

**City of  
Fitchburg**



**Department of  
Public Works**

**COMMISSIONER**

301 Broad Street  
978-829-1910  
978-345-9687 FAX

February 23, 2024

U. S. Environmental Protection Agency, Region 1  
5 Post Office Square, Suite 100  
Mail code OES04-04  
Boston, Massachusetts 02109-3912  
Attn: Beth Kudarauskas

Massachusetts D.E.P., CERO  
8 New Bond Street  
Worcester, MA 01606  
Attn: Dan Kurpaska

**STREETS & PARKS**

301 Broad Street  
978-829-1900  
978-345-9687 FAX

Subject: Semi-Annual Progress Report  
August 2023 – January 2024 Reporting Period  
Consent Decree, IX. REPORTING, Paragraph 70

Dear Ms. Kudarauskas and Mr. Kurpaska,

In accordance with Section VII, paragraph 70 of the Remedial Measures of the Consent Decree (Decree) signed by Fitchburg's Mayor on June 1, 2012, this submission provides EPA and the MassDEP with a report on the City's compliance with Section VII during the preceding six months (August 2023 – January 2024 Reporting Period) as described by Paragraph 70.

The report organization structure is formatted to separately address each relevant section, as it appears in the Decree, and includes all pertinent attachments.

As requested in the February 2013 thru July 2013 Reporting Period, the City is not including a GIS map of water resources and topographic features, as the data contained therein has not changed from the original GIS mapping submission and will not likely change in the foreseeable future. In the event there are significant changes in either water resources or topography, the City shall provide GIS mapping submission reflecting those changes in that reporting period's submission with narrative explanation of said changes.

GIS maps updates and figures, will be provided (electronically and hard copies) under separate cover, and will be provided via email and as printed full-size copy, via U.S. mail.

**ENGINEERING**

301 Broad Street  
978-829-1917  
978-345-9687 FAX

**CEMETERIES**

115 Mount Elam Road  
978-345-9578  
978-345-9686 FAX

**Semi-Annual Progress Report**  
**February 2023 through August 2023 Reporting Period**

**A. SEWER SYSTEM**

**Staffing**

On the Collections side we have hired a GIS Engineer with a start date in the next reporting period on February 5, 2024.

**“Problem Area” Checks**

The City has been more proactive in checking “problem areas” throughout the collections system that have a history of sewer system overflows. These areas have been checked on an approximate bi-weekly basis. The “Problem Area” list is continually updated based on both recent SSO events, and on improvements to a known “Problem Area” that would minimize future SSO occurrences.

**Geographical Information Systems (GIS) Maps**

Four maps were updated for this semi-annual report.

- 1.) “Base Map (Map 1 of 4): The City’s parcel and roadway data is shown on this map along with municipal boundaries. The map has been updated with the latest parcel data from the City’s Assessor and Engineering Offices.
- 2.) “Combined and Separate Sewers” (Map 2 of 4): The City’s sewer system is shown including combined and separated sewers along with pipe sizes and materials. Regulator manholes, combination manholes, and standard sewer manholes are also shown. Lastly, the City is close to completion of sewer rim elevations with its GPS unit. The few remaining manholes are newly constructed or cannot be located due to signal obstructions. The City raised 3 buried manholes to grade during the reporting period, and repaired 25 manhole covers. These locations are shown.
- 3.) “Storm Drainage” (Map 3 of 4): This map depicts record drawing storm drain data including the City’s current GPS shots of catch basins and drain manholes. We will continue to locate drain structures but the Wastewater Division’s main concentration will be to locate all sewer related infrastructure. As part of the City’s MS4 Program, a more aggressive GPS survey program for storm system assets location is ongoing, and is headed by the Fitchburg DPW - Engineering Division, with assistance from the Wastewater Division.
- 4.) “Extraneous Flow Investigation, Remediation, and Capital Projects” (Map 4 of 4): “Extraneous Flow Investigation, Remediation, and Capital Projects” (Map 4 of 4): This map includes sewer projects that have been accomplished within the reporting period and projects that are planned following the reporting period. During the reporting period the City replaced, raised, and reset numerous manhole frames and covers. Manhole castings found in fair condition with fewer than 3 vent holes in the cover, or within a combined sewer area, or in an off-road easement, then the City did not replace the casting with a new vent-less casting.

The City also:

- (1) Continues with construction on the “**Downtown Separation Project**” for CSO Regulators 010, 032, 045 and 083.
- (2) Repaired a main line and replaced a manhole on the difficult to access Birch Brook sewer easement. The City plans to structural line the entire 1,400 feet of this easement during the upcoming period.
- (3.) Made repairs to the sewer force main on route 31 in Westminster.
- (4.) Continued with the ongoing post construction monitoring of the “**CSO 007, 011, 039, 048 Separation/Rehabilitation Project**”.
- (5.) Repaired and reset 51 manhole frame and covers. The locations of these improvements are noted on the map.

Also, contained on this “Extraneous Flow Investigation, Remediation, and Capital Improvement Projects” map (Map 4 of 4) is the City’s current status of its sewer cleaning and CCTV program. Pipes are color coded based on their condition rating.

The City is working diligently to separate its combined sewers. In early 2013 the City reported 71,097 feet of combined sewer pipe in its system. As of the close of this reporting period, the City has a total remaining combined sewer length of approximately 38,717 feet, or approximately 7.37 miles.



