



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 1

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

Drafted Date: August 30, 2022
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Subj: Inspection Report
Clean Water Act

From: Elizabeth Kudarauskas, Inspector
Douglas Koopman, Inspector
Damian Bednarz, Inspector

Thru: Elizabeth Kudarauskas

ELIZABETH
KUDARAUSKAS

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I. Facility Information

- A. *Facility Name:* East Fitchburg Wastewater Treatment Facility (WWTF)
- B. *Facility Location:* 24 Lanides Lane, Fitchburg, MA 01420
- C. *Facility Contacts:* Mark McNamara – Superintendent, Wastewater Plant Operations
Ken Letorneau – Wastewater Plant Maintenance
Nick Erickson – Commission Public Works
Ken Dupant – Sewer System Manager
Matt Hotan – Weston & Sampson
- D. *NPDES ID No(s):* MA0100986

II. Background Information

- A. *Date(s) of inspection:* July 20, 2022
- B. *Weather Conditions:* Clear and sunny, approximately 90° F
- C. *US EPA Representative(s):* Elizabeth Kudarauskas, Douglas Koopman, Damian Bednarz
- D. *State/Local Representative(s):* Xiaoning Chen, MassDEP

E. Federally Enforceable Requirements Covered During the Inspection:

- NPDES Permit Number MA0100986, City of Fitchburg Wastewater Treatment Facilities Commission effective September 1, 2010
- Consent Decree United States and Massachusetts v. City of Fitchburg, Filed 10/2/2012

F. Previous Enforcement Actions:

- Consent Decree United States and Massachusetts v. City of Fitchburg, Filed 10/2/2012

III. Type and Purpose of Inspection

U.S. Environmental Protection Agency (“EPA”) inspectors, Elizabeth Kudarauskas, Douglas Koopman, and Damian Bednarz (“inspection team”) conducted an announced inspection of the City of Fitchburg (“City”) Wastewater Treatment Facilities under EPA’s National Pollutant Discharge Elimination System (“NPDES”) individual discharge permitting program. The inspection included the Fitchburg East Wastewater Treatment Facility (the “Facility” or the “Site”) as well as a discussion of the City’s collection system and Combined Sewer Overflows (“CSOs”).

IV. Facility Description

The City provides sewage collection through a system of combined and separate sanitary sewers. According to an inspection report drafted in February of 2019, the City’s wastewater collection system consists of about 133 miles of separate sanitary lines and 9 miles of combined sewer lines. Waste is treated at the Facility and effluent is discharged into the North Nashua River. The City is permitted to discharge from 17 CSOs into the following receiving waters: North Nashua River, Sand Brook, Birch Brook, Baker Brook, and unnamed tributaries.

The Facility staff includes 21 staff members, including operations, maintenance, and management positions. According to City personnel, at the time of the inspection, the Facility was providing preliminary, primary, and secondary treatment for an average of 5.7 MGD, while the Facility design flow is 12.4 MGD. During wet weather, the Facility can treat up to 25 MGD before bypassing secondary treatment. Flows are composed of 66% residential sources, with the remainder consisting of commercial and industrial sources including 35,000 gallons per day of septage and 200,000 gallons per day from Greif Paper Co. The Facility serves Fitchburg residents and businesses as well as the neighboring communities of Lunenburg (allotted 161,000 gallons per day) and Westminster (allotted 300,000 gallons per day).

V. Inspection

Inspector Kudarauskas announced the inspection by email to Mr. McNamara on June 24, 2022.

The inspection team along with *Xiaoning Chen* from the Massachusetts Department of Environmental Protection (“MassDEP”) arrived at the Facility at approximately 9:00 AM.

A. Opening Conference

The inspection team was granted access to the facility and began the opening conference in the employee break room area. The inspection team presented credentials and began with introductions.

Facility operators expressed that current flow average is 5.7 MGD, which is unusually low. In the year prior the Facility had averaged 10 MGD. The Facility had not had a bypass for a few months. Wet events have been relatively infrequent, and Facility operations believes this might correlate to the lower flows.

Facility personnel described an upset of the plant that occurred in May 2022 and is still impacting Facility operations. For one hour on Saturday of Memorial Day weekend, the Facility saw a spike in the influent pH of 10.5. At the time of the inspection the Facility was continuing to investigate possible sources of the pH spike. The inspectors discussed possible sources, including industrial users. The Facility pH monitor is continuous and has an alarm, but facility personnel were not sure if the pH alarm was also audible.

