GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
BAY CITY DISTRICT OFFICE

LIESL EICHLER CLARK
DIRECTOR

May 12, 2022

Eric Buckman, Manager
City of Gladstone
1100 Delta Avenue
Gladstone, MI 49837-0032

WSSN: 2640
County: Delta

Dear Eric Buckman:

SUBJECT: City of Gladstone Water System Sanitary Survey (Survey)

This letter confirms the Department of Environment, Great Lakes, and Energy's (EGLE) staff meeting with Mr. Rob Spreitzer on March 9, 2022, to complete a Survey of the City of Gladstone (City) water system, and to present the final findings, discuss areas for improvement, and identify timelines for corrective action where appropriate. The purpose of a Survey is to evaluate the water supply system with respect to the requirements of the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399). It is also an opportunity to update EGLE's records, provide technical assistance, and identify potential risks that may adversely affect drinking water quality.

Since the last survey, EGLE acknowledges the City has completed the following water system improvements:

1. Replaced turbidity and chlorine residual monitoring equipment.
2. Rehabilitated the water plant clear well.
3. Updated the hydraulic model of the water distribution system.
4. Inspected the intake pipe and crib.
5. Completed miscellaneous improvements to the water plant building's exterior.

The following table summarizes EGLE's final findings from the Survey of the water system:

Survey Element	Findings
Source	**Deficiency identified**
Treatment	Recommendations made
Distribution System	Recommendations made
Storage	**Deficiencies identified**
Pumps	No Deficiencies/Recommendations
Monitoring & Reporting	Recommendations made
Management & Operations	Recommendations made
Operator Compliance	No Deficiencies/Recommendations
Security	No Deficiencies/Recommendations
Financial	No Deficiencies/Recommendations

Other	No Deficiencies/Recommendations

Deficiencies:

Deficiencies indicate non-compliance with Act 399. The following deficiencies were identified during the survey:

1. R 325.10907: Intake inlet and pipeline
Rule 907(3) requires that the intake pipeline shall be constructed to reasonably protect against physical hazards associated with the surface water source. The most recent inspection report indicates the intake crib is in poor condition. Portions of the intake pipe are exposed on the lakebed and holes were observed in the exposed pipe. Zebra mussel colonization was observed on the intake crib and pipe. Replacement of the intake is identified as a fiscal year 2025 capital improvement project. To resolve this deficiency, complete replacement of the intake crib and pipeline by December 31, 2025.

2. R325.11112: Storage tanks generally; R325.11113: Gravity storage tanks
Rule 1112 states storage tanks shall have no unprotected openings. Rule 1113 states gravity storge tanks shall have a vent of sufficient size. Per Ten States' Standards, section 7.0.7, overflow pipes shall be fitted with 24-mesh non-corrodible screen. Use of a solid flapper or duckbill valve should be considered to minimize air movement and ice formation. Per section 7.0.8, access hatches to the tank's wet interior shall be fitted with a watertight cover which overlaps the framed opening and extends down around the frame by at least two inches. Per section 7.09, vents shall be fitted with 24-mesh non-corrodible screen. Elevated tanks shall also be fitted with a pressure/vacuum-style vent.

29th Street elevated tank -- The tank is not equipped with a pressure/vacuum-style vent. The overflow line is not fitted with 24-mesh screen. The tank appears to be experiencing excessive air flow into the overflow pipe during freezing weather. The entry hatch is not fitted with a watertight cover. An Act 399 construction permit has been issued for painting and modifications to the elevated tank. Completion of the permitted work would resolve the deficiency. To resolve the deficiency, complete the work and provide documentation of the corrections to EGLE by December 31, 2022.

