New England Water Works Association

a Section of the American Water Works Association

2016 Spring Joint Regional Conference & Exhibition

co-sponsored with

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Massachusetts Water Works Association ♦ New Hampshire Water Works Association
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NEW ENGLAND'S LARGEST WATER EVENT!

March 30-31, 2016

DCU center

Worcester, Massachusetts

Table of Contents

DCU Center Address and Directions

DCU Center Arena and Convention Complex
50 Foster Street, Worcester, MA 01608-1398
T 508.755.6800 • **F** 508.929.0111 • **Web site:** www.dcucenter.com

From the North: Route 495 S. to Route 290 W. Take Exit 18 and follow signs to the DCU Center.

From the Northwest (Athol, MA; Brattleboro, VT): Route 122 S. into Worcester. Route 122 becomes Pleasant St. Stay straight on Pleasant St., then turn left onto Main St., and right onto Foster St. Follow Foster St. until you see the DCU Center on your left.

From the South: Route 495 N. to Route 290 W. Take Exit 18 and follow the signs to the DCU Center.

From the Southeast (Rhode Island): Route 146 N. to Route 290 E. Take Exit 16 and turn left at the end of the ramp. At the 3rd set of lights (Major Taylor Boulevard), the DCU Center is on your left.

From the East: I-90 W. (Mass Turnpike) to Route 495 N. to Route 290 W. Take Exit 18 and follow signs to the DCU Center.

From the West: I-90 E. (Mass Turnpike) to Exit 10 (Auburn). After the tollbooth, bear left at the fork. Take Route 290 E. to Exit 16 and turn left at the bottom of the ramp (there is a light). At the 3rd set of lights (Major Taylor Boulevard), the DCU Center is on your left.

Worcester Hotel Information

The following hotels are located near the DCU Center. The rates below are subject to state sales and occupancy taxes which currently are a combined total of 14.45% per room, per night and are subject to change without notice. You are encouraged to make reservations early to ensure the group rate and availability. All reservations must be made directly with the hotel.

Hilton Garden Inn (Closest to the DCU Center and Headquarters Hotel - 35 Major Taylor Blvd., Worcester): A block of rooms has been reserved until **February 27, 2016**. The room rate is $151 per room, per night, single or double occupancy plus applicable taxes. Day guest parking is $7 per day. Overnight self parking is $9.95. Please make reservations directly with the hotel by calling 508.753.5700 and mention NEWWA to obtain the above room rate.

Holiday Inn Express (2½ blocks from DCU Center - 110 Summer Street, Worcester): A block of rooms has been reserved until **February 29, 2016**. The room rate is $135 per room, per night, single or double occupancy plus applicable taxes. The rate includes free parking and hot breakfast. Please make reservations directly with the hotel by calling 508.757.0400 and mention NEWWA to obtain the above room rate.

Courtyard Marriott (.8 miles from DCU Center - 72 Grove Street, Worcester): A block of rooms has been reserved until **March 1, 2016**. The room rate is $139 per night for one king bed or two queen beds, plus applicable taxes. The rate includes free parking. Please make reservations directly with the hotel by calling 508.363.0300 and mention NEWWA to obtain the above room rate.

Parking Information

Downtown Worcester in the DCU Center area has numerous parking facilities. The preferred parking garage of the DCU Center is the Worcester Municipal Parking Garage located at 30 Worcester Center Boulevard off of exit 16 from I-290. Other municipal lots include: City Square, 100 Front Street; Dwight Foster Parking, 27 Waldo Street; and Exchange Street Parking, 10 Exchange Street.

For a complete listing of Worcester hotels, an interactive map of the city, and things to do, visit www.destinationworcester.org.

Conference Registration Desk

The Conference Registration Desk is located in the Pre-function Area of the DCU Center at the bottom of the escalator.

Photograph and Information Release

Photographs will be taken at this event. By registering for this event you agree to allow NEWWA to use your photo in any NEWWA-related publication or social media site.

Technical Program / Training Contact Hour (TCH) Information

The technical sessions feature a wide range of topics providing contact hours to meet operator recertification and professional engineering renewal requirements.

Training Contact Hour Requirements: TCHs will be awarded for technical sessions and tours on Wednesday and Thursday. Attendees who wish to receive TCHs must be in attendance for the entire session. **You must have your badge scanned when you enter and exit the session room. You cannot move between sessions in the same time period.** A picture ID is required. (Note: TCH approval of State Agencies is pending at the time of publication.)

Conference Schedule and Sessions Listed by Area of General Interest

Wednesday, March 30th Concurrent Sessions

			Treatment	Distribution	Water Resources	Small Systems	Laboratory	Utility Managers	Consultants	Office	Vendors	Regulatory
7:30 AM to	**4:00 PM**	**Registration Desk Open**										
8:00 AM to	**3:00 PM**	**Exhibit Hall Open**										
8:00 AM to	**9:00 AM**	**YP Meet & Greet Breakfast - Meeting Room E**										
9:00 AM to	**5:00 PM**	**"Fresh Ideas" Student Poster Session (see page 11 for details)**										
8:50 AM to	11:00 AM	Tour A - Acton Water Treatment Facility, Acton, MA	X	X	X	X	X	X	X	X	X	
9:00 AM to	11:00 AM	1 – Distribution I		X		X		X	X	X	X	
9:00 AM to	11:00 AM	2 – Water Treatment I	X		X	X	X	X	X	X	X	X
9:30 AM to	11:30 AM	3 – Construction Projects	X	X		X	X	X	X	X	X	
9:30 AM to	11:30 AM	4 – Climate Change/Emergency Response/Security	X	X	X	X	X	X	X	X	X	X
9:30 AM to	11:30 AM	5 – Technology	X	X	X	X	X	X	X	X	X	X
11:00 AM to	**1:00 PM**	**Complimentary lunch, scavenger hunt, TOP OPS Competition and door prizes!**										
2:00 PM to	4:00 PM	6 – Water Treatment II	X		X	X	X	X	X	X	X	X
2:00 PM to	4:00 PM	7 – Distribution II		X		X		X	X	X	X	
2:00 PM to	4:00 PM	8 – Young Professionals	X	X	X	X	X	X	X	X	X	
2:00 PM to	4:00 PM	9 – Water Resources		X	X	X	X	X	X	X	X	X
2:00 PM to	4:00 PM	10 – GIS/Asset Management		X	X	X		X	X	X	X	
3:00 PM		**Exhibit Hall Closes (see complete Exhibit Hall schedule on page 14)**										
4:00 PM to	**6:00 PM**	**Reception sponsored by exhibitors and conference sponsors - Ballroom Pre-Function Area**										

Thursday, March 31st Concurrent Sessions

			Treatment	Distribution	Water Resources	Small Systems	Laboratory	Utility Managers	Consultants	Office	Vendors	Regulatory
8:00 AM to	**2:00 PM**	**Registration Desk Open**										
8:00 AM to	**1:30 PM**	**Exhibit Hall Open**										
8:50 AM to	11:00 AM	Tour B - Acton Water Treatment Facility, Acton, MA	X	X	X	X	X	X	X	X	X	
9:00 AM to	11:00 AM	11 – Distribution III (Distribution & Storage Committee)		X		X		X	X	X	X	
9:00 AM to	11:00 AM	12 – Regulations	X	X	X	X	X	X	X	X	X	X
9:30 AM to	11:30 AM	13 – Groundwater		X	X	X		X	X	X	X	
9:30 AM to	11:30 AM	14 – Dams			X	X		X	X	X	X	
10:30 AM to	**11:00 AM**	**Scavenger Hunt Awards to be Announced (see page 11 for details)**										
11:00 AM to	**1:00 PM**	**Complimentary lunch, TOP OPS Competition, and door prizes!**										
1:30 PM to	3:30 PM	15 – Water Treatment III	X		X	X	X	X	X	X	X	X
1:30 PM to	3:30 PM	16 – Safety/Operations & Maintenance	X	X	X	X	X	X	X	X	X	X
1:30 PM to	3:30 PM	17 – Cross Connections		X		X		X	X	X	X	X
1:30 PM to	3:30 PM	18 – Management/Finance		X	X	X		X	X	X	X	
1:30 PM		**Exhibit Hall Closes (see complete Exhibit Hall schedule on page 14)**										

Wednesday Morning, March 30, 2016

2 Training Contact Hours will be awarded for the tour and technical sessions. See page 1 for training contact hour requirements.

Tour A
Acton Water Treatment Facility
8:50 AM to 11:00 AM

Moderator: *JAMES CRAY, P.E., Lead Project Engineer, Wright-Pierce, Andover, MA and AMY COPPERS COSTANTINO, P.E., Lead Project Engineer, Wright-Pierce, Andover, MA*

8:50 AM — Meet between escalator and Exhibit Hall entrance to board bus for Acton's Water Treatment Facility, Acton, MA

Attendees will observe and learn about the 1.7 mgd South Acton Water Treatment facility, on-line since April 2015, that treats water from a combination of 8 groundwater wells, including one under the direct influence of surface water. It is owned by the Acton Water District, designed by Wright-Pierce, and constructed by Waterline Industries. The project was funded through the Massachusetts Clean Water Trust through the State Revolving Fund. It uses dual aeration towers for VOC removal and pH adjustment prior to being preoxidized with potassium permanganate for filtration by Pall Aria microfiltration membranes. This achieves mineral removal and compliance with log removal criteria under the Surface Water Treatment Rule. The filtered water flows into a baffled clear well to achieve the necessary chlorine contact time prior to entering the distribution system. The facility replaced two existing treatment facilities that utilized aeration and chemical addition to treat the 8 groundwater wells. As part of the project, over 13,000 linear feet of transmission main was installed to connect the two raw water sites, including pipe jacking under active commuter rail tracks. The facility is designed to expand capacity up to 2 mgd with the addition of a ninth well and add additional treatment capabilities for the emerging contaminant 1,4-dioxane, if necessary in the future.

