



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MA 02109-3912

Date: *Dated as shown on electronic signature*

Subj: Inspection Report
Clean Water Act - National Pollutant Discharge Elimination
System ("NPDES")
Gloucester Wastewater Treatment Facility

From: Rachel Olugbemi, Physical Scientist *Rachel Olugbemi* Digitally signed by
RACHEL OLUGBEMI
Date: 2023.01.05
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Thru: Doug Koopman, Engineer

To: File

I. Facility Information

- A. *Facility Name:* Gloucester Water Pollution Control Facility
- B. *Facility Location:* 50 Essex Ave
Gloucester, MA 01930
GPS coordinates: 42.611338, -70.680381
- C. *Facility Contacts:* Dana Martin, Environmental Engineer
Department of Public Works
3 Pond Road
Gloucester, MA 01930
978-325-5335, dmartin@gloucester-ma.gov
- D. *NPDES ID No.:* MA0100625

II. Background Information

- A. *Date of inspection:* December 6, 2022
- B. *Weather Conditions:* cloudy, about 55°F
- C. *US EPA Representatives:*
Rachel Olugbemi, Doug Koopman
- D. *State/Local Representative(s):* N/A
- E. *Federally Enforceable Requirements Covered During the Inspection:* NPDES
Permit No. MA0100625 which became effective on September 1, 2022 (the
"Permit").
- F. *Previous Enforcement Actions:* CSOs Consent Decree (Civil Action No. 89-2206-
WGY) which was terminated in 2021.

III. Type and Purpose of Inspection

The Water Compliance Section of US EPA Region 1 conducted a Compliance Evaluation Inspection of the City of Gloucester's Water Pollution Control Facility (the "Plant" or "Facility") and Combined Sewer Overflows ("CSOs") to evaluate compliance with the Permit.

IV. Facility Description

According to the Permit's fact sheet, the Facility is designed for an average daily flow rate of 7.24 million gallons per day ("MGD") and a peak flow rate of 15 MGD, although the currently authorized 12-month rolling average flow is 5.15 MGD. The Facility employs preliminary treatment, chemically-enhanced primary treatment, and disinfection to treat wastewater that is ultimately discharged into Massachusetts Bay at an outfall point that is one mile away from the shore. The Facility has four CSOs.

V. Inspection

Ms. Olugbemi announced the inspection to the Facility on November 22, 2022 via email.

Ms. Olugbemi and Mr. Koopman (the "Inspectors") arrived at about 8:55 am.

A. Opening Conference

The Inspectors presented their credentials to Ms. Martin. Ms. Olugbemi explained the inspection's purpose of evaluating compliance with the Permit, especially in light of planned upgrades. The Inspectors introduced themselves and exchanged business cards with the attendees ("reps"):

- Dana Martin - Environmental Engineer, City of Gloucester
- Sara Vargas - Junior Engineer, City of Gloucester
- Anthony DiGironimo - Project Manager, Veolia
- Eric Kelley - Project Manager/Associate, Environmental Partners
- Robert Rafferty - Principal, Environmental Partners

- *Management and staffing.*

The City of Gloucester's Department of Public Works ("DPW") has an Engineering Division in which Ms. Martin and Ms. Vargas reside. Ms. Martin oversees Veolia, the City's contractor. Veolia has contracts to operate the Plant, the City's wastewater collection system, and the City's drinking water system. DPW also has a Utilities Division.

The City has five staff in the engineering department. Veolia has 21 total operators, five of which focus solely on the collection system. Three operators work each daily shift, which runs from 7 am to 3 pm daily shift.

- *Collection System.*

The Collection System has 29 pump stations, 30 miles of low pressure force mains, and 60 miles of gravity sewers.

The Collection System also uses Septic Tank Effluent Pumping systems (“STEPs”). There are about 1400 STEPs across the City, 300 of which contain grinders. The STEPs send liquid waste to the Facility. Solid wastes remain within the STEPs and are removed by DPW staff about every three years. About one to five percent of the Collection System is combined sewers.

The Collection System serves 24000 Gloucester residents (83% of Gloucester’s population), 1800 Essex residents (51% of Essex’s population), and 450 Rockport residents (6.5% of Rockport’s population), for a total population served of about 26250 residents. Residents that are not served by the Collection System use septic tanks.

Expansion of the Collection System’s sewershed is infeasible due to cost. Collection System work will instead focus on pump station rehabilitation and inflow/infiltration reduction.

- *Facility overview.*

Mr. DiGironimo described the Facility’s process. Wastewater enters under Essex Avenue, passes through grit chambers, then is lifted by two screw pumps into the headworks where debris and grit are removed. Ferric chloride and polymer are added to the wastewater and then it enters the two primary clarifiers. Lastly, wastewater is disinfected in the two chlorine contact tanks, dechlorinated, and discharged. Sludge is processed on-site using two gravity thickeners and a dewatering press then shipped to a location in Maine.

The Facility’s wastewater flow averages about 3 MGD, with peak flows of about 12 to 14 MGD. The Facility also receives about one or two tank trucks of septage per week, consisting primarily of the solid wastes removed from STEPs by the DPW.