North Bluff Drive ground level tank – The entry hatches are equipped with gaskets, but the hatch cover hinges must be adjusted to ensure a watertight fit and proper overlap. The vent is not fitted with 24-mesh screen and may be undersized. The Bluff Drive tank is a ground level tank but is constructed on a hill and functions hydraulically like an elevated tank. The tank is not fitted with a pressure/vacuum-style vent, but installation of one may be appropriate to protect the structural integrity of the tank and to exclude sources of contamination during high-rate withdrawal incidents such as main breaks and fires. To resolve this deficiency, adjust the entry hatch hinges to provide a watertight fit, install 24-mesh non-corrodible screen on the existing vent, and provide documentation of the corrections to EGLE by July 15, 2022. Because 24-mesh screen has less open area than the existing screen, it may be necessary to enlarge the end of the vent pipe to provide equivalent air exchange with the finer screen. Evaluate the adequacy of the existing vent by December 31, 2022. If vent modifications are necessary, provide a plan to EGLE by March 31, 2023 for replacing the vent.

Required Actions:

The required actions listed below are not a deficiency but must be completed by the date indicated to avoid a future deficiency or significant deficiency designation.

1. To enhance operational flexibility, all chemical feed pumps are the same model and have the same nominal capacity. Actual pump output is limited by the size of feed tube. Submit a list of chemical feed pumps used at the water treatment plant, including the chemical being fed and the size and capacity of the feed tube, by August 15, 2022.
2. Seal the top of the phosphate feed tote immediately.
3. Submit a plan by August 15, 2022 for inspecting the coagulant static mixer for chemical buildup/plugging.
4. Residential cross connection inspections are conducted when staff are on site for other work. Begin scheduling and conducting additional residential inspections to ensure all customers are covered by your cross connection control program. Ensure satisfactory recordkeeping, reporting, and enforcement for residential cross connection accounts.
5. Update your general plan by December 15, 2022 by submitting a map showing pressure contours under peak demands.
6. Submit an updated reliability study by December 15, 2022.
7. Implement a three-point calibration of the pH probe by August 15, 2022 using 4.0, 7.0, and 10.0 pH buffers.
8. Implement the following procedure for the continuous chlorine analyzer by August 15, 2022:
    a. Compare the residual reading from the continuous analyzer to a secondary DPD method at least weekly.
    b. Record and retain the information from item a to document your instrument's verification history.
    c. Verify the accuracy of the secondary DPD method by checking it against a known standard per the manufacturer's recommendation.
    d. Maintain the continuous analyzer according to the manufacturer's requirements.
9. Begin reporting the pounds of fluoride solution fed each day on the monthly operation report (MOR) beginning with the June 2022 MOR.
10. A mixer has been installed in the clear well. The mixer is effective for reducing thermal and chlorine residual stratification, but it can reduce the disinfection (CT) credit awarded under the Surface Water Treatment Rule. To prevent any reduction in CT credit, the mixers should not be operated while the plant is in operation. Develop a standard operating procedure (SOP) for mixer operation by August 15, 2022. Alternatively, you may revise your plant start-up and shut-down SOPs to include operation of the mixers.
11. An updated asset management plan (AMP) and 5-year and 20-year capital improvement plan is due by May 31, 2023.

Recommendations:

The following are recommendations the City should consider to enhance its operations and to avoid future deficiencies:

1. Purchase a copy of AWWA Standard C-651-14 to use as a basis for disinfecting water mains during new construction and repairs.
2. Consider improvements (pipe recoating and dehumidification) to prolong the life of piping and steel components in the water plant.
3. Conduct daily verification of the bench turbidimeter with a secondary standard.
4. Provide secondary containment for the active PACl shipping tote, feed pump, and piping.

5. Consider additional safety enhancements to the chlorine feed system including elimination of interior access, construction of an observation window, and plugging of the floor drain and other potential pathways for chlorine gas escape.
6. Modify the monthly operation report to include the specific polymer product (currently Kemira Superfloc N300) being fed each month to allow EGLE to verify compliance with dose and monomer requirements.

Please contact this office within **60 days** of receiving this letter to acknowledge its receipt and respond to the above required actions and recommendations.

If you have any questions, please feel free to contact me at the phone number listed below or by email at LondonR@Michigan.gov.

Sincerely,

Robert London, P.E.

Digitally signed by Robert London, P.E.
Date: 2022.05.12 08:27:19 -04'00'

Bob London
Surface Water Specialist
Engineering Unit
Drinking Water and Environmental Health Division
989-450-7834

Enclosure
cc/enc: Mr. Rob Spreitzer, City of Gladstone