

**City of  
Fitchburg**



**Department of  
Public Works**

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February 16, 2022

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: David Boyer

Subject: Semi-Annual Progress Report  
August 2021 – January 2022 Reporting Period  
Consent Decree, IX. REPORTING, Paragraph 70

Dear Mr. Handler and Mr. Boyer,

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 2021 – January 2022 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.

**Semi-Annual Progress Report**  
**August 2021 through January 2022 Reporting Period**

**A. SEWER SYSTEM**

**Staffing**

There were two major staffing changes during the reporting period. Both the Deputy Commissioner of Wastewater, and the Sewer System Manager departed the City. In the interim until these positions are filled, the Plant Superintendent has been named the Interim Deputy Commissioner, and the duties of the Sewer System Manager have been split between the DPW Civil Engineer, Superintendent of Streets, and the GIS Engineer. The City expects to post and fill these positions in the next reporting period.

**“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. Most of the few remaining manholes to locate are buried and will continue to be uncovered in the coming reporting period season. The City raised 1 buried manhole to grade during the reporting period, and repaired 13 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)**: 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.) separated additional combination manholes, (2) completed construction of the Highview Street Sewer Project, and (3.) continued the ongoing construction of the "***CSO 007, 011, 039, 048 Separation/Rehabilitation Project***". An engineering services contract for the pre-design investigations, and engineering design services of the next combined sewer separation project, termed the "***Downtown Separation Project***" for CSO Regulators 010, 032, 045 and 083 was also executed. 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 44,277 feet, or approximately 8.38 miles.

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

The collection operators continue to make progress with CCTV inspections and condition coding all 143.7 miles (approximate length) of sewer pipe within the City. By the close of the reporting period, the City had condition coded approximately 93.4% 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 5.9% 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 has begun the inspection of sewers in the "***Downtown Separation Project***" (***CSO's 010, 032, 045, and 083 Separation/Rehabilitation Project***). Around 24,250 LF of sewers and drains will be light cleaned and televised, and 2,350 LF of sewers and drains will be inspected using multi-sensor inspections. In addition, around 3,900 LF of culverts/CSO overflow collectors will be inspected using multi-sensor inspections with an additional 2,000 LF of culverts/CSO overflow collectors inspected with CCTV. The multi-sensor inspection system included CCTV, Sonar, and Radar, in order to assess pipe ovality, pipe wall loss,

and sediment depth. The sewer identified for inspection consist of sewers the City was previously unable to inspect or are sewers with structural defects that required an additional inspection.

The following table (*Table No. 1*, on Page 5) summarizes manhole inspections to date:

<b>CITY &amp; CONSULTANTS 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	714	3619	19.93%
Overlap (manholes inspected by both City and Consultant)	46	3619	1.27%
Consultant	1,277	3,575	35.78%
<b>Inspection Totals</b>	<b>2,037</b>	<b>3619</b>	<b>56.78%</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 sewer manholes, drain manholes and catch basins with its GPS unit. To date the City has located the following assets:

- 3,607 publicly-owned sewer manholes out of 3,619 (99.6% completed), which leaves 12 manholes to be located.
- 2,516 drain manholes (out of an unknown total).
- 4,049 catch basins (out of an unknown total).
- 369 sewer laterals
- 24 sewer clean-outs
- 1,459 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 executed a contract with Utility Cloud, a CMMS web-based software. The City will get the system up and running in the next reporting period 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**

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 JULY 31, 2021 TO FEBRUARY 1, 2022**

<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	--	Weir wall raised 6-inches on 5/12/21 Volume for event on September 2, 2021 was unknown
CSO-007	Cushing St. at Riverfront Park	0	0	Regulator closed May 3, 2021
CSO-010	Main St. at River St.	5	173,432	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	13	144,474	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.	-	-	Closed on August 24, 2021.
CSO-041	Benson Rd. near Falulah St.	3	21,127	Upsizing of pipe downstream and upstream I/I work necessary for closure. 5 catch basins upstream connected to sanitary