11:00 AM — Bus leaves Acton to return to the DCU Center

Because educational material and information about the facility will be disseminated on board the bus, **YOU MUST BE ON THE BUS TO PARTICIPATE IN THE TOUR AND/OR TO RECEIVE 2 TCHs.**

NOTE: The tour is limited to 50 people and is expected to fill up fast. You must have a paid registration to attend the tour. There is no additional fee, however, you must indicate which tour you plan to attend on the registration form.

Session 1
Distribution I
9:00 AM to 11:00 AM — South Ballroom

Moderator: *ROBERT J. WILLIAMSON, P.E., Senior Project Manager, Wright-Pierce, Portland, ME*
Assistant Moderators: *ASHLEY N. DUNN, P.E., Senior Water & Wastewater Engineer, Town of Framingham, Framingham, MA, and DONALD L. WARE, P.E., Chief Operating Officer, Pennichuck Corporation, Merrimack, NH*

9:00 AM — "Unidirectional Flushing Yields Multiple Benefits"
by COLLEEN E. HEATH, P.E., Environmental Engineer, CDM Smith, Boston, MA and JEFFREY CRANE, Project Engineer, Town of Andover Water Department, Andover, MA

Unidirectional flushing (UDF) is a water system best management practice to clean water mains and maintain high water quality. By combining a water system's calibrated hydraulic model and InfoWater UDF, flushing plans can be produced and implemented in the field. This presentation discusses how the benefits of unidirectional flushing go beyond water main cleaning and how to use the real world results to gain additional insights into your water system and subsequently integrate the information into the hydraulic model.

9:30 AM — "Horizontal Direction Drilling of Raw Water Intakes"
by RYAN P. NEYLAND, P.E. Project Manager, Tata & Howard, Marlborough, MA

Regulatory and customer-based drivers led Falmouth Water Department to construct a new water treatment plant (WTP) at Long Pond. Due to the location of the new WTP in relation to the existing pump station facility and intake, new intakes and a raw water pump station were needed to pump water from Long Pond to the WTP. This presentation will discuss pipe and screen installation utilizing horizontal directional drilling methods to minimize any potential impacts to the pond during construction.

10:00 AM — "Specifications - You Don't Always Get What You Want"
by TIMOTHY M. STINSON, P.E., Project Professional (retired), Kleinfelder, Holbrook, MA

The presentation will review information on the requirements of writing specifications for various water system materials and projects. It will look at legal issues and also discuss pitfalls of poorly worded specifications. Among items will be use of certain words like "will" vs. "shall" and impacts they can have on your project. Other items such as use of outdated specifications and need to update standards on a regular basis will be presented. Tips on writing "strong" specifications will be discussed.

10:30 AM — "Thrust Restraint"
by PAUL H. HANSON, P.E., Regional Director, Ductile Iron Pipe Research Association, Valparaiso, IN

This presentation will review thrust and the restraint methods typically used with DI pipe. Thrust force will be discussed - what, where, and how much? Thrust block and restrained joint system designs, construction and field considerations will be detailed. Some tricks of the trade, research results and exceptional situations will be reviewed.

Session 2
Water Treatment I
9:00 AM to 11:00 AM — North Ballroom

Moderator: *THOMAS D. LeCOURT, P.E., Director of Drinking Water Operations, Springfield Water and Sewer Commission, Springfield, MA*
Assistant Moderators: *WILL WALKUP, P.E., Project Engineer, Black & Veatch, Burlington, MA and MICHAEL M. GREELEY, P.E., Associate, Hazen and Sawyer, P.C., Boston, MA*

9:00 AM — "Biological Filtration for Groundwater Treatment"
by ALAN G. LeBLANC, P.E., BCEE, Associate and Senior Project Manager, CDM Smith, Manchester, NH

This presentation will discuss the 7-month examination of a multi-aquifer groundwater supply featuring iron concentrations varying from 2 to over 14 mg/L, and source water manganese concentrations ranging from 0.08 to over 0.6 mg/L. The literature indicates very few prior studies of biological filtration at such high iron content. This work proved that very high iron loadings could be reduced to 0.02 mg/L or less biologically. Similar success was found for manganese removal.

9:30 AM — "Treating Water with Steadily Increasing Arsenic, Iron and Manganese"
by KRISTEN M. BERGER, P.E., ENV SP, Principal, Comprehensive Environmental Inc., Marlborough, MA

The Auburn Water District's West Street Wells have steadily increased in levels of arsenic, iron, and manganese above regulatory levels. In response, the district took these wells off-line in 2013 and initiated the planning, design, and construction process for treatment. This presentation will highlight the district's efforts to implement treatment with a facility capable of treating this source

well into the future, anticipating that levels of arsenic, iron, and manganese will continue to rise similar to past experience.

10:00 AM — "Aquarion Water Company 4-Log Program"
by SHOKOOFEH REZAZADEH, Planning Engineer, Aquarion Water Company, Bridgeport, CT

As a part of the drinking water community, Aquarion Water Company is devoted to provide safe drinking water. An initiative started a few years ago to prioritize our ground water sources of supply where providing 4-Log can ensure better water quality. The speaker will discuss the program and how they ended up designing and constructing upgrades to a number of facilities. Case studies discussing changes along the way will be presented.

10:30 AM — "Trichloramine Corrosion and Air Stripping"
by JERRY D. LOWRY, Ph.D., P.E., Chief Executive Officer, Lowry Environmental Engineering, Blue Hill, ME

Rapid corrosion of stainless steel occurs in air stripping operations if trichloramine is formed. This presentation documents two incidents that occurred in treatment plants in the Eastern US. Natural ammonia at low concentration was present but not recognized. Chlorine to nitrogen ratios, pH, and stripping conditions are related to the production and release of trichloramine. Severe corrosion examples are compared to experiences in Europe, where catastrophic stress crack corrosion by trichloramine caused structural failures and deaths at indoor swimming pools.

Session 3
Construction Projects
9:30 AM to 11:30 AM — Centre Ballroom

Moderator: *RON H. HIDU, P.E., Vice President, Woodard & Curran, Bangor, ME*
Assistant Moderator: *PAUL O. GARDNER, Chief Cross Connection Inspector, Lawrence Water Department, Lawrence, MA*

9:30 AM — "Lake Konomoc Pump Station: Adding Redundancy and Resiliency to an Existing WTP"
by JOSEPH LANZAFAME, P.E., Director of Public Utilities, City of New London, New London, CT

Lake Konomoc, a 1.84-billion gallon reservoir for the city of New London water supply system, serves approximately 44,000 people in New London and parts of Waterford and Montville. With an eye on preparing for future population growth and potential drought conditions, the city decided to implement a plan to increase the withdrawal capacity from the reservoir to allow access to an additional 366 million gallons (MG) of previously unusable water stored within Lake Konomoc.

10:00 AM — "Providing Emergency Water Supply to Long Island, Boston Harbor, Massachusetts"
by TODD R. PROKOP, P.E., Project Engineer, and ROBERT LITTLE, P.E., Vice President, Woodard & Curran, Andover, MA

This presentation will share how Woodard & Curran worked with the city of Boston and the Massachusetts DEP to complete an alternatives analysis to determine how to supply Long Island with water for domestic use and fire protection until a new water supply line could be installed. The team investigated a number of strategies; however, several requirements left one viable option. This presentation will describe the project and the numerous obstacles that increased the difficulty level once work began.

10:30 AM — "Fast-track Twin 6.5 MG Water Storage Tank Design and Construction"
by DAVID CEDARHOLM, P.E., Senior Project Manager, Tighe & Bond, Portsmouth, NH, and DAVID G. MILLER, P.E., Deputy Director, Water Supply, Manchester Water Works, Manchester, NH

Tighe & Bond was selected in 2014 by Manchester Water Works in Manchester, NH for the design, permitting, bidding, and construction engineering of two 6.5 MG wire-wound pre-stressed concrete water storage tanks. This presentation summarizes the efforts behind the fast-track design and construction of the largest water storage tank project of its kind in New Hampshire. The two new tanks replace a 20 MG earthen berm reservoir constructed in 1870, which will be decommissioned in 2016.

11:00 AM — "Fast-Track Implementation of a Town-Wide Water System"
by MARK WHITE, Principal, and RYAN J. TRAHAN, P.E., Senior Project Manager, Environmental Partners Group, Quincy, MA

Eastham has progressive drinking water quality issues in private wells because of their proximity to septic systems and the town's closed landfill. The town voted in 2014 to proceed with the permitting, design and construction of a water system. This presentation will describe how the project proceeded in an unprecedented fast-track basis, the strategies used to move quickly through the permitting process, and to start construction activities for this new water system within ten months of the Town Meeting decision.

