



September 22, 2018

RECEIVED

Mr. J. E. B. Pinney
Deputy General Counsel
Kentucky Public Service Commission
P.O. Box 615
Frankfort, KY 40602

FEB 26 2018

PUBLIC SERVICE
COMMISSION

The Honorable J.E.B. Penney,

Please find enclosed an original and five copies of the Kentucky Water & Wastewater Operators Association's drinking water and wastewater technical program for its upcoming conference to be held April 9 – 11, 2018. To help with your review, I have also included a breakdown of the sessions by day and hour. This program offers 74 hours of concurrent technical sessions, but only allows the attendee to earn a total of 18 hours for each discipline. We have submitted this course to the Kentucky Division of Compliance Assistance for review as well, but it will not be on the agenda of the Kentucky Boards of Certification until March 20, 2018. As such, I do not suspect I will have documentation of their review and, hopefully approval, until sometime in late April.

As such, I would appreciate your review of the documents attached and guidance on whether you see any areas for concern given that this is the first application KWWOA has submitted to the Public Service Commission (PSC). Given that I do not anticipate having documentation of DCA's approval until after the Conference, it would be nice to have some type of guidance, if possible, to share with our attendees regarding PSC's review. I will ask DCA to provide their letter, as soon as possible, and will immediately forward it to your attention.

Thank you so much for your guidance to date. Should you have questions, do not hesitate to contact me.

Sincerely,

Lisa B. Detherage
Member Services Director
KWWOA

Enclosures: 1 original and 5 CEU Applications
Course summary by day and hour

<p>Mail to:</p> <p>Division of Compliance Assistance Certification and Licensing Branch Operator Certification Program 300 Fair Oaks Lane Frankfort, KY 40601</p>	<p>Commonwealth of Kentucky Department for Environmental Protection</p> <p>Application for Approval of Courses for Continuing Education Credit</p> <p><i>Drinking Water Treatment, Drinking Water Distribution, Bottled Water, Wastewater Treatment and Collection System</i></p> <p>Telephone: 1-800-926-8111 www.dca.ky.gov/certification</p>	<p><i>For Official Use Only Do not write in this space</i></p> <p>RECEIVED</p> <p>FEB 26 2018</p> <p>PUBLIC SERVICE COMMISSION</p>
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I. Course Sponsor Information:Agency Interest Number: 82582

A. Sponsoring Organization (school, business, association, etc.):

Kentucky Water & Wastewater Operators Association

Key Contact Person:

Name and Title: Lisa B. Detherage, Member Services DirectorAddress: P.O. Box 700City, State and Zip: Lawrenceburg, KY 40342Phone and Fax: 502-352-0510E-mail: Lisa@kwwoa.orgWeb Page: www.kwwoa.org☒ One-Time Approval Requested☐ Two-Year Approval Requested

B. If individual requesting approval is different than the key contact person for the sponsor, please complete the following information:

Name and Title: _____

Address: _____

City, State and Zip: _____

Phone and Fax: _____

E-mail: _____

II. General Course Information:A. Title: 61st Annual KWWOA ConferenceB. Location and Date/s: Northern Kentucky Convention Center. April 8 – 12, 2018C. Cost per Student or Group: \$ Member - \$230 and Non-member - \$270

D. Delivery Format or Media (check those that apply):

<input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Web/Online	<input type="checkbox"/> Laboratory	<input type="checkbox"/> Exhibition
<input type="checkbox"/> Field	<input type="checkbox"/> CD-ROM	<input type="checkbox"/> Video/Audio	<input type="checkbox"/> Correspondence
<input type="checkbox"/> Other (Explain) _____			



E. Continuing Education Credits (**hours**) Requested for Target Audience:Drinking Water Treatment, Distribution and/or Bottled Water: 18 hoursWastewater Treatment and/or Collection: 18 hours**(Attach a detailed description explaining how this training relates to the wastewater treatment process.)****III. Required Items** (must be attached to submittal, check off as completed):

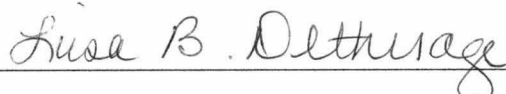
- A. ☒ Course Learning Objectives
- B. ☒ Criteria for Successful Completion by Operators
- C. ☒ Agenda (timed with instructors identified and brief description of topics)
- D. ☒ Credentials for All Instructors

IV. Additional Attachments (required for distance learning courses, optional for other training):

- A. ☐ Instructional Design (developed by whom/their credentials)
- B. ☐ Curriculum Content (subject matter experts/their credentials)
- C. ☐ Required Assignments and/or Examinations (type, passing score, etc.)
- D. ☐ Mandatory Time Constraints (deadlines, granting of extensions, etc.)

V. Signature of Sponsor's Contact Person

I confirm that all information provided with this application is accurate to the best of my knowledge. A complete list of attendees and credits to be awarded to them will be forwarded on a "Continuing Education Activity Report" to the Kentucky Division of Compliance Assistance (within 30 days of completing the course when possible).

Printed Name and Title: Lisa B. Detherage, Member Services Director 2/22/18Signature and Date:  2/22/18

Monday – April 9, 2018 – Continuing Education Classes

7:00 to 8:30 AM - Breakfast & KWWOA Opening Session/General Membership Meeting - Ballrooms C, D & E

8:30 – 9:30 AM - General Technical Session (Continuing Education Credit Provided) – Ballrooms C, D & E

Environmental Protection Update – Commissioner Aaron B. Keatley, KY Department for Environmental Protection

Moderator: Robin Strader

	General Technical Room 5 2nd Floor	Water Technical Room 6 2 nd Floor	Wastewater Technical Room 7 2 nd Floor	Wastewater Collection Room 4 2 nd Floor	Industrial Wastewater Room 3 2 nd Floor
	– Moderator – Stamper	– Moderator – Stamper	– Moderator – Stamper	– Moderator – Stamper	– Moderator – Stamper
9:45 AM	Plant Reliability & the Role of Mechanical Sealing Options Jeff Waldal Advanced Sealing Technology	Bacteriological Detection, Recognition & Control Corey Harper Hawkins, Inc.	Sizing a Sewer Lift Station Jonathan Cummings Wascon, Inc.	Help!!! This Pump Station Stinks but we are Tight on Money! Stewart North Source Technologies, LLC	Hot Topics in Wastewater Treatment in KY – Part 1 Jim Collins Brentagg Mid-South
10:50 AM	How Operators Can Work Better with State Inspectors Josh Pedigo Green-Taylor Water District	401 KAR Chapter 8 Updates Sara Gaddis Division of Water	Pretreatment Enforcement Case Study – Tracking Down a Foam Source Jason Crawford Sanitation District No. 1	Simple Tools for Operators to Quantify I/I, Detect Leaks & Measure Rehab Progress George Kurz, P.E. Sewer Capacity Management	What is all the “phos” about?– Part I Patrick Beamon Brentagg Mid-South

Lunch – 11:50 to 1:15 on your own

	General Technical Exhibit Hall Room A 1 st Floor	Water Technical Exhibit Hall Room B 1 st Floor	Wastewater Technical Exhibit Hall Room C 1 st Floor	Wastewater Collection Room 4 2 nd Floor	Industrial Wastewater Room 3 2 nd Floor
	– Moderator – Stamper	– Moderator – Stamper	– Moderator – Stamper	– Moderator – Stamper	– Moderator – Stamper
1:15 PM	Culture Trumps Strategy Jeff Eger HDR	DPB's in Kentucky & DW Updates Joe Uliasz Kelly Husband Division of Water	Energy Optimization Experience & Benefits of New Construction Jacob Billingsley Glasgow Water Company	Point Repair: A Necessary Tool in the Trenchless Tool Box Ben McGraw Source One Environmental	How to Select a Wastewater Treatment Plant Jay Wyatt Envirotect Services

Ice Cream Social – 2:15 – 3:15 PM

Exhibit Hall

3:15 PM	Clear Results & Accuracy You Can Count On Eric Link LabtronX	Lead in Drinking Water Greg Heitzman, P.E. BlueWater Kentucky Peter Goodmann, KY Division of Water Dr. Rengao Song Louisville Water Company	Understanding Screening Capture Methods & Efficiency Brian Gatewood Delaney & Associates, Inc.	Investigating a Sewage Back-up Event – A Case History for CMOM Practices George Kurz, P.E. Sewer Capacity Management	What is all the “phos” about?– Part 2 Patrick Beamon Brentagg Mid-South
4:20 PM	Risk Assessment of Underground Vaults: Protecting Workers from Common Job Hazards Luke Darby EJ USA	Drought Management Planning for Small and Medium Systems in Kentucky Ron McMain, P.E. Bell Engineering	Peracetic Acid for Wastewater Disinfection Jim Pelton Pelton Environmental Products	Benefits of MACP in a Manhole Rehab Project Jerry Weimer Jerry Weimer Consulting	Hot Topics in Wastewater Treatment in KY – Part 2 Jim Collins Brentagg Mid-South

8:00 – 11:00 PM – New Riff Distillery, 24 Distillery Way, Newport, KY

Cornhole, Music, Hors D'oeuvres & Distillery Tours

Buses will leave from the Northern KY Convention Center at 7:45 and 8:00 or you can ride the Trolley (New Riff is the last stop)

Tuesday – April 10, 2018 – Continuing Education Classes

	General Technical Exhibit Hall Room A 1 st Floor	Water Technical Exhibit Hall Room B 1 st Floor	Wastewater Technical Exhibit Hall Room C 1 st Floor	Water Distribution Room 4 2 nd Floor	Lab Analyst Training Room 1 2 nd Floor
	- Moderator - Stamper	- Moderator - Stamper	- Moderator - Stamper	- Moderator - Stamper	- Moderator - Stamper
8:00 AM	Best Practices for Condition Monitoring with Ultrasound Joe Edelen UE Systems	Chlorine Dioxide Trial – Effectiveness of Chlorine Dioxide for DPB Removal Justin Spears, City of Scottsville Josh Stinson, Williamstown Randy & Rory Bush, TMB	Pump Stations – Inside and Out David Bryan Smith & Loveless	The Life and Times of the Chestnut Street Tank Ron McMain, P.E. Bell Engineering	40 CFR 136 CWA Method Update Rule Shannon Pratt LabtronX
9:05 AM	Online Organics Monitoring for DW & WW Treatment Sydney Jannetta Suez Water Technologies & Solutions	Utilization of Mixed Oxidants to Improve Residual & Overall Water Quality in Distribution Systems Robert Newton Johnson Matthey	Pump Station Troubleshooting David Bryan Smith & Loveless	Choosing the Right Meter & Using it to Solve Billing Disputes Tina Masters Odum, P.E. Badger Meter	Maintaining Your Lab's Certification Patrick Garrity Division of Water
10:10 AM	Geospatial Tools for Improved As-Built Plans David Carter, P.E., PLS CDP Engineers	How to Use SCADA Data for Operational Effectiveness Sam Hatchett Jim Uber CitiLogics	Pump Station Maintenance David Bryan Smith & Loveless	Repairs Without Shutdown Michael Mecredy Team Industrial Services	QA/QC for Certified Labs Kevin Stewart Division of Water
11:15 AM	Polyethylene Encasement for External Corrosion Control for Iron Pipelines – A 60 Year History Allen H. Cox, P.E. Ductile Iron Pipe Research Assoc.	Using HSF to Survey & Determine Distribution Residence Time Bob & Brandt Cashion S4 Water Sales & Service	Pump Station Maintenance Continued David Bryan Smith & Loveless	Creating a "Smart"er Customer Service Experience through AMI Scott Clark Hardin County Water District No. 2	Laboratory Ethics & Data Integrity Patrick Garrity Division of Water
Lunch - 12:15 to 2:00 PM – Exhibit Hall– Free to All Attendees Door Prizes will be Awarded					
	General Technical Exhibit Hall Room A 1 st Floor	Water Technical Exhibit Hall Room B 1 st Floor	Wastewater Technical Exhibit Hall Room C 1 st Floor	Water Distribution Room 4 2 nd Floor	Lab Analyst Training Room 1 2 nd Floor
	- Moderator - Stamper	- Moderator - Stamper	- Moderator - Stamper	- Moderator - Stamper	- Moderator - Stamper
2:00 PM	Analyzing & Predicting Cavitation in Hydraulic Systems Alan Bryan, P.E. & Adalyn Haney, P.E. GRW	Electro-Coagulation Treatment Doug Ralston, P.E. Engineering Resources, Inc.	Advances in RTU & SCADA & How to Benefit from Using Them Doug Sayre Allied Technical Services, Inc.	Someone is Swimming in Your Tank... How safe are they and you?? Patrick Brown, P.E. Jennifer Coon Tank Industry Consultants	Comparison of Methods for The Detection of Fecal Coliforms and E. coli Gil Dichtner IDEXX
3:05 PM	Haz Comm in Transition Greg Duncan Velocity EHS	Turbidity – What are we Measuring? Eric Link LabtronX		Maintaining Water Quality in Storage Tanks: Seeing the Forest & the Trees Casey Doyle Louisville Water Company	Commercial Laboratory Considerations Paul Barker Beckmar Laboratory

Wednesday – April 11, 2018 – Continuing Education Classes

Coffee Available To All Attendees –7:30 – 8:30 AM - Across from the 2nd Conference Registration Desk

	Water Technical Room 4 & 5 2 nd Floor	Wastewater Technical Room 6 & 7 2 nd Floor	Drinking Water Plant Tour (Meet the bus at _____)
	- Moderator - Stamper	- Moderator - Stamper	- Moderator - Stamper
8:30 AM	Chloramine Conversion – HCWD#2 a Case Study Shaun Youravich Hardin County Water District No. 2	Applying Activated Sludge Process Calculuations: Aeration Dan Miklos Hazen & Sawyer	Fort Thomas Water Treatment Plant Tour Northern KY Water District Jonathan Moor Matt Piccirillo Warren Hinman Mollie Bailey
9:35 AM	Why Some Air Bubbles Mix Water & Some Just Aerate Larry Bell Pulsed Hydraulics, Inc.	Applying Activated Sludge Process Calculations: Clarification & Chlorine Disinfection Dan Miklos Hazen & Sawyer	
10:40 AM	Dedicated Bulk Water Dispensing Points Jay Morrison Flowpoint Environmental Systems	Tools and Techniques for Managing Ponds in Wastewater Systems Adam Charlton Aquatic Controls	
Lunch 11:40 – 1:00 PM – On Your Own			
	Water Technical Room 4 & 5 2 nd Floor	Wastewater Technical Room 6 & 7 2 nd Floor	Wastewater Plant Tour (Meet the bus at _____)
	- Moderator - Stamper	- Moderator - Stamper	- Moderator - Stamper
1:00 PM	Kentucky Infrastructure Authority Updates Donna McNeil Kentucky Infrastructure Authority	Collection System Odor Control Options Darin Skutt Carus Corporation	Dry Creek Wastewater Treatment Plant Tour Sanitation District No. 1 Brian Berens Jeff Verdin
2:05 PM	Cyanobacteria Case Studies – Management of Taste & Odor Issues Adam Charlton Aquatic Controls	Filamentous Growth – Causes & Control Tim Ricketts timothyrickettstTraining.com	
3:10 PM	Where and how to remove TTHMs from the Distribution System Michael Christensen Medora Corporation	Kentucky Infrastructure Authority Updates Donna McNeil Kentucky Infrastructure Authority	

**Wastewater - Application for Approval of Courses
for Continuing Education Credit - Attachment**

**Kentucky Water and Wastewater Operators Association
61st Annual KWWOA Conference
February 22, 2018**

III. Required Items

A. Course Learning Objectives

This program will provide a variety of training topics of value to wastewater and drinking water system operators to assist with their professional development and the enhancement of system operations under their control. Operators will be able to attend training sessions that will seek to convey new material relevant to their industry/operation, increase the depth of their knowledge relevant to basic operations of their facility, and/or provide a refresher to ensure full protection of human health and the waters of the Commonwealth.

B. Criteria For Successful Completion

Exams will not be given at the conclusion of each training session. However, operators must attend the full session and will receive a sheet that must be stamped by a KWWOA official at the conclusion of each one hour of training. Failure to obtain a stamp will negate the operator receiving credit for a particular session. These stamp sheets will be turned in to KWWOA prior to the operator leaving the Conference and be maintained by the organization. The hours earned by each operator will be documented on a Continuing Education Activity Report and submitted via electronic submittal to the Division of Compliance Assistance.

C. & D. Agenda and Credentials for All Instructors – A timed agenda is provided below, along with a brief description of each session and the instructor's credentials.

Monday, April 9, 2018

General Technical Sessions

8:30 to 9:30 AM

General Technical – Kentucky's Infrastructure Needs and the Role Operators Play (1 hour)
Speaker: Aaron B. Keatley, Commissioner, Department for Environmental Protection

Aaron Keatley is the Commissioner of the Kentucky Department for Environmental Protection. Appointed in 2016 by Governor Matt Bevin, Keatley served previously as the Department's Deputy Commissioner.

Born in California and raised in southwest Michigan, Commissioner Keatley first began working with the Agency in 1993. It was a seasonal position that was supposed to last for only three months. This short-term job turned into a career of public service for the Commonwealth.

Leadership opportunities in the Department's Division of Waste Management, Division of Water, Division of Enforcement and with the Division of Compliance Assistance has provided him with diverse experiences. This broad perspective enables him to see beyond the program silos that can define government agencies. As Commissioner, he is committed to applying this perspective while seeking collaborative partnerships that produce meaningful results.

He lives with his wife, Andrea, in their Scott County home on the banks of South Elkhorn Creek. When he is not at work, he enjoys wading the creek with his fly rod in search of bass, bluegill and long-eared sunfish. He can also be found – binoculars in hand – in search of new birds to add to his life-list.

