

MWEA Fall Technical Conference

Abstracts & Bios

Stoney Creek Lodge - Columbia, MO
Thursday, November 6, 2025
8:00am - 4:45pm

8:00 AM - 9:00 AM

Room: 2

Session: Lessons Learned from Missouri's Municipal Wastewater Nutrient Optimization Pilot Project

Speakers:

- **Jim Fitzpatrick, Black & Veatch** - Jim has over 30 years of process engineering experience optimizing, upgrading, and expanding wastewater treatment facilities from 0.1 to over 400 MGD. His specialties include nutrient removal and recovery, advanced clarification, and wet-weather flow treatment. Jim has contributed over 120 publications and presentations to the profession, including chapters in WEF guidance manuals "The Nutrient Roadmap" and "Wet Weather Design and Operation in Water Resource Recovery Facilities". He's a licensed Professional Engineer in Missouri with a Bachelor and Master degree in Chemical Engineering from the University of Louisville.
- **Mike Tate, T8 Environmental, LLC** - Mike has over 35 years of experience in the environmental engineering field. He rose through the ranks of the Kansas Department of Health and Environment (KDHE) and retired as the Director of the Bureau of Water. He then spent nearly six years with EPA Region 7, continuing to find collaborative solutions to thorny water quality problems facing the four Region 7 states before starting T8 Environmental LLC where he continues to assist clients with nutrient control. His experiences with state and federal environmental regulation provide him a unique perspective on how to most cost effectively and collaboratively implement the Clean Water Act. Mike is a licensed Professional Engineer in Kansas. He earned both his Bachelor degree in Civil Engineering and his Master degree in Bioenvironmental Engineering from Oklahoma State University.

Abstract: Missouri's new Total Phosphorus Rule will add statewide effluent total phosphorus (TP) limitations for domestic point sources with a design flow ≥ 1 mgd, and industrial facilities categorized as "Major" that typically discharge phosphorus in their industrial wastewater. This is part of Missouri's Nutrient Loss Reduction Strategy to lower the state's contribution of TP to the Gulf of Mexico by 45% by 2035. Missouri's strategy includes the recently completed Municipal Wastewater Nutrient Optimization Pilot. Mike will discuss results from this pilot project and

lessons learned working with eight Missouri WWTFs to optimize their operations for nutrient reduction. Jim will conclude with a discussion of treatment options and timing involved in planning, designing, building, and operating upgrades for nutrient reduction through chemical and/or biological processes.

8:00 AM - 8:30 AM

Room: 1

Session: Flow Monitoring FUNdamentals

Speakers:

- **Jonathan Lyke, Burns & McDonnell** - Jonathan provides data analysis, management, and mapping for flow monitoring projects. He brings extensive knowledge of both separated and combined sewer systems, I/I studies, flow monitoring data collection and analysis, GIS mapping, and drone operations. He is responsible for the investigation, installation, and maintenance of both the City's Smart Sensor network and Smart Sewer Program flow meters, which includes more than 360-meter sites across the city. He is NASSCO certified for LACP, MACP and PACP. He is proficient in Waterspout, ARCGIS (mobile/desktop/Pro), Flowlink Pro, Granite XP, HOBOWare, Bentley Software (Pointools Connect Edition/MicroStationV8i), Cloud Compare, Autodesk-Revit, FloVENT Modeling, Google Sketch-up, and Microsoft Excel (LVL. DM) and Access.

Abstract: This presentation will explore the various reasons for implementing flow metering in water systems, encompassing pre- and post-rehabilitation assessments, inflow and infiltration analysis, system capacity evaluations, model updates, and city interconnection projects. The presentation will include Burns & McDonnell (BMCD) case studies from Kansas City, MO and Joplin, MO, highlighting lessons learned regarding effective planning and the iterative nature of adjustments in flow metering strategies. The key takeaway will be that a comprehensive approach to flow metering is crucial, and that more meters are not always better. Effective planning and iterative adjustments are essential for successful implementation.

8:30 AM - 9:00 AM

Room: 1

Session: A Surprise Discovery: Using a Hydraulic Model to Understand the Capacity of Your Collection System

Speakers:

- **David Ecklund, Burns & McDonnell** - Since 2015, David has served as an engineer for Burns & McDonnell's Water/Wastewater group. He has worked on a variety of projects in areas that include collection system modeling and flow analysis, distribution system modeling, Private Inflow Reduction, and storm and sanitary sewer design. He works with a diverse group of clients throughout Missouri and the Midwest, from small rural communities to large metropolitan areas, and provides extensive experience in a variety of modeling softwares including InfoWorks, Hydra, SewerGems, and InfoWater.