The Facility’s supervisory control and data acquisition (“SCADA”) system stores and monitors data from the treatment process and flow from the collection system pump stations.

The Facility accepts up to 35,000 gallons of septage per day. Previously the Facility accepted up to 100,000 gallons or more per day, but this led to too many problems with facility operations. The Facility further restricts septage by not accepting it within two hours of an anticipated wet weather event. This is maintained via controls that automatically lock hook ups and valves during wet weather events. No septage enters the headworks during bypass conditions. In 2020, the Facility completed its Comprehensive Enhanced Phosphorus Treatment (“CEPT”) upgrade. Additionally, the secondary treatment system was upgraded to include replacement of pumps and blowers and recoating of pipes. Three emergency diesel generators were installed on Site, which are run for maintenance every two weeks. The facility plans to upgrade their lab and replace their gravity thickeners, which were initially installed in 1975. Additional upgrades include adding a polymer to the sludge press, which increased solid waste concentration from 1% to 5-7%.

In 2009, the City closed its Western WWTF and rerouted its flow to the Facility. Last year, the City completed a separation project that resulted in separating ½ a mile of combined sewer lines. Facility staff stated that prior to the separation work that has

already been completed, large storms would result in elevated flows at the Facility that would last for days. Now that some separation work has been completed storm related flow surges drop back down much faster. In addition, Facility staff noted that they have seen a significant reduction of grit at the Facility since the separation work has started.

This year the City approved a downtown CSO project. This project is estimated to cost \$30 million to separate 5 miles of combined sewers. The project will be completed in phases, with \$10 million going towards Phase I, about a third of the work, and will start in 2023. Phase II will address a larger area of the City and will start construction in 2024. Phase II is expected to cover two construction seasons and will cost \$20 million. These projects will close another four CSOs and will include removal of inflow and infiltration to bring a huge benefit to the Facility. At the time of the inspection the City was in the process of conducting a sewer rate study because rates were expected to increase to fund the separation projects. The City expects a fully separated stormwater system by 2030.

The City of Fitchburg also has combined manholes within the collection system. Combined manholes are being separated as part of these projects. On average the City has been separating about 25-30 combined manholes per year. Facility staff estimate an average cost of \$20,000 to \$30,000 to separate each manhole, with extremes on both sides of the estimate.

The City maintains a list of problem areas within the collection system. The City uses a GIP map to track areas that are problematic due to roots, fats, oils and grease, or other reasons. The local Board of Health and the Sewer Department work together on this issue, and the Board of Health had enforcement authority if needed.

B. Facility Tour

At approximately 11am facility personnel, along with Mr. Hotan, led the inspection team on a tour of the facility. The inspection team first saw the area where trucks connect to the Facility to discharge septage via exterior hook up piping (image 191). A drain in the septage area leads to the Facility headworks.

The inspectors then visited the headworks building where they observed two mechanical bar racks and two aerated grit tanks (image 194). Settled solids are scooped out (image 196) of the grit tanks and put into dumpsters for disposal. Approximately 4-5 dumpsters of grit are removed from each tank per year. Influent is sampled (image 197) and stored in a refrigerator after the influent passes through both aerated grit and mechanical bar screens (image 199-200). The bar racks are operated by a float or on a timer under normal flow conditions. Rags from the bar racks are cleared and put in a dumpster. Odors from the headworks building are managed with an odor control system.

The Facility previously had a multi-hearth sludge incinerator. The equipment is still on site, however, it is no longer used. The old ash collection area is now used to collect sludge in dumpsters. According to facility personnel, the Facility currently fills two dumpsters per day with sludge.

Inside the CEPT building the inspectors observed several large chemical storage tanks. The tanks contained Sodium Hydroxide, Sodium Hypochlorite, Magnesium Chloride, Polymers, and Ferric Chloride that are used for both 1st and 2nd stage aeration and clarification (images 202-205). Mr. McNamara stated that most of the large tanks in the CEPT building have a capacity of 7,200 gallons, except for the sodium hypochlorite tank, which has a capacity of 5,800 gallons. Facility personnel also stated that the CEPT building has sumps in the floor that would direct flow to the head of the plant if needed. At the time of the inspection, the pumps were set in manual mode.