Commissioner Keatley holds both a bachelor degree from Michigan State University and masters from the University of Kentucky.

Session Summary: Kentucky's wastewater and drinking water infrastructure is critical to the health, safety, and financial growth of the Commonwealth. As responsible stewards we must proactively plan for future needs or these important assets could quickly become a liability.

Kentucky operators play an important role in defining Kentucky's future. It is not enough to simply operate and maintain a system. Operators must dream. Operators must communicate that dream. Operators must assist decision makers in refining that dream. Operators must participate in achieving that dream.

In this session, we will discuss some of the areas that the Department for Environmental Protection is evaluating related to our infrastructure and the challenges that will face operators in the future. These focus areas will include maintenance, capacity, reliability, redundancy, and quality. Addressing these topics require an honest assessment of operations, rates, expansion, and regionalization.

9:45 to 10:45 AM

General Technical – Plant Reliability & the Role of Mechanical Sealing Options(1 hour)

Speaker: Advanced Sealing Technology

Jeff Waldal joined Advanced Sealing Technology in 2017 with a focus on Business Development. Previously, he worked for Seikowave from 2013-2017 as Chief Operating Officer. Prior he worked for Ceradyne Inc. from 1995 – 2013 (3M acquired Ceradyne Inc. in 2012). Mr. Waldal began his career at Ceradyne-Semicon Associates as Quality Manager (1995-1997), was promoted to Operations Manager (1997-1999), and became President of Semicon Associates in 1999 and Corporate Vice President of Ceradyne Inc. in 2003.

Mr. Waldal currently serves as a mentor for the University of Kentucky's Center for Entrepreneurship Program. Mr. Waldal has a BA in Business Management from the University of Kentucky and an MBA from Eastern Kentucky University.

Summary: The training will feature how mechanical seals work with emphasis on how to create optimal functionality for extended life as well as what can make a seal fail. Further, the training will compare and

contrast packing to mechanical seals. Last, the training will look at different predictive maintenance techniques for pump systems.

10:50 to 11:50 AM

General Technical – How Operators Can Work Better with State Inspectors(1 hour)

Speaker: Josh Pedigo, Green-Taylor Water District

Josh is a graduate of Lindsey Wilson College. Josh has worked as a Drinking Water and Wastewater Operator at the City of Elizabethtown, earning his drinking water treatment class IIIA certification. He has worked for the KY Division of Water as an Environmental Scientist and recently became the General Manager of the Green-Taylor Water District.

Session Summary: This session will address the following:

- What to expect when an inspector comes to your facility,
- What needs to be available to be looked at for an inspection,
- How to handle mishaps and calling on the State,
- Miscommunication between the state and facilities is no good,
- What happens during an inspection, and
- How to talk with an inspector.

1:15 to 2:15 PM

General Technical –Culture Trumps Strategy (1 Hour)

Speaker: Jeff Eger, HDR Engineers

Jeff Eger is the national Stormwater Business Class Director for HDR Engineers. He is a nationally recognized leader in utility management who has been on the forefront of innovative practices throughout his 23 year career in the industry. Jeff served as Executive Director of the Water Environment Federation, developing a new strategic direction for WEF, focusing on raising awareness of the value of water. Eger spent 17 years as the Executive Director of Sanitation District No.1 of Northern Kentucky. In that role, he led the successful merger and consolidation of 34 local governments sanitary and storm sewer systems.

Session Summary: The culture of any organization can make or break its successful operation and ability to achieve its core values and functions. This presentation will discuss the components of a thriving and successful cultures and how to build one in any organization.

3:15 to 4:15 PM

General Technical – Clear Results & Accuracy you Can Count On(1 hour)

Speaker: Eric Link, LabtronX

Eric Link is the Owner/CEO of LabtronX, a company specializing in the maintenance and calibration of utility laboratory equipment. Eric started repairing laboratory equipment for LabtronX over 30 years ago. He was instrumental in developing LabtronX's calibration program, the Accuracy Assurance Program. He later became CEO and in 2012 purchased the company. He has given many lectures on a

variety of laboratory equipment subjects and looks forward to sharing his experience and knowledge with you today.

Session Summary: Inspectors ask “How do you know?” System failures cause valuable downtime. Calibration and maintenance is needed, but where do you start? Eric Link, the owner/CEO of LabtronX, has specialized in the maintenance and calibration of utility laboratory equipment for over 30 years. He will examine some of the issues below and how they support you as an operator.

- Accuracy vs. precision
- Alarm clock
- Dart board
- Standards vs. readability
- Calibration Limitations
- Hach Turbidimeters (readability, repeatability, accuracy)
- Temperature Standards (half a division)
- BFPTK Gauge Calibration
- Calibration vs. Verification
- Calibrating and verifying a pH meter
- Flow meters
- Secondary standards - CL2 and Turbs
- Dissolved Oxygen
- Maintenance
- Identify common failures
- Mechanical Items
- Items with a finite life (lamps, gaskets, electrodes)
- What good does cleaning do?
- Documentation
- Proof - How do you know?
- Reference - Where have you been?
- Proactive call to action

4:20 to 5:20 PM

General Technical – Risk Assessment of Underground Vaults: Protecting Workers from Common Job Hazards (1 hour)

Speaker: Luke Darby, EJ USA

Luke Darby has been working for EJ (formerly known as East Jordan Iron Works) for 3 years in various roles within the company. Luke works in conjunction with both the Columbus and Cleveland, OH offices for EJ. His current position is Technical Sales Representative covering Ohio, Kentucky, and West Virginia. With over 10 years in the construction industry, Luke helps cities and engineers to develop solutions for their infrastructure needs. He oversees training for licensed contractors, engineers, and architects and works in conjunction with KRWA, KWWOA, Ohio EPA, and WVRWA. He has also been working on fire hydrants and gate valves for 10 years, helping municipalities develop and maintain operating and maintenance standards for their water distribution systems.

Session Summary: This session will explore the safety hazards found in underground vaults, manholes and pump stations. This presentation will conduct a risk assessment of underground structures, identifying various hazards and the OSHA requirements for protecting workers from those hazards. Some of the OSHA topics covered are Fall Hazards, Confined Space Hazards and Lockout / Tagout. Too many workers are injured or killed each year and often could be protected with very little effort or cost.

At the conclusion of the course, all participants should understand the risks found at underground vaults and how to protect workers from these common on-the-job hazards.

Wastewater Technical Sessions

9:45 to 10:45 AM

Wastewater Technical – Sizing a Sewer Lift Station(1 Hour)

Speaker: Jonathan Cummings, WASCON, Inc.

Jonathan Cummings has been with WASCON for the past 14 years. He covers Aftermarket Sales & Service in Tennessee & Kentucky. Jonathan's experience with WASCON started out by working on small grinder pumps at WASCON's service shop. From that point, he started doing service and sales calls to collection operators. Jonathan spent two years in inside sales where he learned to properly size pumps and systems in the wastewater market.

Session Summary: This presentation will cover the aspects that are involved when sizing a sewer lift station. We will cover what is considered when sizing a pump and selecting the correct type of pump station for the application. We will also look at the various control options that are available when trying to get the optimum efficiency out of your pumps.

10:50 to 11:50 AM

Wastewater Technical –Pretreatment Enforcement Case Study – Tracking Down a Foam Souce (1 Hour)

Speaker: Jason Crawford, Sanitation District No. 1

Jason is a Pretreatment Specialist with Sanitation District No. 1, a job he has held for 17 years. His job duties include Sampling, Writing Permits, FOG (Fats Oils & Grease), Special Meters, Data Entry, Inspections, New Industry Classification, Enforcement, Soil Remediation, Unusual Discharges, Illegal Discharges and spills. He has a Bachelor of Science Degree from the University Of Kentucky and level 2 Pretreatment Certification from Kentucky. He is on SD1's Safety Committee, Leadership Northern Kentucky Class of 2016 and serves as a Pretreatment Certification Board Member and the KY / TENN WEA Pretreatment Board Co-Chair.

Session Summary: The presentation will go over a little about SD1 and then I will talk about Sanitation District No. 1's enforcement in general. He will then share with the audience foaming issues we had at our treatment plant and how we found the culprit and what enforcement actions were taken.

1:15 to 2:15 PM

Wastewater Technical – Energy Optimization Experience & the Benefits of New Construction (1 Hour)

Speaker: Jacob Billingsley, Glasgow Wastewater Treatment Plant

Jacob attended and graduated from Barren County High School and then went on to play Baseball and Golf at Lindsey Wilson College where he obtained his Bachelor's Degree in Biology in 2006. He started his career in the wastewater field in June 2010. After the requirements were met, he obtained his Class II, III and IV Wastewater Licenses and is now the Superintendent for the Glasgow Wastewater Treatment Plant. He is an avid golfer, hunter, part time farmer and he is married to Krissy and has two young children Lilly and Sawyer. He currently resides just outside of Barren County in the Kino / Summer Shade area of Metcalfe County.

Session Summary: This presentation will discuss the Energy Optimization Program that Glasgow participated in with USEPA, KY DOW, and a few Universities. He will discuss the changes that Glasgow has made and the improvements that we have put into our budget down the road. He will provide, from an operator's perspective, the advantages of making these improvements and the financial savings that you could see from these improvements.

3:15 to 4:15 PM

Wastewater Technical –Understanding Screening Capture Methods & Efficiency(1 Hour)

Speaker: Brian Gatewood, Delaney & Associates, Inc.

Brian retired from the City of Williamstown where he served in various capacities from Operator to Water/Wastewater Director for 26 years. He holds a Class III license in WW Treatment, WW Collection, Surface Water Treatment, and Distribution. Currently Brian is employed by Delaney and Associates as a Sales Representative covering Owners and End Users in KY and Southern OH.

Session Summary: This session will address the problems related to low capture ratio - this section will talk about downstream problems caused by poor screening.

- Screen design basics - This section covers information needed to make sure the screen fits the requirements of its application.
- Screen technologies - This section covers the various types of screens available.
- Screen testing - This section covers the facility used to test screens capture ratio.
- Screen details and design considerations - This section covers making sure the screen is being used in a proper application and the possibility of using a more appropriate piece of equipment.

4:20 to 5:20 PM

Wastewater Technical – Peracetic Acid for Wastewater Disinfection (1 Hour)

Speaker: Jim Pelton, Pelton Environmental Products

Jim graduated from Purdue University with a Bachelor of Science in Mechanical Engineering in 2005. He worked as a general contractor specializing in HVAC systems for schools and healthcare facilities as well as a field engineer, conducting energy audits on boiler/steam systems. He began his career in water/wastewater in 2010 with an emphasis on process treatment equipment within the treatment plant.

Summary: Review of what peracetic acid is, why it is an effective disinfectant for WWTPs and why it's becoming more popular. Presentation will include a review of implementation, safety requirements, dosage, and permitting.

Wastewater Collection Sessions

9:45 to 10:45 AM

Wastewater Collection – Help!! This Pump Station Stinks but we are Tight on Money(1 Hour)

Speaker: Stewart North, Source Technologies, LLC

Stewart has an Associate's Degree, Environmental Technology, from Lexington Community College. Stewart has served as a project manager for Advanced Technologies International from 1994-1999 removing UST's and remediating contaminated sites, EnviroData Group Laboratories from 2000- 2003, and Evergreen Environmental from 2004-2005 performing water and land cleanups and waste disposal.

He has served as the President of Field Operations for Source Technologies since 2004, performing numerous waste treatment installations for the prevention and abatement of odor and corrosion for municipalities. He has performed pilots and case review studies for the treatment of sludge for hydrogen sulfides, treatment of sulfides in meat processing plants and the disinfection of wastewater prior to discharging into receiving waters.

Session Summary: Many times utilities have sewage pump stations that create offsite odors affecting nearby homes and businesses as well as endanger the health and safety of utility personnel who work on the stations. Most of these stinky pump stations are not treated because of a lack of funds. Using chemicals in solution to treat H₂S can be expensive. This presentation will cover engineering/design ideas to reduce odors as well as the Evergreen Process air treatment technology. The Evergreen Process is a GREEN, low cost, patent pending technology developed by Source Technologies to treat foul air thus eliminating offsite odor complaints and health and safety issues.

10:50 to 11:50 AM

Wastewater Collection – Simple Tools for Operators to Quantify I/I, Detect Leaks & Measure Rehab Progress(1 Hour)

Speaker: George Kurz, P.E.

George has a BS in Civil Engineering from Tennessee Tech. He has 41 years of experience in state and local government, sewer service contracting and consulting engineering. For most of that time he has worked on detecting, measuring, and stopping I/I in municipal sewer systems. He believes that I/I is the most significant problem facing most operators, but that the true magnitude of the problem is underestimated and has been largely overlooked. To change this paradigm, he conducted an independent investigation using public information to calculate I/I in the 242 sewer systems in Tennessee to increase public and regulatory awareness. The study found an average of 45.4% annual I/I across the state. George has also developed standard methods for measuring effectiveness of rehabilitation using flow monitoring. His approach for I/I reduction programs is based on the measured elimination of 4.6 billion gallons annually in 3 Tennessee cities.

Session Summary: The 2016 ASCE Infrastructure Report Card for Tennessee reported that, "The annual average level of I/I leakage (45.4%) measured in systems across the state indicates significant deterioration in many wastewater collection systems. Two-thirds of the systems had greater than 50% I/I." However, a review of all NPDES (National Pollution Discharge Elimination System) permit applications showed that municipal agencies are reporting levels of I/I averaging about 20%. This gross underestimate indicates that most municipal agencies do not know how to measure I/I in their own systems.

Treatment plant and collection system operators need to understand how their systems are affected by I/I. This is particularly true in smaller communities where material and personnel resources are limited. If we use an influent flow of 500,000 gal/day, as a threshold to define smaller communities, then that defines half the systems in Tennessee. In many cases, these communities think that they do not have the resources to hire engineers or flow monitoring companies to conduct studies to determine if their systems have significant amounts of I/I. In some cases, this results in ignoring the problem and acceptance of the status quo. The non-proprietary spreadsheet tool described in this presentation does not require new flow monitoring. The daily flow and BOD concentration data (normally collected by licensed treatment and collection systems) may be easily processed in a few minutes. Every month, the system operator can create a measure of the “health” of the collection system. The procedure works well on an Excel spreadsheet and is simple to use.

The purposes of this presentation are to:

- Demonstrate a set of simple techniques for estimating the quantity of leakage. These techniques rely on analyzing the variability of influent flow and influent BOD concentrations. They are not intended to replace flow monitoring in collection systems, but may provide an additional impetus for developing a flow-monitoring network and possibly a sewer model.
- Encourage operators, municipal planners, and state regulatory personnel to use these techniques and existing sources of data to evaluate their systems, quantify gross I/I, detect significant new leaks due to pipe or manhole failure, and monitor the effectiveness of sewer rehabilitation work.
- Demonstrate how a municipal agency can measure changes in I/I levels for the purpose of requesting moratorium relief.

The presentation will include an illustration of tracking annual I/I on a daily basis at six monitoring locations in the City of Brentwood over a period of seven years. This system measured the elimination of 850 MG of annual I/I (a 50% reduction) because of the city’s sewer rehabilitation program. As the data was being reviewed in 2012 and 2013, a new source of infiltration was identified along the trunk line. The city conducted a field investigation and discovered a new leak in a manhole adjacent to the Little Harpeth River. The leak was estimated to be about 0.6 MGD using this technique. Calculations of the hydraulic head from the river and the size of the hole corroborated that estimate. Once the leak was plugged in December 2013, then the tool described in this paper was used to track the reduction of I/I until it was shown to return to levels prior to the leak occurrence.

1:15 AM to 2:15 PM

Wastewater Collection – Point Repair: A Necessary Tool in the Trenchless Tool Box(1 Hour)

Speaker: Ben McGraw, Source One Environmental

Ben McGraw is the National Sales Manager for Source One Environmental who lives in Cincinnati Ohio. He specializes in collection system assessment and CIPP applications that focus on point repair and I-I reduction. In his spare time, Ben enjoys playing golf, serving as the Athletic Director for St. Bartholomew Athletic Association and coaching his children’s sports teams.

Session Summary: We are all facing unique challenges when it comes to maintaining our wastewater systems. Each system is different and they all require a broad spectrum of repair solutions. All forms of CIPP have their benefits and unique applications. As infrastructure constantly requires maintenance, a

point repair is the number one solution for structurally rehabilitating pipes, allowing you to allocate time, funds and resources elsewhere.

Other forms of CIPP often rely on point repairs for their effectiveness. For example, a pipe with a bad offset or missing section cannot be fully lined. A point repair can be used to structurally repair these areas before a liner is installed.

Point repairs are unique in that they allow you to pinpoint infiltrations and only repair areas that require rehabilitation—saving time, investments, materials and hours of labor. A point repair is the only form of CIPP that is known to be structural in nature. These repairs can be installed while the pipe is still active with minimal manpower and equipment. By adding the ability of installing point repairs, you can benefit in numerous ways. First, you are permanently eliminating I&I issues in your system. This saves tax payers money in treatment costs and reduces the cost of maintaining your treatment plant. Reducing the number of open cut excavations that you perform every year is not only great for the environment, it also saves precious budget dollars. The average dig and replace takes 2-3 days. A typical point repair can be completed in a few hours for a savings of around 75% when compared to a standard open cut excavation.

Point repairs are the most versatile form of preventative maintenance for your wastewater system. When you combine this versatility with the extreme money saving potential, you have a truly innovative solution that is second to none.

3:15 to 4:15 PM

Wastewater Collection – Investigating a Sewage Back-up Event – A Case History for CMOM (1 Hour)
Speaker: George Kurz, P.E.

See bio above.

Session Summary: This presentation will focus on CMOM (Capacity, Management, Operation, and Maintenance) principles that will help maintain proper levels of customer service, preserve the public investment in the sanitary sewer system and help comply with State and EPA regulatory requirements.