CSO-045	Main St. at Oliver/Putnam St.	11	3,869,771	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.	0	-	Regulator closure construction in progress as part of under construction CSO-7, 11, 29, 48 Project. Active meter still in manhole.
CSO-064	Water St. Easement near former "Halloween World"	10	2,772,734	Regulator on main interceptor sewer. Inflow removal upstream and sewer upsizing likely necessary for closure.
CSO-076	Birch St. at Heywood St.	4	22,480	Downstream pipe undersized. No known combined sewers upstream.
CSO-83	Main St. at Prichard St.	6	129,815	Will be closed as part of Downtown Separation Project in 2025
<b>Totals</b>		<b>53</b>	<b>7,133,833</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 the previous reporting periods, discussions were had with ADS and their wastewater engineering consultant regarding Bill H. 4921, and the ensuing MassDEP regulation 314 CMR 16.00 regarding public notification of CSO events. The regulations were updated with public comments in January 2022, with an updated submittal date of the draft CSO Public Notification Plan for May 1, 2022. The City is currently in discussion with their wastewater engineering consultant about the implementation of a public notification system to comply with the new regulations and will execute an agreement to conduct the work in the next reporting period.

### **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.

### **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, with the report likely to be submitted to the MassDEP and EPA in the next reporting period.

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. In the past reporting period, the City conducted additional inspection of sewers upstream of the interceptor that convey flow under Route 2 from the Fitchburg Landfill and submitted follow-up private inflow letters to locations where suspect private inflow sources were found. To date, the City did not receive a response at

these locations. During the next reporting period, the City will hand deliver the suspect inflow source notices for dye testing/flooding and anticipate submitting the SSES Phase IV report to MassDEP and EPA.

### **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 62 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 132 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 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 CSO 007, 011, 039, 048 Separation/Rehabilitation Project, the City has separated 16 combination manholes to date. As part of the City's next sewer separation project in the downtown area (*CSO 010, 032, 045, 083 Separation/Rehabilitation Project*), the City plans to separate 9 combination manholes.

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 continued construction of the 'CSO 007, 011, 039, 048 Separation/Rehabilitation Project'. This project involves the closure of CSO Regulators 007, 039, and 048. In addition, combined sewers upstream of the previously closed CSO 011 will be separated on Clarendon Street. In total, approximately 4,800 linear feet of combined sewers will be 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 will be replaced, and 20,000 linear feet of sewers will be rehabilitated to repair structural defects and reduce infiltration/inflow in the project area. In addition, the project (as bid) will permanently separate 17 combination manholes. Construction commenced in November 2020 and is currently ongoing. The project has a contract completion date November 2022 and is funded through the State Revolving Fund (SRF). As part of the project, CSO Regulator 007 was permanently closed on May 3, 2021, and CSO Regulator 039 was closed on August 26, 2021.



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 will include the separation of approximately 27,600 LF of combined sewers and the rehabilitation of 37,600 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. During this reporting period, the City commenced the investigation and design phases of the project, and completed the following tasks:

- 793 attempted manhole/catch basin inspections
- Around 40,000 LF of surveyed roadway
- Around 63,400 LF of smoke testing
- Review of over 60,000 LF of CCTV videos
- 325 soil borings/probes

In addition, the City commenced CCTV and multi-sensor inspection in the project area. As part of the work, around 24,250 LF of sewers and drains will be light cleaned and televised, and 2,350 LF of sewers and drains will be inspected using multi-sensor inspections. Also, around 3,900 LF of culverts/CSO overflow collectors will be inspected using multi-sensor inspections with an additional 2,000 LF of culverts/CSO overflow collectors inspected with CCTV. During the next reporting period, the City anticipates completing the field work for both the investigation and design phases, which will include the CCTV and multi-sensor inspections, the remaining survey, dye testing/flooding of defects identified during smoke testing, and building inspections.

The City submitted a SRF Project Evaluation Form during the last reporting period for the construction phase of the project. The construction for the project is estimated to commence in Spring 2023. The City is still awaiting the release of the 2022 Intended Use Plan.