*CSO 010 Separation Project, Main Street near River Street, August 2023*

## **Capacity, Management, Operation & Maintenance (CMOM) Related Activities, and GIS Maps**

The collection operators continue to make progress with CCTV inspections and condition coding all 143.9 miles (approximate length) of sewer pipe within the City. By the close of the reporting period, the City had condition coded approximately 94.4% of its sewer system. The majority of pipes remaining to be coded are either located within difficult to access easements, egg-shaped pipes, 6- inch diameter pipes, or odd-shaped brick conduits. Some of the sewers are likely never to be inspected until they are replaced, as there are no access points. Some of the uninspected sewers are small diameter force mains where a CCTV camera is too large to fit in the pipe. The City has had great progress however using outside contractors to CCTV portions of its remaining sewers through SSES or combined sewer separation work. Many of the remaining sections will be televised within the next 2-years as part of the Downtown Separation Project (**CSOs 010, 032, 045, and 083**). Since many of the remaining sewers to be televised are beyond in-house capabilities, the City has begun a second round of CCTV of the entire system, with 19.2% having been CCTV'd under the second round.

As the majority of remaining sewers to be inspected are outside the City's capabilities to inspect, the City has actively been outsourcing this work. The City completed the inspection of sewers in the "Downtown Separation Project" (**CSO 010, 032, 045, and 083 Separation/Rehabilitation Project**) during a previous reporting period. The City's engineering consultant completed their review of the inspections during a previous reporting period, which included the review of 68,800 LF of sewer/drain CCTV and CCTV/Laser/Sonar inspections. A draft report of the CSO 010, 032, 045, and 083 Separation/Rehabilitation Project was provided to the City in October 2022. The report was finalized during this reporting period and provided to the City in February 2024.

The following table (*Table No. 1*) summarizes manhole inspections to date:

<b>TABLE No. 1</b>			
<b>SEWER MANHOLE INSPECTION TOTALS</b>			
<b>Inspected by</b>	<b>Total Inspected</b>	<b>Total Manholes</b>	<b>Percent of Inspections Completed</b>
City of Fitchburg	1,340	3625	36.97%
Overlap (manholes inspected by both City and Consultant)	46	3625	1.26%
Consultant	1,277	3,625	35.27%
<b>Inspection Totals</b>	<b>2,663</b>	<b>3625</b>	<b>73.46%</b>

Table No. 1 above includes both City-inspected manholes, as well as past inspections performed by the City's consultant engineers that were conducted in conjunction with past and current projects, including CSS 4D, the CSO-039, 048, 011, 007 Project, SSES Phases I, II, and IV, and the Beech and Hazel Streets Sewer Separation Project. Between both the City's Engineer, and the City's in-house forces, 56.98% of manholes have been inspected. Hundreds of manholes will be inspected in the coming year as part of the upcoming Downtown Separation Project.

## **Global Positioning Satellite (GPS) System Update**

The City is continuing to locate all of its newly constructed sewer manholes, drain manholes and catch basins with its GPS unit. To date the City has located the following assets:

- 3,615 publicly-owned sewer manholes out of 3,625 (99.7% completed), which leaves 10 manholes to be located.
- 2,544 drain manholes (out of an unknown total).
- 4,065 catch basins (out of an unknown total).
- 369 sewer laterals
- 24 sewer clean-outs
- 1,465 other asset types. Other asset types typically include other types of utility manholes, services, or locations of dig-safe mark-outs.

### **Asset Management**

During the past reporting period, the Wastewater Division continues to use Utility Cloud, a CMMS web-based software. Wastewater Collections is using the software to log, track and report on all sewer service calls this past reporting period. In the next reporting period the City will be training the new GIS Engineer to keep the system up and running to track CSO inspections, manhole inspections, pump station inspections, and service calls, among other day-to-day activities.

### **Intermittent Stream Connections to Sewer**

No intermittent streams were removed from the sanitary system during the reporting period.

### **Meter Maintenance (KLD)**

The City has been maintaining its 10 flow meters located at regulator manholes throughout the reporting period. ADS long-range ultrasonic depth sensors are also maintained at CSOs-10, 41, 45, 76, and 83 to provide additional monitoring redundancy and accuracy at the regulators.

The table below (**Table No. 2**) includes the reporting period's summary of CSO overflows. In accordance with Paragraph 70, Subparagraph d. of the Consent Decree, **Table No. 2** includes notes on whether or not the meter was malfunctioning for a time during the reporting period. During the reporting period, the City generally had good meter coverage.

**TABLE No. 2**

**OVERFLOW DATA FOR REPORTING PERIOD AUGUST 1, 2023 TO JANUARY 31, 2024**

<b>Meter</b>	<b>Location</b>	<b>Events</b>	<b>Volume (Gallons)</b>	<b>Notes:</b>
CSO-004	Cleghorn St. at Oak Hill Rd.	1	1,000	Weir wall raised 6-inches on 5/12/21 Volume for event on February 18, 2021 was unknown
CSO-007	Cushing St. at Riverfront Park	-	-	Regulator closed on May 3, 2021
CSO-010	Main St. at River St.	0	0	Will be closed as part of Downtown Separation Project in 2025. Raised weir wall from 20" to 30" above sensor on 5/12/21.

