efficiency of digital data collection and facilitating the development of comprehensive environmental solutions. However, currently these tools are underutilized for environmental compliance and assessment because of a variety of reasons, including regulatory acceptance. How do we leverage digital data and machine learning to solve the challenges of today in a way that will lay the groundwork for the digital solutions of tomorrow?
20896	401	Developments in Hydrothermal Liquefaction for WRRFs	In this interactive session, speakers will provide insights on new developments in the implementation of hydrothermal liquefaction (HTL) for resource recovery at wastewater facilities. The first presentation will cover the practical principles of HTL for wastewater applications and the research that has been conducted to date. The second presentation will identify and quantify the potential impacts of processing different types of wastewater solids through HTL in the wastewater treatment process as a mitigation measure for implementing this technology at full scale. The last presentation will build upon the previous two to take the attendees through the design considerations of the first HTL demonstration facility for wastewater solids. Interactive Session | Facilitated Discussion
20897	402	Greenhouse Gas Strategies in Action: Measure to Mitigate	Attendees will be provided with tools they can take home to estimate, quantify, and mitigate greenhouse gas emissions through analysis of two case studies. During this session, they will also be introduced to an Excel-based tool to track GHG emissions throughout the whole WRRF treatment process. Interactive Session | Facilitated Discussion

20898	403	Interactive I/I Program Development: WEF -Town Needs Your Help!	WEF-Town is experiencing high infiltration and inflow in their sewer system and needs your help! This interactive workshop will provide a fun and collaborative approach to exploring various sewer evaluation and rehabilitation technologies. Teams will work together to develop an inspection plan to address the system's I/I challenges. Interactive Session | Knowledge Development Forum
20899	404	How Could EPA's 2023 Review of Recreational Water Quality Criteria Affect WRRFs?	EPA's 2023 Review of the Recreational Water Quality Criteria included three areas with the potential to impact water resource reclamation facilities (WRRFs). EPA plans to continue developing recommendations for viral indicators for pathogens; these may lead to additional coliphage standards for disinfection, which in turn may require larger disinfection systems at WRRFs. EPA also plans to explore the use of fecal source indicators, which could help determine waters that may have been impacted by wastewaters and differentiate between human and animal sources of feces. And finally, EPA has indicated an interested in antimicrobial resistance, including WRRF as a potential source. This session will cover each of these areas, and the potential implications for WRRFs. Interactive Session | Facilitated Discussion
20900	405	Protect Your Utility From Cyber Attacks	An overview of some of the cyber threats facing water and wastewater systems and free tools and resources that systems can use to increase their cybersecurity will be provided during this session. It will include information and examples of the challenges and opportunities to increase cybersecurity at smaller systems. Participants will have the opportunity to share their cybersecurity knowledge and experiences and water utility speakers will provide examples of implementing cybersecurity measures at their utilities.
20901	406	Climate-Proofing Our Cities: Transformative Solutions	Our session's speakers will showcase various examples of how cities can address the challenges of climate change and improve their stormwater infrastructure through innovative and adaptive solutions. The speakers will share their experiences and lessons learned from implementing projects that aim to enhance the resilience, sustainability, and quality of life in urban environments. The session will cover topics such as rehabilitating and replacing aged stormwater infrastructure in San Diego, applying adaptive management to reduce flood risk for water pollution control plants in Philadelphia, and developing flood warning and response plans and coastal stormwater designs in Clayton County and Boston.
20902	407	Indigenous Environmental Practices: Lessons 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. Interactive Session | Panel Discussion
20903	408	Treatment Challenges and Reuse within the Semiconductor Industry	Our speakers will dive into the challenges faced by the semiconductor industry in treating high-strength wastewaters which include TDS, TOC, various inorganics, etc. and lead to the formation of disinfection byproducts (bromoform). Various treatment methods and disinfection alternatives will be discussed. Options for Zero-Liquid Discharge (ZLD) will also be explored to promote water reuse/reclamation within the semiconductor fabrication process which will help lead to net positive water. Interactive Session | Facilitated Discussion
20904	409	Microbial Ecology Selection Under Low DO Concentration	Our panelists will engage the audience with respect to discussing the changes associated with microbial communities after adapting a Low DO strategy for reducing energy demand and manage carbon for nutrient removal. Dr. Chandran will introduce the scientific work associated with the type of organisms that thrive under these conditions. The two speakers will present the research findings from pilot- and full-scale applications regarding biological nutrient removal. Interactive Session | Panel Discussion
20905	410	Mechanistic Modeling Developments for Newer Processes	Three case studies will put a spotlight on mechanistic modeling developments to address newer treatment processes. Participants will analyze a biomass densification model and use it to investigate improved operational capacity. In the second case study, attendees will apply a process control strategy in a full-plant dynamic model to enhance and stabilize the operation of a post aerobic digester (PAD). Finally, participants will investigate a calibrated mechanistic model of an anaerobic moving bed biofilm reactor (AnMBBR) to explore performance boundaries. Interactive Session | Case Study Analysis

