Course Title**: The Role of Smart Tanks in Distribution Water Quality Management**

60 minutes of instruction

Course Description: This 60-minute seminar will provide water system managers, operators and engineers a practical understanding of the science and implementation of distribution system based water treatment to address low residual levels and disinfection byproducts.

Course Outline:

1. The basics of water tank mixing
    a. Understanding and measuring water tank stratification (temperature and chemical)
    b. Methods that attempt to achieve the results of a well-mixed tank
    c. Modes of tank mixing in recent history
    d. Impact of applying the right amount of energy to a water storage asset
2. Background on DBP and THM regulation in the United States
    a. EPA and Stage 2 DBP Rules
    b. THM generation in water systems
    c. Conditions that allow for THM formation
    d. Nature of THMs (volatile compounds, Henry's Law)
    e. Basics of THM removal
3. Background on the importance of controlling disinfectant residual levels in water systems
    a. Prevalence of low residual related MCL violations
    b. Role of nitrifying bacteria in the destruction of water quality (chloramine systems)
    c. Operational procedures currently used to stave-off nitrification
    d. The Breakpoint Curve – Understanding Fluctuating Residual Levels in Networks
    e. Equipment options and equipment form factors

Presenter Bios:

Ethan Brooke
Senior Product Manager, THM Removal System, PSI Water Technologies, Inc.

Ethan Brooke is an internationally recognized expert on aeration technologies for trihalomethane (THM) removal. His master's thesis on THM aeration was published in the *Journal American Water Works Association* and resulted in three patents which are held by the University of New Hampshire. Ethan has a background in civil engineering and product management and has worked on a variety of water, wastewater and distribution system infrastructure improvement projects.

Learning Outcomes:

- Attendees will understand the role of tank mixing as a fundamental step to improving water network quality
- Attendees will understand the conditions that generate THMs in distribution systems and the physical/chemical nature of THMs

- Attendees will better understand the mechanisms for THM removal based on the physical/chemical nature of THMs
- Attendees will understand the conditions and basic chemistry of chloramine and free-chlorine residual destruction in water distribution systems
- Attendees will understand how the breakpoint curve can be used to intelligently boost residual levels in an automated mode versus today's manual and time-consuming methods

Tracking of Attendance:

- When the invitation is sent out, it includes a registration link. This registration link requires them to enter in their contact information. That is captured in an Excel format into a spreadsheet. These spreadsheets are stored on our internal website for future needs to be accessed.