NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

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NJDEP OVERSIGHT REPORT
TRENTON WATER WORKS
Period: August 2023

Trenton Water Works is a community water system that provides drinking water to 200,000+ people in the City of Trenton and portions of neighboring Mercer County municipalities (Ewing, Hamilton, Hopewell, Lawrence). Due to state Safe Drinking Water Act (N.J.S.A. 58:12A) compliance concerns, the New Jersey Department of Environmental Protection (Department) issued a Unilateral Administrative Order (UAO) on October 12, 2022, to initiate direct operational oversight of Trenton Water Works (TWW). While under the Department's direct operational oversight, TWW remains responsible for managing the daily operations of the water system. To facilitate on-the-ground oversight of TWW's operations and enhance TWW's technical and managerial capacity, the Department appointed a third-party oversight contractor (TPO) that works routinely with TWW staff and reports directly to the Department.

This report is intended to summarize oversight findings and actions during the month of August 2023.

Summary of August 2023 Findings and Immediate-Term Actions

In August, TWW showed improvements in procedures for cleaning and rehabilitating the Superpulsator units once they are taken offline. These new practices are expected to enhance the performance of the units in the future by preventing damage that can occur if done improperly. Strides have also been made in the distribution system where low-velocity flushing is having a positive impact to lower the risks of contamination. While progress has been made on these efforts, TWW continues to struggle with chemical feed and supply issues.

1) Superpulsator Clarifier® Units

Following rehabilitation of the Superpulsator Clarifier® Units (Units), TWW began to fill Unit #3 at the end of July to prepare to bring it online for the first time in approximately 2 years. Upon bringing online, TWW realized that the unit was not operating in a way to continuously remove sludge from the unit. Despite this setback, no treatment issues were anticipated or experienced and a defective part was replaced to allow the unit to operate normally.

Figure 1: Cleaned out SuperPulsator #4

Once Unit #3 was filled, Unit #4 was taken offline for draining and cleaning. TWW began using a different cleaning procedure used by other plants with Superpulsator Clarifier® Units the State to reduce the time it typically takes to clean the unit.

On August 17, 2023, Department staff observed that there was significantly less sludge in the basin of Unit #4 after it was fully drained and it was confirmed by

both TWW and the TPO that the new cleaning method was highly effective. The turnaround time for cleaning was reduced to approximately 2-3 weeks, when it previously took months for TWW to clean out the sludge build up in an offline unit.

2) Chemical Feed Supply Issues

TWW continues to experience issues with their chemical feed and supply systems. In mid-August, TWW experienced an increase in turbidity at the plant due to a reduction in the amount of a critical chemical added for sludge bed formation to make up for a delay in chemical deliveries by the manufacturer. In accordance with state regulations, all public water systems are required to have a minimum of 30 days of chemical storage onsite. TWW did not have sufficient chemical storage, or a delay in chemical deliveries would not have impacted normal operations at the treatment plant. While higher turbidity was experienced at the plant during this time, levels remained in compliance. Since March 2023, the Department and the TPO have documented approximately 20 different incidents with the operational of TWW's sludge blanket polymer, ferric chloride, and potassium permanganate chemical feed systems. TWW's chemical feed system and storage, which are required for the day-to-day operation of the treatment plant and distribution system, will be evaluated by the TPO and as part of the system assessments.

3) Pennington Reservoir

Reservoir Replacement Plan

The Department completed a review of TWW's proposed Phase 2 storage tank plan that was submitted in May 2023. This phase of the plan proposes two above ground covered storage tanks in the high service area of the distribution system. Following review of the plan, the Department sent a letter requiring TWW to address several concerns about the hydraulic model simulations and interconnection capacity testing. The Department will not approve the Phase 2 plan until TWW addresses all concerns, and TWW demonstrates that the plan satisfies the requirements under N.J.A.C. 7:19-6.7 and 7:10-11.11(a)2.

Reservoir Check Valve

TWW will be replacing the reservoir check valve with a "double door" style valve that was determined to be the best solution to prevent the backflow of water into the reservoir. The lead time to receive this new valve from the manufacturer is approximately 40 weeks, so the zinc orthophosphate chemical feed system for the gravity zone will remain offline until this work is completed. Lead and copper levels in the gravity zone distribution system are not expected to be negatively impacted at this time based on a water quality parameter review by the Department. The Department has required additional lead and copper monitoring for the gravity zone as a precaution to monitor any changes that would impact water quality.

4) Distribution System Activities

The low velocity flushing program continued throughout August as part of the overall Legionella mitigation plan for the TWW system. TWW continued their sampling efforts at flushing and non-flushing locations throughout the distribution system to trend chlorine residual over time. Water temperature results remained steady throughout the month of August, similar to temperatures in the month of July. Based on water temperatures and chlorine residual results in the system, there was no further increase in the chlorine residual leaving TWW's point of entries. TWW was able to maintain the target chlorine residual of 1.0 mg/L in most areas of the distribution system during this month.

Hydrant inspections continued in August. Hydrants were inspected throughout all zones in Trenton. TWW's midge sampling program also began on August 14, 2023. Monitoring for midges in the distribution system is used as an indicator of potential water quality concerns in the reservoir. No midges were detected in the distribution system during the month of August that would trigger the need for additional evaluation of the reservoir.

NEXT STEPS

While training continues to be a focus at this time, the Department will be requesting that the TPO expert on maintenance practices be brought onsite to the treatment plant. The intent is to evaluate and provide recommendations on how to create a preventative maintenance program for TWW to reduce the number of chemical feed incidents.