CSO-032	#543 Main St. at Post Office	8	159,000	Will be closed as part of Downtown Separation Project in 2025. Weir wall raised on May 12, 2021
CSO-039	Water St. at Walnut St.	-	-	Regulator closed on August 24, 2021.
CSO-041	Benson Rd. near Falulah St.	0	0	Upsizing of pipe downstream and upstream I/I work necessary for closure. 5 catch basins upstream connected to sanitary sewer
CSO-045	Main St. at Oliver/Putnam St.	14	2,033,000	Down-looking sensor used to estimate overflows. Modified calculations by using Francis Formula weir equation for increased overflow estimation. Will be closed as part of Downtown Separation Project in 2025.
CSO-048	#85 Water St.	-	-	Regulator 48 was closed on May 24, 2022.
CSO-064	Water St. Easement near former "Halloween World"	9	4,231,000	Regulator on main interceptor sewer. Inflow removal upstream and sewer upsizing likely necessary for closure.
CSO-076	Birch St. at Heywood St.	2	105,000	Downstream pipe undersized. No known combined sewers upstream.
CSO-83	Main St. at Prichard St.	0	0	Will be closed as part of Downtown Separation Project in 2025. Meter did not record any Overflow Event, however visual aid was activated. Possible cause could have been vermin.
<b>Totals</b>		<b>34</b>	<b>6,529,000</b>	

The City has been servicing the meters on a roughly 3-month frequency to help maintain high data quality. During the reporting period, the meter manufacturer (ADS Environmental Services, or 'ADS') conducted multiple visits to all of the City's flow meters to ensure they were functioning as designed.

The City has been maintaining its ECHO down-looking sensors to keep abreast of potential problems in the collection system. In addition, the ECHO meters are also deployed at the City's four (4) major siphons, to

determine if the siphon cleaning started during this reporting period will have a noticeable effect on sewer surcharging in the siphon head chambers. The ECHO deployment locations are shown on Map 4 of 4 (“*Extraneous Flow Investigation, Remediation, and Capital Projects*”). On Map 4 of 4, the ECHOs are designated by an “LS” symbol (for “level sensor”), and are described in the legend as “wireless ultrasonic level sensors”.

During previous reporting periods, The City’s wastewater engineering consultant assisted the City with implementing their public notification system for CSO events in accordance with MassDEP regulation 314 CMR 16.00 and submitted the final CSO Public Notification Plan in January 2023. During the next reporting period, the City plans to continue adjusting the public notification system as needed.

### **CSO Weir Wall Adjustments**

No weir wall adjustments were made.

### **Post-Construction Monitoring Plan & Post-Construction Monitoring Report**

In late May 2016, the City was approved to proceed with the Post-Construction Monitoring Plan (PCMP) field sampling program. The City requested and received an extension from MassDEP and EPA to extend the performance of PCMP sampling, as working hours, lab hours, and timeliness of events limits the time available to sample a wet weather event to only 4 or 5 hours a day. The City finished the final wet weather sampling within calendar 2017, and the Post-Construction Monitoring Report (PCMR) was submitted for review and approval at the end of February 2018. To date, we have not received a response from either the MassDEP or EPA most recently updated and submitted to the MassDEP and the EPA in March 2017.

The City’s ongoing CSO 007, 011, 039, 048 Separation/Rehabilitation Project was substantially completed during the past reporting period. Punch list items have been addressed and the construction for this project is complete. Following the conclusion of the construction, the City plans to commence the post construction monitoring for the project, which includes flow metering and outfall sampling to evaluate the effectiveness of the sewer separation work. The post construction monitoring is expected to be conducted for a period of one year.

The City’s CSO 007, 011, 039, 048 Separation/Rehabilitation Project was completed during the past reporting period. Punch list items were addressed and the construction for this project is complete. Following the conclusion of the construction, the City plans to commence the post construction monitoring for the project, which includes flow metering and outfall sampling to evaluate the effectiveness of the sewer separation work. The post construction monitoring is expected to be conducted for a period of one year and completed during the next reporting period.

### **Hydraulic Model & Hydraulic Capacity Assessment**

As required under Paragraphs 41 through 46 of the Consent Decree, the City is required to develop a hydraulic model for all pipes in the City 12-inches and larger, and for all CSOs. During the previous reporting period, the City received conditional approval of its Hydraulic Model. The model was approved based on the understanding that additional model runs and analyses would be conducted under the Capacity Assessment Report which was submitted (under separate cover) at the end of August 2018. To date, we have not received a response from either the MassDEP or EPA on the Capacity Assessment Report.

The City, in discussions with its Consultant, have determined that the most appropriate time for a full hydraulic model update of the system will be after the Downtown Separation Project in the 2025 time frame. Updating the model before this time seems ill advised, due to the drastic changes that will occur to the collection system after this project.

### **Sewer System Evaluation Survey**

As required under Paragraphs 26 and 27 of the Consent Decree, the City was required to submit a SSES Scope of Work (SOW) for approval, to conduct an SSES in accordance with the approved SSES SOW, and to submit a SSES report for approval by EPA and MassDEP. The City submitted the draft SSES SOW before the December 31, 2015, deadline. The final SSES SOW was submitted to the MassDEP and EPA on August 12, 2016, and there was subsequent electronic correspondence between the City, Wright-Pierce and MassDEP later in the month of August 2016. However, to date, the City has received neither a formal approval, nor a conditional approval of the SSES Scope of Work. The City has proceeded forward with the phased SSES investigative work entailed in the SSES Scope of Work. The SSES Phase 1 report was submitted at the end of 2016. Comments from the MassDEP have been received and will be responded to concurrently with any comments that EPA may have. Investigative work for Phase 2 of the SSES has been completed and the report was submitted to the MassDEP and EPA in March 2020.