### **Sewer Connection Summary**

Table No. 4 below is a report of all new sewer connections to the sewer system in Calendar Year 2021, 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 - 2021 Calendar Year					
Date Issued	House #	Street	Occupancy Type	Work Description	Estimated Flow (GPD)
3/24/2021	808	South St.	Residential	New sewer connection	330
5/10/2021	579	South St.	Residential/Condos	New sewer connection	3850
5/10/2021	535	Wanoosnoc Rd.	Residential	New sewer connection	220
5/12/2021	77	Richardson Rd.	Residential	New sewer connection	330
7/20/2021	43	Skyview Dr.	Residential	New sewer connection	330
7/22/2021	1052	Franklin Rd	Residential	New sewer connection	330
8/20/2021	414	Ashburnham St.	Residential	New sewer connection	330
10/12/2021	535	Shea St.	Residential	New sewer connection	440
12/14/2021	366	Westminster Hill Rd.	Residential	New sewer connection	330
12/15/2021	473	Fairmount St.	Residential	New sewer connection	440
Total Estimated Added Average Daily Flow (ADF):					12,430

## 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.

The City procured the renewal flood insurance policies certificates, as required by the MassDEP – Division of Municipal Services prior to the Project contract award to the construction contractor. The policies effective dates run from January 4, 2020 thru January 4, 2021.

While the Project fully completed within the reporting period, the City opted to renew these policies through the National Flood Insurance Program, for the period of January 4, 2021 thru January 4, 2022, and were for the following buildings within the Easterly Wastewater Treatment Facility:

Chlorination Building ..... Policy No. 87058631232020  
Blower Building ..... Policy No. 87058631242020  
Process Building & Primary Gallery ..... Policy No. 87058631252020

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<sup>st</sup>, 2020 and January 31<sup>st</sup>, 2021 included:

#### **August 2021**

- [COVID-19, Pandemic \(ongoing\) Normal Staffing](#)
- [Septage Receiving Sump Pump - replaced pump wear plate](#)
- [Settled Effluent Strainer - repaired frozen drain valve](#)
- [Emergency Generators - Performed 3 year major service](#)
- [Primary Basin No. 2: drained, cleaned and replaced floor carrying wear shoes](#)
- [#4 Sampler- replaced compressor](#)
- [1<sup>st</sup> Stage Aeration - service all blower check valves](#)
- [Wet Well Tank Drain Pump - oil change service performed](#)
- [Twas Pump #4 Penn Valley Pump- replaced lower gasket](#)
- [Second Stage Aeration Influent Mix Box - replaced temp covers with aluminum covers](#)
- [Department Of Labor And Safety - Plant inspection held on the 24<sup>th</sup>](#)

- Vehicles Serviced - TX Gator, 2017 F-350, 2015 Ford Transit
- Hydrotherm Boiler - replaced seal on #1 & #2 circulator pumps
- Completed 69 Preventative Maintenance Work Orders and 29 Demand Work Orders.

#### September 2021

- COVID-19, Pandemic (ongoing) Normal Staffing
- #3 Fournier Press - replaced air bag #2 cell
- Headworks Pure Air Oder Control - replaced fan shaft and bearings
- #1 Emergency Generator - replaced room vent fan motor
- Aeration Basin 1-2 - Cleaned and removed rags
- Gravity Belt Thickener Control Panel - replaced Failed Fiber Optic Communication Module
- Vehicle serviced -Farmall Tractor
- Primary Basin Control Panel - replaced failed Analog Input Module
- Installed New Light pole at By-Pass Gate area and 1stage Aerations steps
- Completed 73 Preventative Maintenance Work Orders and 16 Demand Work Orders.

#### October 2021

- COVID-19, Pandemic (ongoing)
- #3 Fournier Press - rebuilt press.
- Chlorine Contact Chamber - replaced hypo fitting on Water Champ Rapid Mixer
- Primary Basin Skimming's - Cleared plugged line to skimming's pit
- East Plant Elevator - Annual State Safety Inspection Performed
- SCADA - worked on programming issues
- Aerzen Blower 2AB-1 & 4 - performed code W-13 motor maintenance
- Department of Labor and Safety - Completed 11 of 14 items
- Headworks Aerated Grit Chamber - replaced VFD drive for blower #3
- Vehicles Serviced - 2016 Ford Escape Blower Fan,
- Completed 79 Preventative Maintenance Work Orders and 24 Demand Work Orders.