Session 4
Climate Change/Emergency Response/Security
9:30 AM to 11:30 AM — Meeting Rooms A & B

Moderator: *DEMETRIOS G. VIDALIS, P.E., Systems Engineer, Boston Water & Sewer Commission, Boston, MA*
Assistant Moderator: *CHRISTOPHER C. YANNONI, P.E., ENV SP, Senior Principal, Stantec, Burlington, MA*

9:30 AM — "Coastal Resiliency Evaluation of Critical Facilities"
by KEVIN M. FLOOD, P.E., Senior Project Manager, and DOUG BRISEE, P.E., Project Engineer, Fuss & O'Neill, Inc., Manchester, CT; LISA McSTAY, Ocean Engineer, RPS ASA, South Kingstown, RI

An evaluation of critical facilities was completed using storm surge, wave action, and shoreline change assessment models to predict flooding, quantify potential losses, and estimate economic losses. Evaluation also identifying assets at critical facilities and developing schematics of potential adaption measures that could be utilized to protect these facilities during various Category Storms with a certain Sea Level Rise. Budgetary opinions of cost were developed for two most likely scenarios and these were presented to the municipality and the public.

10:00 AM — "Conducting a Critical Infrastructure Assessment and Climate Ready Analysis"
by MARY KRISTIN IVANOVICH, Vice President, Woodard & Curran, Portland, ME

This presentation will explore how water utilities can position themselves to respond to climate change and protect water supplies. It will detail how Woodard & Curran worked with the city of Lawrence Water Department and conducted a critical infrastructure analysis and risk assessment to determine climate readiness. The objective was to identify the utility's risks associated with climate change and to develop adaptation strategies that could be integrated into existing emergency response programs, capacity development, capital planning, and regular maintenance.

10:30 AM — "Cybersecurity Assessments of Drinking Water Utilities"
by THOMAS NOBLE, Principal - Project Manager, Horsley Witten Group, Sandwich, MA

The Virginia Department of Health, with the U.S. Environmental Protection Agency, is evaluating cybersecurity risks associated with drinking water utilities' process control and business systems. Based on these assessments and their findings, guidance is being provided for utilities of all sizes and characteristics to improve their cybersecurity posture. The large data set being obtained from

the program is providing the water sector with a much deeper understanding of leading issues and challenges faced specifically by water utilities.

11:00 AM — "Are You Prepared for Drought?"
by JEFF FENCIL, Environmental Scientist, U.S. Environmental Protection Agency, Washington, DC

EPA's new Drought Response and Recovery Guide brings together lessons learned from small to medium-sized drinking water systems across the country who have dealt with drought. The interactive guide provides utilities with best practices and key actions that can be taken when planning for, responding to, or recovering from drought. EPA will walk through the main sections of the guide and showcase a case study map with a video that tells the unique story of each of the six case studies. The Drought Response and Recovery Guide provides a user-friendly tool to water utilities dealing with drought impacts by outlining practical actions that can increase a utility's overall drought resilience.

Session 5
Technology
9:30 AM to 11:30 AM — Junior Ballroom

Moderator: *MARGARET A. McCARTHY, P.E., Team Leader/Project Manager, Weston & Sampson, Peabody, MA*
Assistant Moderator: *J. KEVIN REILLY, Microbiologist, U.S. Environmental Protection Agency-New England, Boston, MA*

9:30 AM — "A Cost Effective Plan for Implementing Technology Into DPW Operation"
by MARK L. WETZEL, P.E., Superintendent, Town of Ayer Public Works Department, Ayer, MA

The Town of Ayer Department of Public Works has begun implementation of various technologies in day-to-day operations of the water, wastewater, stormwater and highway operations including: 1) water and wastewater SCADA, 2) radio read water meter system, 3) electronic tie cards and record drawings, 4) GIS mapping of infrastructure including GPS locations, 5) CMMS Asset Management and Work Order System, 6) mobile field applications, and 7) social media public relations. The presentation will discuss the programs, costs, and systematic method of implementation, training, and staff buy-in.

10:00 AM — "Mobile Technology and Reporting Systems Increases Efficiency for Utilities"
by ALAN FABIANO, Technology Manager, Woodard & Curran, White Plains, NY, and FRANK J. CAVALERI, Senior Vice President Operations and Management, Woodard & Curran, Dedham, MA

Utilizing mobile data collection and reporting systems allows utilities to spend more time on process efficiency and less on data entry and reporting. Smartphones and tablets allow for real-time data collection, eliminating the potential for transcription errors or data loss due to hardware failures. Operations databases and computerized management systems (CMMS) streamline regulatory and maintenance reporting. This presentation will illustrate how these technologies can provide highly accurate and complete data collection, faster reporting, enhanced data security and cost savings.

10:30 AM — "How to Make a Smart Grid Communicate"
by LEAH E. STANTON, Project Manager/Team Leader, Weston & Sampson, Peabody, MA

The Town of Danvers was a recipient of a DOE $7 million grant to fund Smart Grid for their water and electric systems. Ensuring communication between the various systems; meters, field devices, and electric SCADA, was a large challenge of the project. The goal was to construct a Wi-Max (3.65 GHz) radio system for town-wide communication. This presentation will look at the design and implementation challenges, concerns and solutions to create a communication infrastructure utilized by these systems.

11:00 AM — "Completing an Asset Inventory and Condition Assessment"
by JEFFREY R. CLAUS, Management Consultant, CDM Smith, Manchester, NH

This presentation will discuss the processes and tools developed to facilitate a large asset inventory and condition assessment initiative for both water distribution and treatment assets. The effort included verifying existing CMMS assets and GIS features as well as creating new assets and GIS features using tablet computers in the field. Protocols were established for defining what assets and information to collect, how to categorize the assets, and how to assign condition scores for a variety of equipment types.

Wednesday Afternoon, March 30, 2016

Session 6
Water Treatment II
2:00 PM to 4:00 PM — North Ballroom

Moderator: *MICHAEL M. GREELEY, P.E., Associate, Hazen and Sawyer, P.C., Boston, MA*
Assistant Moderators: *JAMI B. WALSH, P.E., Senior Project Engineer, AECOM, Chelmsford, MA, and RON H. HIDU, P.E., Vice President, Woodard & Curran, Bangor, ME*

2:00 PM — "Understanding MP Low Wavelength Disinfection: Guidance for Operating and Future UV Facilities"
by JAMES R. COLLINS, P.E., Project Manager, ARCADIS, Wakefield, MA

This presentation will be an overview of recent developments related to UV disinfection performance with medium pressure UV lamps. Current UV validation methods and U.S. EPA credit calculations may overestimate the disinfection performance of MP UV reactors for Cryptosporidium and Giardia as well as viruses. A Water Research Foundation project was recently completed that provides guidance for existing and future utilities to understand and implement MP UV disinfection. The results of this research and recommended implementation approaches will be reviewed.

2:30 PM — "Utilizing UV Technology to Meet the Long Term 2 Enhanced Surface Water Treatment Rule at the Holyoke Water Works Water Treatment Facility"
by DARLEEN BUTTRICK, P.E., Project Manager, and DAVID E. PINSKY, P.E., President and Chief Executive Officer, Tighe & Bond, Westfield, MA; HENRY G. SEIDEL, Supervisor Source of Supply, and DAVID M. CONTI, General Manager, Holyoke Water Works, Holyoke, MA

Holyoke Water Work's (HWW's) water treatment facility (WTF) currently maintains a waiver from filtration. The LT2 Rule requires that unfiltered systems provide a minimum of two disinfectants to separately achieve the total inactivation requirements for Cryptosporidium, Giardia lamblia, and viruses. In order to comply with the LT2 Rule, HWW installed UV at their WTF. This presentation will review the history of the project, from selection of the UV technology, through construction and operation of the new facility.

3:00 PM — "New Drops in Jordan's Water Bucket to Bolster Limited Water Resources for the City of Irbid"
by JENNIFER OSGOOD, P.E., BCEE, Senior Project Manager/Principal, CDM Smith, Boston, MA

Water scarcity is a global environmental challenge, and for Jordan is the country's largest environmental challenge. Due to the influx of Syrian refugees, Jordan's limited natural water resources are unable to support sustainable water management practices. The King Abdullah Canal (KAC) has been identified to provide additional supply yet is challenging to treat with turbidity spikes, DBP precursors and algae. The new treatment facility will provide multiple barriers and address the country's urgent need for water supply.

3:30 PM — "Changes in DBP Speciation With GAC Treatment"
by ALLISON M. REINERT, Assistant Engineer, Hazen and Sawyer, P.C., Raleigh, NC

This presentation will discuss several pilots and full-scale applications using GAC and impacts regulated and unregulated DBPs. GAC case studies, with various source water conditions, oxidation conditions, and upstream processes were evaluated. Results provide insight into how source water quality and chlorination strategies coupled with GAC strategies may impact DBP profiles. By quantifying the change in DBP speciation and concentration, this work provides information to stakeholders on how GAC impacts regulated DBPs and what unintended consequences occur in terms of unregulated DBP formation.