20906	411	Primary, Secondary, and Tertiary Applications of Advanced Filtration Technology	Advanced filtration technologies can be used to suit a wide variety of treatment applications â€“ from replacing conventional primary clarifiers, supplementing or replacing traditional secondary clarifiers in the activated sludge process, and providing tertiary treatment for nutrient removal. This session showcases the flexibility that filtration technologies can offer. Interactive Session | Facilitated Discussion
20907	412	Full-scale Demonstrations: Balancing Risks and Rewards for Successful Innovation	Speakers will discuss pilot and full-scale demonstrations of various novel technologies at each of their utilities. Technologies of focus will include pilot and full-scale operation of hydrocyclones at Denver Metro, implementation of digital twin application at HRSD, and pilot and full-scale operation of membrane aerated biofilm reactors (MABR) at VCS Denmark. Speakers will also delve into drivers, challenges, risk mitigation strategies, internal buy-in from operations, collaboration with consultants and/or technology providers, and success factors specific to each utility. Interactive Session | Facilitated Discussion
20908	413	Manufacturer Highlights for Small Communities: Packaging the Big for the Small	Manufacturers have been invited to speak during this session to provide insight on their design efforts for small flow, decentralized treatment systems. The discussion will highlight challenges and offer innovative solutions. Interactive Session | Facilitated Discussion
20909	414	PFAS in Wastewater: What Should Utilities Do Next?	As water reclamation and scientific communities continue to develop an understanding of PFAS in wastewater and biosolids, this session will offer guidance to utilities considering what to do next. Panelists will address the latest advances toward understanding how PFAS enters the water resource recovery facility (WRRF), its fate and transport, impacts to biosolids management, and how to communicate this to your communities, regulators, and elected officials. Recognizing that utility managers are dealing with PFAS fatigue, this is not intended to be an introductory PFAS 101 session. Panelists will take a deep dive into the status of research, how it impacts utilities and decisions we can be making to get ahead of regulations. This session will include discussion after each presentation.
20910	415	International Experience: Safeguarding Our Shared Water Resources	Despite various nutrient and contaminant parameters having been established and regulated over the years, there is always a new concern on the horizon. The sampling, monitoring and controlling of known, and sometimes unknown, parameters has become even more essential with an increase in water reuse and its end users. This session will explore how safe reuse water can be produced and controlled in different countries around the globe. Interactive Session | Facilitated Discussion
20911	416	Maintaining Water Quality During Wet Weather Events	Our speakers will discuss the complex hydrological conditions which result from wet-weather events. Speakers will identify different potential pathways to begin incorporating wet-weather specific conditions into regulatory and permitting arenas.
20912	417	PFAS in Biosolids: Remove and Track it	Our speakers will present how to effectively track PFAS through biosolids treatment processes including but not limited to thermal treatment and gasification during this session. They will also be highlighting different PFAS treatment technologies and the by-products of these processes.
20913	418	Pump Station Design Considerations and Construction Solutions	Very different design and construction difficulties were faced by three pump station design and construction situation. This session will highlight specific design/investigation techniques used to evaluate pump station design configurations and forcemain pressure demand constraints and feature a range of different construction techniques used to overcome site constraints. This session will include three interactive interludes where attendees will reflect on presented solutions and consider alternate solutions in small groups. Interactive Session | Conversations and Input
20914	419	Application of Machine Learning and Modeling in Carbon Diversion Technologies	Opening with an overview presentation on three WRRF's secondary clarifier performance. This presentation will inform the audience of predicting primary clarifier performance using artificial intelligence (AI)/machine learning tool using field data. The second presentation will highlight the pilot and full-scale A-stage performance for removing and capturing carbon using machine learning tool. The last presentation will focus on advanced modeling on enhancing carbon from wastewater.

20915	420	Enhancing Nitrogen Removal: Insights Into Carbon Sources and Mechanisms	During this session, speakers will delve into innovative approaches for denitrification, including dual external carbon sources for full denitrification, primary sludge fermentate utilization for shortcut nitrogen removal, and the kinetic mechanisms between methanol and glycerol-driven partial denitrification coupled with anammox (PdNA) in moving bed biofilm reactor (MBBR).
20916	421	Optimizing Membrane Efficiency for Water Reuse and Disinfection	The three presentations in this session are related to ultrafiltration (UF) membrane systems for advanced water treatment and disinfection. The first presentation includes a bench-scale study on optimizing water quality and enhancing filterability for a UF plant by adjusting the pretreatment chemical dosing strategy. The second presentation investigates the fouling behavior of different organic fractions in algae-laden water and the effects of divalent and metal cations on their interactions with UF membranes. The third presentation measures virus levels in reclaimed water using a rapid in-field quantitative polymerase chain reaction (qPCR) method and compares the virus removal efficiency of microfiltration (MF) and UF units. Interactive Session | Facilitated Discussion
20917	422	Exploring the Future Impacts and Improving Utility's Readiness for AI Implementation	Digital tools and systems are on the horizon for utilities to inform decision-making, maximize efficiencies, and improve operations. Along with these intentional efforts, artificial intelligence (AI) and machine learning are becoming part of all our lives, including how we work. While these exponential advances will create many opportunities, utilities are also considering the possible impacts or risks that will accompany this change and could be reluctant to embrace it. How will it impact, positively and negatively, our workforce, our engagement with the public, and how we do our work? In this session, attendees will explore the possible futures and, together, identify proactive steps that can be taken today to set the path for future acceptance and integration of AI at our own utilities. Interactive Discussion | Panel Discussion
20918	423	Resilient Solutions in Response to Nature's Forces	Let's explore three case studies of resilient solutions in response to natural disasters that affected different regions of the world! The speakers will share their experiences and lessons learned from dealing with extreme events, such as fires, flooding, and droughts disrupted essential services in the water sector and beyond. The session will highlight the importance of integrating stormwater management practices, land use policies, water rights and community engagement in building back better and enhancing resilience.
20919	424	Water Recovery in Livestock Production	Agricultural use of water accounts for approximately 70 percent of global water use, with livestock production accounting for 40 percent of the total water use. Because of the water demand, livestock production has become a focus of water recovery as well as energy recovery. This session will cover treatment of manure from livestock production using aerobic and anaerobic processes, and recovery of the water and/or biogas for use as fuel.
20920	425	Zero Liquid Discharge (ZLD): Process Selection, Design, and Operations	More and more industries -- led by semiconductor, battery, and other high-tech segments -- are being required to install zero liquid discharge (ZLD) systems due to high salt and TDS concentrations that can't be discharged to POTWs or receiving streams. Combined with the need to reclaim large quantities of water due to water scarcity and demand from high-use industries, large ZLD systems are being installed across the country. This session will provide a review of ZLD system technologies and process selection for pretreatment considerations, reverse osmosis configuration evaluation, and operations review of different technologies.
20921	426	N2O Unmasked: Understanding and Taming Emissions	Embark on a journey to uncover the intricate mechanisms behind N2O production and explore the diverse factors influencing its release into the environment. Discover innovative approaches and effective strategies for mitigating N2O emissions without compromising operational efficiency. Join experts as they share insights, research findings, and practical solutions to tame N2O emissions and foster sustainable practices in environmental management. Interactive Session | Panel Discussion