Abstract: The Sanitary District of Decatur (SDD) owns and operates the large diameter interceptor sewers and wastewater treatment plant. Multiple, large industrial water users have approached SDD regarding the feasibility of connecting into the SDD sewer system. However, due to the large size of the proposed sewer loadings, SDD had concerns regarding the available capacity of the existing system. To answer these questions, Burns & McDonnell helped SDD execute a flow and rainfall monitoring program. The data collected from the flow and rainfall monitoring program provided valuable insight into the dry and wet weather conditions in the SDD sanitary system. A hydraulic model was then developed of the sanitary sewer interceptor system to simulate existing and proposed conditions. Unique aspects of the City owned facilities – including a combined sewer overflow facility, large lift stations, and many connections from the City of Decatur collection system – had to be considered to provide a working model that accurately represented the SDD sanitary system. Through this effort, SDD discovered that the existing system had substantially more capacity than initially assumed. Utilizing the collected data, hydraulic model, and plan for growth, SDD was able to predict future capacities of the system and create a plan to accommodate future customers. This ultimately may lead to significant investments and future growth in Decatur, Illinois and the surrounding area.

9:00 AM - 9:15 AM | BREAK

9:15 AM - 10:15 AM

Room: 1

Session: Collection System Modeling 201 - Advanced Tools in InfoWorks ICM

Speakers:

- **Taylor Christmas, Woodard & Curran** - With over 12 years of experience, Mr. Christmas has worked extensively in collection systems, spanning a broad range of projects including hydraulic modeling, I&I analysis, sanitary and combined sewer flow metering, condition assessment and asset management. Over the last 6+ years, Mr. Christmas has refined his focus to collection system modeling and master planning. At

Woodard & Curran, Mr. Christmas is tasked with managing the technical direction and execution of several modeling and master planning projects, developing proposals and scope and fee development.

Abstract: Hydraulic models are, even in their more basic forms, powerful tools that help to answer key questions about sewer and pump station capacity. However, there are several advanced tools available at our disposal that can significantly expand our understanding of how a collection system operates. The key is knowing how to implement them. This presentation will explore four different advanced modeling tools within InfoWorks ICM: Real-Time Controls, Storage Volume Analysis, Spatially Varying Rainfall and Pollutant Travel Time Analysis. Attendees will walk away with the ability to evaluate how these advanced modeling tools can greatly enhance current or future master planning and capacity assessment projects.

Room: 2

Session: Managing PFAS in Industrial Discharges: Regulations and Best Practices

Speakers:

- **Katie Bruegge, DROP Collaborative** - Katie is an Environmental Program Manager at DROP Collaborative (formerly KimHEC). Katie graduated from Bradley University in Peoria, IL with a BS in Environmental Science in 2012. She has been working in the wastewater field since 2017 where she started as a laboratory analyst. Since then, she has been involved in laboratory supervision, MS4 program management, biosolids program tracking, and pretreatment and FOG program implementation. Katie has been with DROP Collaborative since 2022, working to assist multiple communities in Industrial Pretreatment Program implementation and maintaining NPDES permit compliance.
- **Sarah Struby, Stinson** - Sarah's practice covers all aspects of environmental law, including regulatory compliance, permitting, litigation, and corporate and real estate transactions. She has significant experience representing clients in administrative negotiations with the Environmental Protection Agency and state governmental agencies, particularly under CERCLA/Superfund, solid and hazardous waste laws, and the Clean Water Act, as well as navigating clients through complex site investigation and remediation projects. She also has experience litigating traditional environmental (cost-recovery) and environmental-adjacent (tort) claims.

Abstract: In today's world of evolving PFAS regulations, managing PFAS discharges from industrial users presents a significant challenge for pretreatment program coordinators. This presentation will share a case study from a Missouri pretreatment community and will provide actionable best practices. Pretreatment coordinators and managers will gain practical guidance on how to approach PFAS control within their respective programs while facilitating a collaborative relationship with the contributors of their system. By sharing ideas and exploring best practices, this presentation will help equip attendees with the tools needed to navigate the

complexities of PFAS regulations and effectively manage industrial wastewater discharges.