During the night of November 29-30, 2010, the sewage collection system in Winchester, Tennessee received 3.9 inches of rain and experienced a back-up of sewage into a group of medical offices. Winchester Utilities assumed that the sewage back-up resulted from an “Act of God” (excessive I/I) and refused to compensate damages to the medical offices. Events with greater rainfall depths occurred before and after November 29-30, 2010, however, no back-ups or damages were reported for this location. For comparison, 3.9” of rain in 24 hours has a recurrence interval of slightly more than one occurrence in 2 years. This was not an exceptional rain event.

Later inspection by an independent engineer found that three reaches of pipe and two manholes downstream from the backup were replaced by the Utility. They all showed clear evidence of multiple surcharging with accumulations of debris on the walls. The new construction had defects sufficient to impede free flow and accumulate rags and debris. Additionally, the next manhole downstream from the altered manholes was free from sewage materials on the walls and clearly had not experienced surcharging. This indicated that the back-up was primarily caused by the defects in the later construction. The defects were easily visible by naked eye from the surface of the ground.

This back-up event led to a chain of events culminating in a final judgment on December 29, 2016 by the

Circuit Court of Franklin County to award \$57,466 in damages to the business owner. In his decision, the Judge stated: "In this case, the defect (discovered by the Plaintiff's team) was easily discoverable, had Winchester Utilities bothered to inspect the system it operated and particularly the subject portion of the system which was not designed by a professional engineer nor approved by the State of Tennessee. This lack of approval serves as constructive notice at a minimum, if not actual notice of a condition which caused the backflow of sewage. . ." This lengthy and expensive litigation and the expensive damages to this business could have easily been avoided by application of well-known CMOM principles.

This presentation will illustrate the following points to be addressed in a CMOM program:

- Overflow and back-up events should be individually investigated on-site to determine the cause. An overflow which occurred during heavy rainfall is not automatically a result of excessive I/I (inflow and infiltration).
- Changes to the sewer system must be submitted to the state for review and acceptance (often requiring design by a licensed engineer).
- Handling and reporting emergency repairs and changes.
- Promptly update system maps and drawings.
- Periodic inspection of manholes (visual inspection inside the structure - at a minimum).
- Design, install (or construct) changes to meet Design Criteria standards. (In this case properly shape the manhole invert and channel.)
- Coordinate inspections and construction standards between the operating agency and the municipal inspection department.
- Promptly report overflows and backups of sewage.
- Check valves to prevent backflow may not retain their effectiveness over a long period of time.
- Explain the significance and differences between "actual notice" and "constructive notice" for the purposes of liability.

The duties of a collection system operator are clearly defined in the Field Study Training Program prepared for the USEPA (California State University, 1987). The most basic duties are: "...collection system operators keep the system working. They inspect the system to keep the wastewater flowing today and in the future." The author hopes to use this case history as a tool to illustrate typical problems in a sewer system and how to avoid or mitigate them before a crisis occurs.

4:20 to 5:20 PM

Wastewater Collection – Benefits of MACP in a Manhole Rehab Project (1 Hour)

Speaker: Jerry Weimer, Jerry Weimer Consulting

Jerry worked for City of Cincinnati, Metropolitan Sewer District (MSDGC), for 30 years in Condition Assessment and Cleaning. He has a Class 2 State of Ohio Wastewater Collection License. He has been a PACP/LACP/MACP Trainer for 12 years. He is a Member of WEF and NASSCO where he is Chair of the Large Diameter Cleaning Work Group for NASSCO's O&M Committee and sits on the Lead Cross Bore Prevention Work Group for NASSCO Infrastructure Assessment Committee. He currently consults and trains on Wastewater Collection Maintenance and Inspection and Cross Bore Prevention and Detection. He also codes Manholes, Pipelines and Laterals using MACP/PACP/LACP. He has Coded over 300 manholes in last 60 days

Session Summary: MACP is NASSCO's coding of the features and defects found in an Access Point (typically a manhole but includes all access points and catch basins). The coding allows the Municipality, Engineer and Contractor to see the conditions in the access point using the coding system that is used across the US, Canada, Mexico and South America. The main components are classifying the dimensions and materials making up each section of the manhole, classifying features and defects (cracks, holes, deposits, infiltration) in a standardized method which includes a scoring and rating system to prioritize manholes by condition

This session will review MACP and how using MACP for manhole inspections helps to get a better and cheaper solution to manhole rehabilitation.

Industrial Wastewater Sessions

9:45 to 10:45 AM

Industrial Wastewater – Hot Topics in Wastewater Treatment in KY – Part 1(1 Hour)

Speaker: Jim Collins, Brenntag Mid-South

Mr. Collins holds a BS Degree in Marketing and Management from Indiana State University. He is a registered Industrial Waste Water Professional, Certified Electro Finisher and President of the Indiana Industrial Operators Association. He has 35 years of experience in the chemical industry and is an Instructor of advanced wastewater courses in Indiana and Kentucky.

His duties with Brenntag Mid-South include start up and troubleshooting of any industrial process that involves a chemical feed program. Once the process is up and running, he assists the customer make the process run efficiently, trouble free, and at a minimal cost to the customer.

Session Summary: Today's industrial presentation will be a two-part session. Both of these sessions will discuss dilemmas faced by operators of industrial wastewater treatment plants. We will also discuss how to achieve compliance with pretreatment permits and ideas that can be used not only in daily operations, but when it comes to training employees as to the importance of proper operations of the facilities' industrial wastewater treatment plants. Fundamentals such as coagulation, flocculation, precipitation, synergies of mixing and troubleshooting ideas that are relevant today will also be reviewed.

10:50 to 11:50 AM

Industrial Wastewater –What is all the “phos” about?– Part I(1 Hour)

Speaker: Patrick Beamon, Brenntag Mid-South

Pat Beamon from New Harmony, IN is the new Bio-Additives Manager for Brenntag Mid-South, Inc. He specializes in biological treatment of municipal and industrial wastewater treatment.

Session Summary: This session will address the following:

- EPA update On Phosphorus Limits
- Pre-treatment update for industries
- Biological Uptake of Phosphorus
- Chemical Precipitation of Phosphorus

1:15 AM to 2:15 PM

Industrial Wastewater –How to Select an Industrial Wastewater Treatment Plant (1 Hour)

Speaker: Jay Wyatt, Enviro-Tec Services, Inc.

Jay Wyatt is an industrial wastewater treatment designer and project manager at Enviro-Tec Services. He has designed and installed multiple wastewater treatment systems which addressed multiple variations of waste streams and resulted in treatment cost savings while maintaining compliance.

Session Summary: This session will discuss how and what goes in to designing a wastewater treatment system. His focus will be on the design of systems for metal removal such as Zinc and Nickel waste from platers. I will be going into detail on how we come up with flow rates, tank sizes, types of mixers, types of clarifiers, etc.

3:15 to 4:15 PM

Industrial Wastewater – What is all the “phos” about?– Part 2 (1 Hour)

Speaker: Patrick Beamon, Brenntag Mid-South

See bio above.

Session Summary: This session will address the following:

- Phosphorus and Nutrient Requirements
- Carbon Uptake of Phosphorus
- Orthophosphate versus Total Phosphorus

4:20 to 5:20 PM

Industrial Wastewater – Hot Topics in Wastewater Treatment in KY – Part 2(1 Hour)

Speaker: Jim Collins, Brenntag Mid-South

See bio above.

Session Summary: This session will continue the discussion above on how to achieve compliance with pretreatment permits and ideas that can be used not only in daily operations, but when it comes to training employees as to the importance of proper operations of the facilities' industrial wastewater treatment plants. Fundamentals such as coagulation, flocculation, precipitation, synergies of mixing and troubleshooting ideas that are relevant today will also be reviewed.

Tuesday, April 10, 2018

General Technical Sessions

8:00 to 9:00 AM

General Technical – Best Practices for Condition Monitoring with Ultrasound(1 Hour)

Speaker: Joe Edelen, UE Systems

Joe has been a Regional Manager at UE Systems for 3 years and is Level one certified in Ultrasound.

Session Summary: Ultrasound has become a major player in the condition monitoring of rotating equipment. Once considered just a leak detector, more maintenance and reliability programs are relying on the technology to monitor assets in their facilities. Once considered as just a “leak detector,” more maintenance and reliability professionals have come to realize the many uses for ultrasound technology and have since saved countless dollars in wasted energy from the quantification of compressed air/gas leaks, the energy savings associated with identifying failed steam traps, to improved overall plant reliability by finding potential failures before they become catastrophic, and increased safety measures when inspecting energized electrical equipment.

9:05 to 10:05 AM

General Technical – Online Organics Monitoring for DW and WW Treatment(1 hour)

Speaker: Sydney Jannetta, Suez Water Technologies & Solutions

Sydney Jannetta has worked for SUEZ Water Technologies and Solutions, Analytical Instruments for 4 years now as a Product Application Specialist. She helps customers determine the best way to analyze their samples for total organic carbon by running them in the lab and generating reports. She deals with all types of water from ultrapure to wastewater and has presented at over 20 national conferences. Sydney holds a Bachelor's of Science degree in Chemistry from the University of Northern Colorado. Previously, she worked in the lab making Certified Reference Standards for our TOC analyzers, as well as, completed Field Research Experience on organics monitoring.

Session Summary: Organic measurements, such as Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) were developed decades ago to measure water quality. Today, these time-consuming measurements are still used as parameters to check water treatment processes; however, the time required to generate a result—ranging from hours to days—does not allow COD or BOD to be useful process control parameters. Online Organics Monitoring with Total Organic Carbon (TOC) Analysis allows for effective process control because results are generated in a few minutes and offers true quantification of all carbon. Though it does not replace BOD or COD measurements still required for compliance reporting, TOC analysis drives smart, data-driven and rapid decision making to improve process control and optimization, meet compliances or detect leaks.

TOC Analysis offers a dependable tool to capture true organic strength and generate real-time data to help operators make treatment adjustments when there is a change in process conditions, troubleshoot a problem, or predict future behavior. These decisions often lead to cost savings and improve regulation compliance. Three application examples of TOC analysis are included in this paper: carbon & nitrogen diurnal pattern insights at WWTP, disinfection byproduct (DBP) formation control in drinking water plant, and optimizing treatment of reclaimed water at drinking water plant.

The first example is of a middle size American city looking to optimize nitrogen removal to meet current and future nitrate limits on wastewater reject. To prepare for the new daily nitrate and ammonia discharge limits, a municipal WWTP implemented several upgrades including added TOC Monitoring to examine the carbon load fluctuation to the aeration basin influent. On-Line TOC data demonstrated an offset in carbon and nitrogen peaks. This offset indicates a carbon limitation for denitrification, which significantly impacts the plant's ability to meet future nitrogen limits. This presents a host of optimization opportunities that were previously overlooked as carbon/nitrogen ratios were considered daily. Thanks to smart interpretation of data generated and capability to now take real time actions, municipal wastewater treatment and municipal drinking water facility operators impact their OPEX and their capabilities to meet regulatory requirements.

The second example is of a drinking water plant that expanded their jar testing from just turbidity to include TOC data. This allowed the plant to make process improvements that directly impacted their coagulation efficiency and DBP formation, since TOC is a precursor for DBPs. The result was a cost savings in both chemical use and sludge disposal costs. On-site TOC allows the plant to react to fluctuating source water quality and make appropriate treatment decisions.

The final example comes from a zero-liquid discharge drinking water plant that recycles all on-site water back to their membrane system. They need to optimize treatment of recycled water back to the membranes to prevent membrane fouling. TOC analysis helps them understand what levels of organics are in the membrane feed and better control chemical dosing of coagulant to minimize both organic and inorganic fouling. The site added in enhanced TOC characterization measurements for improved water quality insight.

Organics monitoring using rapid, efficient, and inclusive TOC analysis allows drinking water and wastewater operators to optimize chemical addition, understand nutrient balancing, meet effluent discharge requirements, and control treatment processes from start to finish by relying on data to make smart treatment decisions and adjustments based on water quality.

10:10 AM to 11:10 PM

General Technical – Geospatial Tools for Improved As-Builts(1 hour)

Speaker: David Carter, P.E. & PLS, CDP Engineers

David Carter, PE, PLS, is a co-founder of CDP Engineers and currently serves as its President and CEO. He is a registered professional engineer and professional land surveyor with over 30 years of experience in the areas of infrastructure design and planning, surveying, and geospatial data management. His infrastructure experience includes design and analyses of water, sanitary sewer, storm sewer and transportation systems.

Session Summary: Geospatial tools, combined with GIS and mobile technology, have become increasingly affordable and valuable for every day water and wastewater operational workflows. GIS tools and databases are now widely available and are increasingly mobile friendly. This presentation explores how new 3-D technology, combined with GIS and mobile devices, can affordably benefit creating improved As-Builts and enhance overall asset management efforts by improving efficiency and productivity.

11:15 AM to 12:15 PM

General Technical – Polyethylene Encasement for External Corrosion Control for Iron Pipelines- A 60 Year History(1 hour)

Speaker: Allen Cox, P.E., Ductile Iron Pipe Research Association

Mr. Cox is a graduate of the University of Tennessee at Knoxville in Civil Engineering. Allen's previous professional experience includes employment with Texaco, Inc., the US Army Corps of Engineers (Memphis Branch), a Tennessee based construction company and Memphis Light, Gas and Water Division. Mr. Cox joined DIPRA in 1981. He is a registered Professional Civil Engineer in the State of Tennessee, a NACE International Certified Corrosion Specialist and an Envision SP. He is a member of the American Water Works Association (AWWA), National Association of Corrosion Engineers (NACE) International, American Society of Civil Engineers (ASCE) and the Water Environment Federation (WEF).

Summary: This talk presents the results of case histories of some of the oldest installations where gray cast and/or ductile iron pipelines were installed using polyethylene encasement as a means of corrosion control and how this method of protection was researched and developed. Investigative procedures included soil testing, excavation and physical inspection of exposed pipe sections, and laboratory testing of the polyethylene material. Included are testing results and the location sites of each investigation. The investigations demonstrate the effectiveness of polyethylene encasement as an external corrosion protection method for gray cast and/or ductile iron pipe and how this will allow a pipeline designer to implement a safe and sustainable design.

2:00 to 3:00 PM

General Technical –Analyzing & Predicting Cavitation in Hydraulic Systems (1 Hour)

Speakers: Alan Bryan, P.E. & Adalyn Haney, P.E., GRW

Alan Bryan is a sanitary engineer with GRW's Lexington and Louisville offices. Mr. Bryan earned his bachelor's degree in civil engineering at the University of Kentucky. He also is a registered professional engineer in Kentucky and Indiana. Mr. Bryan's experience spans a broad spectrum of civil/public works activities. He has more than 23 years of experience with project management/coordination and the planning, design, and construction administration of various water distribution and storage systems, wastewater collection and conveyance, and water & wastewater treatment facilities. Mr. Bryan has designed projects for clients such as the Lexington-Fayette Urban County Government, Northern KY Water District, and American Water Company in Indiana, Kentucky, Pennsylvania, and West Virginia, as well as numerous water/wastewater municipalities throughout Kentucky, Indiana and Ohio. Mr. Bryan is a member of the KY-TN AWWA and WEF professional organizations.

Adalyn Haney is a sanitary engineer with GRW's Louisville office. Mrs. Haney earned her bachelor and master degrees in civil engineering at the University of Kentucky. She is a registered professional engineer in Kentucky.

Mrs. Haney has over 10 years of experience in planning, design, construction administration and hydraulic modeling of various water distribution, water treatment, wastewater collection and wastewater treatment projects. She has worked on projects for clients such as the Northern Kentucky Water District, Louisville MSD, the Paducah-McCracken Joint Sewer Agency, as well as numerous other water and wastewater municipalities throughout Kentucky.

Mrs. Haney is a member of the American Water Works Association and the Kentucky Society of Professional Engineers.

Session Summary: Cavitation is a hydraulic phenomenon that can result in the wear and tear of critical piping systems and hydraulic components. Cavitation has been identified as the resulting destructive forces and shockwaves from the violent collapse of vapor bubbles in the flow stream. If not taken into consideration during design or left unaddressed after installation, the effects of cavitation could result in eventual damage to, and costly shutdown of, valuable pumps and piping systems.

Common places that we see cavitation form in our industry are at the faces of pump impellers, at control valves that have a large pressure drop across them, and sometimes in the piping downstream of control valves. Cavitation can be identified in various forms including vibration in piping systems, clattery noises in pumps, or reduced flow through control valves.

In this presentation, we plan to discuss the various forms of cavitation relating to hydraulic systems with large pressure drops or pressure differentials, and in pumped systems. One example that deserves design consideration is the return drain valve on Wet Weather storage tanks in sewage collection systems. In recent years we have seen numerous installations of these storage tanks pop up in our industry in an effort to help reduce or eliminate sanitary sewer overflows. The design situation that warrants consideration for evaluation of cavitation is when a full storage tank is draining through a control valve back into the sanitary sewer. The control valve's job is to maintain a flow rate that the sewer can handle. In order to accomplish this, the control valve causes a large pressure drop across the valve, typically discharging to atmospheric pressure (0 psi). This large pressure drop can cause vaporization of the fluid in the valve with eventual collapse of the formed vapor bubbles on the valve seat or downstream piping.

Another example of cavitation is in pumps where the NPSH at the pump suction is not sufficient to keep the fluid from vaporizing prior to it being pressurized by the pump. In this situation the vapor bubbles collapse on the impeller face causing pitting and erosion of the impeller.

Identifying where the potential for cavitation is the greatest is a must for hydraulic systems with large pressure differentials. We will discuss different types of system configurations that can cause cavitation and the resulting damaging effects that cavitation can have on the operating equipment used in these systems. We will also talk about the various precursors that will help in predicting the formation of cavitation and provide effective solutions that can help in reducing the effects or possibly eliminate cavitation from the hydraulic system.