Session 7
Distribution II
2:00 PM to 4:00 PM — South Ballroom

Moderator: *JAMES J. PESCATORE, P.E., BCEE, Vice President, CDM Smith, Boston, MA*
Assistant Moderators: *DAVID E. PUTNAM, President, Putnam Pipe Corp., Hopkinton, MA, and KAREN L. GRACEY, P.E., Vice President, Tata & Howard, Marlborough, MA*

2:00 PM — "Manchester Water Works Plans for Future Storage Needs"
by MARC W. MORIN, P.E., Area Manager, and ROBERT M. McCOY, P.E., Senior Project Manager, Kleinfelder, Manchester, NH; DAVID G. MILLER, P.E., Deputy Director, Water Supply, Manchester Water Works, Manchester, NH

Manchester Water Works (MWW) previously operated a 20 million gallon reservoir. With the existing floating cover approaching the end of its service life, MWW decided to replace the reservoir with concrete tanks. MWW evaluated its distribution storage needs in terms of volume, hydraulics, and water quality. The resulting recommendation was to reduce the storage volume in the low service system from 20 to 13 million gallons. This presentation will focus on the methodology used to develop the storage volume recommendations.

2:30 PM — "Decisions and Considerations for Water Storage Tank Selection"
by ROBERT A. DRAKE, P.E., Senior Associate, and JAMES DYMENT, Senior Project Manager, BETA Group, Inc., Lincoln, RI; JOSEPH W. LYNCH, Director of Public Works, Town of Milton, Milton, MA

The Town of Milton, MA is currently replacing its three water storage tanks (combined capacity of 1.34 MG) with two new water storage tanks. The tanks are located within the Blue Hills Reservoir Area. This presentation will discuss the design decisions made including tank replacement versus rehabilitation, technical and site-specific considerations in selecting the type of replacement tank, and the regulatory requirements that needed to be resolved prior to the construction of the tanks.

3:00 PM — "No Room, No Problem: Meeting the Challenges of a Limited Site for a Storage Replacement Project in Framingham"
by ROBERT J. WILLIAMSON, P.E., Senior Project Manager, Wright-Pierce, Portland, ME; BLAKE D. LUKIS, Director, Water & Wastewater, Framingham DPW, Framingham, MA; and CHRISTOPHER C. HODGSON, New England Regional Manager, DN Tanks, Wakefield, MA

Framingham's Beebe Zone includes two tanks located on a single site; a 300K gallon riveted steel tank and a 1.0 MG prestressed concrete tank. The smaller tank required replacement, while the concrete tank required cleaning and safety upgrades. The site, no larger than the proverbial "postage stamp," is accessed through a steep winding driveway located on private property. The challenges of working under an extremely confined space and the complexities of maintaining service during construction will be presented.

3:30 PM — "Water Storage Alternatives for a Small Water System"
by THOMAS J. MAHANNA, P.E., Vice President, Tighe & Bond, Worcester, MA

This presentation will describe how we assisted a small water department with 100 customers to determine their optimum water storage solution. Their current storage is provided in small hydropneumatic tanks that do not provide fire protection. Tighe & Bond completed a study that evaluated the feasibility of constructing a new storage tank that would meet existing and future water demands and provide adequate fire protection to its customers. Several different tank styles were considered along with cost comparisons of each.

Session 8
Young Professionals
2:00 PM to 4:00 PM — Meeting Rooms A & B

Moderator: *AMY COPPERS COSTANTINO, P.E., Lead Project Engineer, Wright-Pierce, Andover, MA*
Assistant Moderator: *DEMETRIOS G. VIDALIS, P.E., Systems Engineer, Boston Water & Sewer Commission, Boston, MA*

2:00 PM — "A Collaborative Approach to Solving a Midwestern Community's Water Storage Needs"
by MORGAN K. STUART, Engineer, Woodard & Curran, Bangor, ME

This presentation will outline the design and construction of a two million gallon composite elevated storage tank in the city of St. Charles, Missouri. The tank was designed to provide sufficient capacity to serve the existing and future demands of the city while minimizing the impact on water age in the system. The presentation will also examine the challenges associated with constructing a tank adjacent to residential neighborhoods.

2:30 PM — "A City-wide Approach to Tackling a Century Old Distribution System"
by ANGELA O'DONNELL, P.E., Project Engineer, CDM Smith, Boston, MA

Before 2011, over 30% of the city of Malden's water distribution system was older than 100 years. Taking an aggressive city-wide approach, the city replaced nearly 17 miles of pipe during a 4-year Capital Improvement Program. With the help of social media, a constantly updated construction dashboard on the Mayor's website, and extensive public outreach, the city addressed the coordination nightmare, and successfully replaced pipes, appurtenances, and hundreds of lead services; details of the city's successful approach will be presented.

3:00 PM — "UDF in Design - Using UDF Programs to Identify Distribution System Improvements"
by KEVIN M. RATHBUN, Engineer, Environmental Partners Group, Quincy, MA

Developing and implementing a unidirectional flushing (UDF) program is an important part of maintaining a water distribution system. However, used effectively, a UDF program can also serve as a valuable design tool. This presentation will look beyond the notion of a flushing program as an output to explore UDF programs as a tool for identifying future distribution system improvements. Also discussed are tools engineers can use to optimize an existing UDF program to increase efficiency and effectiveness.

3:30 PM — "Development of a Drought Planning Tool to Improve Short-, Medium-, and Long-Term Water Supply Forecasting"
by JUSTIN IRVING, P.E., Principal Engineer, Hazen and Sawyer, P.C., Boston, MA

This project focuses on the development of a drought planning tool that integrates conventional drought warning indices, hydrologic forecasts, and drinking water system operational models. The

goal of the tool is to provide proactive responses to projected dry periods, and improve preparedness for drought conditions. The presentation will review the various statistical forecasting methodologies used by the tool, and review benefits from a case study involving a large drinking water utility.

Session 9
Water Resources
2:00 PM to 4:00 PM — Junior Ballroom

Moderator: *DAVID C. PEELING, P.E., Principal Engineer, Kleinfelder, Rocky Hill, CT*
Assistant Moderator: *KRISTEN M. BERGER, P.E., ENV SP, Principal, Project Manager, Comprehensive Environmental Inc., Marlborough, MA*

2:00 PM — "Chasing Excellence - Town of Canton Employs Asset Management for Integrated Water Resources Planning"
by KRISTEN RYAN, P.G., Project/Program Manager, Kleinfelder, Cambridge, MA; RODERICK K. LOVELY, P.E., Asset Management Principal Professional, Kleinfelder, Manchester, NH; and MICHAEL TROTTA, Superintendent of Public Works, Town of Canton, Canton, MA

The Town of Canton, Massachusetts faces the challenge of maintaining aging infrastructure with limited budgets while maintaining service levels and achieving regulatory program compliance. To meet these challenges Canton leadership is acting on its vision for an integrated program encompassing drinking water, stormwater, and wastewater. In this presentation we will illustrate how the program is being developed and show how the completed asset management system will support cost effective decision making.

2:30 PM — "Source Water Protection - Stormwater and Spill Control for a Major Roadway"
by BENJAMIN LUNDSTED, P.E., Principal, Comprehensive Environmental Inc., Merrimack, NH

Pennichuck Water Works teamed with NH DES and CEI to develop an innovative design that includes pretreatment and wetlands treatment for Tinker Pond to address potential impacts of a major roadway that passes through its watershed. The work included a stormwater treatment pond, spill control, and maintenance road that will allow cleanout of the pretreatment system. This presentation will discuss the factors involved in a spill control/water quality treatment project designed for source water protection of a drinking water supply reservoir.

3:00 PM — "Supply Water Management and Control"
by JASON D. McCARTHY, Water Treatment Plant Manager, Town of Danvers, Danvers, MA

This presentation will discuss water supply juggling from a public water supplier's perspective. The Danvers public water supply has several surface water sources (Middleton Pond, Aunt Betts Bog, Emerson Brook, and Swan Pond) that supply raw water to the water treatment plant. There are also two ground water wells that supply to the distribution system directly. Each source has its own limitations, operational demands, and in some cases - consequences. There are also many variables that impact each source's availability, from withdrawal permits to rainfall, blooming algae to beavers. The Danvers approach to balancing these competing factors will be presented.

3:30 PM — "How to Save an Aquifer - The Pease AFB Story"
by BLAKE A. MARTIN, Vice President, Weston and Sampson, Worcester, MA, and SCOTT E. HILTON, Hazardous Waste Remediation Bureau, New Hampshire Department of Environmental Services, Portsmouth, NH

The complex coastal deposits of southeastern New Hampshire have varied permeabilities, intersecting aquifer deposits, and complex overburden/bedrock interaction with resulting high yielding gravels wells (2 MGD) at Pease Air Force Base. These wells have been the subject of extensive investigations, groundwater modeling efforts, federally funded cleanups, and scrutiny by regulatory agencies. Saving these sources has resulted in intense public scrutiny and human health studies regarding the threat from Perfluorinated compounds and other VOCs. These concerns drive current investigations and action plans.

Session 10
GIS/Asset Management
2:00 PM to 4:00 PM — Centre Ballroom

Moderator: *MARGARET A. McCARTHY, P.E., Team Leader/Project Manager, Weston & Sampson, Peabody, MA*
Assistant Moderator: *CAROLYN C. GIAMPE, Manager, Capital Project Delivery, Aquarion Water Company of Connecticut, Bridgeport, CT*

2:00 PM — "Asset Management: What's Your Appetite?"
by CRIS PEREZ, Asset Management Leader, Tighe & Bond, Westwood, MA

Implementing an asset management (AM) program is on many municipalities' and utility owners' "to-do" list. But for many, this goal is as appealing as it is daunting. With several software products available and the fact that different organizations need different implementation strategies, there is no "one solution" that fits all. In this presentation, we will discuss strategies for creating an AM roadmap that can help define key elements of your AM Plan without the use of sophisticated software.