10:15 AM - 10:20 AM | BREAK

10:20 AM - 11:20 AM

Room: 1

Session: A Pump Guru and a Pump Newbie Walk into a Conference Room

Speakers:

- **Kyla Strickler, Woodard & Curran** – Kyla graduated from Elizabethtown College in Elizabethtown, PA in 2020 before continuing her education at Drexel University to earn a Masters in Peace Engineering in 2022. After she graduated from Drexel, she moved to Missouri to start her career at Woodard & Curran. Here, she's been involved in a variety of projects, including lead service line replacements, water main replacements, sewer main rehabilitation and design, and water treatment plant design.
- **Mickey Bernard, Hydro-Kinetics** - Mickey is the former owner and founder of Hydro-Kinetics Corporation. Mickey has been in the water and wastewater business for over 35 years. He began his professional career after obtaining his Master's Degree and join Woodward Clyde Consultants in Kansas City. After several years at Woodward Clyde he realized he was not cut out to do consulting. He was hired by a large Rep firm in Oklahoma as the office's lead project manager for water and wastewater projects. As his experience grew he transitioned from Project Management to sales. In 1997 he formed Hydro-Kinetics which presently represents a complete line of water and wastewater equipment manufacturers.

Abstract: In the world of pumps, it's easy to get overwhelmed by not only the multitude of pump station design alternatives, but even by what feels like limitless options for pump selection. This "back-to-basics" presentation will be a structured Q&A targeted toward both new and experienced industry professionals that intends to walk the audience through the pump selection process. A design engineer will ask a seasoned pump professional thought-provoking questions to help attendees walk away with a refreshed understanding of the steps to take when designing a pump station and selecting pumps.

Room: 2

Session: How to Respond to the Unexpected: Industrial Slug Loading

Speakers:

- **Sandy Bernard, Lochmueller Group** - Sandy is the lead Process Engineer at Lochmueller Group. She has been with Lochmueller for a little over 3 years. She spent the first 11 years of her career working as the process engineer at a wastewater treatment plant. This is where she developed a passion for operations troubleshooting. At Lochmueller Group, Sandy enjoys working on wastewater and drinking water treatment process designs in addition to an occasional operations troubleshooting project. Sandy is a licensed professional engineer in Illinois, Missouri, and Indiana. She earned her bachelor's degree in civil engineering and a master's degree in business administration at Southern Illinois University Edwardsville.

Abstract: Industrial slug loading events can have a significant impact on the biological processes at a wastewater treatment plant. As the front-line responders in these events, it is vital that operators are given the knowledge and tools to be able to respond immediately when necessary. Additionally, long-term evaluation, data collection, and standard operating procedure development should follow the immediate response once the event has passed. This presentation will discuss four real-world examples of what can happen during industrial slug-loading events and various ways operators can respond during and after the event is over. The immediate response to each scenario will be discussed, along with the long-term response effort and conclusions of each of these efforts. Scenarios include a low influent pH slug event, a BOD slug event, a TKN slug event, and a surfactant slug event.

11:20 AM - 11:25 AM | BREAK

11:25 AM - 11:55 AM

Room: 1

Session: Pump Station Expansion Employing Two Emerging H&H Modeling Tools

Speakers:

- **Joslyn Townsend, AECOM** - Joslyn is a civil engineer and project manager with 11 years of experience including field work, laboratory work, engineering reports, and design. She has worked on and managed projects involving construction management, field inspections, groundwater monitoring, watershed modeling, civil and stormwater design, sewershed modeling, and pump station modeling and design. Joslyn's education includes a bachelor's degree in Geological Engineering from Missouri University of Science and Technology in Rolla, MO and a master's degree in Civil Engineering from the University of Kansas in Lawrence, KS.

Abstract: The Water Services Department (WSD) of the City of Kansas City, Missouri plans to rehabilitate and expand the Pied Creek Pump Station, currently operating with a capacity of 4,200 gpm utilizing two duty pumps. Our group evaluated sewershed-wide redistributions

utilizing InfoWorks ICM and ArcGIS, and established the redistributed condition in the design. The redistributed condition along with flow/population projections for proposed development areas in the sewershed, estimated using ArcGIS, were employed in InfoWorks ICM to select design flow values for future conditions in year 2045. A pump station model was developed using AFT (Applied Flow Technology) Fathom™ fluid dynamic simulation software, which integrates conventional engineering hydraulic analysis with an intuitive graphical user interface. This hydraulic model was used in conjunction with the selected design flow values to propose three pump station alternatives. The alternatives considered options for upsizing the existing forcemain or installing a parallel forcemain to handle the increased pump station capacity needs and lower the horsepower demands of the proposed pumps.