As a strategic deviation, largely due to the criticality of the trunk line sewer asset, the City has prioritized the investigative work associated with the trunk sewer line ("Phase 4" in the Scope of Work), ahead of the "Phase 3" SSES work (meter basins M06, M14, and M18). As part of the project, approximately 30,150 LF of interceptor sewers ranging from 18 to 48-inches in diameter were inspected using a combination of CCTV, laser, sonar, and hydrogen sulfide monitoring. Additionally, 138 manholes were inspected along the interceptor, including manholes along the interceptor not inspected during Phase I of the SSES. The project also included 69 successful building inspections and approximately 18,500 LF of smoke testing.

The City submitted the final SSES report to MassDEP and EPA in November 2022 and has not received any formal comments or approvals.

### **Combination Manholes Program**

There were two (2) qualifying rain events during the reporting period that met the criteria (2 or more inches of rainfall, within a 24-hour period) necessary to perform combination manhole (CMH) inspections. Rainfall data is recorded at the City's primary rain gage at the Department of Public Works Building (at #301 Broad Street, Fitchburg). An additional rain gauge is also maintained at the east end of the City, at the Summer Street Fire Station. The City often inspects all the combination manholes after a large rain less than 2-inches, as seen in the attached table.

During the reporting period, there were a total of 28 flow transferences to either the drain side or sewer side of the CMHs during the three events that the manholes were inspected. These overflows are taking place in a total of 100 remaining combination manholes. The City reported **262** total combination manholes existing in the system in 2008.

The NPDES permit states that the City has two years to separate CMHs if they show evidence of transference. In the past, the City has prioritized CMHs that transfer sanitary water to the storm drain over CMHs that transfer storm drain water to the sanitary sewer. As a result, in the past the City has first prioritized those manholes that show evidence of transference to the drain side of a manhole. In the past 5 plus years however, the City has received multiple prices for separating combination manholes. It has been determined that pricing is very unfavorable when mobilizing and demobilizing multiple times throughout the City to separate manholes. In addition, separating one manhole on a street does not solve transference issues if other combination manholes remain on the same street. Due to the aforementioned reasons, the City has been prioritizing separation of manholes based on a number of factors including road paving locations, frequency of flow transference, and locations within a combined sewer separation project area. The City has been concentrating separation in specific areas to receive better pricing, but also to drastically reduce the chance for transference from a specific area or street.

Due to an on-call contract expiration, there were no combination manholes separated during this past reporting period. The City has currently budgeted over \$360,000 for each of the next two fiscal years for combination manhole separation.

In Spring 2019, the City executed an agreement with Weston & Sampson to develop contract documents for bidding with design plans for the separation of 150 combination manholes that have shown signs of transference. The City is currently evaluating the feasibility of placing a project out to bid to separate a significant portion of the combination manholes included in the Combination Manhole Separation Program. In December 2020, The City submitted their Wastewater Management Plan Phase II Report. As identified in the report, the City plans to integrate the combination manhole separation program with the remaining combined sewer separation program to achieve an accelerated, cost-effective separation of combination manholes upstream of combined sewers. The remaining combination manholes that are not upstream of combined sewers that have shown signs of transference will be separated as funding is available and in advance of the completion of the remaining combined sewer separation projects.

As part of the completed CSO 007, 011, 039, 048 Separation/Rehabilitation Project, the City - separated 19 combination manholes. As part of the City's current sewer separation project in the downtown area (**CSO 010, 032, 045, 083 Separation/Rehabilitation Project**), the City plans to separate 10 combination manholes. Due to the size of this project, the City has decided to perform the construction in 3 phases. During the first phase, 7 of the 10 combination manholes will be separated, 2 combination manholes will be separated during the second phase, and 1 combination manhole will be separated during the third phase. Construction for the first phase commenced in Summer 2023 and 5 of the 7 combination manholes are expected to be separated during the next reporting period.

The City also has plans to separate additional combination manholes using DPW crews, many of the combination manholes are shallow in depth, and relatively simple for separation. In the coming reporting period the City expects to make additional progress in separating manholes. During the reporting period, the City was much occupied raising failing sewer manhole covers, which minimized additional in-house progress on separating combination manholes.

During construction of the in-progress 'CSO-007, 011, 039, 048 Project Sewer Separation/ Rehabilitation Project', 16 combination manholes have been separated to date.

During the coming reporting period, the City also will complete a hydraulic model analysis on 6 combination manholes on Lunenburg Street that have a history of major transference. The purpose of the analysis is to determine whether redirecting storm water down an adjacent street will free enough capacity in the existing drain on Lunenburg Street to prevent manhole surcharging. The study is being completed at the request of MassDOT, as the combination manholes are located within a state road (Route 2A).