3:05 to 4:05 PM

General Technical – Haz Comm in Transition(1 Hour)

Speaker: Greg Duncan, Velocity EHS

Before joining VelocityEHS in 2016, Greg spent 6 years working with the National Marine Fisheries Service (NMFS) and Alaska Department of Fish & Game (ADF&G) to study the ecology of commercial fisheries in the North Pacific and Bering Sea, and to monitor fishing industry compliance with environmental laws and occupational health and safety standards. Greg holds a B.S. in Biology, and a Masters of Environmental Law & Policy.

Session Summary: Surprisingly for some, the new face of HazCom is very much like that of the HazCom in transition—it's still in a state of flux. So while companies were thinking compliance challenges brought on by OSHA's adoption of the Globally Harmonized System were behind them now that the GHS deadlines and phase-in period have passed, that's unfortunately not the case. The obligations imposed by the deadlines are ongoing and the compliance challenges persist. When it comes to safety data sheets (SDS) and label compliance in particular, there seem to be more questions than answers for the millions of employers covered by the rule.

This confusion is due in part to upstream adoption delays, general misunderstandings about what has long been required under the standard compared to what was newly required as a result of GHS adoption and the ever-changing regulatory landscape. These issues collectively contribute to HazCom's continued ranking as one of OSHA's most frequently cited standards.

In this session, we address the often elusive areas of SDS and label compliance under HazCom. As examples, we'll discuss OSHA's expectations for labeling small containers and managing SDSs when the same product from different suppliers is being used. Given the integral role they play in HazCom, by equipping EHS professionals with information necessary to tackle SDS and label compliance issues head-on, we are paving the way for companies to more easily achieve and maintain a fully compliant Hazard Communication Program today and well into the future.

Wastewater Technical Sessions

8:00 to 9:00 AM

Wastewater Technical –Pump Stations – Inside and Out (1 hour)

Speaker: David Bryan, Smith & Loveless

David Bryan is an Aftermarket Sales Engineer at Smith & Loveless and is recently certified in Wastewater Transfer Instruction. In his time at Smith & Loveless, David has conducted extensive research in water pumping systems, and has coordinated several training models for mechanical and electrical systems found on above grade pump stations. Before getting his Bachelor of Science in Mechanical Engineering Degree from The University of Kansas, David worked in the Mathematics Department at Johnson County Community College where he engaged in one-on-one and small group instruction.

Session Summary: The overview will introduce the series and covers the types of wet well mounted pump stations available. The session will address the basic components of a pump and vacuum prime system. There is a workbook activity in which participants identify the components of 2 vacuum primed systems. The basic mechanical process is presented here as well and the importance of the station serial numbers.

This session will also address the electrical equipment present in an above grade wet well mounted pump station, as well as the basic electrical process of a pump station. There is also an emphasis on station operating control systems.

9:05 to 10:05 AM

Wastewater Technical – Pump Station Troubleshooting(1 hour)

Speaker: David Bryan, Smith & Loveless

Reference bio above.

Session Summary: This presentation will cover basic trouble shooting and systematically identify potential electrical and hydraulic problems. There is a workbook activity in which participant's identify an issue by using a compound gauge reading.

This second portion of the class will further detail issues discussed in the previous section. Attention is given to identifying issues using a compound pressure gauge, determining motor rotation, and pump station diagnostics regarding mechanical vibration and cavitation.

10:10 to 11:10 AM

Wastewater Technical –Pump Station Maintenance_(1 hour)

Speaker: David Bryan, Smith & Loveless

Reference bio above.

Session Summary: This section covers routine maintenance procedures and schedules. Each procedure is described with a video and shows each step of the process.

11:15 AM to 12:15 PM

Wastewater Technical –Pump Station Maintenance Continued(1 Hour)

Speaker: David Bryan, Smith & Loveless

Reference bio above.

Session Summary: This section covers how to determine the pumping rate and static and total dynamic head for both above grade and flooded suction pump stations, using measurements taken at the time of pumping. There is also time devoted to examples (both good and bad) of back pressure on the pump station check valve.

We will also cover the use of pump curves when selecting a pump for design conditions. The process includes plotting the design point and determining a pumping system based on brake horse power lines, impeller diameter lines, maximum suction lift lines, and efficiency lines. Suction and discharge line diameters are also discussed. The design condition is discussed briefly, with regard to the system curve when impeller diameters are changed.

This presentation will also cover the basic operation and features of the flooded suction pump station. There is a comparison between the two pump types (vacuum primed and flooded suction) as well as, routine maintenance schedules and procedures for the flooded suction pump station. The section provides a basic list of commonly used service tools and spare parts.

2:00 to 4:05 PM

Wastewater Technical – Advances in RTU & SCADA & How to Benefit from Them (2 Hours)

Speaker: Doug Sayre, Allied Technical Services, Inc.

Owner of Allied Technical Services, Inc. since 1994, Doug Sayre has worked in the water and wastewater industry for 36 years. Prior to starting Allied Technical Services, Inc. (ATS) Doug worked for a large manufacturers' representative firm as the service and startup manager where he gained the trust of factories and customers dealing with countless commissioning issues. He started the concept of selling at the Plant level with that firm and has continued to deal with customers in the field. Having been to countless factory schools over time he became a consultant in the field of Vibration Analysis and Laser Alignment for many of the pump companies. ATS monitors customer operations when requested, as well as monitors its own fleet of rental pumps utilizing many of the products involved in this discussion.

Session Summary: Modern cell based telemetry allows operations to view pump operations in several formats, trending allows trained operators to pick up on problems. Issues that would have taken months to determine what was wrong can now be diagnosed in short order saving repair costs, downtime while risk of an SSO is reduced. In drinking water operations combined with a power awareness program cost of operation may be reduced using today's features. On the flip side of the curve small stations can now be economically monitored with a few basic parameters not available just a few years back. Adding additional data points within the confines of a plant can easily be done with wireless equipment in less than a day. Some of the new wireless Spread Spectrum Radios can run for two to three years reliably on a single battery allowing test measurement and prototype testing results to be sent real time back to the control room. Re-purposing this type of equipment is fast for many types of data used in the plant.

Laboratory Technical Sessions

8:00 to 9:00 AM

Laboratory Technical – 40 CFR 136 CWA Method Update Rule(1 hour)

Speaker: Shannon Pratt, LabtronX

Shannon Pratt has a Grade 4 Wastewater certification in the State of TN and is the Quality Manager for LabtronX, a company specializing in the maintenance and calibration of utility lab equipment and flow meters. Shannon began her career in 2001 working for two environmental laboratories. She then moved on to work at TDEC's Fleming Training Center as an instructor for operator training courses. During her time at Fleming, she took part in a joint effort with several State and EPA regulators to create Guidance Documents and provide CE seminars on the 40 CFR 136 Method Update Rule. In 2014, Shannon went on to work for a public utility as their Lab Analyst at their Grade 4 WWTP. Finally, in 2016, she was hired by LabtronX as their Quality Manager, maintaining calibration documentation and SOPs.

Session Summary: This presentation describes Clean Water Act Analytical Methods; Methods Update Rule - 2016 promulgated by EPA. EPA is promulgating changes to analytical test procedures that are used by industries and municipalities to analyze the chemical, physical, and biological components of wastewater and other environmental samples that are required by regulations under the Clean Water Act. The changes include revised methods published by EPA and voluntary consensus standard bodies, such as ASTM International and the Standard Methods Committee. EPA is adding certain methods reviewed under the alternate test procedures (ATP) program to 40 CFR Part 136 and clarifying the

procedures for EPA approval of nationwide and limited use ATPs. Further, EPA is revising the procedure for determination of the method detection limit (MDL).

These revisions:

- provide increased flexibility to the regulated community,
- improve data quality,
- update the methods, to keep current with technology advances, and
- address laboratory contamination issues related to the MDL and better account for intra-laboratory variability.

9:05 to 10:05 AM

Laboratory Technical – Maintaining Your Lab’s Certification(1 hour)

Speaker: Patrick Garrity, KY Division of Water

Mr. Garrity is an Environmental Scientist with the Kentucky Division of Water. He has over 30 years of experience working in the environmental chemistry field. Mr. Garrity holds a bachelor's degree in chemistry and master's degree in computer science. He is EPA certified as a Drinking Water Certification Officer.

Session Summary: Discuss the requirements necessary for drinking water and wastewater laboratories to maintain their Kentucky laboratory certification on an annual basis. He will walk through the following: certification renewal process and time frames; entire laboratory operation (including sample receiving, quality assurance, required quality control and documentation, reporting requirements, records retention); and the on-site audit process.

10:10 to 11:10 AM

Laboratory Technical – QA/QC for Certified Laboratories (1 hour)

Speaker: Kevin Stewart, KY Division of Water

Mr. Stewart is an Environmental Control Supervisor with the Kentucky Division of Water. He has 14 years of experience working in the environmental chemistry field. Mr. Stewart holds a bachelor's degree in biology. He is EPA certified as a Drinking Water Certification Officer.

Session Summary: Presentation and discussion concerning applicable quality assurance and quality control procedures in drinking water and wastewater approved methods.

11:15 to 12:15 PM

Laboratory Technical –Laboratory Ethics and Data Integrity (3 hours)

Speaker: Patrick Garrity, Division of Water

Reference Bio above.

Summary: Overview of laboratory ethics and data integrity as they apply to drinking water and wastewater compliance samples. Analyst and management responsibilities as they apply to overall laboratory ethics, including training.

2:00 to 3:00 PM

Laboratory Technical – Comparison of Methods for The Detection of Fecal Coliforms and E. coli (1 hour)
Speaker: Gil Dichtner, IDEXX Laboratories

Gil Dichter is the Technical Support Manager for IDEXX Laboratories. He has a B.A. in Chemistry and MBA in Management who has 25+ years in water microbiology. He is a member of ASM, AWWA, WEF, ASTM, TNI, ASQ and serves as:

- Chair of ASTM D19-24 Methods for Water Microbiology.
- Member of Standard Methods for Water and Wastewater Microbiology section 9000; Committee Chair for sections 9030 & 9060 and co-Chair for 9215 and committee member on 9020, 9040, 9221, 9223 & 9230.
- Member of the PTPEC Committee and Chair of the PT SOP Committee for TNI (The NELAC Institute).

Session Summary: Wastewater Utilities and Private Laboratories are required to test final waste water effluent for either E. coli and/or fecal coliforms prior to discharge into a body of water to comply with NPDES requirements. Presently there are methods such as MTF and MF methods that are based on lactose fermentation requiring confirmation that can take up to 3 days. The methods are time consuming and if a presumptive positive is found it can take several days before confirmation is obtained. It is important to obtain results as quickly as possible to implement corrective action. Confirmation methods will be reviewed.

Lactose Based methods: 15 tube MPN and membrane filtration methods such as m-Endo, m-ColiBlue and m-FC will be reviewed and compared to Colilert/ Colilert-18 and Quanti-Tray, based on Defined Substrate Technology. The Quanti-Tray system is a semi-automated quantitative method that can yield results without dilution up to 200 or 2400/100mL within 18-22 or 24-28 hours. Further dilutions can be made and will be reviewed. This method is specific for E. coli and fecal coliforms requiring no confirmation.

QC requirements and the recent Method Update Rule will be reviewed for microbiology methods.

3:05 to 4:05 PM

Laboratory Technical – Commercial Laboratory Considerations (1 Hour)
Speaker: Paul Barker, Beckmar Laboratories

Paul has a MS in aquatic biology from the University of Louisville. He worked with the Peace Corps in Ghana working on a cholera and measles eradication program (1971-73). He moved on to work at the Health Department in the water resources program (1973-1975). He served as a research assistant at UL on aerosolized bacteria emitted from package sewer plants in Jefferson County, Kentucky (1975-1978). In 1978, he became the Lab Manager at Beckmar Environmental Laboratory where he remains today.

Session Summary: This session will review from a commercial lab's perspective:

- How the industry had developed,

- Where we hope to go,
- Issues with state certification,
- Ethics and data integrity,
- Can commercial laboratories lower your operating costs?
- Are eggs (analyses) really cheaper in the country, and
- Problems when you encounter enforcement actions.

Wednesday, April 11, 2018

Wastewater Technical Sessions

8:30 to 9:30 AM

Wastewater Technical – Applying Activated Sludge Process Calculations: Aeration(1 Hour)

Speaker: Dan Miklos, Hazen & Sawyer

As a principal of his own firm, Mr. Miklos was responsible for the management and operation of small to large utilities. He routinely provides engineering assistance, management and technical expertise for in-plant troubleshooting, start-up of new facilities, operator training, value engineering, operability reviews, bioassay and treatability studies, distributed control system design, and technical supervision/contract operation of water and wastewater facilities.

His academic credentials include a MA Environmental Systems, University of Waterloo 1977 and a BS Kent State University 1974. He is a Registered Sanitarian and Class III Water and WWTP Operator in OH, Class IV WWTP Operator in KY and IN, and an S-1 WWTP Operator, New Jersey.

He has been employed by Hazen and Sawyer, P.C. since 2010. Previously, he ran his own consulting firm, Advanced Treatment Sciences from 1987 to 2010. In addition to several consulting firms, he has also worked for the City of Fairfield and the Ohio Department of Health and the Ohio Department of Natural Resources.

Session Summary: Expected Learning Outcome:

1. Attendees will review the major aeration process control concepts in activated sludge.
2. Process control sampling/testing results will be applied to arithmetic functions to provide for insight into their plant's expected performance
3. The math skills necessary to apply arithmetic functions for process performance insight will be reviewed in detail.
4. Process control concepts and calculations will provide direction for operator adjustment and control of the aeration process.

Aeration Process Concepts and Math Calculations to be reviewed.

1. SVI
2. Solids Inventory
3. Mean Cell Residence Time
4. Aerobic SRT
5. Gallons to WAS using MCRT
6. Organic Loading Rate
7. F/M Ratio
8. Detention Time
9. Treatment Time

9:35 to 10:35 AM

Wastewater Technical – Applying Activated Sludge Process Calculations: Clarification & Chlorine Disinfection (1 Hour)

Speaker: Dan Miklos, Hazen & Sawyer

Reference Bio above

Session Summary: Expected Learning Outcome:

1. Attendees will review the major clarification process control concepts in activated sludge.
2. Chlorine disinfection will be reviewed and the CT Value will be used to calculate the disinfecting power of chlorine with variable detention time and chlorine residual. Process control sampling/testing results will be applied to arithmetic functions to provide for insight into the plant's expected performance
3. The math skills necessary to apply arithmetic functions for process performance insight will be reviewed in detail.
4. Process control concepts and calculations will provide direction for operator adjustment and control of the aeration process.

Settling Process Calculations

1. Surface Overflow Rate
2. Solids Loading Rate
3. Clarifier Sludge Detention Time
4. Settled Sludge Concentration
5. Clarifier Sludge Flow Demand
6. Sludge Blanket Movement
7. Sludge Blanket in Equilibrium:
 - Calculate RAS Flow Rate in meter is questioned.
 - Known variables – MLSS & RAS concentrations and Influent Flow.
 - Calculate RAS Concentration if sample point questioned.
 - Known variables – MLSS Concentration and Influent & RAS Flow Rate.

Disinfection with Chlorine Process Calculation

1. The Disinfection power of chlorine is commonly expressed as a CT Value. (CT stands for Concentration X Time). Concentration is in ppm/mg/L while time is in minutes.
2. How to apply this disinfection principle with varying levels of chlorine demand and fluctuating flow rates.

10:40 to 11:40 PM

Wastewater Technical – Tools & Techniques for Managing Ponds in Wastewater Systems (1 hour)

Speaker: Adam Charlton, Aquatic Controls

Adam has a Bachelor's of science degree (with highest distinction) in fisheries and aquatic sciences from Purdue University (graduated 2006). He worked with Florida Fish and Wildlife in research and then freshwater fisheries management for three years before teaming up with Aquatic Control. He has been managing the Kentucky and Tennessee territories for Aquatic Control since the fall of 2011. His work includes operations pertaining to aquatic weed and algae control, fountain and aeration system sales and service, and registered aquatic algaecide/herbicide/product sales. At Aquatic Control, he has been managing ponds in waste water treatment systems in Kentucky since 2012.

Summary: This presentation will provide an overview of some of the problems that waste water operators commonly experience in their waste water ponds and lagoons such as planktonic algae, filamentous algae, duckweed, watermeal, pH problems, and total suspended solids. The presentation will go over basic information about these problems and offer solutions to them. We will discuss algaecide/herbicide selection and application. This presentation will also go over examples of real world situations where some of these problems were addressed.

1:00 to 2:00 PM

Wastewater Technical – Collection System Odor Control Options (1 hour)

Speaker: Darin Skutt, Carus Corporation

Darin Skutt has worked for Carus Corporation for 18 years with the last 3 years as the Technical Service Manager. As the Technical Service Manager, Darin conducts laboratory testing and product demonstrations for Carus Corporation municipal, industrial, and environmental customers and prospective new customers. These product demonstrations include technical training, safety presentations, and installation of safe chemical handling and dosing systems. He is a graduate from Illinois Wesleyan University, Bloomington, IL with a BS degree in Chemistry, ACS Certified. Mr. Skutt is a member of AWWA, Water Environment Federation, and the American Chemical Society.

Session Summary: Collection system odor control is a complex issue which can involve many different treatment options. Typically, neighborhood odor complaints are the first sign of issues in a collection system. Hydrogen sulfide, which causes the odor complaints, can lead to the corrosion of the equipment at the lift station and if left unchecked can eventually lead to the need to repair the infrastructure. When considering the use of permanganate for odor control in a collection system, there are multiple options to consider. Liquid permanganate can be used for grease issues and high hydrogen sulfide levels that require immediate action. Liquid permanganate nitrate blends can be used to provide long term

odor control through multiple lift stations with just one application point. For gravity sewers, slow release permanganate tablets can be fed with all of the equipment below the manhole cover to keep everything out of sight.