Room: 2

Session: When Dreams Become a Reality: How a Rural Missouri Community Accommodated Rapid Growth

Speakers:

- **Allison White, Burns & McDonnell** - Allison is a Project Manager at Burns & McDonnell focusing on water and wastewater capital delivery. Alli has spent her career serving utilities across the state to deliver capital in a cost-effective manner that is both current time and future looking while meeting the needs of their stakeholders. When delivering projects, Alli prioritizes a partnership approach to collaboratively and effectively develop solutions.

Abstract: This presentation will provide an explanation of how the City of Republic progressed from a rural Missouri community to the fastest growing City within the fastest growing region in the state. By utilizing an adaptable, progressive and proactive approach, the City and their partner Burns & McDonnell made a plan, sought funding opportunities and ultimately began delivery of over \$100 Million in capital within a six year period.

11:55 AM - 12:55 PM | LUNCH

12:55 PM - 1:25 PM

Room: 1

Session: Map It, Manage It, Master It: The Power of Spatial Thinking in Asset Management

Speakers:

- **Kristen Wenzel, TREKK Design Group, LLC** - Kristen Wenzel has been at TREKK Design Group for the past 10 years. She is currently a GIS Project Manager in the St. Louis office. Her GIS background is primarily supporting Asset Management efforts, with developer experience creating spatial visualizations for a variety of disciplines.

Abstract: Asset management is a critical component for the success of any collection system. This presentation explores the integration of GIS-based visualizations and tools with asset management to increase efficiencies in planning and budgeting projects, while monitoring system health and tracking asset maintenance.

Room: 2

Session: I Need to Repair My Sewer Without Interrupting the Flow of Beer

Speakers:

- **Angela Martin, St. Louis MSD** - Program Manager in the Construction Department managing open-cut construction projects of various size and complexity. Formerly worked in the Planning Department as a hydraulic modeler and watershed lead for the Bissell Point Watershed. Enjoys long walks and not getting caught in traffic jams.

Abstract: The Metropolitan St. Louis Sewer District (MSD) is consistently tasked with repair or replacement of its facilities in heavily congested areas of St. Louis City and County. In one particular case, the District was faced with a failed brick sewer in an area of congested utilities. Further complicating the issue was that the limits of excavation would include two 20" water mains, one of which we were told was a main feed line for the Anheuser Busch Brewery. The District evaluated various options for repair. Given the deterioration that had occurred, replacement of a 27-foot length of pipe along with an adjacent manhole was chosen as the appropriate option. Once a contractor had been selected, excavation revealed even further complications related to utilities. Excavation limits included the previously noted water mains, both of which were closer than anticipated, as well as a gas main and electrical duct bank. Given that the sewer was compromised, time was not available to relocate the surrounding utilities. MSD worked together with the contractor on the project to devise a solution that would allow for continued utility service without substantial delay. The chosen solution was to replace the existing sewer with a new 30" diameter sewer. To reduce the overall footprint, the pipe was constructed by casting it in place. Ultimately, the construction was completed in October of 2024, with no interruption of the utilities and no impact to the entire country's beer supply.

1:25 PM - 1:55 PM

Room: 1

Session: The Power of Data Visualization in Water and Wastewater Systems Management

Speakers:

- **David Ecklund, Burns & McDonnell** - Since 2015, I have served as an engineer for Burns & McDonnell's Water/Wastewater group. I have worked on a variety of projects in areas that include collection system modeling and flow analysis, distribution system modeling, Private Inflow Reduction, and storm and sanitary sewer design. I have worked with a diverse group of clients throughout Missouri and the Midwest, from small rural communities to large metropolitan areas, and provide extensive experience in a variety of modeling softwares including InfoWorks, Hydra, SewerGems, and InfoWater.