### **Status of Regulators and Outfalls**

During the last reporting period, The City completed construction of the 'CSO 007, 011, 039, 048 Separation/Rehabilitation Project'. This project involved the closure of CSO Regulators 007, 039, and 048. In addition, combined sewers upstream of the previously closed CSO 011 were separated on Clarendon Street. In total, approximately 4,800 linear feet of combined sewers were separated through the installation of 4,850 linear feet of PVC sewers and 2,700 linear feet of HDPE drains. 2,100 linear feet of existing sewers were replaced, and 20,000 linear feet of sewers were rehabilitated to repair structural defects and reduce infiltration/inflow in the project area. In addition, the project (as bid) permanently separated 19 combination manholes. Necessary change orders have also resulted in the additional separation of 2,100 LF of combined sewers. As part of the project, CSO Regulator 007 was permanently closed on May 3, 2021, CSO Regulator 039 was closed on August 26, 2021, and CSO 048 was closed on May 24, 2022. This project was funded through the State Revolving Fund (SRF).

The City was included on MassDEP's 2021 SRF Intended Use Plan for the investigation phase of the CSO 010, 032, 045, 083 Separation/Rehabilitation Project. This project includes the separation of approximately 28,350 LF of combined sewers and the rehabilitation of 47,300 LF of sanitary sewers in the downtown area of the City. The project will result in the closure of CSO regulators 010, 032, 045, and 083. A draft report of the CSO 010,

032, 045, 083 Separation/Rehabilitation Project was provided to the City in October 2022, and included the results of the following:

- 871 attempted manhole/catch basin inspections
- Approximately 63,400 LF of smoke testing
- 68,800 LF of CCTV and Multi-Sensor Inspections
- 43 dye tests
- 913 attempted building inspections (553 successful)

The City received the final report in February 2024. Due to the size of the CSO 010, 032, 045, 083 separation project, the City has elected to conduct the project in three construction phases. During the first phase, the City will close CSO 010 through the separation of 5,800 LF of combined sewers and rehabilitation of 10,300 LF of sanitary sewers. During the second phase, the City will close CSO 032 through the separation of 13,000 LF of combined sewers and rehabilitation of 25,300 LF of sanitary sewers. During the third phase, the City will close CSOs 045 and 083 through the separation of 9,550 LF of combined sewers and rehabilitation of 11,700 LF of sanitary sewers.,

In August 2022, the City submitted an SRF Project Evaluation Form for the second phase of the project, and the City was included on the 2023 Intended Use Plan during the previous reporting period. During the current reporting period, the City submitted a Construction Stage Application for Financial Assistance for the second phase of the project and has continued the design of the second and third phases of the project. The City intends to submit an SRF Project Evaluation Form for the third phase of the project during the next reporting period.

The construction for the first phase of the project commenced in Summer 2023. The construction for the second phase of the project is expected to commence in Summer 2024, during the next reporting period. The construction for the third phase of the project is expected to commence in Summer 2025.

### **Sewer Connection Summary**

Table No. 4 below is a report of all new sewer connections to the sewer system in Calendar Year 2023, which includes the type of connection and the estimated average daily flow for each connection. A list of any I/I work conducted to offset the new flows is also listed, or if an I/I fee was assessed instead, if the additional flow was greater than 15,000 GPD.

Table No. 4					
New Sewer Connections - 2023 Calendar Year					
Date Issued	House #	Street	Occupancy Type	Work Description	Estimated Flow (GPD)
03/28/23	14	Taft St.	Residential	New Sewer Connection	330
04/23/23	39	Will Thompson Way	Residential	New Sewer Connection	330
04/23/23	15	Will Thompson Way	Residential	New Sewer Connection	330
06/22/23	76	Summer St.	Commercial	New Sewer Connection	1,000
07/11/23	62	Academy St.	Residential	New Sewer Connection	6,820
08/09/23	275	Beech St.	Residential	New Sewer Connection	1,760
08/18/23	50	Granite St.	Residential	New Sewer Connection	110
08/29/23	300	Main St.	Residential	New Sewer Connection	220
10/11/23	34	Maple St.	Residential	New Sewer Connection	110
10/25/23	86	Minneapolis Ave.	Residential	New Sewer Connection	110
11/07/23	0	Lancaster St.	Residential	New Sewer Connection	330
11/08/23	396	Lincoln St.	Residential	New Sewer Connection	110
11/08/23	62	Academy St.	Residential	New Sewer Connection	6,160
11/08/23	68	Academy St.	Residential	New Sewer Connection	1,320
11/26/23	0	King St.	Residential	New Sewer Connection	220
12/28/23	325	Main St.	Residential	New Sewer Connection	330
01/23/24	557	Crawford St.	Residential	New Sewer Connection	330
01/23/24	36	Flat Rock Rd.	Residential	New Sewer Connection	3,410
<b>Total Estimated Added Average Daily Flow (ADF):</b>					<b>21340</b>

## POTW TREATMENT PLANT

### Chemically Enhanced Primary Treatment (CEPT) Upgrade Project

As noted in the City's February 2017 Semi-Annual Remedial Measures reporting on this Consent Decree project, we herein and henceforth limit reporting to operational comment updates, as noted in the following paragraph.

Plant operations have maintained a continuous CEPT mode for the plant process. Wet-weather CEPT operations appear to be increasingly effective, and operations staff appear to have addressed process issues that relate to low pH. The overall compliance of the treatment operation appears to be significantly improved.

### Secondary Systems Upgrades (SSU) Project

The SSU Project commenced in February 2017 and completed in August 2020.

With the SSU Project completion, we have seen substantial treatment process improvements as the new *Selector Zones* have become operational. The addition of selector zones has:

- enabled us to reduce our chemical addition of Ferric Chloride to the process trains,
- promoted better settling in the secondary clarifiers; and

- improved our nutrient removal of Phosphorus and Nitrogen in the plant's final effluent.