2:05 to 3:05 PM

Wastewater Technical – Filamentous growth, Causes and Controls (1 hour)

Speaker: Tim Ricketts, Timothy Ricketts Training

Mr. Ricketts has a BA from Morehead State University in Education. He has 32 years experience in the environmental industry with the last 26 years spent in service to the Commonwealth of Kentucky. During 10 of those 26 years, Mr. Ricketts was an environmental Inspector for the Division of Water, regularly inspecting 45 drinking water facilities and 65 wastewater treatment facilities as well as responding to environmental emergencies and citizens complaints. The last 16 years was spent in the Division of Compliance Assistance as a wastewater trainer and technological resource for the regulated community.

Session Summary: This session will address what filamentous growth is in wastewater and the causes and some possible controls before it has a negative impact in your plant/discharge.

3:10 to 4:10 PM

Wastewater Technical–Kentucky Infrastructure Authority Updates (1 Hour)

Speaker: Donna McNeil, Kentucky Infrastructure Authority

Donna McNeil was appointed the Executive Director of the Kentucky Infrastructure Authority effective February 16, 2017. Donna graduated valedictorian from Lawrence County High School in Louisa, Kentucky and received a Bachelor of Science Degree in Civil Engineering from the University of Kentucky. She holds an Engineer-in-Training certification from the Kentucky Board of Licensure for Professional Engineers and Land Surveyors. In 2008, she retired from state government with over 22 years of service. During her tenure she managed the Kentucky drinking water program. From 2013 to 2017, Donna worked as a compliance specialist with Kentucky Rural Water Association, providing technical assistance to water utilities. She is a member of both the Drinking Water and Wastewater Advisory Councils for the Kentucky Division of Water. She is also a member of the US EPA/State SRF Work Group and the Kentucky Water Resources Research Institute Committee on Research and Policy.

Session Summary: This session will provide updates on items such as funding opportunities for drinking water and wastewater infrastructure including planning/design and equipment. Additional details of policy and procedural revisions will also be provided.

Wastewater Plant Tour

1:00 to 4:10 AM

Wastewater Technical – Tour of the Dry Creek Wastewater Plant(3 Hours)

Speakers: Brian R. Berens & Jeff M. Verdin, Sanitation District No. 1

Brian is a Supervisor at Dry Creek Wastewater Treatment Plant for Sanitation District No.1 (SD1). He has worked in the environmental field for over 20 years. Prior to working at SD1, Brian's job experiences

includes Fire and Emergency Medical services, including Hazardous Materials emergency response, Confined space rescue, Rope rescue, Swift Water rescue and currently is an active member of the local community Technical Rescue Team, as well as a Fire Captain on a local Volunteer Fire Department. He holds a Wastewater treatment and Collections systems certification with the State of Kentucky. Brian is responsible for managing day-to-day operations, scheduling, and process control decisions at Dry Creek's Treatment Plant. While enjoying white water rafting and water activities and the rapidly changing environment the importance of improved water detention, and diversion technologies has been an ongoing personal interest that he is quick to try and pass along to others when discussing infrastructure and the overall impacts on the environment.

Jeff is a Supervisor at Dry Creek Wastewater Treatment Plant for Sanitation District No. 1 (SD1). He has worked in the environmental field for over 18 years. Prior to working at SD1, Jeff's job experience includes smoke and die testing, flow monitoring, county wide sampling of rivers, streams and creeks that are impacted by combined sewer overflows and sanitary sewer overflows. He holds a Wastewater certification with the state of Kentucky and is currently enrolled at Cincinnati State for associate degrees in Environmental Engineering Technologies and Water and Wastewater Major. Jeff is responsible for managing day-to-day operations and process control decision at Dry Creek's Treatment Plant. After a recent hiking trip in Arizona, the importance of the water cycle was reinforced to Jeff on how delicate the water cycle truly is and tries to pass that along to others as he gives tours of the treatment plant.

Session Summary: This facility started operating in 1979. It has a design capacity of 46.5 MGD. Dry Creek is SD1's largest treatment plant employing preliminary, primary, biological and secondary treatment processes. Visitors get to see a blend of original equipment operating alongside modern technology.

Back-up Speaker:

General Technical: Personal and Protective Equipment(1 hour)

Speaker: Josh Knight, Hopkinsville Water Environment Authority

Josh Knight is a Graduate Safety Practitioner. He graduated from Murray State University with a Bachelor of Science (B.S), Occupational Safety and Health in 2016. He worked for Metalsa May 2015 – June 2017 and now works for the Hopkinsville Water Environment Authority, holding the following Certifications:

- OSHA 30 Hour Construction Safety and Health - License: 18-60997936
- OSHA 30 Hour General Industry
- CPR and AED

Session Summary: The purpose of this session is to review with operators:

- The Personal Protective Equipment Assessment Process.
- How to select appropriate Personal Protective Equipment for the job task.
- Show employees how to properly wear and care for Personal Protective Equipment.
- Identify hazards in the workplace that could result in Injury or Illnesses.
- Evaluate the level of risk to help determine what controls to implement
- Select an appropriate solution to control the hazard and/or protect the employee
- Example of Job Hazard Assessment Form

Criteria for Successful Completion by Operators

- Understand the process of completing PPE Assessment Process.
- Understand how to identify hazards in the workplace
- Understand control measures (Elimination, Engineering, Administrative, PPE)
- Understand how to properly determine the correct PPE for the Job Task
- Understand how to relate to the SDS to identify hazards and the proper PPE.

**Drinking Water - Application for Approval of Courses
for Continuing Education Credit - Attachment**

**Kentucky Water and Wastewater Operators Association
61st Annual KWWOA Conference
February 22, 2018**

III. Required Items

A. Course Learning Objectives

This program will provide a variety of training topics of value to wastewater and drinking water system operators to assist with their professional development and the enhancement of system operations under their control. Operators will be able to attend training sessions that will seek to convey new material relevant to their industry/operation, increase the depth of their knowledge relevant to basic operations of their facility, and/or provide a refresher to ensure full protection of human health and the waters of the Commonwealth.

B. Criteria For Successful Completion

Exams will not be given at the conclusion of each training session. However, operators must attend the full session and will receive a sheet that must be stamped by a KWWOA official at the conclusion of each one hour of training. Failure to obtain a stamp will negate the operator receiving credit for a particular session. These stamp sheets will be turned in to KWWOA prior to the operator leaving the Conference and be maintained by the organization. The hours earned by each operator will be documented on a Continuing Education Activity Report and submitted via electronic submittal to the Division of Compliance Assistance.

C. & D. Agenda and Credentials for All Instructors – A timed agenda is provided below, along with a brief description of each session and the instructor's credentials.

Monday, April 9, 2018

General Technical Sessions

8:3 to 9:30 AM

General Technical –Kentucky's Infrastructure Needs and the Role Operators Play(1 hour)
Speaker: Aaron B. Keatley, Commissioner, Department for Environmental Protection

Aaron Keatley is the Commissioner of the Kentucky Department for Environmental Protection. Appointed in 2016 by Governor Matt Bevin, Keatley served previously as the Department's Deputy Commissioner.

Born in California and raised in southwest Michigan, Commissioner Keatley first began working with the Agency in 1993. It was a seasonal position that was supposed to last for only three months. This short-term job turned into a career of public service for the Commonwealth.

Leadership opportunities in the Department's Division of Waste Management, Division of Water, Division of Enforcement and with the Division of Compliance Assistance has provided him with diverse experiences. This broad perspective enables him to see beyond the program silos that can define government agencies. As Commissioner, he is committed to applying this perspective while seeking collaborative partnerships that produce meaningful results.

He lives with his wife, Andrea, in their Scott County home on the banks of South Elkhorn Creek. When he is not at work, he enjoys wading the creek with his fly rod in search of bass, bluegill and long-eared sunfish. He can also be found – binoculars in hand – in search of new birds to add to his life-list.

Commissioner Keatley holds both a bachelor degree from Michigan State University and a Masters' Degree from the University of Kentucky.

Session Summary: Kentucky's wastewater and drinking water infrastructure is critical to the health, safety, and financial growth of the Commonwealth. As responsible stewards we must proactively plan for future needs or these important assets could quickly become a liability.

Kentucky operators play an important role in defining Kentucky's future. It is not enough to simply operate and maintain a system. Operators must dream. Operators must communicate that dream. Operators must assist decision makers in refining that dream. Operators must participate in achieving that dream.

In this session, we will discuss some of the areas that the Department for Environmental Protection is evaluating related to our infrastructure and the challenges that will face operators in the future. These focus areas will include maintenance, capacity, reliability, redundancy, and quality. Addressing these topics require an honest assessment of operations, rates, expansion, and regionalization.

9:45 to 10:45 AM

General Technical – Plant Reliability & the Role of Mechanical Sealing Options(1 hour)

Speaker: Jeff Waldal, Advanced Sealing Technology

Jeff Waldal joined Advanced Sealing Technology in 2017 with a focus on Business Development. Previously, he worked for Seikowave from 2013-2017 as Chief Operating Officer. Prior he worked for Ceradyne Inc. from 1995 – 2013 (3M acquired Ceradyne Inc. in 2012). Mr. Waldal began his career at Ceradyne-Semicon Associates as Quality Manager (1995-1997), was promoted to Operations Manager (1997-1999), served as President of Semicon Associates in 1999 and Corporate Vice President of Ceradyne Inc. in 2003.

Mr. Waldal currently serves as a mentor for the University of Kentucky's Center for Entrepreneurship Program. Mr. Waldal has a BA in Business Management from the University of Kentucky and an MBA from Eastern Kentucky University.

Summary: The training will feature how mechanical seals work with emphasis on how to create optimal functionality for extended life as well as what can make a seal fail. Further, the training will compare and

contrast packing to mechanical seals. Last, the training will look at different predictive maintenance techniques for pump systems.

10:50 to 11:50 AM

General Technical – How Operators Can Work Better with State Inspectors(1 hour)

Speaker: Josh Pedigo, Green-Taylor Water District

Josh is a graduate of Lindsey Wilson College. Josh has worked as a Drinking Water and Wastewater Operator at the City of Elizabethtown, earning his drinking water class IIIA certification. He has worked for the KY Division of Water as an Environmental Scientist and recently became the General Manager of the Green-Taylor Water District.

Session Summary: This session will address the following:

- What to expect when an inspector comes to your facility,
- What needs to be available to be looked at for an inspection,
- How to handle mishaps and calling on the State,
- Miscommunication between the state and facilities is no good,
- What happens during an inspection, and
- How to talk with an inspector.

1:15 to 2:15 PM

General Technical –Culture Trumps Strategy (1 Hour)

Speaker: Jeff Eger, HDR Engineers

The culture of any organization can make or break its successful operation and ability to achieve its core values and functions. This presentation will discuss the components of a thriving and successful cultures and how to build one in any organization.

Session Summary: Jeff Eger is the national Stormwater Business Class Director for HDR Engineers. He is a nationally recognized leader in utility management who has been on the forefront of innovative practices throughout his 23 year career in the industry. Jeff served as Executive Director of the Water Environment Federation, developing a new strategic direction for WEF, focusing on raising awareness of the value of water. Eger spent 17 years as the Executive Director of Sanitation District No.1 of Northern Kentucky. In that role, he led the successful merger and consolidation of 34 local governments sanitary and storm sewer systems.

3:15 to 4:15 PM

General Technical – Clear Results & Accuracy you Can Count On(1 hour)

Speaker: Eric Link, LabtronX

Eric Link is the Owner/CEO of LabtronX, a company specializing in the maintenance and calibration of utility laboratory equipment. Eric started repairing laboratory equipment for LabtronX over 30 years ago. He was instrumental in developing LabtronX's calibration program, the Accuracy Assurance Program. He later became CEO and in 2012 purchased the company. He has given many lectures on a

variety of laboratory equipment subjects and looks forward to sharing his experience and knowledge with you today.

Session Summary: Inspectors ask “How do you know?” System failures cause valuable downtime. Calibration and maintenance is needed, but where do you start? Eric Link, the owner/CEO of LabtronX, has specialized in the maintenance and calibration of utility laboratory equipment for over 30 years. He will examine some of the issues below and how they support you as an operator.

Accuracy vs. precision
 Alarm clock
 Dart board
 Standards vs. readability
 Calibration Limitations
 Hach Turbidimeters (readability, repeatability, accuracy)
 Temperature Standards (half a division)
 BFPTK Gauge Calibration
 Calibration vs. Verification
 Calibrating and verifying a pH meter
 Flow meters
 Secondary standards - CL2 and Turbs
 Dissolved Oxygen
 Maintenance
 Identify common failures
 Mechanical Items
 Items with a finite life (lamps, gaskets, electrodes)
 What good does cleaning do?
 Documentation
 Proof - How do you know?
 Reference - Where have you been?
 Proactive call to action

4:20 to 5:20 PM

General Technical – Risk Assessment of Underground Vaults: Protecting Workers from Common Job Hazards (1 hour)

Speaker: Luke Darby, EJ USA

Luke Darby has been working for EJ (formerly known as East Jordan Iron Works) for 3 years in various roles within the company. Luke works in conjunction with both the Columbus and Cleveland, OH offices for EJ. His current position is Technical Sales Representative covering Ohio, Kentucky, and West Virginia. With over 10 years in the construction industry, Luke helps cities and engineers to develop solutions for their infrastructure needs. He oversees training for licensed contractors, engineers, and architects and works in conjunction with KRWA, KWWOA, Ohio EPA, and WVRWA. He has also been working on fire hydrants and gate valves for 10 years, helping municipalities develop and maintain operating and maintenance standards for their water distribution systems.

Session Summary: This session will explore the safety hazards found in underground vaults, manholes and pump stations. This presentation will conduct a risk assessment of underground structures, identifying various hazards and the OSHA requirements for protecting workers from those hazards. Some of the OSHA topics covered are Fall Hazards, Confined Space Hazards and Lockout / Tagout. Too many workers are injured or killed each year and often could be protected with very little effort or cost.

At the conclusion of the course, all participants should understand the risks found at underground vaults and how to protect workers from these common on-the-job hazards.

Drinking Water Technical Sessions

9:45 to 10:45 AM

Drinking Water Technical –Bacteriological Detection, Recognition & Control (1 Hour)

Speaker: Corey Harper, Hawkins, Inc.

Corey Harper is the Technical Manager for Hawkins, Inc. His responsibilities include contract negotiations, technical assistance, product development, developing Laboratory/SOP protocols, and technical sales for all chemicals supplied to clients.

He has been performing treatment plant operations and chemical applications in the water industry for the past 20+ years. He worked as a water plant operator/manager and in distribution for 2 years.

In 1992, he began his career with a Phosphate manufacturing company located in Beloit, WI. There he learned and taught phosphate chemistry to clients and companies that utilized Phosphate properties for corrosion inhibition and food additives/preservatives.

In 1997, he became a Regional Manager at an internationally known corporation for manufacturing oxidants, catalysts and corrosion inhibitors. His duties included managing a group of sales/technical representatives while performing on-site technical assistance to treatment facilities in KY, TN, NC, SC, GA, FL, NM, CO, AK, AZ, and AK.

In 2006, he started his own water treatment company focusing on plant optimizations, desktop studies, distribution flushing programs, and chemical sales in the water and wastewater industries. His company was solicited and sub-contracted by engineering firms to perform preliminary studies on treatment options and chemical recommendations.

In 2011, he began as a Regional Manager for the largest producer of Aluminum based chemicals in North America. His duties included managing a region of clients and distributors that used/distributed coagulants in KY, TN, NC, SC, and VA. The duties included on-site jar testing, performing chemical trials and conducting educational/technical sessions throughout the region.

Session Summary: This presentation covers the bacterial presence/biofilm in water treatment plant, distribution, and consecutive system in the southeastern US. We monitor and test to determine which bacteria is present, develop a strategy for chemical treatment, and set-up a monitoring program to inhibit the re-growth of the biofilm.

10:50 AM to 11:50 AM

Drinking Water Technical – 401 KAR Chapter 8 Updates(1 Hour)

Speaker: Sara Gaddis, Division of Water

Sarah Jon Gaddis has been employed with the Department for Environmental Protection for 17 years, first in the Division of Waste Management and, currently, in the Division of Water. Her career has shifted focus from closure and cleanup of Underground Storage Tank sites to programs regulated by the Division of Water including drinking water, wastewater and stormwater. Sarah is the Branch Manager of DOW's Compliance and Technical Assistance Branch including personnel in 10 regional offices as well as the state's drinking water program. Originally from Somerset, Sarah has a B.S. degree in Geology from Morehead State University, an M.S. degree in Geology from Miami University and is a registered professional geologist.

Session Summary: In 2017, 401 KAR Chapter 8, which includes many of the state's drinking water regulations, was updated. This session will highlight significant changes to the regulations as well as changes and updates that were made and how the changes will affect stakeholders.

1:15 to 2:15 PM

Drinking Water Technical – DBP in Kentucky & Drinking Water Updates(1 Hour)

Speakers: Joe Uliasz & Kellee Husband, Kentucky Division of Water

Mr. Uliasz studied electrical engineering and environmental science which led to a career in drinking water operations. Mr. Uliasz became a certified drinking water operator in Florida, and his family later relocated to Kentucky where he received his certifications for Class IVA water treatment plant operator as well as Class IIID water distribution. He served as a water plant operator at Georgetown Municipal Water and then took a position as the manager for the Beech Fork Water Commission in Clay City, Kentucky. Subsequent to his employment as a water plant operator he has worked for and owned companies that sold, installed and trained operators on equipment used for the treatment of both drinking water and wastewater. In all of these positions, Mr. Uliasz gained a great deal of experience in plant operations, chemical treatment, water distribution, employee/operator training and customer service. Mr. Uliasz is also a U. S. Army veteran. He is now the Supervisor of the Compliance and Technical Assistance Section at the Division of Water.