Abstract: Data visualization has emerged as a critical tool in the modern utility landscape, enabling water and wastewater professionals to transform complex datasets into actionable insights. This presentation will offer a high-level overview of data visualization and its integration into our daily lives, showcasing how it bridges the gap between raw data and intuitive design. By making data easier to digest and identifying patterns quickly, data visualization enhances decision-making processes, reduces mistakes, and allows professionals to focus on more critical tasks. The session will explore the practical applications of data visualization within the utility sector, including asset management, capital project identification, and operational decision-making. It will also delve into external presentations to stakeholders, providing a clear understanding of utility operations and system performance. Attendees will gain insight into developing a successful dashboarding roadmap, from data review and transformation to deployment and training. Real-world examples from Burns & McDonnell will be showcased, including dashboards that track inspections, summarize sanitary sewer overflows, identify high-risk assets, and visualize results from flow monitoring and hydraulic modeling. This presentation aims to demonstrate how data visualization is not just a technological advancement but a strategic necessity for the future of water and wastewater management.

Room: 2

Session: The Fatberg of 2023

Speakers:

- **Emily Lute, City of Moberly** - Emily has been with the City of Moberly since September 2020 where she serves as the Chief Wastewater Operator. She started her wastewater career in Jefferson City in 2015 where she was the Laboratory and Pretreatment Supervisor until moving to Madison, Mo with her husband in 2020. Emily lives on a farm with her two kids where they raise beef cattle, sheep, and the newest addition of chickens.

Abstract: In October 2023 the City of Moberly discovered we had 4,000 ft of force main 100% clogged with grease. This presentation will explain how we discovered the issue, what we did to resolve the issue, and lessons learned throughout the process. We were challenged with a rainy forecast, administration changes, and as expected, negative media attention. After multiple divisions of the utility came together, we became a strong team that is now able to resolve future issues in a more organized way.

1:55 PM - 2:10 PM | BREAK

2:10 PM - 3:10 PM

Room: 1

Session: Bye-Bye Biotowers: BNR Improvements at KC Water's Blue River WWTP

Speakers:

- **Garrett Sheehan, Carollo** - is a senior project manager and vice president with Carollo Engineers in their Kansas City office and brings nearly 29 years of experience dedicated to the planning, design, and construction of wastewater treatment facilities throughout the Midwest and around the country. He grew up near Syracuse, NY, and has a bachelor's degree in civil engineering from Clarkson University in Potsdam, NY, as well as a master's degree in civil and environmental engineering from the University of Illinois at Urbana-Champaign. In his free time, Garrett enjoys spending time with his wife and daughter.
- **Carey Robinson, City of Kansas City Missouri** - Native of Kansas City, Missouri, Carey currently resides in Kansas City, Missouri with his wife Debra Robinson. With 25 years of experience in the Wastewater industry, he ensures proper operation and maintenance of sixty-six facilities, which consist of forty-five sanitary pump stations, fifteen flood (storm water) pump stations and six Wastewater Treatment Plants. All six plants won peak performance awards in 2024. Blue River Treatment is currently under construction for THP (thermal hydrolysis process). This process acts as a pressure cooker to break the down cell walls which make a class A biosolids (fertilizer) and increase biogas production. Carey proudly served his country in the U.S Navy on the Fast attack submarine Hyman G. Rickover SSN 709 as a Torpedoman's mate in 1990-1993.

Abstract: The Kansas City Water Services Department (KC Water) has competing requirements to keep existing facilities functional while addressing short-term regulatory requirements for phosphorus removal and planning for ammonia and nitrogen reductions in the future. This facility plan project at the Blue River WWTP involves developing the most cost-effective overall plan for our ratepayers while meeting our service level commitments to our

ratepayers and regulators. The existing biotowers (trickling filters) do not provide adequate treatment for nutrient removal (nitrogen and phosphorus). To help KC Water meet its current and anticipated effluent nutrient limitations, a reference biological nutrient removal (BNR) facility has been developed. This reference solution will be used as the basis for negotiations with Missouri DNR related to regulatory compliance with these new and anticipated nutrient removal requirements. This paper will review the activities from the first-year journey on a multi-year roadmap for navigating nutrient related process improvements designed to meet KC Water's facility planning objectives: 1. Incorporate efficient but not bleeding edge technology 2. Involve operations in decisions so the system can run efficiently. 3. Represent the best value over the project life. 4. Maximize previous capital investment by our ratepayers. 5. Intelligently sequence between our wet weather consent decree and nutrient requirements while reducing long-term risks.