20922	427	Benefits and Approaches to Moving Dewatering into the Modeling Realm	Modeling wastewater treatment processes has advanced significantly in the last 10 years to include numerous different configurations on the liquid and solids size. Based on a WRF funded project and related research, data and approaches were developed to extend these whole plant models to include dewatering to estimate cake solids concentration and even polymer demand. Three different approaches have been developed by different entities, and these three approaches will be discussed along with the potential benefits of including dewatering in whole plant models to predict dewatering performance. The session will include a panel discussion to help chart the next steps for this initiative.
20923	428	Advancements in Nutrient Removal: Insights from Urban Watersheds	Explore innovative approaches to water quality management through three distinct case studies. Learn about the performance of an active phosphorus removal filter in an urban watershed, delve into the design and benefits of filter marshes as nature-based solutions, and discover the processes behind implementing chemical dosing for water quality improvement in lakes. Gain insights into operational challenges, cost considerations, and lessons learned from these real-world projects.
20924	429	Modeling for Inland Flood Resilience	Discover cutting-edge approaches to flood risk management and stormwater infrastructure planning in urban environments. Learn from case studies in Peterborough, San Diego, and Madison, highlighting the development of integrated flood models, capital improvement programs, and the impact of public feedback on flood reduction solutions. Explore strategies for optimizing stormwater infrastructure, engaging communities, and implementing data-driven solutions for resilient urban development.
20925	430	What Will You Make of Your Biogas?	An overview of two common biogas resource recovery options: combined heat and power (CHP) and biogas upgrading for vehicle fuel will be provided during this session. We will conclude with an evaluation of options for the biogas CO2. The session is sponsored by WEF's EMTF and digs into how to make enhance the economic returns on these investments. Interactive Session | Facilitated Discussion
20926	431	What IS the Workforce of the Future?: Utility Leaders Roundtable	Every business sector, including the Water Industry, has current with workforce challenges. In water utilities, there up to five generations in the current workforce. So why are we concerned with the workforce of the future? Generational challenges, evolving technology and institutional knowledge depletion will continue to be existential threats to the industry. This session will engage utility leaders to gain perspectives learned from a Utility Executive Director with over thirty years of leadership experience, sharing actionable expertise and best practices to prepare for the Workforce of the Future. Industry leaders will have an opportunity to discuss and dialogue with peers in a roundtable setting to address the following questions: •How can a utility best support their workforce of the future? •What soft skills and capabilities do utilities need their people to learn so they are future ready and resilient? •What focused learning initiatives should a utility prioritize and invest in? How can a utility develop the next generation of both managers and leaders for their utility? •What steps can a utility take now to reskill and prepare their workforce for the future? This Leadership Roundtable discussion will help current Utility Leaders practically prepare their organization for the Workforce of the Future.
20927	432	Mobilizing Emergency Response: Collaborative Strategies for Ensuring Safe Water in Jackson, Mississippi for All	Join us for an insightful panel discussion that delves into the dynamic collaboration between the city, contractors, and community partners in the mission to ensure a safe and reliable drinking water system for the community of Jackson. This session will provide a comprehensive overview of the multifaceted approach taken to mobilize an emergency response team, develop an implementation plan, and address immediate critical needs while aligning with long-term objectives. Our panelists, representing key stakeholders involved in this critical endeavor, will share invaluable lessons learned, best practices, and insights gained from their collaborative efforts. From navigating complex supply chain challenges to integrating engineering expertise with financial considerations, this discussion will offer practical strategies and actionable insights for tackling water infrastructure challenges in a holistic manner. Interactive Session | Panel Discussion

20928	433	Alternative Delivery for Potable Water Reuse Projects	From this presentation, participants will gain a better understanding of the advantages associated with alternative project delivery methods for water reuse projects. This presentation should be valuable to utilities of all sizes ranging from those will small (~1) mgd facilities up to large (>100 mgd) facilities. Engineering consultants and contractors will gain insight into the importance of collaboration and flexible planning efforts required for the successful completion of pure water projects using alternative delivery methods. To better engage the audience, a digital poll is proposed, if that is acceptable to WEF. The Poll would query audience members on 4 questions related to alternative delivery perceptions on cost, schedule, quality
20929	501	Enhancing Digestion to Improve Operations and Resource Recovery: Capture of Control	Struvite, vivianite and hydrogen sulfide, all common anaerobic digestion by-products, can cause operations and maintenance headaches in solids handling and biogas cleaning equipment. Additionally, the relatively high phosphorus content in biosolids often limits beneficial use opportunities. This discussion-based session will address how sequestered phosphorus as vivianite and struvite and a nitrate recycle within the digestion process can address the issues of nuisance struvite, vivianite and excess biogas H2S. Interactive Session | Facilitated Discussion
20930	502	Exploring Force Main Condition Assessment Programs	Join this interactive session where attendees will be exposed to a comprehensive exploration of force main condition assessment programs implemented by wastewater utilities across North America. Through a series of interactive sessions, utility representatives will share their experiences, challenges, and lessons learned in developing and executing these programs. Participants will have the opportunity to engage in discussions, case studies, and collaborative activities aimed at fostering knowledge exchange and identifying best practices. Interactive Session | Knowledge Development Forum
20931	503	Peracids Challenge Traditional Disinfectants	How does performic acid compare to more traditional disinfectants in terms of the bacterial targets of today and the potential viral targets of tomorrow? What disinfection technologies are most appropriate for water reuse applications? Join us for an insightful session focusing on the latest advancements and compelling case studies in wastewater disinfection and water reuse.
20932	504	Progression of PdNA: Development to Full-Scale	The history and development of PdNA from the DC Water progression, summarizing discoveries and experiences to the current status will be discussed during this session. Progression and current understanding of nitrite accumulation through denitrification to drive PdNA with pilot scale results informing the role of COD/N and electron donor. Lastly, a full-scale MBBR application demonstrating the significance and summarizing next steps to more widespread application.
20933	505	Air Quality Issues Beyond Odors: Bioaerosols and GHGs	Air is the 'third effluent' from water resource recovery infrastructure. Odorous air emissions generate public response and, therefore, capture the attention of utility operations and management. However, other components of the third effluent should not be ignored. Attendees of this session will learn about the prevalence, impacts, and mitigation of bioaerosols and greenhouse gasses in collection system and WRRF air emissions. Interactive Session | Conversations and Input
20934	506	Leveraging Advanced Condition Assessments for Facility Planning Activities	Three utilities utilize condition assessments to inform future planning, rehabilitation, and capital project scoping.
20935	507	PFAS Management for Industrial Dischargers	We will hear case studies from industry representatives who are addressing the challenge of PFAS in their wastewater discharges, including a surface finisher, waste management company (landfill), and the United States Air Force. Speakers will describe wastewater characteristics, varying PFAS regulatory requirements in different areas of the United States, PFAS management techniques, and issues unique to their industry. Solutions under investigation or already implemented will also be discussed. Interactive Session | Conversations and Input