2:30 PM — "So Many Pipes So Little Time – So Which One's First?
by JAMES R. CAROLAN, Vice President, CDM Smith, Boston, MA; DAVID J. TANZI, P.E., BCEE, Vice President, Edison, NJ; and JAN CHWIEDOSIUK, Project Engineer, Middlesex Water Company, Iselin, NJ

The Middlesex Water Company (MWCo) in New Jersey has a history of progressive stewardship of its pipeline assets. In accordance with this, MWCo has embarked on the use of a combination of desktop analytical techniques including statistical condition forecasting, pipe service life modeling and risk-based decision making tools to lay the foundation for making capital pipeline replacement/ renewal decisions over the next few decades. This presentation describes how the innovative desktop methods are intended to be used by MWCo to select the most appropriate locations for pipeline inspection and renewal leveraging MWCo's existing GIS and hydraulic model databases.

3:00 PM — "Situational Awareness - The Next Lead in Industrial Human Machine Interface Design"
by MARC BUCHWALD, Water and Wastewater Business Development Manager, Schneider Electric, Parsippany, NJ

This paper will discuss how the HMI should be designed to optimize the operator's interpretation of the vast amount of data being displayed. The cornerstone of improving the overall HMI design is to deliver Situational Awareness (SA). Only by achieving the proper Situational Awareness can the operations team make effective decisions that will deliver overall business success.

3:30 PM — "Complete SCADA System Upgrade Replaces Obsolete Hardware, Enhances Communications, and Improves Operational Efficiency"
by JONATHAN GRANT, P.E., Technical Manager, and GARY ALDERS, Project Manager, Woodard & Curran, Dedham, MA

The distributed control system used by the city of Attleboro, Massachusetts, was at the end of its useful life. The city engaged Woodard & Curran to design and implement a complete upgrade of the SCADA system at the West Street and Wading River water treatment plants, two water tanks, and a reservoir. This presentation will describe this complex project and highlight how communication technology was upgraded and how the additional functionality from the control system has improved operational efficiency.

Thursday Morning, March 31, 2016

2 Training Contact Hours will be awarded for the tour and technical sessions. See page 1 for training contact hour requirements.

Tour B
Acton Water Treatment Facility
8:50 AM to 11:00 AM

Moderator: *JAMES CRAY, P.E., Lead Project Engineer, Wright-Pierce, Andover, MA and ROBERT J. WILLIAMSON, P.E., Senior Project Manager, Wright-Pierce, Portland, ME*

8:50 AM — Meet between escalator and Exhibit Hall entrance to board bus for Acton's Water Treatment Facility, Acton, MA

Attendees will observe and learn about the 1.7 mgd South Acton Water Treatment facility, on-line since April 2015, that treats water from a combination of 8 groundwater wells, including one under the direct influence of surface water. It is owned by the Acton Water District, designed by Wright-Pierce, and constructed by Waterline Industries. The project was funded through the Massachusetts Clean Water Trust through the State Revolving Fund. It uses dual aeration towers for VOC removal and pH adjustment prior to being preoxidized with potassium permanganate for filtration by Pall Aria microfiltration membranes. This achieves mineral removal and compliance with log removal criteria under the Surface Water Treatment Rule. The filtered water flows into a baffled clear well to achieve the necessary chlorine contact time prior to entering the distribution system. The facility replaced two existing treatment facilities that utilized aeration and chemical addition to treat the 8 groundwater wells. As part of the project, over 13,000 linear feet of transmission main was installed to connect the two raw water sites, including pipe jacking under active commuter rail tracks. The facility is designed to expand capacity up to 2 mgd with the addition of a ninth well and add additional treatment capabilities for the emerging contaminant 1,4-dioxane, if necessary in the future.

11:00 AM — Bus leaves Acton to return to the DCU Center

Because educational material and information about the facility will be disseminated on board the bus, **YOU MUST BE ON THE BUS TO PARTICIPATE IN THE TOUR AND/OR TO RECEIVE 2 TCHs.**

NOTE: The tour is limited to 50 people and is expected to fill up fast. You must have a paid registration to attend the tour. There is no additional fee, however, you must indicate which tour you plan to attend on the registration form.

Session 11
Distribution III
9:00 AM to 11:00 AM — South Ballroom

Moderator: *CHRISTINA L. JONES, P.E., Project Engineer, Tighe & Bond, Westfield, MA*
Assistant Moderators: *MICHAEL M. GREELEY, P.E., Associate, Hazen and Sawyer, P.C., Boston, MA, and ASHLEY N. DUNN, P.E., Senior Water & Wastewater Engineer, Town of Framingham, Framingham, MA*

Introduction by NEWWA Distribution & Storage Committee Chair, Robert G. Radigan, Water & Sewer Foreman, Town of Stoneham DPW, Stoneham, MA

9:00 AM — "Collaboration Yields Forward Thinking Design for Multi-Use Water Supply Pump Facility"
by ANDREW J. DENNEHY, P.E., Senior Project Manager, and ROBERT T. MACKIE, P.E., BCEE, Senior Associate, BETA Group, Inc., Norwood, MA

Working collaboratively with Needham's working group, comprised of both engineering and operations personnel, yielded a forward thinking concept that balanced operational, engineering, sustainability, aesthetics, and security aspects into a multi-use water pumping facility that will service the town for decades. Site runoff is handled with a rain garden along with reuse of the original station's foundation for stormwater infiltration. Energy efficiency was woven throughout all aspects of the design. Smooth integration into MWRA's system was a key element.

9:30 AM — "Water Quality Concerns over Too Much Pipe Capacity"
by ROBERT G. RADIGAN, Water & Sewer Foreman, Town of Stoneham, Stoneham, MA, and ERICA LOTZ, P.E., ENV SP, Senior Principal Engineer, Stantec, Burlington, MA

The town of Stoneham experiences low chlorine levels in the northwestern portion of town. After many years of localized flushing, the town is now moving forward with reducing the pipe capacity in this area to address these water quality concerns. Through the use of the town's water system, hydraulic model water system improvements were identified to reduce travel times while still providing adequate fire protection.

10:00 AM — "Distribution System Emergency Preparedness"
by MARK H. JOHNSON, P.E., Director, Metropolitan Water Operations and Maintenance, Massachusetts Water Resources Authority, Boston, MA

Preparing for emergencies is something that all system operators should be constantly focusing on. Many of our day-to-day tasks can be used in preparing to deal with or to minimize emergency situations. This presentation will highlight emergency preparedness activities for distribution system operators. It will also preview a new training course to be offered by the Distribution and Storage Committee of NEWWA.

10:30 AM — "Asset Management for Water Tanks"
by RICHARD JOHNSON, Water Systems Consultant, and SCOTT B. KELLEY, Water Systems Consultant, Utility Service Co., Inc., Atlanta, GA; ROGER HILL, DPW Director, Town of Foxborough, Foxborough, MA, and JEFFREY AYER, Deputy Director Water, Town of West Springfield, West Springfield, MA

Asset management for water tanks is now a reality in Massachusetts as a result of Senate Bill 2126. The legislation allows for a 15 year contract with 5 year renewal at the option of local government through the RFP process. This legislation will provide for extended warranties, future rehabilitation, inspections, and emergency repairs, from a one source provider. Foxborough and West Springfield have provided the leadership in the state to adopt this sustainable creative solution to water quality problems.

Session 12
Regulations
9:00 AM to 11:00 AM — North Ballroom

Moderator: *J. KEVIN REILLY, Microbiologist, U.S. Environmental Protection Agency-New England, Boston, MA*
Assistant Moderator: *DONALD L. WARE, P.E., Chief Operating Officer, Pennichuck Corporation, Merrimack, NH*

9:00 AM — "Cyanobacteria, Cyanotoxins, Harmful Algal Blooms (HABs), or Whatever You Call It - Be Prepared!"
by GEVON SOLOMON, Biologist, U.S. Environmental Protection Agency, Boston, MA

Harmful Algal Blooms are being acknowledged more frequently as a contaminant addressed by surface water systems. They are not simply a taste and odor issue, but are a public health concern. In response to this, the EPA has initiated a series of actions to study and address this concern. They have issued health advisories for two cyanobacterial toxins and guidance manuals on managing cyanotoxins in drinking water. This presentation will review the EPA cyanotoxins health advisories and provide information about cyanotoxin treatment.

9:30 AM — "New Hampshire's First Year of Implementing the Revised Total Coliform Rule"
by BETHANN McCARTHY, Civil Engineer, Drinking Water and Groundwater Bureau, New Hampshire Department of Environmental Services, Concord, NH

This presentation will be a brief overview of how the early implementation of the RTCR has worked in New Hampshire for the past year. This will include general bacteria monitoring requirements, information on the 30-day "fix" limit and when/how to request an alternate schedule, if needed. Common problems encountered in the Level 1 & 2 Assessments and typical sanitary defects revealed during the assessments will also be discussed.