### **Long-Term Preventative Maintenance Plan**

The Long Term Preventative Maintenance Plan has been implemented and practices and protocols contained therein are being carried out. The system is continually being populated with new systems and equipment as work is being performed in an effort to build a completed history of maintenance procedures.

The plan is also reviewed with any new employees to insure they are familiar with the practice and procedures in the plan.

Preventative maintenance work completed between August 1 2023 and January 31 2024 included::

#### **August 2023**

- Built New Storage room in old generator room.
- Fournier Press Incline conveyor – repaired shaft.
- 3-A Primary Basin Skimming Actuator – replaced forward/reversing contactor.
- Headworks Grit Chambers – removed grit, inspected and cleaned aeration heads.
- #4 Penn Valley Twas Pump – replaced trunnions, disc, and gaskets.
- Duall Hypo Day Tank – replaced tank
- Primary Basins Skimming Actuators – serviced all electrical disconnects
- Vehicles Serviced– 2017 F 350, 2013 Transit connect, TX Gator.

➤ *Completed 85 Preventative Maintenance Work Orders and 17 Demand Work Orders.*

#### **September 2023**

- #1 Boiler – replaced leaking steam line.
- Building #6 – repaired hypo leak bottom flange.
- #1 Fournier Press – Started rebuilding press.
- West Plant – Pump Tanks manual to keep up with heavy rains. (Sept 8 – 14)
- Mag Hydroxide fill station – replaced valve.
- CEPT Caustic Tank #1 replaced outlet valve.
- AC Mini Split systems – cleaned all condenser coils.
- Boiler #2 – Replaced condensate pump started contacts.
- CEPT Scissor lift – replaced limit switch
- 1997 Ford bucket truck- sent out truck to swap lift to our 2012 Chevy 3500
- Received New 2022 Ford F-350.

➤ *Completed 79 Preventative Maintenance Work Orders and 14 Demand Work Orders.*

#### **October 2023**

- #1 Fournier Press – rebuild completed
- East Plant Water Meter – replaced meter and upstream pipe.
- #Fire Alarm System – replaced batteries in NAC Booster #56.
- Chlorine Contact Chamber – replaced control screen.

- West Plant Boiler - replaced burner motor and sight glass assembly.
- Primary Basin 3-A skimming actuator - repositioned skimming trough and replaced key.
- #2 Gravity Belt Thickener - repaired belt tracking guide.
- #3 Primary Basin - Replaced all wear shoes.
- Aerzen Blower #2AB-1 & @AB-4 - serviced.
- #4 Franklin Miller Grinder - replaced cutter pack, rebuilt old cutter pack.
- Building #6 - repaired heaters.
- Vehicles serviced - 2013 Equinox, undercoated new 2022 Ford F-350.

➤ *Completed 86 Preventative Maintenance Work Orders and 14 Demand Work Orders.*

#### **November 2023**

- #1 Primary Basin - replaced all wear shoes, Cross collector flight chain and cross collector drive chain and sprocket.
- #2 & #3 Primary Basins - replaced cross collector drive chain and sprockets.
- Settled Effluent Skid- replaced motor saver device.
- Fleet - GPS installed State Inspection 2017 Ford F-350
- Boiler Room - Insulated Steam line that was replaced.
- #2 Grit Chamber Blower - troubleshooting electrical problem.

➤ *Completed 77 Preventative Maintenance Work Orders and 14 Demand Work Orders.*

#### **December 2023**

- 2AB-3 Aerzen Blower - Performed W-13 Maintenance.
- #2 Bar Screen - Removed wood debris.
- #2 Grit Chamber Blower -Electrical problem solve blower back online.
- MCC 11 - Repaired mini split AC system.
- #3 Primary Basin - Replaced Longitudinal drive chain, Replace worn idler bushing.
- 2AB-1 poly line - cleared plugged line.
- #2 Fournier Press - inspected press and replaced worn parts.
- Case Farmall Tractor- Performed full serviced.
- Received new Twas Vaughn pump.

➤ *Completed 78 Preventative Maintenance Work Orders and 15 Demand Work Orders.*

#### **January 2024**

- #3 Fournier Press – Inspected press and replaced worn parts.
- Wet Well Pump – serviced pump.
- Settled effluent Strainer – Repaired Bask wash valve and actuator.
- #1 Penn Valley Pump - replaced lower housing and gasket.
- Main Galley & Bay #5 drains - cleared drains.
- Fournier Press Supply lines - lines plugged, cleared lines.
- 2<sup>nd</sup> Stage skimming - Line plugged to TWAS Tank cleared line.
- Backflow Preventers - Tested.
- Fournier Compressors - repaired motor mounts, added adjusting mechanisms.
- East & West Plant Main Gas line - replaced meters.
- 2AB-4 Aerzen Blower - performed W-13 maintenance.

- #2 primary sludge pump - repaired drive hub key.
- CEPT Hypo containment Pump - replaced pump.
- #2 Primary Basin Cross Collector - replaced shear pin.
- 2012 Chevy Silverado -
- Inventory Clerk - Training.