20936	508	Lithium Recovery Using Advanced Water Treatment Technologies	Lithium is a critical mineral used to batteries for many applications including phones, laptops and electric vehicles. Significant investment has been made to produce lithium by recovering the ion from liquid streams like geothermal brines using conventional water/wastewater treatment processes. This session will cover lithium recovery applications for several treatment technologies, including membranes and energy recovery devices.
20937	509	Leveraging Machine Learning for Facility Operations	Three case studies on employing machine learning (ML) and artificial intelligence will be featured during this interactive session. Case studies from multiple facilities that have leveraged ML to improve operations and reduce costs will be highlighted. Attendees will also consider factors that impact successful deployment of a ML system at their facility. Interactive Session | Case Study Analysis
20938	510	Full-scale Intensification Experience	Join our speakers during their presentations focusing on full-scale experiences of intensification applications. Including two Densified Activated Sludge (DAS) applications with full-scale side-by-side testing to reduce assets and increase capacity. Advancing conventional DAS applications to combined intensification strategies leveraging membrane aerated bioreactors (MABR) with DAS further enhancing selection. Attendees will gain an understanding of how these intensification technologies relate to both capacity and nutrient removal improvements.
20939	511	The ABCs of Bioaugmentation	Bioaugmentation involves the supplemental addition of microbes to treatment systems to enhance performance. This session will provide use cases, methodological approaches, underlying mechanisms, and best practices for how to identify deficiencies in the microbiological ecosystem and determine viable bioaugmentation options. The session will also address the use of new tools such as metagenomics and bioengineering for solving treatment challenges involving emerging contaminants like PFAS and 1,4 Dioxane. The session will be valuable for operators, engineers and process supervisors seeking to develop a comprehensive understanding of how bioaugmentation tools can be utilized as an effective tool for assuring targeted treatment outcomes.
20940	512	Resilient Development: Insights from Urban and Coastal Areas	Discover how diverse regions are navigating the complexities of flood resilience through innovative planning and technology integration. From the strategic investment in flood protection elements across major catchments to the development of stormwater master plans tailored to address sea level rise and increased rainfall intensities, this session explores adaptive approaches to mitigate future risks and optimize resilient development. Gain insights into transferable lessons learned and the impact of collaborative stakeholder engagement on long-term planning efforts.
20941	513	Building the Workforce of Tomorrow	Workforce development is a journey from recruitment to training, retention, advancement, succession planning, leadership development and so much more. Building the workforce of tomorrow is going to require out-of-the-box thinking including community interaction, learning from past experiences, being open to creative recruitment approaches, and being intentional to develop the next generation of strong leaders. In this session, we will begin the journey with a deliberate approach to internships at South Platte Renew, continue with a deep dive into 50 years of workforce development in Niagara Falls, and end with a leadership development program at Henry County Water Authority built on a foundation of professionalism.
20942	514	Cybersecurity Threats: Managing Your Facility's Risk	Attendees will be provided with a platform to discuss the increasing threat to water utilities by cyber actors and how to implement a cyber management plan for your facility during this session. Several cybersecurity tactics to improve a water utility's cybersecurity and minimize their vulnerability to cyberattacks will be summarized along with the tools for implementing these cybersecurity practices at all levels of a facility. Federal funding options for implementing such cybersecurity improvements and the funding process will be outlined. Interactive Session | Panel Discussion
20943	515	Optimizing IPR/DPR Projects: Harnessing the Power of Ozone	If you're considering ozone in your IPR/DPR treatment train, then this session is for you. You'll hear about what's been happening with the application of ozone in Europe and then what's happening here in the US; from bench scale testing to full scale application of side-stream ozone contacting. You'll also learn about how ozone modeling helps with the application to control of byproducts.