Kellee Husband graduated from Kentucky State University with a Bachelor of Science in Biology with a Minor in Chemistry, and received her Master's Degree in Health Administration, and is currently a Doctoral Candidate in Health Administration. Kellee entered State Government in 2005 and has worked for Division of Water Compliance and Technical Assistance Branch since 2007 as a rule manager of Stage 2 DBP's, TOC's, Chlorites, Bromates, LT2, and (Lead and Copper back-up).

Session Summary: Provide an update to DBP issues throughout the Commonwealth and a brief discussion of DBP treatments. Update of changes in the Drinking Water Program, i.e.... DBP sampling, Data inventory sheet and an overview of compliance issues.

3:15 to 4:15 PM

Drinking Water Technical Lead in Drinking Water (1 Hour)

Speakers: Greg Heitzman, P.E., MBA, BlueWater Kentucky, Peter Goodman, Division of Water & Dr. Rengao Song, Louisville Water Company

Greg Heitzman is President of BlueWater Kentucky, a management consulting firm serving the water and wastewater industry. From 2011 to 2015, Greg served as Executive Director/CEO of the Louisville Metropolitan Sewer District (MSD). Prior to MSD, he worked 31 years with the Louisville Water Company serving as Chief Engineer from 1991 to 2007 and President/CEO from 2007 to 2013. Greg obtained his Bachelor and Master's degrees in Civil Engineering from the University of Kentucky and a MBA from the University of Louisville. He is a licensed Professional Engineer in Kentucky. He currently serves on the boards with Kentucky-Tennessee AWWA; Louisville Water Foundation; and Tree Louisville. He serves as Chair of the Kentucky Lead Workgroup and he volunteers with WaterStep, a Kentucky non-profit that "saves lives through safe water". He and his wife, Linda, reside in Louisville. Their daughter, Claire, is married and teaches high school in Lexington, KY.

Mr. Goodman has worked for Department for Environmental Protection since 1993, including 13 years as a manager in the Division of Water prior to being appointed Assistant Director in 2008. In February 2014, Mr. Goodman was appointed the Director of the Division of Water. He is responsible for overseeing Kentucky's water regulatory programs, including the Clean Water Act and Safe Drinking Water Act programs and other programs, including the Dam Safety program, Stream Construction/Floodplain permitting, NFIP, and the Risk Map program, as well as the Agriculture Water Quality Act.

Peter earned his B.S. in Geology from the University of Iowa (1984), his M.A. in Geology from Temple University (1986), and conducted other post-graduate work at the University of Kentucky, where he was a Chevron Fellow.

Dr. Song is the Director of Water Quality & Research at Louisville Water Company. He leads three programs: water quality regulatory compliance; research & technology; and distribution water quality. Dr. Song graduated from the Department of Civil & Environmental Engineering, University of Illinois at Urbana-Champaign. He has published and/or presented over 100 papers and 2 book chapters, advised 2 Ph.D and 3 MSc students, managed several research projects, and consulted for water utilities in both USA and Asia. He is an expert in water quality, water treatment, innovation and product development. He and his wife, Jane, reside in Louisville, KY. Their son, David, is a doctor of medicine in greater New York area.

Session Summary: This session will address

Purpose and Scope of the KY Lead Workgroup - Greg Heitzman - 5 minutes

Regulatory Update on Lead - Peter Goodman - 15 minutes

Corrosion Control Treatment for Lead - Dr. Rengao Song - 15 minutes

KLWG Findings and Recommendations - Greg Heitzman - 15 minutes

Questions - 10 minutes

4:20 to 5:20 PM

Drinking Water Technical – Drought Management Planning for Small and Medium DW Systems (1 hour)
Speaker: Ron McMaine, P.E., Bell Engineering

Ron McMaine, P.E. is a Senior Vice President with Bell Engineering. He is a professional engineer, holds Kentucky Class 4 Water Plant and Class 4 Distribution System Operator's Licenses, and has more than 40 years of experience in the water industry. In his other life, he and his wife grow vegetables, produce numerous value added products, and sell them at several farmers' markets.

Session Summary: Droughts in Texas and California over the past few years have captured frequent headlines, but drought management planning is also important in the "water rich" state of Kentucky. This presentation details the current and planned long range efforts of the City of Berea to reduce the potential effects of a drought, taking into account the projected population increase in the area. It discusses different strategies that have been proposed and how applicable they are for systems in the area. It gives examples of how to calculate projected savings for different water conservation steps. Berea adopted a plan in November 2017 designed to reduce projected demands by 20% over the next 50 years.

Tuesday, April 10, 2018

General Technical Sessions

8:00 to 9:00 AM

General Technical – Best Practices for Condition Monitoring with Ultrasound(1 Hour)
Speaker: Joe Edelen, UE Systems

Joe has been a Regional Manager at UE Systems for 3 years and is Level one certified in Ultrasound.

Session Summary: Ultrasound has become a major player in the condition monitoring of rotating equipment. Once considered just a leak detector, more maintenance and reliability programs are relying on the technology to monitor assets in their facilities. Once considered as just a "leak detector," more maintenance and reliability professionals have come to realize the many uses for ultrasound technology and have since saved countless dollars in wasted energy from the quantification of compressed air/gas leaks, the energy savings associated with identifying failed steam traps, to improved overall plant reliability by finding potential failures before they become catastrophic, and increased safety measures when inspecting energized electrical equipment.

9:05 to 10:05 AM

General Technical – Online Organics Monitoring for DW and WW Treatment(1 hour)
Speaker: Sydney Jannetta, Suez Water Technologies & Solutions

Sydney Jannetta has worked for SUEZ Water Technologies and Solutions, Analytical Instruments for 4 years now as a Product Application Specialist. She helps customers determine the best way to analyze their samples for total organic carbon by running them in the lab and generating reports. She deals with all types of water from ultrapure to wastewater and has presented at over 20 national conferences. Sydney holds a Bachelor's of Science degree in Chemistry from the University of Northern Colorado. Previously, she worked in the lab making Certified Reference Standards for our TOC analyzers, as well as, completed Field Research Experience on organics monitoring.

Session Summary: Organic measurements, such as Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) were developed decades ago to measure water quality. Today, these time-consuming measurements are still used as parameters to check water treatment processes; however, the time required to generate a result—ranging from hours to days—does not allow COD or BOD to be useful process control parameters. Online Organics Monitoring with Total Organic Carbon (TOC) Analysis allows for effective process control because results are generated in a few minutes and offers true quantification of all carbon. Though it does not replace BOD or COD measurements still required for compliance reporting, TOC analysis drives smart, data-driven and rapid decision making to improve process control and optimization, meet compliances or detect leaks.

TOC Analysis offers a dependable tool to capture true organic strength and generate real-time data to help operators make treatment adjustments when there is a change in process conditions, troubleshoot a problem, or predict future behavior. These decisions often lead to cost savings and improve regulation compliance. Three application examples of TOC analysis are included in this paper: carbon & nitrogen diurnal pattern insights at WWTP, disinfection byproduct (DBP) formation control in drinking water plant, and optimizing treatment of reclaimed water at drinking water plant.

The first example is of a middle size American city looking to optimize nitrogen removal to meet current and future nitrate limits on wastewater reject. To prepare for the new daily nitrate and ammonia discharge limits, a municipal WWTP implemented several upgrades including added TOC Monitoring to examine the carbon load fluctuation to the aeration basin influent. On-Line TOC data demonstrated an offset in carbon and nitrogen peaks. This offset indicates a carbon limitation for denitrification, which significantly impacts the plant's ability to meet future nitrogen limits. This presents a host of optimization opportunities that were previously overlooked as carbon/nitrogen ratios were considered daily. Thanks to smart interpretation of data generated and capability to now take real time actions, municipal wastewater treatment and municipal drinking water facility operators impact their OPEX and their capabilities to meet regulatory requirements.

The second example is of a drinking water plant that expanded their jar testing from just turbidity to include TOC data. This allowed the plant to make process improvements that directly impacted their coagulation efficiency and DBP formation, since TOC is a precursor for DBPs. The result was a cost savings in both chemical use and sludge disposal costs. On-site TOC allows the plant to react to fluctuating source water quality and make appropriate treatment decisions.

The final example comes from a zero-liquid discharge drinking water plant that recycles all on-site water back to their membrane system. They need to optimize treatment of recycled water back to the membranes to prevent membrane fouling. TOC analysis helps them understand what levels of organics are in the membrane feed and better control chemical dosing of coagulant to minimize both organic and inorganic fouling. The site added in enhanced TOC characterization measurements for improved water quality insight.

Organics monitoring using rapid, efficient, and inclusive TOC analysis allows drinking water and wastewater operators to optimize chemical addition, understand nutrient balancing, meet effluent discharge requirements, and control treatment processes from start to finish by relying on data to make smart treatment decisions and adjustments based on water quality.

10:10 AM to 11:10 PM

General Technical – Geospatial Tools for Improved As-Built Plans(1 hour)

Speaker: David Carter, P.E. & PLS, CDP Engineers

David Carter, PE, PLS, is a co-founder of CDP Engineers and currently serves as its President and CEO. He is a registered professional engineer and professional land surveyor with over 30 years of experience in the areas of infrastructure design and planning, surveying, and geospatial data management. His infrastructure experience includes design and analyses of water, sanitary sewer, storm sewer and transportation systems.

Session Summary: Geospatial tools, combined with GIS and mobile technology, have become increasingly affordable and valuable for every day water and wastewater operational workflows. GIS tools and databases are now widely available and are increasingly mobile friendly. This presentation explores how new 3-D technology, combined with GIS and mobile devices, can affordably benefit creating improved As-Builts and enhance overall asset management efforts by improving efficiency and productivity.

11:15 AM to 12:15 PM

General Technical – Polyethylene Encasement for External Corrosion Control for Iron Pipelines- A 60 Year History(1 hour)

Speaker: Allen Cox, P.E., Ductile Iron Pipe Research Association

Mr. Cox is a graduate of the University of Tennessee at Knoxville in Civil Engineering. Allen's previous professional experience includes employment with Texaco, Inc., the US Army Corps of Engineers (Memphis Branch), a Tennessee based construction company, and Memphis Light, Gas and Water Division. Mr. Cox joined DIPRA in 1981. He is a registered Professional Civil Engineer in the State of Tennessee, a NACE International Certified Corrosion Specialist and an Envision SP. He is a member of the American Water Works Association (AWWA), National Association of Corrosion Engineers (NACE) International, American Society of Civil Engineers (ASCE) and the Water Environment Federation (WEF).

Summary: This talk presents the results of case histories of some of the oldest installations where gray cast and/or ductile iron pipelines were installed using polyethylene encasement as a means of corrosion control and how this method of protection was researched and developed. Investigative procedures included soil testing, excavation and physical inspection of exposed pipe sections, and laboratory testing of the polyethylene material. Included are testing results and the location sites of each investigation. The investigations demonstrate the effectiveness of polyethylene encasement as an external corrosion protection method for gray cast and/or ductile iron pipe and how this will allow a pipeline designer to implement a safe and sustainable design.

2:00 to 3:00 PM

General Technical –Analyzing & Predicting Cavitation in Hydraulic Systems (1 Hour)

Speakers: Alan Bryan, P.E. & Adalyn Haney, P.E., GRW

Alan Bryan is a sanitary engineer with GRW's Lexington and Louisville offices. Mr. Bryan earned his bachelor's degree in civil engineering at the University of Kentucky. He also is a registered professional engineer in Kentucky and Indiana. Mr. Bryan's experience spans a broad spectrum of civil/public works activities. He has more than a 23 years of experience with project management/coordination and the planning, design, and construction administration of various water distribution and storage systems, wastewater collection and conveyance, and water & wastewater treatment facilities. Mr. Bryan has designed projects for clients such as the Lexington-Fayette Urban County Government, Northern KY Water District, and American Water Company in Indiana, Kentucky, Pennsylvania, and West Virginia, as well as numerous water/wastewater municipalities throughout Kentucky, Indiana and Ohio. Mr. Bryan is a member of the KY-TN AWWA and WEF professional organizations.

Adalyn Haney is a sanitary engineer with GRW's Louisville office. Mrs. Haney earned her bachelor and master degrees in civil engineering at the University of Kentucky. She is a registered professional engineer in Kentucky.

Mrs. Haney has over 10 years of experience in planning, design, construction administration and hydraulic modeling of various water distribution, water treatment, wastewater collection and wastewater treatment projects. She has worked on projects for clients such as the Northern Kentucky Water District, Louisville MSD, the Paducah-McCracken Joint Sewer Agency, as well as numerous other water and wastewater municipalities throughout Kentucky.

Mrs. Haney is a member of the American Water Works Association and the Kentucky Society of Professional Engineers.

Session Summary: Cavitation is a hydraulic phenomenon that can result in the wear and tear of critical piping systems and hydraulic components. Cavitation has been identified as the resulting destructive forces and shockwaves from the violent collapse of vapor bubbles in the flow stream. If not taken into consideration during design or left unaddressed after installation, the effects of cavitation could result in eventual damage to, and costly shutdown of, valuable pumps and piping systems.

Common places that we see cavitation form in our industry are at the faces of pump impellers, at control valves that have a large pressure drop across them, and sometimes in the piping downstream of control valves. Cavitation can be identified in various forms including vibration in piping systems, clattery noises in pumps, or reduced flow through control valves.

In this presentation, we plan to discuss the various forms of cavitation relating to hydraulic systems with large pressure drops or pressure differentials, and in pumped systems. One example that deserves design consideration is the return drain valve on Wet Weather storage tanks in sewage collection systems. In recent years we have seen numerous installations of these storage tanks pop up in our industry in an effort to help reduce or eliminate sanitary sewer overflows. The design situation that warrants consideration for evaluation of cavitation is when a full storage tank is draining through a control valve back into the sanitary sewer. The control valve's job is to maintain a flow rate that the

sewer can handle. In order to accomplish this, the control valve causes a large pressure drop across the valve, typically discharging to atmospheric pressure (0 psi). This large pressure drop can cause vaporization of the fluid in the valve with eventual collapse of the formed vapor bubbles on the valve seat or downstream piping.

Another example of cavitation is in pumps where the NPSH at the pump suction is not sufficient to keep the fluid from vaporizing prior to it being pressurized by the pump. In this situation the vapor bubbles collapse on the impeller face causing pitting and erosion of the impeller.

Identifying where the potential for cavitation is the greatest is a must for hydraulic systems with large pressure differentials. We will discuss different types of system configurations that can cause cavitation and the resulting damaging effects that cavitation can have on the operating equipment used in these systems. We will also talk about the various precursors that will help in predicting the formation of cavitation and provide effective solutions that can help in reducing the effects or possibly eliminate cavitation from the hydraulic system.

3:05 to 4:05 PM

General Technical – Haz Comm in Transition(1 Hour)

Speaker: Greg Duncan, Velocity EHS

Before joining VelocityEHS in 2016, Greg spent 6 years working with the National Marine Fisheries Service (NMFS) and Alaska Department of Fish & Game (ADF&G) to study the ecology of commercial fisheries in the North Pacific and Bering Sea, and to monitor fishing industry compliance with environmental laws and occupational health and safety standards. Greg holds a B.S. in Biology, and a Masters of Environmental Law & Policy.

Session Summary: Surprisingly for some, the new face of HazCom is very much like that of the HazCom in transition—it's still in a state of flux. So while companies were thinking compliance challenges brought on by OSHA's adoption of the Globally Harmonized System were behind them now that the GHS deadlines and phase-in period have passed, that's unfortunately not the case. The obligations imposed by the deadlines are ongoing and the compliance challenges persist. When it comes to safety data sheets (SDS) and label compliance in particular, there seem to be more questions than answers for the millions of employers covered by the rule.

This confusion is due in part to upstream adoption delays, general misunderstandings about what has long been required under the standard compared to what was newly required as a result of GHS adoption and the ever-changing regulatory landscape. These issues collectively contribute to HazCom's continued ranking as one of OSHA's most frequently cited standards.

In this session, we address the often elusive areas of SDS and label compliance under HazCom. As examples, we'll discuss OSHA's expectations for labeling small containers and managing SDSs when the same product from different suppliers is being used. Given the integral role they play in HazCom, by equipping EHS professionals with information necessary to tackle SDS and label compliance issues head-on, we are paving the way for companies to more easily achieve and maintain a fully compliant Hazard Communication Program today and well into the future.

Drinking Water Technical Sessions

8:00 to 9:00 AM

Drinking Water Technical – Effectiveness of Chlorine Dioxide for DBP Removal (1 Hour)

Speaker: Justin Spears, City of Scottsville, Josh Stinson, City of Williamstown, Randy and Rory Bush, Thornton, Bellemin & Musso

Justin Spears has a B.S. in Biology from Western Kentucky University; 12 years of experience as level 4 surface water treatment operator, and currently serves as the Assistant Manager of the Scottsville Water Treatment Plant.

Josh Stinson has an Associate of Science in Business Management; 10 years of experience in Distribution at City of Florence; 4 years as supervisor within water department at the City of Florence, and is currently the superintendent for the City of Williamstown.

Randy Bush has an Undergraduate Degree in Business and Graduate in Management; 17 years in the construction industry, 20 years as a plant manager in the paper industry, and 10 years sales/service in the water industry.

Rory Bush has 7 years as operator in the paper industry; 9 years in sales/service in the water industry.