➤ *Completed 77 Preventative Maintenance Work Orders and 10 Demand Work Orders.*

Looking forward to the coming six months, the City plans to

#### **East Plant**

- Garage Bays No. 4 & 5; Replace roll up doors- will be completed this year.
- Lab and Control Room Upgrade- Will start construction in spring.
- Aerated Grit Chamber Stairwell; Replace floor coating system.
- Remove APC stack
- Process Roof replace

#### **City Sewer Ordinance Revisions**

In the reporting period, on December 15<sup>th</sup>, 2020, the final, updated City Ordinances (Fitchburg City Code, Chapter 147 – Sewers) received its third and final hearing reading in City Council session, and was voted by City Council to be “enrolled and ordained”. On December 18<sup>th</sup>, 2020, the Mayor of Fitchburg signed off on the Council-approved Sewer Ordinance changes. The Sewer Ordinance changes included updated “Technically-Based Local Limits” and also included other provisions required to comply with the National Pretreatment Program (40 CFR 403) “Pretreatment Streamlining Rule”.

Notice correspondences were transmitted to both the Town of Westminster and the Town of Lunenburg (both correspondences were dated January 4, 2021) informing both communities (who each have an “Intermunicipal Agreement” (IMA) with the City of Fitchburg, for providing sewage collection and treatment services), informing same of their IMA requirements to update their own Sewer Ordinances so as to be as stringent (or more stringent) than Fitchburg’s Sewer Ordinance.

Fitchburg has received (for review and approval) the draft updated Sewer Ordinances of the Town of Westminster (date of April 27, 2021), and the Town of Lunenburg (date of January 25, 2022), and each Town has formally adopted and implemented the new updated Sewer Ordinances to reflect those of the City of Fitchburg.

#### **Wet-Weather Operations**

The City has not introduced any septage or other high strength side streams not associated with plant operations during times that any portion of the flow was bypassing the secondary treatment system, or during times when a secondary system bypass was likely to occur within two hours. We are continuing this practice as required, and will conduct periodic review sessions with plant staff to ensure all personnel are aware of wet weather operational procedures.

- Presently our current Monthly Total Phosphorus average is 0.24 mg/L for the period of September 1, 2023 to December 31, 2023.

Comparing (pre- SSU Project) October 2016 plant performance with October 2020 and October 2023 performance:

<u>Metric</u>	<u>October 2016</u>	<u>October 2020</u>	<u>October 2023</u>
Total Flow, MG (month)	175.3 MG	300.0 MG	250.9 MG
Max. Daily Flow, MG	10.4 MG	20.6 MG	29.3 MG
Total Rain, inches (month)	5.3"	5.6"	3.03"
Max. Daily Rain, inches	2.6"	1.6"	1.4"
Rain Events >1.0"	8	3	6
Total Bypass, MG (month)	11.168 MG	.628 MG	0.00 MG
Max. Daily Bypass, MG	8.728 MG	.381 MG	0.00 MG
BOD <sub>5</sub> In (Pounds)	740,267	682,503	336,094
BOD <sub>5</sub> Out (Pounds)	9,716	14,856	8,131
BOD <sub>5</sub> Removal Efficiency	97.3%	97.8%	97.1%
TSS In (Pounds)	667,896	779,325	533,516
TSS Out (Pounds)	26,619	19,401	15,710
TSS Removal Efficiency	96.0%	97.8%	96.8%

Plant performance metrics (post- SSU Project), considering that the newly completed plant upgrades will continue to improve treatment performance, together with the continuing combined sewers separation program, combination manholes separation, and infiltration and inflow removal program, will all further assist and improve (reduce) effects on the plant from wet-weather, and gives the City an expectation for improved plant performance and continuing improved Permit compliance.

Since the implementation of the State Point Analysis system, developed by Wright-Pierce, plant operations have seen reductions in the length of time (duration) of secondary system bypasses, reduction in E. Coli violations, and reductions in both BOD and TSS violations of the NPDES permit.

### **C. WASTEWATER MANAGEMENT PLAN**

In accordance with the Consent Decree, a first draft of the City's Wastewater Management Plan (WWMP) was submitted to the EPA and the MassDEP on May 15, 2019, for review and approval. This plan lays the framework for the City to come into compliance with the Federal Clean Water Act and the terms of the Consent Decree. To date, the City has not received a response from either the MassDEP or EPA on the Wastewater Management Plan, Deliverable No. 1.

The WWMP is required by the Consent Decree to include facility upgrades required to meet seasonal total phosphorus concentration-based limits and collection system upgrades necessary to meet federal water quality standards for combined sewer overflows (CSOs). As part of the WWMP, a CSO Long-Term Control Plan (LTCP) was created in accordance with EPA's *Combined Sewer Overflows Guidance for Long-Term Control Plan*, EPA's *Coordinating CSO Long-Term Planning with Water Quality Standards Reviews*, MassDEP's

*Guidance for Abatement of Pollution from CSO Discharges*, and other relevant state and federal CSO guidance reports.

Estimated costs for sewer separation projects and CSO Control Alternatives were analyzed to determine the extent of their social and economic impacts on the community. Based on the findings of these steps, recommendations were formulated for the City's approach for future CSO mitigation. In addition, recommendations for improvements to the Easterly WWTF were created based on current loads and projected requirements of the City's next NPDES Permit. These tasks were incorporated into the CSO LTCP.

The Consent Decree's WWMP Remedial Measure also stipulates (via Para. 55.a) that, in developing the WWMP, the City is encouraged to consider evaluating potential Best Management Practices, including the use of all appropriate "green infrastructure" and "low-impact development" techniques currently available to reduce inflow.