20944	516	PFAS in Wastewater and Biosolids: Measurement Methods and Fate During Thermal Processes	Join us in exploring the intricate world of PFAS in biosolids by navigating the various measurement methods and cutting-edge research on the fate of PFAS during thermal treatment processes. The session will cover the different types of PFAS measurement methods. You will learn what conclusions can and cannot be drawn from the results of each method and to select the right method tailored to your needs. The fate of PFAS will be highlighted. Pyrolysis and gasification generate transformation byproducts. Drying alters the PFAS profile through the transformation of precursors. Don't miss this opportunity to broaden your knowledge and stay at the forefront of advancements in the complex realm of PFAS analysis and treatment!
20945	517	Revolutionizing Septic to Sewer Conversions	Aging septic systems pose a significant environmental threat as they can leach untreated waste into our nation's waterways. This session will explore multiple approaches to decommission failing septic systems and steps to connect to a new public system, discussing the collaborative efforts utilized to engage individual property owners. Gain valuable insights into navigating the complexities of converting failing septic systems to public sewer systems in a holistic and efficient manner. Interactive Session | Conversations and Input
20946	518	What's New in UV?	Join us to hear about developments in UV disinfection of wastewater! How do we construct and startup a 350-mgd UV system? How does UV-C LED technology compare to conventional UV lamps for wastewater disinfection? Can machine learning improve UVT measurement reliability?
20947	519	Accommodating Industrial Effluents in Municipal Treatment Facilities	Industrial effluents can prove challenging to municipal water resource recovery facilities (WRRF's) due to their high strength, variable influxes, and propensity to disrupt or inhibit biological processes. This session is designed to highlight practical approaches to effectively accommodate a variety of industrial waste streams to maintain overall system performance and treatment efficacy.
20948	520	Anoxic Reactor Design for Low Energy BNR	Let's compares innovative approaches to meet effluent nitrogen limits utilizing low energy technologies! The first presentation recaps VCS Denmark's journey from pilot to full-scale application of membrane aerated biofilm reactors (MABRs) as part of their Beyond Energy Neutrality program. The second presentation focuses on Los Angeles County Sanitation District's piloting of partial nitrification/ denitrification/anammox (PANDA/PdNA) utilizing tertiary MBBR and IFAS technologies. The final presentation introduces Cornell University's successful demonstration of coupling high-rate activated sludge / bio-oxidation (A-B process) with partial nitrification with anammox (PN/A) under low carbon/nitrogen ratio conditions.
20949	521	Process Intensification Using Hydrocyclones	Intensifying the activated sludge process through hydrocyclones involves enhancing solid-liquid separation efficiency and biomass concentration. By integrating hydrocyclones into the system, the separation of mixed liquor from treated wastewater is optimized through improved settleability, leading to higher biomass concentrations being reliably attainable in the bioreactor. This intensification strategy can improve treatment efficiency, reduce footprint, and potentially lower operational costs in wastewater treatment plants.
20950	522	Three Different Flavors of Improvement for Preliminary/Primary Treatment	The first presentation consists of a case study on the design and implementation of a 369 mgd full-scale grit removal facility using free vortex separation. Come learn more about the design approach and performance criteria selection. The second presentation describes an innovative baffle system to substantially improve primary clarifier capacity, along with the performance testing data. The third presentation benchmarks, at pilot-scale, two commercially available primary filtration systems. The two technologies were tested side-by-side for two months and a comparison of their performance, as well as unexpected challenges, will be presented.
20951	523	Using Side-Stream Enhanced Biological Phosphorus Removal to Improve EBPR Performance	Our speaker will be focusing on the side-stream enhanced biological phosphorus removal (S2EBPR) process and will include case studies that feature several different modes of S2EBPR operation. Comparisons between conventional EBPR and S2EBPR processes will be discussed, as will impacts of process modifications on microbial ecology.

20952	524	Synergizing Digital Solutions and Ozonation for Treatment of Micropollutants	Explore and discuss the innovative fusion of ozonation, digital twins, and artificial intelligence (AI) in tackling micropollutant treatment within water and wastewater treatment processes. Technical knowledge and operation experience of ozonation for micropollutants will be presented. Development and deployment of digital twins and AI enhanced control strategies for ozone dosage optimization for treatment and minimal byproduct formation will be discussed. Interactive Session | Facilitated Discussion
20953	525	Impacts of Innovative Solutions on Stormwater Data Gathering and Analysis	In this session, we will explore how innovation and technology has and can impact data collection, management, and reporting. With examples from municipal, industrial, and regulatory stormwater programs provided by our speakers, participants.
20954	526	Outcome and Value-driven Asset Management: Of the People, For the People, By the People	Asset Management has been around for over two decades in the water sector and several water/wastewater agencies have embarked on asset management programs over the past decade. This panel discussion includes panelists from up to 4 water sector agencies that have asset management programs that have been ongoing for several years. Focus of this session will be to explore how each of these organizations have embraced asset management program from a people and culture perspective and more importantly, ways in which each of these organizations are generating value from asset management. Interactive Session | Panel Discussion
20955	527	How Can 3D Scanning and Virtual Reality Be Leveraged for Water Utilities?	The session provides three examples of different utilities leveraging 3D scanning and augmented and virtual reality to visual their assets. By using 3D scanning and selective modeling, a facility can be more dynamic in their project planning and facility management plan. Leveraging a virtual reality allows managers to look the whole picture when reviewing upgrades and modernization projects. These presentations will include case studies for using 3D scanning and XR technologies to enhance designs as well as operations.
20956	528	Federal Funding Case Studies	Come to analyze various case studies for identifying, applying for, and utilizing federal funding. The case studies cover a variety of project types, including collection system rehabilitation, disaster recovery, and industrial treatment. The presenters will introduce several federal funding sources, discuss approaches to increase probability of award, address challenges and how to overcome them, and share lessons learned. Interactive Session | Case Study Analysis
20959	529	Stakeholder Engagement Strategies to Promote Green Infrastructure and Environmental Justice	Utility construction projects often upset the communities they are designed to serve by disrupting traffic patterns, making noise, or creating unsightly dirt piles on the sides of the road. Citizens often complain not just about the construction itself but also because of the costs or the effects of the project. This session will present three examples which engage communities on various projects to help prevent public backlash and garner public support.
20960	530	Advancements in Non-RO Treatment for IPR/DPR: Exploring Cutting-Edge Solutions	Come explore developments and case studies in carbon based advanced treatment (CBAT) for IPR/DPR applications! Why CBAT? Because not all IPR systems need to remove salts and disposal of RO concentrate can be a challenge. In this session attendees will hear from those who have evaluated and tested CBAT systems and the lessons learned. Utilities, engineers and planners contemplating IPR/DPR will benefit from attending.
20961	531	One Water Approaches from Urban Strategies to Coastal Resilience	Starting with research of the One Water approach, speakers will identify strategies that address multiple community and environmental objectives while addressing regulations. This session will show attendees how using an alternative analysis approach to select the best combination of projects to achieve sanitary sewer separation from the storm water system can achieve pollutant reduction. The session will wrap up with an overview of lessons learned from three nature-based solutions.
20962	532	Infrastructure Needs: State and Federal Lessons from the Clean Watersheds Needs Survey	The 2022 Clean Watersheds Needs Survey represents the most comprehensive and robust report on clean water infrastructure needs in the United States. This session will provide an overview of needed investments reported by all 56 states and territories, and the varied approaches states took to collect cost and technical data for POTWs, stormwater, nonpoint source control, and decentralized wastewater treatment projects. Lessons and results from Federal and State perspectives will be shared.