10:00 AM — "U.S. EPA's Unregulated Contaminant Monitoring Rule 3 (UCMR 3), The Results Are In and What They Might Mean for the Future"
by CHRISTOPHER R. RYAN, Environmental Specialist, U.S. Environmental Protection Agency, Boston, MA

The EPA is required to monitor by the 1996 Safe Drinking Water Act for up to 30 unregulated contaminants every 5 years. Round 3 was just completed and this data is used as a primary source of occurrence and exposure information that the EPA uses to develop new regulations, if needed. Round 3 (2013-2015) monitoring program included 28 chemicals and two viruses. Round 3 was just completed and the available monitoring results will be presented.

10:30 AM — "U.S.EPA's New Legionella Guidance Manual List Strategies to Control It in Hospitals, Schools and Offices"
by DENISE C. SPRINGBORG, P.E., Environmental Engineer, U.S. Environmental Protection Agency, Boston, MA

This presentation will review the updating of EPA's guidance manual for Legionella. The manual addresses the six technologies used to control Legionella in complex plumbing systems susceptible to stagnant areas within multi-story buildings. The guidance manual focuses on providing decision makers with scientific information on the effectiveness of these technologies and operational requirements.

Session 13
Groundwater
9:30 AM to 11:30 AM — Centre Ballroom

Moderator: *WILLIAM J. NUNNERY, P.E., Project Manager, Weston & Sampson, Peabody, MA*
Assistant Moderator: *GARRY F. McCARTHY, P.E., Principal, Stantec, Burlington, MA*

9:30 AM — "Challenges Posed by 1,4-Dioxane Impacts at a Massachusetts Groundwater Source"
by DAVID MacLEAN, Senior Associate and KEVIN D. TRAINER, C.P.G., P.G., L.S.P., Associate, GeoInsight, Inc., Manchester, NH

Chlorinated solvents were detected in a municipal water supply well in the 1980s. Recognizing the possibility of emerging contaminants, 1,4-dioxane was added to tests beginning in 2008 and found to be non-detect. However, in 2011 laboratories lowered their detection limits in response to changes to the drinking water guideline, and 1,4-dioxane was found to be present in the water supply well. Emerging contaminants present a challenge for utilities because they are difficult to treat and changes to regulatory standards (and laboratory detection limits) may identify new water quality concerns.

10:00 AM — "Aquifer Sustainability Using Groundwater Monitoring"
by RAYMOND W. TALKINGTON, Ph.D., P.G., C.P.G., Principal, Geosphere Environmental Management, Inc., Exeter, NH

Monitoring groundwater levels in aquifers is an important component to water conservation. In recent years there has been an increase in water conservation and water reuse for many communities both large and small. However, how have aquifers responded to these conservation measures? It is important to monitor groundwater levels in these aquifer systems to develop a groundwater withdrawal plan in order to maximize aquifer sustainability and maintain the long term health of the aquifers.

10:30 AM — "What To Do When the Well is Under Pressure"
by TOM HYDRO, Regional Technical Representative, Weston & Sampson, Worcester, MA, and TIMOTHY KAISER, Director of Public Works, Williamstown Water Department, Williamstown, MA

Unique aquifers are under extreme pressure and exhibit artesian flowing conditions-creating extraordinary drilling challenges and increased risk during the construction and testing of this 800 gpm well. Due to recharge zones on the flanks of three surrounding mountain sides, upward aquifer pressures of 43 to 60 feet exist. Specialty designs and unique testing methods were used. Quick thinking, specialty grouts, and a little sawdust prevented the formation of a catastrophic sinkhole during construction and testing of this well source.

11:00 AM — "Are You Protecting Your Assets? Practical Modflow Applications & Source Water Protection Efforts to Protect Vital Watershed Resources"
by RYAN J. TRAHAN P.E., Senior Project Manager, Environmental Partners Group, Inc., Quincy, MA

Approximately 80 percent of the Seekonk Water District's total water supply is from the Newman Avenue wellfield. A hydrogeologic study of the wellfield for water supply protection, planning, and management purposes was conducted. A new Zone II was delineated and a new aquifer protection map and bylaw was approved at Town Meeting in Spring 2015. This presentation will summarize the science of the flow model and how this data was used to develop new source water protection zones and map.

Session 14
Dams
9:30 AM to 11:30 AM — Meeting Rooms A & B

Moderator: *KEVIN M. FLOOD, P.E., Senior Project Manager, Fuss & O'Neill, Manchester, CT*
Assistant Moderator: *KAREN L. GRACEY, P.E., Vice President, Tata & Howard, Marlborough, MA*

9:30 AM — "Risk-Based Decision Making for Dam Safety Improvements … and Beyond"
by PETER H. BARIL, P.E., Principal/Senior Hydrologic Engineer, and CHAD W. COX, P.E., Principal, GZA GeoEnvironmental, Inc., Norwood, MA

Spearheaded by the Corps of Engineers, the engineering community has developed risk management best practices to assess and manage risk for dams. The risk-based approach provides more robust and realistic design criteria for hydraulic, stability, and structural improvements, based on probability of occurrence and associated consequences (i.e. risk). A general overview of key concepts will be presented to inform water supply dam owners how the risk-based methods are utilized to develop enhanced early warning monitoring programs and improvement for a their dams and other key facilities.

10:00 AM — "Seepage Control Structures at Earthen Dams"
by JOHN J. GREGOIRE, Program Manager, Reservoir Operations, Massachusetts Water Resources Authority, Boston, MA

MWRA manages numerous large, high hazard earthen water supply dams. After vegetation management exposed toe areas of three dams, active seeps were discovered. Known seeps were monitored to assess if they were increasing in flow as well as moving fines through the dam, which could be indicative of problems. At MWRA dams, these seeps had masonry seepage control structures with V-notch weirs designed and built to collect/pass seepage flows for monitoring. To date, two structures have been completed and are operational. Two others are scheduled for construction. This presentation will

discuss the discovery of seeps, the design/construction of the control structures, and lessons learned will be shared.

10:30 AM — South Carolina Dams, Severe Storms, and New England: What should be learned from Recent Events?
by MATTHEW BELLISLE, P.E., Senior Vice President, Pare Corporation, Foxborough, MA

As a result of Hurricane Joaquin, 36 dams failed in South Carolina due to flooding associated with precipitation reported as high as 19 inches in 24-hours. While catastrophic, this event provides opportunities for dam owners to review the set up to the failures, the response, and the recovery. What was done, what could have been done, and what should be done in the future. This is the time to Monday morning quarterback, and prepare our structures for extreme events.

11:00 AM — "Balancing Interests - Environmental Resource Impacts Related to Dam Improvements"
by CHRISTOPHER D. HAKER, P.E., Principal Engineer, Tighe & Bond, Worcester, MA

Natural resource and wildlife habitat impacts are an important issue related to design, permitting, and construction of improvements to dams. This presentation will discuss improvements that are typically performed at dams throughout New England and the type of resource and habitat areas that are commonly impacted. Common resource areas include vernal pools, bordering vegetated wetlands, land under water, habitats for salamanders, turtles, and fisheries, and bat hibernacula. The presentation will explore ways to minimize impacts and possible mitigation options.

Thursday Afternoon, March 31, 2016

Session 15
Water Treatment III
1:30 PM to 3:30 PM — North Ballroom

Moderator: *DONALD L. WARE, P.E., Chief Operating Officer, Pennichuck Corporation, Merrimack, NH*
Assistant Moderators: *JAMI B. WALSH, P.E., Senior Project Engineer, AECOM, Chelmsford, MA, and CHRISTOPHER C. YANNONI, P.E., ENV SP, Senior Principal, Stantec, Burlington, MA*

1:30 PM — "Retrofitting DAF for Surface Water Treatment - Lessons Learned"
by CHARLES PIKE, P.E., Principal Engineer, and MARIO S. FRANCUCCI, P.E., Project Manager, Black & Veatch, Burlington, MA

Meriden, CT recently completed a major upgrade of its largest treatment plant, Broad Brook WFP (5.0 mgd capacity). Improvements included a new DAF pretreatment facility to address seasonal taste and odor problems; complete filter rehab including air scour; new chem. feed systems that are safer for plant workers to operate; and major mechanical rehab to facilities that were 40, 80 and over 100 years old. This presentation discusses 'lessons learned' from this rehab project from piloting through construction and commissioning.

2:00 PM — "Advances in Ozone Generation & Injection – Ceramic Dielectrics & Side Stream Injection"
by ADAM S. KRAN, P.E., Project Engineer, Environmental Partners Group, Quincy, MA

Ozone gas is regularly used in drinking water treatment for the oxidation of organics and metals, primary disinfection, and the control of taste and odor causing compounds. Conventional ozone generators rely on maintenance-intensive glass tube dielectrics, and ozone gas is commonly added to water for treatment using bubble diffusers at the bottom of a contactor. This presentation will focus on state-of-the-art technology for ozone generation using low-maintenance ceramic dielectrics and on the use of high-efficiency side stream gas injection systems. The presentation will include a case study of an ozone plant upgrade.

2:30 PM — "Challenges and Solutions for Achieving Multi-Faceted Project Objectives for a Large Plant Upgrade"
by LARRY W. VANDEVENTER, Vice President, Kleinfelder, Cambridge, MA, and SIMON WONG, P.E., Vice President & Principal Structural Engineer, Kleinfelder/Simon Wong Engineering, San Diego, CA

The presentation will discuss the city of San Diego 215 mgd Miramar WTP upgrade: the disinfection redundancy goals, the hydraulic constraints controlling the design, the design and baffling of both the chlorine contact tank and clearwells, CFD modeling of hydraulic efficiency, the integration and design of the low lift pump station, physical modeling of the pump station, and maintenance of plant operation during construction. The presentation will conclude with a 5 min. 3-D video animation of the construction sequencing.