Room: 2

Session: Phosphorus: Role and Analysis in Wastewater Treatment

Speakers:

- **Zach Wilson, City of Springfield** - Zach Wilson received his bachelor's degree in chemistry with a minor in geology in 2015. Later, he earned a master's degree in chemistry in 2017. Zach has been working in the field of water and wastewater treatment for a combined 9 years of experience but has been working in various laboratories for a combined total of 15 years. Currently, he is employed as the Organic Chemist for the City of Springfield, Missouri at the Southwest Wastewater Treatment Plant.

Abstract: Nutrient pollution from wastewater, in the form of phosphorus, presents a danger to not only the environment, but also to the socioeconomic and bodily health of the surrounding communities. Currently, the Department of Natural Resources (DNR-MO) and the Environmental Protection Agency (US EPA) are updating National Pollution Discharge Elimination System (NPDES) permits to include new limits on the amount of phosphorus pollution that can be emitted from a wastewater treatment plant. To combat excess phosphorus emissions from affecting the environment and adherence to NPDES permits, modern wastewater treatment plants are equipped with numerous techniques to prevent phosphorus from entering receiving waters utilizing sophisticated microbiology and chemistry. Many of these techniques require firm control of appropriate phosphorus levels within the wastewater treatment plant as to properly guide phosphorus removal. Many phosphorus analytical techniques exist to monitor phosphorus levels as to provide guidance to operational and engineering personnel to optimize the sequestration and removal of phosphorus pollution. This presentation will discuss the various species of phosphorus and their roles in removing phosphorus pollution from wastewater while presenting useful phosphorus analytical techniques to ensure the proper and efficient operation of a wastewater treatment plant.

3:10 PM - 3:15 PM | BREAK

3:15 PM - 4:15 PM

Room: 1

Session: Sidestream Fermentation: 6 years of Successful Operation at the Wakarusa River WWTP

Speakers:

- **Edmund Kobylinski, Olsson** - Ed has been a process engineer for 46 years with 38 years in the KC area and taught WWTP design at KU for 4 years. Ed led the process design of the Wakarusa River WWTP, performed operator training, assisted with process start-up and has followed its performance since start-up in 2018.

Abstract: The Wakarusa River WWTP in Lawrence, KS is a sidestream fermentation success story. It has been operating for 6 years meeting permit limits with an average effluent of 0.33 mg/L as P (no supplemental carbon added). Biosolids land disposal has been a challenge at times and has caused some periods of poor performance. We were able to simulate both good performance and poor performance periods using SUMO as the simulation platform. We will present 6 years of influent and effluent phosphorus data. In addition to the Wakarusa data, I will present some additional fermentation options to consider for Biological Phosphorus Removal.

Room: 2

Session: Year One of Five: St. Louis MSD's Bissell Point & Lemay WWTFs Fluidized Bed Incinerator Design-Build Project

Speakers:

- **Raed Armouti, Crawford, Murphy & Tilly, Inc.** - Raed serves as the Project's Design Manager. Raed brings extensive experience with MSD having designed or managed numerous Metropolitan St. Louis Sewer District projects over the last 25 years.

Abstract: St. Louis MSD and Kokosing/Plocher (KP) signed a \$900M fixed price design-build project in July 2023. The project will replace existing multiple hearth incinerators with new fluidized bed incinerators (FBIs) at both Bissell Point and Lemay Wastewater Treatment Facilities (WWTFs). New solids handling facilities with dewatering centrifuges and cake pumps

will feed sludge to three FBIs at both WWTFs. A phased project delivery approach to design, permit, and construct facilities is being utilized by KP to complete the project by March 2029. The design is scheduled to be completed in April 2025 and construction of clearing, sitework, and foundations were underway at both WWTFs in May 2024. A brief overview of the project progress including alternative technical concepts to improve layout and save costs, design approval, permitting project at two separate building agencies, procurement of major equipment and materials, and construction of foundations. The project team has developed and utilized various plans and tools to manage the team of subcontractors and subconsultants and coordinate with St. Louis MSD and Owner's Representative. This presentation will walk-around the Solids Processing Buildings to highlight the final design and to demonstrate the benefit of 3D modeling to continuously collaborate with St. Louis MSD to efficiently develop, coordinate, review, and complete the project design.

