



Enhancing Water Quality Management:

Salem Water Department's Success with Hach's EZ1025sc Dissolved Manganese Analyzer



Nestled in southern New Hampshire along the Massachusetts border, the Town of Salem Water Department serves its community with dedication and precision.

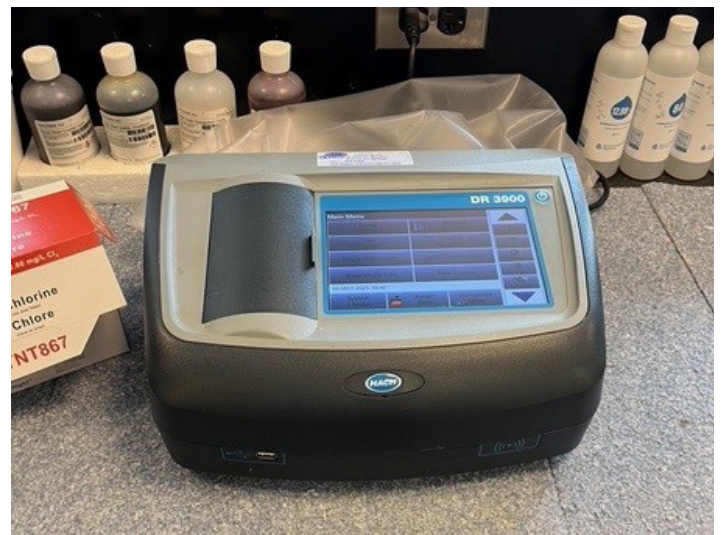
Drawing from Canobie Lake as the primary source from May through October and switching to Arlington Pond during the winter months to allow regeneration, the department employs advanced treatment processes including upflow clarifiers and anthracite filters.

Pre-chlorination is carefully adjusted based on incoming flow to ensure optimal water quality.

The Challenge: Reactive Monitoring and Unpredictable Manganese Levels

Before implementing Hach's innovative solution, the Salem team relied on manual grab sampling—conducting 3-4 tests per day using Hach's trusted DR3900 and DR6000 spectrophotometers with the PAN method. Samples often required dilution for high concentrations, adding to the operational burden. Manganese spikes, particularly triggered by rainfall events, were historically managed through guesswork and reactive measures. These fluctuations went unnoticed for years, leading to issues in the distribution system, increased customer complaints, and frequent clear well maintenance for cleaning and draining.

Fred Wallace, Deputy Director of Utilities, recognized the need for a more proactive approach. "Prior to the installation of the analyzer, we were just doing grab samples and were reactive to increasing levels of manganese," he recalls. "Our source waters present some challenges, which we address with treatment processes to meet drinking water quality standards."



The Salem's team previous grab sampling method: Hach's DR3900 and DR6000 spectrophotometers with the PAN method

The Solution: Hach's EZ1025sc 2-Stream Dissolved Manganese Analyzer

To address these challenges, the Salem Water Department selected Hach's EZ1025sc 2-Stream Dissolved Manganese Analyzer for continuous monitoring of raw and finished drinking water. This state-of-the-art online analyzer provides real-time insights, seamlessly integrating with the plant's SCADA system for 24/7 data access. Operators can now start their shifts with immediate knowledge of incoming manganese levels, eliminating the need for time-consuming lake sampling and reducing overall testing requirements.

Hach's comprehensive service package further enhances reliability, offering startup assistance, operator training, and quarterly preventative maintenance visits. Between services, the team easily handles reagent changes, ensuring uninterrupted performance.



Doug Curtin (Hach Field Service Technician III) maintaining the EZ1025sc 2-Stream Dissolved Manganese Analyzer



Transformative Results: Proactive Treatment and Operational Efficiency

The impact has been profound. With the EZ analyzer, the department can detect manganese spikes at the plant's headworks—such as levels reaching 0.3 mg/L—and treat them early through oxidation with chlorine as a pre-oxidant. This shift from reactive to proactive management has uncovered valuable data trends, confirming instincts about weather impacts and revealing insights into source water quality amid climate changes.

Town of Salem Water Department

Key outcomes include:

- **Reduced Chlorine Dosing:**
Real-time data enables precise adjustments at the low lift station, optimizing chemical use while maintaining effective oxidation for manganese levels of 0.1–0.2 mg/L.
- **Superior Removal Efficiency:**
Anthracite filters excel in removing manganese, achieving finished water concentrations below 0.013 mg/L—well under the Secondary Maximum Contaminant Level (SMCL) of 0.04 mg/L, representing an order-of-magnitude reduction.
- **Minimized Maintenance:**
Early treatment prevents manganese buildup in the clear well, cutting down on draining and cleaning efforts.
- **Fewer Customer Complaints:**
Consistent water quality has led to a noticeable decrease in issues for Salem residents and interconnections.
- **Rapid Response to Variability:**
For instance, Canobie Lake's 15–30 ft depth can see manganese drop from 0.3 mg/L at 7:30 AM to 0.07 mg/L by 2 PM, with the analyzer providing the visibility needed to adapt swiftly.

The analyzer's data trends also offer long-term benefits, helping the team correlate rainfall with spikes and refine treatment strategies for sustained excellence.

A Testament to Innovation and Partnership

Fred Wallace praises the transformation: "It is easier to manage manganese issues. The online EZ manganese analyzer has improved our operations and reduced the amount of chlorine we are dosing at the low lift station."

By partnering with Hach, the Salem Water Department has turned a challenging water source into a model of efficiency and reliability.

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Discover how Hach's EZ sc Series can elevate your water treatment processes.

Contact us today to learn more!



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