Outside the CEPT building the inspectors observed tanks that are used in the sludge process. Two sludge gravity thickener tanks, two thickened waste activated sludge (TWAS) holding tanks (image 206). and three primary settling tanks are in this area. All of these tanks are covered and connected to the Facility odor control system.

Sludge is collected throughout the wastewater treatment process and directed first to the three primary settling tanks. From the primary settling tanks sludge passes through two gravity belt thickeners to increase the solids content. From the gravity belt thickeners the sludge is held in the TWAS tanks, before it is sent back into the wastewater treatment process. Fournier presses, located in a different area of the Facility, pull sludge off the gravity belt thickeners to be further dewatered and sent to the Fitchburg-Westminster landfill. Facility personnel stated that the sludge tanks are emptied, cleaned, and grit removed once or twice per year for maintenance.

The inspectors then observed the process control sample station and the Facility's flow meter. The first flow meter at the facility is located just before the aeration tanks (images 209-210). This flow meter, a Parshall flume, is used as the Facility's influent flow measurement. At the time of the inspection, the plant was operating at about 5.75 mgd. This flow measurement is used to control a bypass of secondary treatment, which is necessary at flows greater than 25 mgd. Facility personnel stated that the Facility had installed a new bypass flow meter that would comply with the new state CSO notification requirements.

As facility personnel explained, after the flow meter, the flow splits and 60% of the Facility flow goes into the second stage aeration tanks and 40% goes into the first stage aeration tanks for further treatment (image 211-212). The first and second stage processes are the same, but the second stage has slightly more capacity.

As part of the recent secondary treatment upgrades, the Facility added selector zones to the beginning of each aeration chamber to increase nutrient removal. At the end of each aeration chamber, the water flows over a weir where a polymer and then ferric chloride are added for phosphorus removal.

At the time of the inspection the first stage #2 clarifier was going offline and the #1 clarifier was coming online. The facility stated that they need to clean the clarifiers once or twice per week to minimize algae buildup.

The inspectors first saw the pump galley for the first stage process, as well as the centrifugal blowers used in the first stage aeration. The second stage blowers had been replaced and are AERZEN Bowers. Facility personnel stated that the new blowers are automatic and will ramp up based on the DO readings in the aeration tanks.

After the aeration process, the flow from the first and second stage combine in a mixing box where sodium hypochloride is added for disinfection in the chlorine contact chamber. The chlorine contact chamber (image 221) is the final treatment stage before dechlorination and the effluent outfall. In the event of a bypass of secondary treatment, the excess flow will pass through chlorination and dechlorination before discharge. At the time of the inspection, the inspection team observed a scum on top of the chlorine contact chamber (image 222 and 224). Facility personnel stated that the scum was the result of the ongoing impacts of the Facility upset. The scum is cleaned from this area once per week.

The Facility effluent flow measurement is taken at the weir on each side of the chlorine contact chamber. These flow measurements are combined in the Facility SCADA system. At the time of the inspection the inspectors could not read the digital display on the flow monitor.

The inspection team then saw the Fournier rotary sludge presses. Facility staff stated that these presses are expensive to operate and maintain. Two presses are operated at a time, and they are rotated into operation each week (image 228-229). Sludge solids that leave the Fournier press are put into a dumpster for disposal.

C. Records Review

Before the inspection the inspection team reviewed Facility records. These records included:

- NPDES Permit Number MA0100986, City of Fitchburg Wastewater Treatment Facilities Commission effective September 1, 2010
- Consent Decree United States and Massachusetts v. City of Fitchburg, Filed 10/2/2012
- Consent Decree Semi-Annual Progress Report Dated February 15, 2022
- Wastewater Management Plan, submitted May 15, 2019
- Wastewater Management Plan Phase II, submitted December 31, 2020
- Records and notifications of SSO events
- Records and notification of CSO events

D. Closing Conference

The inspection team thanked Facility personnel for their time and confirmed Mr. McNamara as the primary point of contact for future communication. The inspection team informed them that they would receive a copy of the inspection report in about 60 days. The Inspection Team departed at approximately 12 PM.

Unless otherwise noted, this report describes conditions at the facility/property as observed by EPA inspector(s), and/or through records provided to and/or information reported to EPA inspector(s) by facility representatives and as understood by the inspector(s). 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.