The Facility has its own laboratory which analyses samples for chemical parameters such as pH, total residual chlorine, and total suspended solids. The remaining chemical analysis takes place off-site. Influent samples are collected from the manhole on Essex Avenue. Effluent samples are collected after the chlorine tank. Chemicals are stored on-site in the chemical storage building and in the basement of the administrative building.

The facility has an operator on standby 24/7 in case of emergencies, who lives locally and can be contacted by phone. There is a generator on-site which had recently been tested, that can be used in case of power outages.

- *Facility upgrades.*

There are planned upgrades to install secondary treatment. Future upgrades to secondary treatment were considered at the time of the Facility's construction, so there is ample space available. A designer for the secondary treatment upgrades is scheduled to be chosen by the end of January 2023, with a contract in place by the end of March 2023.

There are planned upgrades to improve the flood resiliency of the Facility: construction of a concrete wall and "floating gate" on Essex Avenue, the Northern boundary; sheet piles along the marshy Eastern and Western boundaries; a rear entrance at the hilly Southern boundary; check valves on the stormwater drainage pipes; and relocation of the Essex Avenue pump station's electrical parts. The flood resiliency upgrades will be completed by the end of December 2023, at which time the Facility will be fully protected against climate-related flooding. Wetland impacts have been considered and native species will be planted.

There are plans to add solar panels to the Facility's buildings as part of the upgrades for additional energy production. The facility will be adding variable speed electric drives to all pumps and looking at installation of a second diesel generator. The main building will also be undergoing a heating and ventilation review to see what improvements can be made.

One of the screw pumps is currently non-operational and has had recurring issues. It has been replaced by diesel-powered bypass pumps, which will be replaced with electric bypass pumps in the near future. A permanent solution will be implemented as part of the Facility upgrades. One gravity thickener was also non-operational.

Currently, the Facility adds ferric chloride and polymers to wastewater prior to the primary clarifiers, to help with settling and to control hydrogen sulfide odors. This practice may be discontinued after the Facility is upgraded to secondary treatment.

The Facility also intends to upgrade its odor-control woodchip biofilter.

There are no planned upgrades related to capacity expansion. Reps stated that the Facility's physical capacity is sufficient. Upgrades are focused on effluent quality rather than quantity. Also, there are no planned upgrades related to nutrient removal.

B. Facility Tour

Reps pointed out the influent sampler near Essex Avenue (Photo 1). Reps pointed out the line along which the concrete wall will be built.

The Inspectors observed the Eastern boundary (Photos 2 – 4). Reps stated that the sheet pile will be in line with the light poles and trees.

The Inspectors observed the hose where septage is received (Photo 5). Inside the headworks building, Inspectors observed the grit removal equipment (Photos 6 – 7) and the bar screens (Photo 8).

The Inspectors observed the location of the screw pumps (Photos 9 – 10) and the bypass pumps that had replaced the non-operational screw pump (Photos 11 – 12). Reps stated that polymer is added to the wastewater before it reaches the screw pumps and ferric chloride is added afterwards.

The Inspectors observed the primary clarifiers from above (Photos 13 – 15). Reps stated that the clarifiers are circles siting inside a square box and had been covered to control odors.

The Inspectors observed the woodchip biofilter near the Facility's Southern boundary (Photos 16 – 17). Reps pointed out the location on the adjacent hill where a rear entrance road will be located. The rear entrance will be close to residences and will only be used in emergencies. This is the high point of the property and would be used for access during flooding conditions.

The Inspectors observed the Western boundary (Photos 18 – 19), where another sheet pile wall will be installed. Reps pointed out the gravity thickeners (Photos 20 – 21).

The Inspectors observed the chlorine contact tanks (Photos 22 – 25). Reps stated that the cloudy brown color of the wastewater in the tanks was due to TSS levels of about 60 mg/L.

The Inspectors observed the recently-built chemical storage building (Photos 26 – 28). Reps stated that about 5000 gallons of sodium hypochlorite is added to the wastewater each week.

C. Combined Sewer Overflows Tour

The Inspectors and reps met at Outfall 002, along with DPW staff, located along Western Avenue/Stacey Boulevard. Reps explained how Outfall 002 was permanently closed (Photos 29 – 30).

The Inspectors observed Outfall 004 on Rogers Street (Photo 31). Reps explained that the flowmeter was used to determine in real time whether the outfall was active, based on the height of the water. The Inspectors then observed Outfall 006A on East Main Street (Photo 32) and Outfall 005 (Photo 33), which also had flowmeters.

Reps showed the Inspectors Outfall 009. Outfall 009 is not listed in the Permit. Reps explained that Outfall 009 prevents wastewater discharges in the surrounding residential area by discharging wastewater directly into the harbor. Reps stated that this occurs when

there is excessive flow within the Collection System at a nearby pump station. Outfall 009 also has a flowmeter.

D. Closing Conference

The Inspectors and Facility reps returned to the Facility for the closing conference. The Inspectors thanked the reps for their time and departed at about 3 pm.

This report is based on direct observations made by the Inspectors and on information supplied by Facility representatives as understood by the Inspectors during the Inspection. In addition, information gathered prior to or subsequent to the Inspection from a review of records may be included in this report. This report may not capture all operations or activities ongoing at the time of the inspection. This report does not make final determinations on potential areas of concern. Nothing in this report affects EPA's authorities under federal statutes and regulations to pursue further investigation or action.