20963	601	Making Money with Biogas: Co-Digestion and RNG	Changes to the Renewable Identifications Numbers (RIN) program are driving utilities to re-explore co-digestion and renewable natural gas (RNG) options. Three case studies are covered which demonstrate developing a strong co-digestion program and determining the best pathways for producing RNG, providing clear takeaways for implementation to maximize biogas resources and value. Interactive Session | Facilitated Discussion
20964	602	Don't Miss the Bypass!	Let's discuss the importance of properly designing and implementing bypass systems for collection system rehabilitation and replacement projects. This session will also include the bypass challenges facing collection system rehabilitation and replacement projects.
20965	603	Innovations in Phosphorus Management: From Models to Solutions	During this session, three presentations on phosphorus management in wastewater treatment will be featured. The first presentation will compare two modeling tools, Visual MINTEQ and OLI Studio, to evaluate the scaling tendency of aerated anaerobically digested solids. The second presentation will discuss phosphorus sequestration and recovery with calcium, validating chemical equilibrium and process models with case studies. The third presentation will showcase how Ann Arbor tackled stringent effluent phosphorus limits with a cost-effective sidestream phosphorus removal solution. Attendees will gain insights into the latest innovations and best practices in phosphorus removal and recovery in wastewater treatment.
20966	604	Non-PFAS Up and Coming Concerns	Microplastics, antimicrobial resistance and mercury are all areas of emerging concern. Overviews of how these microconstituents play a role and treatments are discussed.
20967	605	PFAS Removal and Destruction Using Novel Technologies	Come explore the use of three novel technologies: foam fractionation, supercritical water oxidation, and electrochemical oxidation, for removal and destruction of PFAS from concentrated waste streams. The performance of four different foam fractionation technologies for treatment of landfill leachate will be compared. The application of technologies used for PFAS destruction in concentrated waste streams generated from foam fractionation treatment will also be described. Interactive Session | Case Study Analysis
20968	606	Evaluating Plantwide Impacts of AGS and DAS	Come explore impacts of aerobic granular sludge and densified sludge on plant processes outside the immediate secondary treatment technology. Topics include: impacts of directing Nereda® selective wastage to a parallel conventional activated sludge process, Nereda® selective wastage settleability and phosphorus release, and the impacts of densified activated sludge on disinfection.
20969	607	Innovations in Partial-Nitritation-Anammox Processes	Come to explore cutting-edge advancements driving efficiency and sustainability in wastewater treatment! It discusses novel strategies and technologies that optimize the partial nitritation anammox process, revolutionizing the treatment of nitrogen-rich wastewater. For the first time, experts will share full-scale groundbreaking strategies for accelerating nitrogen removal, reducing energy consumption, and minimizing environmental impact. Attendees will gain valuable insights into the forefront of wastewater treatment innovation, paving the way for a cleaner and more sustainable future. Interactive Session | Panel Discussion
20970	608	Green Infrastructure Implementation at Home and Abroad	In Boston, NYC, and Australia various groups are working to implement green infrastructure. In Boston, biofiltration cells are being used to replace catch basins. NYC is implementing green infrastructure in a manner that avoids subsurface challenges. A green star community in Australia is being constructed using distributed green infrastructure storage and rainwater tanks.
20971	609	WIFIA and SRF Funding Accelerate Nutrient Removal in Wichita, Kansas	In this session, we provide an overview of the Clean Water State Revolving Fund (CWSRF) and Water Infrastructure Finance and Innovation Act (WIFIA) programs and how these programs work together to maximize benefits to communities and accelerate wastewater infrastructure projects. The City of Wichita Public Works & Utilities will describe how they've used CWSRF and WIFIA funding for their Biological Nutrient Removal Improvements Program.
20972	610	Automation and Analysis: Data-Driven Strategies Improve Utility Processes	Our speakers will focus on how the water sector is changing to become more data driven. Utilities have been utilizing enterprise systems for decades. We will discuss how smart systems are changing the water sector. They are generating data at an exponential rate. It is increasingly important to incorporate practices to make sound decisions from these systems and implement controls to ensure trusted data. This session will identify processes to improve data-driven decision-making to improve performance through automation, standardization, and visualization of data.

20973	611	Coastal Water Management: Strategies to Eliminate Ocean Discharge	As wastewater discharge regulations are becoming increasingly stringent, and the industry is simultaneously recognizing the value of treated wastewater effluent, optimizing usage of reclaimed water is essential for our coastal US states. Utilizing reclaimed water minimizes ocean discharge points, assists in recharging local aquifers, and if used as a natural system or wetlands, it can be a supplemental nutrient reduction methodology, a basis for various beneficial ecosystems, and even a popular tourist destination. This session will give an overview of how Florida is maximizing and identifying opportunities for reclaimed water, as well as both the short and long term impacts of utilizing reclaimed water for natural system environments.
20974	612	Partnerships and Collaboration: Cornerstones for Successful Collaborative Project Delivery	Three diverse use cases of leveraging different collaborative project delivery models to achieve successful outcomes to the utility and the community. Each presentation shall not only discuss the CPD approach to the project, benefits and lessons learned, but also the impact of cohesive partnerships and effective collaboration among all project stakeholders leading to successful outcomes.