3:00 PM — "Algae & Organics Are No Match for High Rate DAF"
by PAUL A. MORAN, P.E., Project Engineer, Tighe & Bond, Westfield, MA, and JAMES M. HILL, Water Treatment Manager, South Central Connecticut Regional Water Authority, New Haven, CT

The SCCRWA's direct filtration West River WTP currently experiences high algae and organics in the summer months, which limit capacity and create elevated TTHMs in the distribution system. This presentation will include results of winter and summer pilot testing of Dissolved Air Flotation (DAF) and filters. Chemicals, loading rates, filter media, and filter depth were evaluated. A DAF loading of 16 gpm/sf and filter rate of 4.3 gpm/sf were achieved. A preliminary design was developed to high rate the plant.

Session 16
Safety/Operations & Maintenance
1:30 PM to 3:30 PM — South Ballroom

Moderator: *CAROLYN C. GIAMPE, Manager, Capital Project Delivery, Aquarion Water Company of Connecticut, Bridgeport, CT*
Assistant Moderator: *JAMES J. PESCATORE, P.E., BCEE, Vice President, CDM Smith, Boston, MA*

1:30 PM — "Behavioral Based Safety - Creating a Culture of Safety"
by RICK DENHAM, Safety Manager, R. H. White Construction Co., Inc., Auburn, MA, and RUSSELL E. TIERNEY, Northeast Regional Manager – Water, WhiteWater, Inc., Charlton, MA

One of the most difficult tasks managers and organizations face is motivating employees to be safe at work and not only follow safety policies but go beyond and insure their safety 24/7. Doing so takes a desire to have an incident free culture and the knowledge of the subtle effect that organizational leaders, policies, procedures, and operations practices as well as the workplace culture, have on employee's behavior. Misalignment in these key areas, and in management's leadership and actions, will drive employee perceptions and behavior. Attendees will hear how an organization can begin their journey to an incident free culture through behavioral based safety and leave with practical tools for achieving success.

2:00 PM — "Protecting Against Arc Flash Hazards"
by ANDREW FITZPATRICK, P.E., Senior Technical Manager, Woodard & Curran, Bangor, ME

This presentation will discuss arc flash hazard facts and focus on best practices to prevent an arc flash hazard. Five to ten arc flash accidents occur every day in the United States. Understanding whether an arc flash hazard exists is the first step toward protecting employees and the public. Second, two-thirds of all electrical injuries result from the inappropriate action of a worker. Correcting common errors and having an awareness of potential risks to avoid is essential to promoting safety.

2:30 PM — "Addressing Water Quality Issues with Ice Pigging in Webster, MA: A Case Study"
by AUSTIN WEIDNER, Staff Engineer, Tighe & Bond, Worcester, MA; MICHAEL J. SCHRADER, P.E., Project Manager, Tighe & Bond, Westwood, MA; and SCOTT CHARPENTIER, P.E., Town Engineer/Planner, Town of Webster Water Department, Webster, MA

The town of Webster is plagued by acute drinking water quality problems due to iron and manganese in its groundwater sources. To improve water quality, the town is utilizing ice pigging, an emerging technology, to remove legacy manganese from the distribution system. This presentation will discuss the challenges of procuring ice pigging services, the process used to select which pipes to pig to optimize effectiveness, and the results, which are being assessed using hydraulic modeling and unidirectional flushing field observations.

3:00 PM — "Replacement of Large Turbine Meters with Maintenance-free and Reliable Ultrasonic Technology"
by JOHN W. SCHULTZ, Manager Support Programs, Aquarion Water Company, Shelton, CT, and JOHN VAN NOSTRAND, South East Regional Manager, FleximAmericas, St. Johns, FL

Utility companies are faced with the challenge of replacing large meters that fail routine accuracy testing and are no longer supported by the manufacturer. After investigating the options, Aquarion Water Company opted for ultrasonic metering technology as the best choice to replace a 16" revenue meter. The technology provided a cost effective solution while improving low flow measurement and accuracy. Simple installation and zero head loss are added benefits.

Session 17
Cross Connections
1:30 PM to 3:30 PM — Centre Ballroom

Moderator: *PAUL O. GARDNER, Chief Cross Connection Inspector, Lawrence Water Department, Lawrence, MA*
Assistant Moderator: *DAVID E. PUTNAM, President, Putnam Pipe Corp., Hopkinton, MA*

1:30 PM — "Backflow 101, Running a Cross Connection Program or Restarting a Program"
by JOSE MEDINA, Cross Connection Inspector, Lawrence Water Department, Lawrence, MA

The objective of this session is to provide information on running a cross connection program or how to restart your cross connection program! What paperwork and records you must have to run a good Cross Connection Program will also be discussed. We will touch on how to survey your system, what to look for, when surveying and how to identify hazards. We will also discuss education of your public to what a Cross Connection Program is.

2:00 PM — "Backflow Testers' Best Practices for Initial Inspections"
by THOMAS V. CRAVENS, Chair, NEWWA Board of Certification of Backflow Prevention & Cross Connection Control, Holliston, MA

This topic will cover what to look for in the initial test of a backflow prevention device. There is more to the initial inspection than just the test. The tester needs to determine if the correct device was installed in the correct orientation, does the installation meet the water department's installation standards?

2:30 PM — "Panel Discussion - Responsibilities of Testers, Owners, Water Departments, and State Agents"
by WILLIAM SULLIVAN, Sanitary Engineer 3, CT DPH, Water Supply, Hartford, CT; and OTAVIO PAULA-SANTOS, Environmental Analyst, MA DEP, Bureau of Resource Protection, Boston, MA

These panelists will present their state's perspectives on the responsibilities of each of the players in the program: the tester, the owner, the water supplier, and the state water official.

3:00 PM — "NEWWA Rules Change and BFP Testing Change"
by THOMAS V. CRAVENS, Chair, NEWWA Board of Certification of Backflow Prevention & Cross Connection Control, Holliston, MA

The speaker will go over the changes in the test procedure for the reduced pressure zone backflow preventer and will also go over the recent re-certification requirement changes to be implemented January 1, 2017.

Session 18
Management/Finance
1:30 PM to 3:30 PM — Meeting Rooms A & B

Moderator: *THOMAS D. LeCOURT, P.E., Director of Drinking Water Operations, Springfield Water and Sewer Commission, Springfield, MA*
Assistant Moderator: *DAVID C. PEELING, P.E., Principal Engineer, Kleinfelder, Rocky Hill, CT*

1:30 PM — "Employing an Organizational Profiling Tool to Understand the Culture of Your Organization"
by SETH W. GARRISON, Vice President, Woodard & Curran, Portland, ME

There are several established tools for assessing an organization's culture. This presentation will focus on the Organizational Culture Assessment Instrument (OCAI) and will discuss how Woodard & Curran performed a cultural assessment of a regional private water supplier using the OCAI and the value that it brought to their change management efforts. Understanding to what degree the utility aligned with each of the OCAI's cultural characteristics provided managers with a frame of reference for making effective and lasting management decisions.

2:00 PM — "How Does a Two Hundred Year Old Water System Sustain and Adapt to Meet Water Demands?"
by BRIAN F. GOETZ, Deputy Director of Public Works – Utilities, City of Portsmouth DPW, Portsmouth, NH, and ALBERT PRATT, P.E., Water Resources Manager, City of Portsmouth, Portsmouth, NH

The Portsmouth Water Division is a regional water system in the seacoast area of New Hampshire. Originally constructed in 1797, the system has grown to consist of a Reservoir, a brand new LEED Certified water treatment facility, eight wells, five storage tanks, and approximately 190 miles of water mains. This presentation will focus on the water system's Integrated Water Supply and Demand Management Program.

2:30 PM — "Triple Bottom Line (TBL) Tool and LCA Insights for Water Supply Planning"
by STEPHANIE K.L. ISHII, Assistant Engineer, Hazen and Sawyer, P.C., Fairfax, VA

The need for a comprehensive and objective methodology for comparing water supply options stems from strained conventional resources, emerging alternative resources, and the important role of public acceptance in water supply planning. Here we discuss the development of a specialized TBL tool, including LCA, economic input-output modeling, and social impact assessment, and its application to a utility case study. Additionally, LCA results from four water treatment facilities highlight the influence of source water variability on the overall impacts of treatment.

3:00 PM — "Closing the Infrastructure Funding Gap"
by GARRY F. McCARTHY, P.E., Principal, Stantec, Burlington, MA

The Water Infrastructure Finance Commission (WIFC) Report was completed in February 2012. The report led to the Legislature passing an Act Improving Drinking Water and Wastewater Infrastructure on August 6, 2014, authorizing, among other things, additional funding for infrastructure projects. The base is building for developing sustainable infrastructure replacement funding sources for water utilities. This presentation includes options available to water utilities to educate/inform their customer base regarding the value of drinking water to facilitate funding of critical infrastructure improvements.

Announcements / Reminders

Connect to the Spring Conference!

Get one-touch access to information on technical sessions, speakers, exhibitors, and meetings! **Download the mobile app at http://eventmobi.com/newwa2016.**

Young Professionals Meet & Greet Breakfast!