In December 2020, the City submitted the WWMP Phase II Report to MassDEP and EPA. As required under the CD, the report included the following:

- A description of all infrastructure improvements and programs that have been implemented during the previous period to comply with the conditions of the CD and meet limits and other conditions of the City's NPDES Permit.
- The cost of the above listed efforts to date.
- A description of efforts planned for the next 3-year period.
- An assessment of the abatement anticipated to be achieved from the efforts for the next 3-year period.

The report also included a preliminary performance review of the SSU upgrades. Limited SSU data was available for the report since the improvements were not fully complete until August 2020. The preliminary performance results indicated improvements in BOD, TSS, and Ammonia treatment, although further analysis is required with a larger and more substantive set of data. The City will provide a more detailed analysis of the treatment improvements under the SSU in the next submittal of the WWMP in 2024.

During a previous reporting period, the City authorized a scope of work to complete the next submittal of the WWMP. As required under the Consent Decree, the WWMP Phase III Report shall include the following:

- A description of all infrastructure improvements and programs that have been implemented during the previous period to comply with the conditions of the CD and meet limits and other conditions of the City's NPDES Permit.
- The cost of the above listed efforts to date.
- A description of efforts planned for the next 3-year period.
- An assessment of the abatement anticipated to be achieved from the efforts for the next 3-year period.

Due to the anticipated issuance of the updated NPDES Permit, the City requested from EPA and MassDEP a one (1) year extension to December 31, 2024, for the portion of the WWMP Phase III Report that pertains to the updated NPDES permit and all items related to the Easterly WWTF. A supplement to the WWMP Phase III Report will be provided in December 2024 and will review the performance results from the Easterly WWTF's SSU upgrades since the submittal of the WWMP Phase II Report. This supplemental report will also include a summary of the necessary infrastructure and WWTF improvements, programs, and schedule updates that may need to be implemented to meet any new limits and conditions of the updated NPDES Permit. It should be noted that the draft updated NPDES Permit was provided to the City by the EPA Region 1 on December 15, 2023. An

Extension was granted and provided to the City by the United States Department of Justice (DOJ) via an email sent on December 21, 2023.

The City submitted the WWMP Phase III Report – Infrastructure Improvements to EPA and MassDEP during the current reporting period on December 29, 2023. The report summarized the improvements and programs the City completed between December 2020 and December 2023 related to CSO separation work. In addition, the report identified the City's anticipated schedule for tasks related to sewer separation projects for the next three (3) years, which were also identified in the City's CSO LTCP in the first submittal of the WWMP.

#### **D. ILLICIT CONNECTIONS**

The Wastewater Division has continued coordinating with the Building Department to halt acceptance of any Building Permits/Occupancy Permits at properties until the any discovered inflow source is removed. Going forward, in the course of ongoing and periodic repeat CCTV work, any suspected illicit connections will be identified for further investigation, to confirm or rule out as an illicit connection. If determined to be illicit connections, the area infrastructure will be reviewed and evaluated for the feasibility of redirecting confirmed illicit connections. In addition, the City plans to incorporate all building inspection data gathered as a result of SSES work conducted by its Consultant, into the City's GIS, for tracking purposes.

Eight (8) properties had private inflow sources (roof leaders/sump pumps) redirected from the sanitary system in the CSO 007, 011, 039, 048 Separation/Rehabilitation Project area. The connections were removed under the City's Financial Assistance Program for removing private I/I sources. Under this program, the City has been reimbursing homeowners up to 50% of the cost to remove an I/I source within the CSO 007, 011, 039, 048 Separation/Rehabilitation Project area. The program is planned to be extended to the 'Downtown Separation Project' area, where multiple sources of private I/I have been identified within the first phase of the construction that began in Summer 2023.

#### **E. INTERIM PHOSPHORUS LIMITS**

The City has been complying with the interim phosphorus limits contained in Attachment 9b of the Consent Decree. As of July 2023 we have a 12-month rolling phosphorus average of 0.28 ppm, which is below the interim phosphorus limit of 0.5 ppm. The City attributes the sustained compliance during our reduced treatment capacity, with respect to interim phosphorus limits compliance, to contributions from the CEPT primary treatment improvements, the State Point system, and the hard work of the plant operations and maintenance personnel.

### **VIII. SUPPLEMENTAL ENVIRONMENTAL PROJECT (SEP)**

No SEP activities took place during the reporting period.

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If there are any comments or questions regarding the above subject please contact the undersigned at (978) 829-1930.

Sincerely,

## FITCHBURG DPW, WASTEWATER DIVISION

Hank McNamee

Mark McNamara  
Fitchburg DPW Deputy Commissioner of Wastewater

Electronic & Hard Copy: Beth Kudarauskas, USEPA, Region 1 Office  
Dan Kurpaska, Section Chief, MassDEP, Central Region Office

Electronic copy:  
(Transmittal letter only)      Chief, Environmental Enforcement Section, DOJ  
Anu Balakrishna, Assistant U.S. Attorney  
Jeff Kopf, Senior Enforcement Counsel, EPA Region 1  
Louis Dundin, Assistant Attorney General, Massachusetts AG

Electronic copy: Nicholas J. Ericson, P.E., Fitchburg DPW Commissioner  
Sam Saquailia, Mayor, City of Fitchburg  
Lisa Mead, Mead, Talerman & Costa, City Solicitor

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Mark McNamara, DPW Deputy Commissioner Wastewater