IEPA ID#	Session #	WORKSHOPS	
20975	W01	Wastewater Microbiology	Facility operators, managers, and engineers will use staining techniques and phase-contrast microscopes to analyze floc and identify protozoa, metazoa, and filaments, thereby developing practical information to help these professionals control their processes. This workshop will discuss types of microorganisms, environmental factors affecting the microorganisms, and metabolism and growth characteristics that may affect participants' processes. A combination of learning styles will enable participants to help with related process control problems at their facilities.
20976	W02	Operationalizing Digital Twins to Advance Process Control and Optimization	The workshop is designed to introduce attendees to the fundamentals of data management essential to advancing and scaling digital transformation projects and initiatives focused on improving optimization of asset operations and maintenance. In addition, the workshop will provide the methodology to plan and implement a digital twin solution using a combination of modeling, automation, and other necessary platform solutions. Participants can also register for the Sunday machine learning workshop to learn more about the resources needed to implement machine learning process controls.
20977	W03	Thickening Optimization: Improve Performance and Benefit Multiple Plant Processes	This workshop will focus on practical solutions to increase thickening performance, including thicker solids, better solids capture, reduced polymer consumption, reduced operations and maintenance costs, enhanced biological phosphorus removal, and smaller or more efficient downstream solids handling processes. This workshop will be of primary interest to facility managers, superintendents, operators, and maintenance staff from municipalities who need to 'do more for less'.
20978	W04	Operation and Maintenance from Water Reuse to Advanced Water Purification	This workshop focuses on equipping attendees with essential operation and maintenance (O&M) problem-solving skills, sustainable practices, and innovative approaches for water recycling facilities. Led by a seasoned team of water recycling and advanced water purification (AWP) experts, including designers, facility operators, engineers, and managers, this training ensures a holistic understanding of AWP and water recycling O&M.
20979	W05	Refinery and Petrochemical Wastewater Treatment: Process Control Strategies	Refinery and petrochemical wastewater treatment engineers and operators face significant pressure to maintain effective operations under challenging conditions. This workshop engages participants in real-life operational issues and practical problem-solving exercises. Challenges and effective strategies will be presented by an experienced facilitator. Problem-solving sessions will allow attendees to select a challenge and work in groups to identify solutions. The solution to each problem will then be presented by the groups to the wider audience.
20980	W06	Aeration Control for Practitioners: Advanced Control and Optimization Techniques for Aeration, Process, and Energy	Aeration control is a complex task at water resource recovery facilities and affects operation and compliance of activated sludge facilities, including process stability, settling, nutrient removal, effluent quality, energy, and operation and maintenance. This workshop builds on the 'Aeration Control for Practitioners' workshop at WEFTEC 2023 by providing tools to identify, evaluate, and troubleshoot advanced aeration control strategies, including ammonia-based aeration control, shortcut denitrification/nitrite shunt control, low dissolved oxygen aeration control (< 0.5 mg/L dissolved oxygen), model predictive control, and ammonia-to-nitrate ratio based control.

20981	W07	Advanced Primary Treatment Technologies for Carbon Diversion & Management at WRRFs	Advanced primary treatment technologies have been developed to address critical issues that WRRF utilities face, including energy management, nutrient removal, resource recovery, footprint limitations, obsolete equipment, and integration with existing assets and facilities. Many of these technologies are innovative or emerging. The focus of this workshop is to explore and assess promising innovative and emerging technologies to address these critical challenges.
20982	W08	Wastewater Microbiology-	Facility operators, managers, and engineers will use staining techniques and phase-contrast microscopes to analyze floc and identify protozoa, metazoa, and filaments, thereby developing practical information to help these professionals control their processes. This workshop will discuss types of microorganisms, environmental factors affecting the microorganisms, and metabolism and growth characteristics that may affect participants' processes. A combination of learning styles will enable participants to help with related process control problems at their facilities.
20983	W09	Activated Sludge and Biological Nutrient Removal Process Control: Hands-On in the Real World (Off-Site)	Leading practitioners will present this comprehensive workshop and share their experiences in an interactive environment. Presenters will introduce attendees to the basics of activated sludge and biological nutrient removal during transit to a local water resource recovery facility. Upon arrival, attendees will rotate in small groups through six interactive stations: oxidationâ€“reduction potential and alkalinity, microscopy, in situ nutrient measurement, in situ aerator oxygen measurement, troubleshooting secondary clarifiers, and anaerobic digestion considerations. Groups will focus on overcoming practical design problems that have plagued many systems. Process control parameters, sidestream considerations, and practical tips will be discussed. The format is informal, and real-life examples and questions are welcomed. Please note that this workshop is held outdoors.
20984	W10	Water Environment Federation/The Water Research Foundation: Doing More, with Lessâ€”Implementing Machine Learning Process Controls at Water Resource Recovery Facilities	This workshop will provide participants with an understanding of machine learning and how to implement data-driven process controls at water resource recovery facilities. The workshop will describe each of the steps involved and resources needed to implement machine learning process controls. Participants will have the opportunity to apply the steps for machine learning implementation to specific problem scenarios through a hands-on activity using an open access toolbox developed as part of a $2M Department of Energy project. As a precursor to this workshop, participants are not required to but are welcome to take the Saturday digital twins workshop.
20985	W11	Water Environment Federation/The Water Research Foundation: Renewable Revenue Streams Through Best Practices and Safe Operation of Renewable Natural Gas Facilities	Are you a resource recovery facility or engineer interested in learning the ins and outs of upgrading biogas to renewable natural gas (RNG)? Then this workshop is for you! This workshop will focus on the myriad of steps required for implementing RNG for pipeline injection, with a comprehensive comparison of treatment technologies putting your utility on a path for increased revenues from the sale of renewable identification numbers and commodity gas. Multiple case studies will be provided to help guide decision-making and safe operation of systems.

20986	W12	Smart Infrastructure for Sewer Solutions	Smart infrastructure can be used to inform operational decisions that ultimately improve the efficiency, reliability, and lifespan of physical assets. By implementing these solutions, it is estimated that utilities could save up to $320B in capital expenditures and operating expenses. This workshop will strive to provide attendees with insights needed to reimagine how new and existing data, assets, and technology can be leveraged to improve the efficiency of their systems while preventing overflows.
20987	W13	Understanding and Applying Disinfection Fundamentals (Off-site)	Come learn the why and how of wastewater disinfection from a group of experts in the field. There is a suite of disinfection technologies available for use, and it can be challenging to understand how they work and to select the most appropriate technology. This workshop aims to provide a fundamental understanding of the current and emerging disinfection technologies with hands on learning activities and a look ahead to potential changes in the regulatory environment.
20988	W14	The Future of Water Reuse Using Carbon-Based Advanced Treatment (CBAT) to Implement 'One Water' Initiatives	Carbon-based advanced treatment (CBAT) includes processes such as biological activated carbon (BAC) and granular activated carbon adsorption that have been shown to be effective for pathogen and chemical removal in bench-, pilot- and full-scale applications. Additionally, because of water quality benefits observed, using the ozone/BAC processâ€"coupling biofiltration with an upstream preoxidant such as ozoneâ€"has become common in drinking water and advanced water treatment applications. With capital and operating costs of treatment schemes dictating project design and implementation, inland utilities and others are investigating in the use of non reverse osmosis based multibarrier schemes that do not pose brine or concentrate management challenges and can provide robust treatment in a sustainable and cost-effective manner. The benefits of CBAT, lessons learned from pilot- and full-scale projects, how CBAT fits into the current active and evolving regulatory landscape, and limitations of CBAT in advanced treatment will be discussed.
20989	W15	Fundamentals of Collaborative Delivery	Collaborative delivery is the fastest form of project delivery in the water sector. With recent supply chain issues, cost increases, and difficulty obtaining contractor interest, utilities are increasingly choosing collaborative delivery for capital projects. Join industry experts for a day of interactive training, case studies, and discussion about how this process can improve the chances of project success.
20990	W16	Learning to Communicate: Connecting with Audiences and Telling Your Story	Expert water communicators will lead this workshop about how to effectively connect with audiences through storytelling. Participants will learn best practices directly from subject matter experts through interactive activities. Throughout the session, participants will prepare presentation materials using the lessons and takeaways from the speakers to improve their skills. This workshop is recommended for anyone looking to improve their skills in preparing technical presentations and delivering them to diverse audiences.