Session Summary: Examine the effectiveness of Chlorine Dioxide in reducing Disinfection By-Products, using case studies from water plants in Kentucky: Cynthiana, Scottsville, and Williamstown. Included in these case studies will be discussions on how the treatment works, implementation at each facility, and data obtained from compliance testing.

9:05 to 10:05 AM

Drinking Water Technical – Utilization of Mixed Oxidants to Improve Residual & Overall Water Quality in Distribution Systems(1 hour)

Speaker: Robert Newton, Johnson Matthey

Bob Newton is Senior Director Global Municipal Business for Johnson Matthey-MIOX and has 30+ years in water & wastewater sector in both municipal and multiple industrial and institutional/commercial verticals. He has held a variety of positions during the course of his career including general management, strategic marketing, sales management, business development, project management, process engineering and R&D. He has had exposure and a solid working knowledge across numerous innovative and conventional technologies and applications in water, wastewater & water reuse treatment across a variety of vertical markets. Bob holds a B.S. in Chemical Engineering from Drexel University and has previously held his Professional Engineering license in New York, Texas & Massachusetts.

Session Summary: Mixed oxidants (MOS) are approved by EPA and follow the same standards of chlorine. Mixed oxidant chemistry has provided water municipalities with chlorine residual enhancement, biofilm control, taste & odor improvement, disinfection by product (DBP) reduction, and alum/polymer savings by micro-flocculation in conventional surface water treatment plants.

Data and research from sites across the country has shown that MOS is able to penetrate the polysaccharide substrate of biofilm attached to pipe distribution walls where standard chlorine and bleach chemicals could not. Recent evidence from laboratory research indicates that mixed oxidants include H₂O₂ and other reactive oxygen species. Research on the composition continues; but the evidence on the chemical and biocidal behavior continues to show, as it has for the past 20 years, that MOS is a superior oxidant compared to sodium hypochlorite alone.

The presentation will discuss the onsite generation process, including MOS chemistry used at water utilities and the evaluation of the field data collected and how it has significantly improved water quality and how it has saved municipal utilities significant costs. We will be featuring several water treatment plants in Kentucky that have utilized MOS and its benefits to their water treatment plant and distribution system.

10:10 to 11:10 AM

Drinking Water Technical - How to Use SCADA Data for Operational Effectiveness (1 hour)

Speakers: Jim Uber and Sam Hatchett, CitiLogics

Jim Uber, CEO of CitiLogics, has developed hydraulic and water quality models, and related technologies, for 30 years. Dr. Uber earned a PhD in Environmental Systems Analysis from the University of Illinois in 1988. He has an extensive background in systems analysis and assessing the complex tradeoffs inherent in technological decisions. He continues to be an industry leader in promoting the development of software tools to help water utilities better manage their assets, with current efforts focused on bringing the benefits of real-time modeling and related water analytics to the water industry.

Sam Hatchett, CTO of CitiLogics, leads software design and development projects marketed to the broader water industry. He has deep knowledge of software development practices, database systems, and engineering analysis techniques; these skills generate new, more efficient, and often unexpected ways for CitiLogics' clients to realize their goals. Sam is the architect and lead developer of the USEPA open source EPANET-RTX real-time modeling object library, as well as CitiLogics Polaris™, the only real-time state estimator for distribution system hydraulics and water quality.

Session Summary: This presentation will introduce information technologies that can deliver a wide range of real-time information displays aimed at helping operators. The technologies leverage data residing in the SCADA historian database, and are based on existing open-source software that is free and extensible.

Examples will be provided from a pilot study involving four water utilities. An illustrative example provides web-based real-time displays related to filtration efficiency. The analytics presented can be thought of as automating the spreadsheets that many utilities provide to the State once per month, based on partnership for safe water guidance. But, unlike manually produced spreadsheets, the real-time analytics displays are intended to be used by operators to identify and correct issues, as they occur.

The same suite of information technologies allows for more advanced applications -- all related to making use of data to predict, or to show, operators what is going on in the plant or the distribution system. In an example of more advanced use, distribution system models connected to SCADA provide predictions about flows and residence times in the distribution system, reflecting operator decisions over time (as recorded by SCADA).

11:15 AM to 12:15 PM

Drinking Water Technical – Using HFS to Survey & Determine Distribution Residence Time (1 Hour)

Speakers: Bob & Brandt Cashion, S4 Water Sales & Service

Robert K. (Bob) Cashion is a Nationally Certified Water Technologist, he holds class IV Water & Wastewater operators licenses in several states and has been providing water & wastewater related training for over 39 years. He is the Business Development Manager for S4 Water Sales & Service, and is involved extensively in chemical treatment applications, operations and maintenance issues of filtration systems and water quality assessment projects. He is an active member in the AWWA and NRWA and various State associations. He has a BS degree in Environmental Health & Technology from Missouri Southern State University and is a graduate of the Water & Wastewater Technical College, Neosho, MO.

Brandt graduated from Western Kentucky University in 2000 with a Bachelor of Science degree in Environmental Science and Technology. He has worked in the Water and Wastewater Industry since 2004, serving as a sales rep for Southeastern Laboratories in Kentucky and Tennessee through 2007. He then served as a regional sales manager for Hach (2007-2010) before opening S4 Water Sales and Service, LLC as President/CEO (2010 – Present). He currently holds a Class III DW License and memberships in AWWA, NRWA, KRWA, KWWOA, multiple State RWA. He resides in Bowling Green, KY with wife Amanda and two children.

Session Summary: The use of Hydrofluosilicic Acid (HSF) can be utilized to determine detention times, residence times and tank turn over in the water treatment process and within the distribution system. The use of HFS allows a shortened version of hydraulic modeling to provide an estimated residence time to allow for better control of DBP formations within the WTP process or the distribution system. This presentation will highlight a case history of information gained on a Central Kentucky water purveyor and a consecutive system. The implementation of this survey and information allowed for much needed data to control DBP formation and Stage Two DPB regulatory requirements.

2:00 to 3:00 PM

Drinking Water Technical – Electro-Coagulation (1 Hour)

Speaker: Doug Ralston, P.E., Engineering Resources, Inc.

Doug is a 1969 Graduate of Hanover College obtaining his Professional Engineers registration in 1980. Prior to obtaining his P.E., Doug was a certified operator (Class IV Municipal; Class D Industrial) in Indiana and Kentucky. He has been in the water/wastewater profession since 1972 either as a chemist, operator, operations specialist or engineer. He is a 5S Award winner and a Lifetime Member of WEF. He resides in Ft. Wayne, IN and is an Associate Partner of Engineering Resources. Doug is married to his lovely wife Lisa and they have 3 precious Shih Tzu's, Jack, Hazel and Coach. Doug plays golf when time allows and if he needs some extra cash.

Session Summary: Electrocoagulation is a process where the contaminants present in an aqueous medium are destabilized and removed by passing an electric current through the medium.

E - FLOC® Technology incorporates electrocoagulation into a single unit system that removes contaminants from wastewater and water thus eliminating/reducing chemical addition and allowing the treated water to be re-used or discharged to sewer.

This session will discuss what electrocoagulation is, how it works, components of the actual unit, the benefits of it, including the “Green” ones, and treatment case studies.

3:05 to 4:05 PM

Drinking Water Technical – Turbidity – What are we measuring?(1 Hour)

Speaker: Eric Link, LabtronX

Eric Link is the Owner/CEO of LabtronX, a company specializing in the maintenance and calibration of utility laboratory equipment. Eric started repairing laboratory equipment for LabtronX over 30 years ago. He was instrumental in developing LabtronX's calibration program, the Accuracy Assurance Program. He later became CEO and in 2012 purchased the company. He has given many lectures on a variety of laboratory equipment subjects and looks forward to sharing his experience and knowledge with you today.

Session Summary: Fresh water is one of the most unique and rare substances in the universe. Because we rely on water for life, a lot of scrutiny in the lab takes place to ensure the safety of our communities and environment. One of the most basic tests to determine the cleanliness of water is turbidity. But what are we really measuring with our turbidimeters and how are the science and regulations changing around this parameter? We will explore these questions and look at the challenges that lie ahead.

Water Distribution Technical Sessions

8:00 to 9:00 AM

Water Technical – The Life and Times of the Chestnut Street Tank (1 Hour)

Speaker: Ron McMaine, P.E., Bell Engineering

See bio above.

Session Summary: Easily visible from Interstate 75, Berea's Chestnut Street tank has been a landmark for Berea for many years. Built when the system was owned by Berea College, it was the main tank for the system until a three million gallon reservoir/clearwell was built as part of the water plant project in the early 1990's. Through the years it has been modified in several ways to meet the needs of the water system, with improvements to reduce DBP formation and aesthetic enhancements to improve the water system's image. This presentation discusses all of these modifications and relates them to the larger topic of maximizing the value of water storage to a distribution system.

9:05 AM to 10:05 AM

Water Technical – Choosing the Right Meter & Using it to Solve Billing Disputes (1 Hour)

Speaker: Tina Odum Masters, Badger Meter

Tina Masters Odum, P.E. has a BSCE degree from the University of Cincinnati and has been a Registered Professional Engineer in Ohio since 1999. Tina began her career as a design engineer for CDM Smith. In addition she has held Regional Sales and National Sales Director positions for UV disinfection companies

focusing on Municipal water and wastewater sales. She was also the LED product Manager for Veolia water and provided complete support for the Led Italia Evaporators in Industrial markets throughout the US. Prior to her position with Badger meter, Tina was a Strategic Account Manager for the Duraflow microfiltration system while living in Korea with her husband who was stationed there. Tina lives in Kentucky and is a Solutions Architect for Badger Meter Inc. She provides technical assistance for the customer before and after the sale with a coverage area of Michigan, Ohio, northern Indiana, Kentucky, West Virginia and Western Pennsylvania.

Session Summary: Water meters are a long term investment, so choosing the correct meter type and size is an important decision and will affect water utility revenue for decades. When mobile or fixed reading technology is added to the meter, the hourly data gathered can be used to resolve billing disputes and find/fix issues. This presentation will cover meter sizing and selection and provide a light-hearted look into real utility examples of hourly meter data being used to quickly resolve billing disputes.

10:10 to 11:10 PM

Water Technical – Repairs without Shutdown (1 Hour)

Speaker: Michael Mecredy, Team Industrial Services

Michael Mecredy has over 15 years' experience in the water and waste water industry. He is active with Rural Water, AWWA and WEF. His past accomplishments include the management, product development, and contract service provider of under pressure installation equipment and services.

Session Summary: To Inform attendees of the alternative methods to shutting down the water service during a normal or emergency repair and replacement of common water works items (i.e. fire-hydrants, valves, pipe and appurtenances). The information will be presented in a class room discussion format. At the outset of the presentation the class will be asked their greatest challenges, trends or current events related to this subject (i.e. water conservation, aging infrastructure, poor maps and valve location, time constraints, consumer confidence reporting, trench safety, backflow, establishing isolation zones for security reasons, asset management, customer complaints, introducing chlorinated water into streams and ponds, or any other associated risk/hurdle that is inherent with shutdown. Upon hearing 2 or 3 of the greatest challenges then the presentation will be tailored to address those specific challenges.

Attendees will be provided an overview of the proven technologies to make repairs and additions to distribution and transmission mains while maintaining system pressure. These technologies will aid the water purveyor to remain regulation compliant as it relates to water quality and employee safety at the same time reducing the risks associated with system shutdown.

11:15 to 12:15 PM

Water Technical – Creating a “Smart”er Customer Service Experience through AMI (1 Hour)

Speaker: Scott Clark, Hardin County Water District No. 2

Scott has a Bachelor's Degree in Business Management and is a certified Class IV Distribution and a Class III Water Treatment operator, FEMA Certified in Incident Command and a National Incident Management Systems and a Certified Large Meter Tester. He is currently the Administrative/Customer Services Manager for Hardin County Water District No. 2, a position he has held since 1996. Prior to this

position, he served as the District's Information Systems Manager from 1994-96 and as a Water Treatment Plant Operator from 1990-94.

Session Summary: This case study will provide insight to the pre-evaluation, bidding, and post bidding evaluation processes for meters and endpoints. We will discuss the options of AMR vs. AMI and what factors can help a utility in making that determination.

2:00 to 3:00 PM

Water Technical – Someone is Swimming in Your Tank.... How safe are they and you???(1 Hour)

Speaker: Jennifer Coon, Tank Industry Consultants

Jennifer Coon has a Bachelors' of Science degree from Indiana University, Public Affairs, Concentration in Environmental Science and a Masters' of Science, Indiana University, Environmental Science Degree, Concentration in Hazardous Materials Management. She is also a Certified Safety Professional, Certified Environmental Trainer Certification and Certified Hazardous Materials Manager Certification. Jennifer is responsible for developing, communicating, and monitoring Tank Industry Consultants extensive Health and Safety program. Jennifer authored, updates, and enforces all aspects of TIC's construction safety program that include Lead in Construction, Hazard Communication, Personal Protective Equipment, Confined Space, and Lockout/Tagout components. She conducts all in-house safety training and respirator fit tests, and supervises medical surveillance plan in accordance with all applicable OSHA regulations. In addition to her safety responsibilities, Jennifer has written over 2,600 technical reports addressing the condition of water storage tanks. These reports included recommendations for safety, sanitary, and aesthetic improvements to meet applicable industry standards.

Summary: The underwater evaluation of water storage tanks using divers continues to gain popularity throughout the United States. And as with most new "industries," there has been an influx of companies claiming to be "experts," but who are not. It takes more than a diver's card, some fins, and a tank of air to be able to safely dive inside water tanks. As the tank owner, you should be aware of the latest regulations regarding diving inside water tanks. If you don't, your level of liability exposure is troubling, at best.

This presentation will educate tank owners and operators about the latest OSHA regulations (29 CFR Part 1910, Subpart T, Commercial Diving Operations, 2011 revision) and industry standards (U.S. Navy Diving Manual, Revisions 6 and AWWA C652-11) related to performing underwater evaluations in tanks. Recent OSHA regulations have established stricter protocols concerning who can and can't perform dive evaluations, the equipment required for these dives, and the consequences of non-compliance. Most tank owners will be surprised to learn what OSHA requires versus what is currently being done in the field. In addition, this presentation will describe to attendees the "tricks of the trade" and standards or practice developed over 30 years of providing dive evaluations of water storage tanks the RIGHT way.

3:05 to 4:05 PM

Water Technical – Maintaining Water Quality in Storage Tanks: A Comprehensive Management Strategy (1 Hour)

Speaker: Casey Doyle, Louisville Water Company

Casey Doyle is a Supervisor within the Distribution Water Quality Department and is responsible for Distribution Treatment and Disinfectant Residual Management at Louisville Water Company. He is a graduate of Eastern Kentucky University with a Bachelor of Science in Environmental Studies. He has

over 7 years of experience in drinking water treatment, distribution system operation and compliance. His primary role at Louisville Water is to manage disinfectant residual through tank management, flushing programs, water quality monitoring and nitrification prevention and control.

Session Summary: Storage reservoirs in water distribution systems (DS) play a significant role in water quality (WQ). Historically, tank facilities have been designed to meet hydraulic requirements, where WQ was not an important consideration. This has typically led to tanks designed, constructed, operated and maintained in a manner that has a detrimental impact on the quality of water delivered to customers. This is especially true with water utilities that employ chloramines as a secondary disinfectant, such as Louisville Water Company (LWC); due in part to the high potential for persistent nitrification events.

LWC DS consists of ~4,200 miles of main and over 30 finished water storage facilities (ranging in size from 100,000 gallons to 30 MG). LWC has been faced with many distribution WQ challenges in recent times, primarily in finished water storage tanks. This can be attributed to high ambient air temperatures, construction of large bulk storage facilities, decrease in per capita water consumption and continued expansion of the DS into more rural areas for future business development. Successfully managing consistent WQ throughout the DS required LWC to optimize tank management strategies.

Through a more holistic approach to tank management, LWC was able to develop and enhance WQ. The key components of this strategy include: improved seasonal dependent treatment schemes, improved DWQ modeling, innovative booster pumping, DS/tank specific operational modifications, seasonal storage reduction planning, advanced tank flushing techniques, enhanced nitrification prevention and control program, enhanced tank monitoring and maintenance program, reservoir mixing improvements, an improved cleaning/inspection program, and a tank specific WQ scoring methodology. In addition, a direct low level feeding of chlorite is currently being implemented as a short-term residual management practice. LWC will evaluate additional site specific DS treatment techniques for consideration as potential long-term strategies for managing WQ in finished water tanks.

This optimization maximized resources and technologies in both capital and O & M activities. LWC will continue to develop and integrate best industry practices into tank management and all other areas of DWQ management. LWC adapts to stay ahead of emerging regulations and to maximize the effectiveness of resources to meet current and future challenges. These practices can be implemented by other utilities looking to optimize storage reservoir management programs.

Laboratory Technical Sessions

8:00 to 9:00 AM

Laboratory Technical – 40 CFR 136 CWA Method Update Rule(1 hour)

Speaker: Shannon Pratt, LabtronX

Shannon Pratt has a Grade 4 Wastewater certification in the State of TN and is the Quality Manager for LabtronX, a company specializing in the maintenance and calibration of utility lab equipment and flow meters. Shannon began her career in 2001 working for two environmental laboratories; she then moved on to work at TDEC's Fleming Training Center as an instructor for operator training courses. During her time at Fleming, she took part in a joint effort with several State and EPA regulators to create Guidance Documents and provide CE seminars on the 40 CFR 136 Method Update Rule. In 2014, Shannon went on

to work for a public utility as their Lab Analyst at their Grade 4 WWTP. Finally, in 2016, she was hired by LabtronX as their Quality Manager, maintaining calibration documentation and SOPs.