4:15 PM - 4:45 PM

Room: 1

Session: Being Intergenerationally Minded (BIM) with Design Evolution

Speakers:

- **Suzie Carpenter, Black & Veatch** - Suzie has 24 years of experience in water and wastewater and is a senior project manager for Black & Veatch. She has managed multi-discipline teams on projects ranging from study through detailed design at small and large facilities
- **Brian Melton, Black & Veatch** - Brian serves as an Innovation Lead at Black & Veatch, where he champions digital transformation and helps to deliver value and positive disruption for project delivery. With 24 years at Black & Veatch, Brian has contributed to some of the world's largest infrastructure projects, collaborating with teams across North and South America, the UK, India, and Asia. His deep expertise in Building Information Modeling (BIM) for infrastructure projects facilitates innovative workflows and the adoption of cutting-edge processes for project delivery and beyond. Brian frequently spearheads initiatives to develop technology strategies, prototype new solutions, and support technology implementation. Recently, he has been instrumental in shaping strategies and designs for next-generation digital solutions that enhance project delivery and support facility operations. His efforts focus on simplifying data access and improving data management for projects teams and clients, leveraging advanced spatial intelligence technologies and data-centric processes such as BIM, digital twins, virtual reality, reality capture and AI-enabled solutions.

Abstract: This presentation will discuss the evolution of design using BIM (3D) modeling and how to ensure all generations are finding the information they need for reviews and engagement. As technology has evolved so have the tools we use to design new and upgrade

existing facilities. The historical evolution of a design was to submit paper copies of plans and sections along with P&IDs and one-line diagrams to convey the details of the design. With BIM, reviewers can “walk” through a model for review and see accessibility, safety, and operability in real time. The downfall is that the model can convey that all the details are worked through and can leave those used to reviewing paper documents wanting more. This presentation will focus on proven methods to evolve design and receive Owner input that is effective for all in the organization. Additionally, Virtual Reality is being leveraged to help design teams and owners conduct immersive review sessions. As digital transformation affects us all, owners' needs are starting to evolve, and the deliverables we provide in the future will be more connected and intelligent, with digital twins potentially replacing traditional deliverables altogether at some point.

Room: 2

Session: So you think you can DENSE

Speakers:

- **Adrian Romero, Black & Veatch** - is a wastewater process engineer at Black & Veatch in Overland Park, KS. He has a BS in Chemical Engineering and an MS in Environmental Engineering from the University of Kansas. He has over 3 years of experience in the wastewater field, including research on low DO BNR, wastewater-based epidemiology for sars-cov-2, and biological inhibition of heterocyclic organic nitrogen in activated sludge nitrification. As the process engineer in the Central Regional Wastewater System (CRWS) Master Plan, Adrian led the hydrocyclone solution evaluation for capacity expansion, along with process services for Trinity River Authority.
- **Bridget Moore, Black & Veatch** - Bridget Moore is a project engineering manager at Black & Veatch. She has a BS in Civil Engineering from Rockhurst University and is a licensed PE in Missouri, Oklahoma, and Kansas. She has over 7 years of experience designing and managing engineering teams on water and wastewater treatment projects, including the Bentonville WRRF project which utilized process intensification using densified activated sludge.

Abstract: Densified activated sludge (DAS) offers 20-30% additional treatment load capacity to conventional activated sludge treatment with minimal capital investment and treatment infrastructure modifications. DAS is achieved through a coordinated “dance” of physical and biological selection mechanisms and relies on the same phosphorus accumulating organisms that provide enhanced biological phosphorus removal (EBPR). Missouri utilities using EBPR to comply with the state’s new Total Phosphorus Rule should consider integrating DAS as a very cost-effective way to optimize the performance, reliability, and resiliency of their treatment process. This presentation will overview design alternatives and operational considerations for DAS, including lessons learned from the following case studies: (1) Tomahawk Creek WWTF – 19 MGD EBPR facility seeing a 60% reduction in sludge volume index (SVI) through surface

wasting DAS, (2) Sac Regional EchoWater – 181 MGD BNR with DAS and EBPR, (3) Bentonville WRRF – doubling capacity to 8 MGD with DAS and EBPR to achieve effluent TP & 0.3 mg/L, (4) Metro Water Recovery – first-ever piloting of WAS hydrocyclones for DAS, and (5) Trinity River Authority – 189 MGD CRWS sees 40% increase in peak flow capacity through SVI attenuation with WAS hydrocyclones.