Join the Young Professionals Committee and established NEWWA members for a Meet & Greet breakfast on Wednesday, March 30th at 8:00 AM in Meeting Room E. Learn more about NEWWA's young professional and mentoring programs.

Back by Popular Demand – Speed Networking! Join us for this rapid-fire, fun and engaging format of networking where you will be personally introduced to more members quicker than any other event. All active NEWWA members of any age are welcome to come and participate.

Free Admission to the Exhibit Hall!

Visit more than 200 exhibitors in the Exhibit Hall on Wednesday from 8:00 AM to 3:00 PM and Thursday from 8:00 AM to 1:30 PM. Enjoy complimentary coffee and doughnuts from 8:00 AM to 10:00 AM. Complimentary lunch will be available from 11:00 AM to 1:00 PM.

Door Prizes . . .win cash . . . sports tickets . . . and more! Every person registered for the conference will receive one complimentary raffle ticket for each day. Each ticket will be valid for one day, and you must be present to win. Drawings will be held during lunch hours between 12:00 and 12:30 p.m. on both Wednesday (**RED** ticket) and Thursday (**BLUE** ticket) in the Exhibit Hall.

NEW for 2016 ... TOP OPS Competition — 11:30 AM in Meeting Rooms A & B

What is TOP OPS? During a TOP OPS competition, teams of one, two, or three operators compete against each other in a fast-paced, question-and-answer tournament. A moderator will pose a broad range of technical questions, with points awarded to the teams that answer the questions correctly. **Team members MUST:** 1) Work full-time as a water and/or wastewater treatment plant employee, a water distribution system employee, a sewer collection system operator, or in a first-line supervisory capacity. At least 50% of their time must be as a water treatment plant employee or water distribution employee; 2) Possess a valid operator, wastewater, laboratory, or distribution certification for their jurisdiction; 3) All team members must also be AWWA members or employees of a utility holding a utility membership; 4) Team members do not need to be employed by the same utility.

TOP OPS Teams Needed! We are seeking four teams of operators to participate in this event. The deadline to enter your team is February 29, 2016. For full details, see the TOP OPS informational flyer at newwa.org or contact Katelyn at kcahalane@newwa.org.

"NEWWA In Action" — A Scavenger Hunt!

Collect words/phrases from participating exhibitors' booths. There will be 10 connecting words/phrases in folders at participating booths. Some booths will have duplicate word groups to that of another booth. Use the word groups to complete the paragraph on the entry form. When completed, submit your entry (with your name, mailing address and phone number) to the collection box in the conference registration area. Deadline for submission is 10:30 AM on Thursday, March 31st. Awards will be announced and posted by 11:00 AM.

"Fresh Ideas" College Student Poster Session

Encourage young member participation in NEWWA! Visit the "Fresh Ideas" college student poster session on **Wednesday, March 30th** and learn a fresh idea. Students will be present to explain their project from 12:30 PM to 2:00 PM. Posters will be displayed in the Exhibit Hall. Cash prizes will be awarded to students for first, second, and third place.

Visit newwa.org for abstract submittal information. Questions? Contact Ken Lee, NEWWA Student Activities Committee Chair, at Western New England University, 413.782.1739 or kenneth.lee@wne.edu.

Wednesday Evening Reception!

Join NEWWA staff and other conference attendees in the Ballroom Pre-function Area from 4:00 PM to 6:00 PM for a reception sponsored by exhibitors and conference sponsors.

Earn Training Contact Hours (TCH)

Training Contact Hour Requirements: TCHs will be granted for technical sessions and the tours on Wednesday and Thursday. Attendees who wish to receive TCH credit must be in attendance for the entire session. **You must have your badge scanned when you enter and exit the session room. You cannot move between sessions in the same time period.** A picture ID is required. (Note: TCH approval of State Agencies is pending at the time of publication.) **Your TCH certificate will be prepared and mailed to you within six to ten weeks from the date of the conference.**

Conference Registration Form

Register online at newwa.org or complete this form and return by fax 508.893.9898 or mail to NEWWA, 125 Hopping Brook Road, Holliston, MA 01746-1471. **Register and pay by March 16th to receive a discount. No refunds will be given after March 23rd.**

PART I - CONTACT INFORMATION (Please print clearly. Name and title will appear on badges as they are written below.)

Name	Title	Nickname	
Company			
Address	City	State	Zip
Phone / Email			Member #

PART II - REGISTRATION OPTIONS AND FEES (Membership can be in any of the sponsoring organizations. Fee includes buffet lunch.)

Two-Day Registration Options	Member/Speaker Discount	Full Price	Amount Paid
Regular	$230	$280	
Young Professional	180	240	
Retired Member (Must be a fully retired NEWWA member)	100	N/A	
Full-Tme Student	50	50	
One-Day Registration Options - Please indicate which day you will attend.	**Member/Speaker Discount**	**Full Price**	**Amount Paid**
Regular ☐ WED ☐ THURS	160	250	
Young Professional ☐ WED ☐ THURS	115	130	
Full-Time Student ☐ WED ☐ THURS	30	30	
FREE Exhibit Hall Only - No Sessions ☐ WED ☐ THURS	N/A	N/A	--
☐ **Early Registration Discount** - Individuals registering and paying by 3/16, check here and deduct $30.			

PART III - ACTON, MA WATER TREATMENT FACILITY TOUR

Each tour is limited to 50 people. You must have a paid registration for the conference to attend the tour. There is no additional fee, however, you must indicate which tour you plan to attend.

☐ **Tour A** WED March 30 ☐ **Tour B** THURS March 31

PART IV - DISCOUNTED UTILITY/STATE REGULATORY AGENCY FEES

Utilities/State Agencies are encouraged to schedule up to 30 employees or commissioners to attend the entire conference and exhibition for one fee. State or Federal agencies should call NEWWA to determine these charges based on attendance. **Please list the names of utility/state agency employees attending on page 13 and check which day(s) they will be attending. You must return this form and the list on page 13 together to be registered. If you need assistance or are registering more than 30 employees or commissioners, call NEWWA at 508.893.7979 or email jgilpin@newwa.org.**

Class (population served)	Member Discount	Full Price	Amount Paid
Utilities with < 1,000 population served	$ 350	$430	
Utilities with = or > 1,000 and < 5,000 population served	500	590	
Utilities with = or > 5,000 and < 25,000 population served	920	1,050	
Utilities with = or > 25,000 and < 50,000 population served	1,150	1,320	
Utilities with = or > 50,000 population served	1,380	1,550	
☐ **Early Registration Discount** - Organizations registering and paying by 3/16, check here and deduct $60.			

PART V - METHOD OF PAYMENT

TOTAL PAYMENT - total fees minus discount(s) **$**

☐ Personal Check (Payable NEWWA) ☐ Company Check ☐ MasterCard ☐ Visa ☐ AMEX ☐ Discover Card

Credit Card # | Exp. Date | Signature

☐ Check here if you have a disability and may require accommodations to fully participate. You will be contacted by NEWWA.
NOTE: If you need special hotel accommodations, you must inform the hotel when you make your hotel reservations.

For additional information about the conference or to download the conference program, visit newwa.org

Utility Employee Sign-Up Form

Please **PRINT** or **TYPE** this information clearly so that badges can be prepared in advance. Return this form as early as possible but no later than **March 13**. Please **CIRCLE** the days attending so that proper amounts of food can be ordered. **It is extremely important for proper contact hour assignment that the person's full name and title be given.**

Utility/State Agency Name:

Full Name for Certificate	Nickname	Title	Day(s) Attending Conference			Day Attending Tour	
			WED	THURS	BOTH	WED	THURS
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Return by fax: 508.893.9898
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Exhibit Hall Hours and Information

Tuesday, March 29, 2016	
7:00 AM - 10:00 AM	Exhibitors with vehicles can enter Exhibit Hall - please arrange with Katelyn at kcahalane@newwa.org (Vehicles must arrive before 10:00 a.m. and use the Commercial Street entrance.)
10:00 AM - 1:00 PM	Exhibit Hall closed for exposition service set-up
1:00 PM - 5:00 PM	Exhibit Hall open for exhibitor set-up
Wednesday, March 30, 2016	
7:00 AM - 8:00 AM	Exhibitors set up/move in
7:30 AM - 4:00 PM	Registration Desk open in the Pre-Function Area at the bottom of the escalator
8:00 AM - 3:00 PM	Exhibit Hall Open (complimentary coffee and doughnuts in the morning)
11:00 AM - 1:00 PM	Complimentary lunch in Exhibit Hall
3:00 PM	Exhibit Hall Closes
4:00 PM - 6:00 PM	Reception sponsored by all exhibitors and conference sponsors - *Ballroom Pre-Function Area*
Thursday, March 31, 2016	
7:30 AM - 8:00 AM	Exhibitors can enter Exhibit Hall
8:00 AM - 2:00 PM	Registration Desk open in the Pre-Function Area at the bottom of the escalator
8:00 AM - 1:30 PM	Exhibit Hall open (complimentary coffee and doughnuts in the morning)
11:00 AM - 1:00 PM	Complimentary lunch in Exhibit Hall
1:30 PM - 3:30 PM	Exhibit Hall closes and exhibitors break down.

Registered Exhibitors as of January 1, 2016

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