Session Summary: This presentation describes Clean Water Act Analytical Methods; Methods Update Rule - 2016 promulgated by EPA. EPA is promulgating changes to analytical test procedures that are used by industries and municipalities to analyze the chemical, physical, and biological components of wastewater and other environmental samples that are required by regulations under the Clean Water Act. The changes include revised methods published by EPA and voluntary consensus standard bodies, such as ASTM International and the Standard Methods Committee. EPA is adding certain methods reviewed under the alternate test procedures (ATP) program to 40 CFR Part 136 and clarifying the procedures for EPA approval of nationwide and limited use ATPs. Further, EPA is revising the procedure for determination of the method detection limit (MDL).

These revisions:

- provide increased flexibility to the regulated community
- improve data quality
- update the methods, to keep current with technology advances, and
- address laboratory contamination issues related to the MDL and better account for intra-laboratory variability.

9:05 to 10:05 AM

Laboratory Technical – Maintaining Your Lab’s Certification(1 hour)

Speaker: Patrick Garrity, KY Division of Water

Mr. Garrity is an Environmental Scientist with the Kentucky Division of Water. He has over 30 years of experience working in the environmental chemistry field. Mr. Garrity holds a bachelor's degree in chemistry and master's degree in computer science. He is EPA certified as a Drinking Water Certification Officer.

Session Summary: Discuss the requirements necessary for drinking water and wastewater laboratories to maintain their Kentucky laboratory certification on an annual basis. He will walk through the following: certification renewal process and time frames; entire laboratory operation (including sample receiving, quality assurance, required quality control and documentation, reporting requirements, records retention); and the on-site audit process.

10:10 to 11:10 AM

Laboratory Technical – QA/QC for Certified Laboratories (1 hour)

Speaker: Kevin Stewart, KY Division of Water

Mr. Stewart is an Environmental Control Supervisor with the Kentucky Division of Water. He has 14 years of experience working in the environmental chemistry field. Mr. Stewart holds a bachelor's degree in biology. He is EPA certified as a Drinking Water Certification Officer.

Session Summary: Presentation and discussion concerning applicable quality assurance and quality control procedures in drinking water and wastewater approved methods.

11:15 to 12:15 PM

Laboratory Technical –Laboratory Ethics and Data Integrity (3 hours)

Speaker: Patrick Garrity, Division of Water

Reference Bio above.

Summary: Overview of laboratory ethics and data integrity as they apply to drinking water and wastewater compliance samples. Analyst and management responsibilities as they apply to overall laboratory ethics, including training.

2:00 to 3:00 PM

Laboratory Technical – Comparison of Methods for The Detection of Fecal Coliforms and E. coli (1 hour)

Speaker: Gil Dichtner, IDEXX Laboratories

Gil Dichter is the Technical Support Manager for IDEXX Laboratories. He has a B.A. in Chemistry and MBA in Management who has 25+ years in water microbiology. He is a member of ASM, AWWA, WEF, ASTM, TNI, ASQ and serves as:

- Chair of ASTM D19-24 Methods for Water Microbiology.
- Member of Standard Methods for Water and Wastewater Microbiology section 9000; Committee Chair for sections 9030 & 9060 and co-Chair for 9215 and committee member on 9020, 9040, 9221, 9223 & 9230.
- Member of the PTPEC Committee and Chair of the PT SOP Committee for TNI (The NELAC Institute).

Session Summary: Wastewater Utilities and Private Laboratories are required to test final waste water effluent for either E. coli and/or fecal coliforms prior to discharge into a body of water to comply with NPDES requirements. Presently there are methods such as MTF and MF methods that are based on lactose fermentation requiring confirmation that can take up to 3 days. The methods are time consuming and if a presumptive positive is found it can take several days before confirmation is obtained. It is important to obtain results as quickly as possible to implement corrective action. Confirmation methods will be reviewed.

Lactose Based methods: 15 tube MPN and membrane filtration methods such as m-Endo, m-ColiBlue and m-FC will be reviewed and compared to Colilert/ Colilert-18 and Quanti-Tray, based on Defined Substrate Technology. The Quanti-Tray system is a semi-automated quantitative method that can yield results without dilution up to 200 or 2400/100mL within 18-22 or 24-28 hours. Further dilutions can be made and will be reviewed. This method is specific for E. coli and fecal coliforms requiring no confirmation.

QC requirements and the recent Method Update Rule will be reviewed for microbiology methods.

3:05 to 4:05 PM

Laboratory Technical – Commercial Laboratory Considerations(1 Hour)

Speaker: Paul Barker, Beckmar Laboratories

Paul has a MS in aquatic biology from the University of Louisville. He worked with the Peace Corps in Ghana working on a cholera and measles eradication program(1971-73). He moved on to work at the Health Department in the water resources program (1973-1975). He served as a research assistant at UL on aerosolized bacteria emitted from package sewer plants in Jefferson County, Kentucky (1975-1978). In 1978, he became the Lab Manager at Beckmar Environmental Laboratory where he remains today.

Session Summary: This session will review from a commercial lab's perspective:

- How the industry had developed,
- Where we hope to go,
- Issues with state certification,
- Ethics and data integrity,
- Can commercial laboratories lower your operating costs?
- Are eggs (analyses) really cheaper in the country, and
- Problems when you encounter enforcement actions.

Wednesday, April 11, 2018

Drinking Water Technical Sessions

8:30 to 9:30 AM

Drinking Water Technical – Chloramine Conversion – HCWD#2 a Case Study (1 Hour)

Speaker: Shaun Youravich, Hardin County Water District No. 2

Shaun Youravich began his career in the water industry 26 years ago as a water treatment operator. He is currently employed as the Operations Manager for Hardin County Water District No. 2 which is a water utility with over 27,000 customer connections, 2 treatment plants and over 1,000 miles of water main. Shaun has earned a baccalaureate degree from Western Kentucky University in Business Management and currently holds Kentucky class IVA and IVD certifications.

Shaun has been a member of the Kentucky Water and Wastewater Operators Association for the past 26 years and has served in multiple roles on both the Central chapter and State boards. He is also a 19 year member of the KY/TN Section of AWWA where he has also served as a board member and committee chair.

Session Summary: This presentation will focus on the conversion of the disinfection process for Hardin County Water District No. 2 from free chlorine to chloramines. It will cover the reasons for converting and the studies conducted prior to the conversion. It will also look at the design and construction of facilities for both treatment plants. The presentation will cover the implementation process to include public notification and education, issues encountered and then follow up with a look at how the process is working now.

9:35 to 10:35 AM

Drinking Water Technical – Why some Air Bubbles Mix Water & Some Just Aerate (1 Hour)

Speaker: Larry Bell, Pulsed Hydraulics, Inc.

Larry L. Bell is an Environmental Engineer and Application Scientist with 40 years of experience in the water/wastewater industry. He received his BS from Iowa State University and his MA from the University of Northern Iowa. He has worked as a sales engineer and product designer for Hach Company (Loveland, CO), Orion Research (Boston, MA), Fischer & Porter Co. (Warminster, PA) in addition to owning Instrument & Chemical Services Inc. (Green Camp, OH) and being an operating partner with Pulsed Hydraulics Inc. (Oroville, WA). Products that he has designed for the above named companies include chlorination/dechlorination feed systems, analytical monitors (turbidity, chlorine, sodium, silica, phosphate and dissolved oxygen), flow meters and mixing systems.

Session Summary: The use of large air bubble mixing in municipal drinking water and wastewater treatment processes is increasing dramatically as the technology proves to save capital, maintenance and energy costs. In order to properly design and use applications in both potable water and wastewater treatment process, engineering consultants and operation personnel need to understand what happens to air masses as they move in water. Original application research conducted by the author will discuss the four stages that occur for all air bubble masses during the air bubble's existence in a body of water. Not all air bubbles aerate and not all mix. Improper application of the use of air bubble masses can lead to costly mistakes which can result in poor utilization of public finances and embarrassment for the designer.

10:40 to 11:40 AM

Water Technical – Dedicated Bulk Water Dispensing Points (1 hour)

Speaker: Jay Morrison, Flowpoint Environmental

Jay Morrison is Vice President of Flowpoint Environmental Systems, a manufacturer specializing in turn key, customizable bulk water dispensing systems and management software. He focuses on new technologies available to create smarter treatment and distribution systems.

Session Summary: As municipalities conduct vulnerability assessments of their water supply facilities, many realize that by the very nature of their design, municipal water systems potentially provide multiple points for accidental or intentional contamination - contamination that could critically jeopardize the public health and economy of a community. This paper demonstrates how a community can secure their water system through access points, while increasing revenue and managing unaccounted-for losses.

Reference to the AWWA "Water System Security: A Field Guide" will be used to show how hydrants that are typically used for water dispensing, pose a safety and operations threat to a system through unauthorized and improper usage, citing recent fatalities due to contractor usage of hydrants.

More importantly, the value of water is constantly increasing. In light of fracking regulations in many states, the true value of water will be tested. Utilities will be offered an opportunity to sell water at a value that can generate much needed revenue for system improvements. Use of dedicated bulk water filling points is a proven way to increase revenue, maintain customer accounts and secure usage to a water distribution system. Examples of all types of dedicated water points will be presented and discussed.

1:00 to 2:00 PM

Drinking Water Technical –Kentucky Infrastructure Authority Updates (1 Hour)

Speaker: Donna McNeil, Kentucky Infrastructure Authority

Donna McNeil was appointed the Executive Director of the Kentucky Infrastructure Authority effective February 16, 2017. Donna graduated valedictorian from Lawrence County High School in Louisa, Kentucky and received a Bachelor of Science Degree in Civil Engineering from the University of Kentucky. She holds an Engineer-in-Training certification from the Kentucky Board of Licensure for Professional Engineers and Land Surveyors. In 2008, she retired from state government with over 22 years of service. During her tenure she managed the Kentucky drinking water program. From 2013 to 2017, Donna worked as a compliance specialist with Kentucky Rural Water Association, providing technical assistance to water utilities. She is a member of both the Drinking Water and Wastewater Advisory Councils for the Kentucky Division of Water. She is also a member of the US EPA/State SRF Work Group and the Kentucky Water Resources Research Institute Committee on Research and Policy.

Session Summary: This session will provide updates on items such as funding opportunities for drinking water and wastewater infrastructure including planning/design and equipment. Additional details of policy and procedural revisions will also be provided.

2:00 to 3:00 PM

Drinking Water Technical – Cyanobacteria Case Studies – Management of Taste & Odor Issues (1 hour)

Speaker: Adam Charlton, Aquatic Controls

I have a Bachelor of Science Degree (with highest distinction) in fisheries and aquatic sciences from Purdue University (graduated 2006). I worked with Florida fish and wildlife in research and then freshwater fisheries management for three years before I came to Aquatic Control. I have been managing the Kentucky and Tennessee (east of I-24) territories for Aquatic Control since the fall of 2011. I oversee operations pertaining to aquatic weed and algae control, fountain and aeration system sales and service, and registered aquatic algaecide/herbicide/product sales. At Aquatic Control, I have been managing taste and odor producing algae in a drinking water reservoir in central KY since 2012. Our company has been involved in managing drinking water reservoirs in Indiana and Missouri.

Session Summary: This presentation will go over case studies for several drinking water reservoirs that we have worked with. It will include a background on planktonic algae and cyanobacteria and the problematic compounds that the taste and odor producers make. It will discuss the problems with each reservoir and how we addressed the problems. It will demonstrate how we completed algaecide

applications in the reservoir to help reduce or eliminate problems in the water production process. I will email you a case study handout that will have some of the information I'll be talking about.

3:05 to 4:05 PM

Drinking Water Technical – Where and how to remove TTHMs from the Distribution System (1 hour)

Speaker: Michael Christensen, Medora Corporation

Michael Christensen is the East US Manager for Medora Corporation, a position he has held since the year 2001. Michael joined Medora Corporation with an Ag-Business degree and after 22 years in agriculture-related businesses. Michael has focused on the development of new applied science technology for water treatment. He is one of a team of technical advisors for Medora Corporation that develops and markets the SolarBee/GridBee equipment for freshwater, potable water and wastewater applications. As the US East Manager, Michael has been responsible for projects that include municipal water potable mixing and TTHM removal, municipal and industrial wastewater treatment systems. He has presented seminars and technical training to numerous state agencies and water related associations.

Session Summary: TTHM compliance continues to be a discussion point throughout the municipal water industry. There are a variety ways to deal with the high levels. This presentation will explain how to apply equipment to reduce TTHM's with very little change to the present infrastructure. Both in tank treatment and a new inline/skid type of system located at a facility in Illinois will be discussed with case study information presented on each.

Drinking Water Plant Tour

8:30 to 11:40 AM

Drinking Water Technical – Fort Thomas Treatment Plant Tour(1 Hour)

Speakers: Jonathan Moor, Matt Piccirillo, Warren Hinman & Mollie Bailey, Northern KY Water District

Johnathan Moor has been working at NKWD since 2016 and has over 10 years' experience in drinking water including 5 years as a research assistant at the University of Illinois and 2 years in the Research and Development Center at the Corps of Engineers. As Operations Manager, he is responsible for the operational needs and decisions of the District's three treatment plants. Johnathan holds a Bachelor's degree in Civil Engineering from the University of Cincinnati and a Master's degree in Environmental Engineering from the University of Illinois. He is also a member of KWWOA and AWWA.

Matt Piccirillo has been working at NKWD for over 16 years and holds a Kentucky Class IVA Drinking Water license. As plant supervisor, he is responsible for plant operational decisions at The District's three treatment plants, making sure that treatment goals and compliance issues are met. Matt is also involved in ongoing projects related to treatment changes or upgrades. As a volunteer, Matt serves as President of KWWOA's North Central Chapter and is on AWWA's Honors and Awards Committee.

Mollie Bailey has been with NKWD for over 17 years. She holds a Kentucky Class IVA Drinking Water license and has operated all three of The District's treatment plants. As plant foreman, she is responsible for the day to day operations at the Fort Thomas, Taylor Mill, and Memorial Parkway treatment plants.

She is part of the decision making team which keeps operations running smoothly. Mollie is a member of KWWOA and AWWA.

Warren Hinman has been with NKWD for over 14 years. He holds a Kentucky Class IVA Drinking Water license and has operated all three of The District's treatment plants. As plant foreman, he is responsible for the day to day operations at the Fort Thomas, Taylor Mill, and Memorial Parkway treatment plants. He is part of the decision making team which keeps operations running smoothly. Warren is a member of KWWOA and AWWA.

Summary: Since 1936, this state of the art facility has been serving northern Kentucky's drinking water needs. Many changes and upgrades have occurred over the past 80 years. Currently this plant can treat up to 44 million gallons per day for the customers of Kenton and Campbell counties, along with other portions of northern Kentucky. On the tour you will follow the path of water from the reservoirs as it goes through the rapid mixers, settling basins, filters, carbon contactors, and ultra-violet disinfection before entering the clear wells.

- Bus to NKWD (30 minutes) – Introductions with NKWD staff. Bus ride to the treatment plant with initial discussion about the plant, its history, and NKWD facts and info.
- Reservoirs (20 minutes) – Overview of the facilities. View and discussion of the pretreatment building and Powdered Activated Carbon silo.
- Chemical Building (15 minutes) – tour through the chemical building discussing bulk storage, chemical addition, and rapid mix.
- Basins (10 minutes) – coagulation, flocculation, sedimentation, and residuals removal in the settling basins.
- Filter Building (30 minutes) – view operators' lab, filter bays, overview of SCADA including plant systems and distribution network.
- Advanced Treatment Building (30 minutes) – overview of the Advanced Treatment Building including Granular Activated Carbon contactors, organics removal, treatment goals, and UV disinfection
- Lab (30 minutes) – overview of the Districts Laboratory
- Solids Handling Facilities (15 minutes) – clarifiers, belt filter presses and overall residuals handling

Back-up Speakers:

1. General Technical: Personal and Protective Equipment(1 hour)

Speaker: Josh Knight, Hopkinsville Water Environment Authority

Josh Knight is a Graduate Safety Practitioner. He graduated from Murray State University with a Bachelor of Science (B.S), Occupational Safety and Health in 2016. He worked for Metalsa May 2015 – June 2017 and now works for the Hopkinsville Water Environment Authority holding the following Certifications:

- OSHA 30 Hour Construction Safety and Health - License: 18-60997936
- OSHA 30 Hour General Industry
- CPR and AED

Session Summary: The purpose of this session is to review with operators:

- The Personal Protective Equipment Assessment Process.
- How to select appropriate Personal Protective Equipment for the job task.
- Show employees how to properly wear and care for Personal Protective Equipment.
- Identify hazards in the workplace that could result in Injury or Illnesses.
- Evaluate the level of risk to help determine what controls to implement
- Select an appropriate solution to control the hazard and/or protect the employee
- Example of Job Hazard Assessment Form

Criteria for Successful Completion by Operators

- Understand the process of completing PPE Assessment Process.
- Understand how to identify hazards in the workplace
- Understand control measures (Elimination, Engineering, Administrative, PPE)
- Understand how to properly determine the correct PPE for the Job Task
- Understand how to relate to the SDS to identify hazards and the proper PPE.

2. Drinking Water Technical: Managing Disinfection By Products(1 hour)

Speaker: Mike Ricks, Water Solutions Unlimited

Mr. Ricks is the president of Water Solutions Unlimited, a company that has been in business for over 30 years, working to help municipalities with producing better, cleaner water for their customers.

Session Summary: Presentation would cover area in system that can be checked and regulated to manage organics, algae, and biofilms that contribute to high Disinfection By Products. Would discuss approaches for Treatment plant, Distribution system, and Consecutive systems that purchase water

3. Drinking Water Technical: Organics #2 Corrosion Control for Municipalities(1 hour)

Speaker: Mike Ricks, Water Solutions Unlimited

See bio above.

Session Summary: Discuss issues that cause corrosion, how to avoid being a "Flint Michigan", common approaches to corrosion control and how to fix issues when they come up.