20991	W17	Assessing Sewer Septicity: Applying Tools to Save Money and Trouble	Many corrosion and/or odor issues are dealt with in a reactive manner, often resulting in expensive solutions. Can assessing and modeling sewer septicity open the way for a more proactive approach so that reactive trial-and-error approaches can be avoided, asset management risks can be better quantified, and costs for field inspections can be reduced? Participants will get a comprehensive understanding of a sewer as a process reactor (not only conveyance) and different septicity assessment tools available.
20992	W18	Navigating the Water Sector's Path to Net Zero	If you are a water resource recovery facility or support these institutions and are interested in learning practical strategies toward achieving carbon neutrality, this workshop is for you. Discussions and hands-on activities will focus on the myriad steps necessary to put your utility on a path toward net zero. Multiple case studies will be provided to guide decision making and help develop a suite of actions tailored to each utility's unique greenhouse gas reduction journey.
20993	WLI	Water Leadership Institute Workshop	The Water Leadership Institute program is aimed at educating and training emerging leaders and providing them with opportunities to build strong, lasting relationships within the water sector. The intensive program allows participants to engage in management training and leadership development through a blended learning approach that includes examining complex challenges facing the water and wastewater industries and networking with public and private sector practitioners.
	TOURS		
20995	FT1	Lake Borgne Surge Barrier	On this mostly outside walking tour, you will see a small portion of the New Orleans side of the Lake Borgne Surge Barrier. This 2.9-km (1.8-mile) structure is a small part of the Hurricane & Storm Damage Risk Reduction System built by the Army Corps of Engineers after Hurricane Katrina. A system of floodwalls, levees, floodgates, sector gates, and a barrier work together to reduce the risk of flooding from storm surge from Lake Pontchartrain, Lake Borgne, and the Gulf of Mexico for more than 1 million residents in the greater metropolitan New Orleans area. The Flood Protection Authority East is a state agency that operates and maintains the system in Jefferson, Orleans, and St. Bernard Parishes.
20996	FT2	Infrastructure Resilience and Reliability: Sewerage and Water Board of New Orleans Power Complex	A tour of the Sewerage and Water Board of New Orlean's new Power Complex substation slated for completion in 2025, which will provide reliable power for pumping and drinking water needs to allow retirement of historic turbines still in use.
20997	FT3	Abita Brewing Company	The Abita Brewing Company is committed to environmental conservation. The Brewery operates its own industrial wastewater treatment facility and makes use of an anaerobic bio-energy recovery system (BERS). The BERS also provides water treatment, which results in a 95% reduction of load on the local Abita Springs sewerage system.
20998	FT4	More Than 100 Years of Draining New Orleans: Drainage Pumping Station 6 Tour	An in-depth tour of the oldest pumping station in the Orleans stormwater infrastructure, distinguished by the American Society of Civil Engineers as a National Historic Civil Engineering Landmark.

20999	FT5	Living with Water in the Pontchartrain Basin – a Tour by Pontchartrain Conservancy	Site 1: Enjoy a leisurely stroll on the new Bucktown Marsh Boardwalk, a part of the new Bucktown Harbor on Lake Pontchartrain, while learning about the Pontchartrain Basin and local watershed issues. Along its 305 m (1000 ft), you will find bird blinds and informational signs about plants, wildlife, fisheries, and the coast. Site 2: Tour one of the city's largest pumping stations responsible for draining stormwater. Learn the history of the city's drainage systems and stormwater management practices. Site 3: On the shore of Lake Pontchartrain, the New Canal Lighthouse serves as a science and history museum and a public outreach and education center. Visitors can engage with fun, interactive STEM exhibits to learn about Southeast Louisiana's environment and the work to help preserve it. The site will feature the Pontchartrain Conservancy's work around water quality and coastal restoration.
21000	FT6	Using Green to Aid the Gray: Sewerage and Water Board of New Orleans Green Infrastructure tour	An immersive tour of two green infrastructure demonstration projects funded by the Sewerage and Water Board of New Orleans. The Bayou St John project at 3500 Toulouse Street was completed in 2023 and exhibits detention and retention through earthwork and increased tree canopy as well as buried monitoring infrastructure. The Green Roof atop 625 St. Joseph Street displays an ever-changing palette of plants since 2017.
	OPERATIONS CHALLENGE		
21001	OC1	Operations Challenge Day - 1	The Water Environment Federation's Operations Challenge is the industry's premier professional skills competition. Held annually at WEFTEC, the event recognizes excellence in wastewater operations. Teams are evaluated in five events that demonstrate the span of skills necessary for contemporary water quality professionals. The event exposes participants to emerging practices and products in a competitive, educational, and social atmosphere. More than 50 teams will participate and must be endorsed by their Member Association. The two-day event takes place Monday and Tuesday during conference.
21002	OC2	Operations Challenge Day - 2	The Water Environment Federation's Operations Challenge is the industry's premier professional skills competition. Held annually at WEFTEC, the event recognizes excellence in wastewater operations. Teams are evaluated in five events that demonstrate the span of skills necessary for contemporary water quality professionals. The event exposes participants to emerging practices and products in a competitive, educational, and social atmosphere. More than 50 teams will participate and must be endorsed by their Member Association. The two-day event takes place Monday and Tuesday during conference.