#### November 2021

- COVID-19, Pandemic (ongoing) Normal Staffing
- #2 Fournier Press - rebuilt press
- MCC 11 - replaced Split Air Conditioning unit
- 2<sup>nd</sup> Stage Aerzen Blowers - replaced HMI batteries
- Sodium Bisulfite - replaced hose pump element
- Vehicles serviced - 2015 Ford Transit (repaired exhaust), Farmall Tractor

- Department of Labor And Safety - completed 12 out of 14 items
- Addressable Fire Alarm System - replaced #35 pull station.
- 2<sup>nd</sup> Stage Aeration Basin Side B - replaced motor on Invent Mixer zone B
- Completed 64 Preventative Maintenance Work Orders and 5 Demand Work Orders.

#### December 2021

- COVID-19 Pandemic (ongoing) Normal Staffing
- Addressable Fire Alarm System - replaced batteries in NAC booster next to panel
- Headworks Aerated Grit Chamber - Replaced #2 blower VFD Drive
- Fournier Press SC-4 Screw Conveyor - replaced gear reducer
- #3 Penn Valley Pump - replaced belts and motor bearings
- Hydrotherm Boiler - replaced force draft fan assembly and serviced sensors
- Boiler #1 & #2 - replaced small relief valve #1 boiler, large relief valve #2 boiler, replaced contactors and switches in condensate pump control panel, replaced condensate check valves
- #2 Gravity Belt Thickener - repaired belt guide assembly
- #1 Fournier Press - replaced Scraper knives and Deflector Blocks.
- 
- Completed 67 Preventative Maintenance Work Orders and 23 Demand Work Orders.

#### January 2022

- COVID-19 Pandemic (ongoing) Normal Staffing
- Fournier Press Air Compressors - Installed new air dryer
- Settled Effluent Duplex Strainer - replaced left spray bar motor
- Sludge Galley Transfer Galley - replaced sump pump float switch
- Vehicles Serviced - 2015 Ford Transit (recall) F-350 replaced plow lights
- Primary Basin No. 1 - Replaced chain on Cross Collector
- Aerzen Blower 2AB-3 - Performed motor Service
- #2 Fournier Press Polymer Pump - Rebuilt Pump
- Scada System - Upgraded 4 Scada Computers with Server style computers
- Addressable Fire Alarm System - cleaned smoke alarms headworks blower stair well
- #1 Fournier Press Compressor - repaired motor bracket
- Odor control - Replaced chemical tubing
- Caustic receiving station - repaired fill piping
- Completed 63 Preventative Maintenance Work Orders and 19 Demand Work Orders.

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

### **East Plant**

- East Plant, Process Wing, Garage Bays Nos. 4 & 5: replace roll-up doors.
- East Plant, Control Building: replacement of SCADA computer terminals and historian computer. Completed January 2022
- 'Lab and Control Room Upgrade Project': in progress, working on preliminary design ('20% design'); advance the design of Plant capital improvement project to "For Bid" documents. In process of hiring an OPM.
- Aerated Grit Chamber Stairwell: replace the floor coating system. Started January 2022

### **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 0.29 mg/L for the period of September 1, 2021 to December 31, 2021.

Comparing (pre- SSU Project) October 2016 plant performance with October 2020 and October 2021 performance:

<b>Metric</b>	<b>October 2016</b>	<b>October 2020</b>	<b>October 2021</b>
Total Flow, MG (month)	175.3 MG	156.2 MG	300.0 MG
Max. Daily Flow, MG	10.4 MG	8.4 MG	20.6 MG
Total Rain, inches (month)	5.3"	4.7"	5.6"
Max. Daily Rain, inches	2.6"	1.3"	1.6"
Rain Events >1.0"	8	1	3
Total Bypass, MG (month)	11.168 MG	.048 MG	.628 MG
Max. Daily Bypass, MG	8.728 MG	.048 MG	.381 MG
BOD <sub>5</sub> In (Pounds)	740,267	757,052	682,503
BOD <sub>5</sub> Out (Pounds)	9,716	8,622	14,856
BOD <sub>5</sub> Removal Efficiency	97.3%	98.7%	97.8%
TSS In (Pounds)	667,896	1,806,043	779,325
TSS Out (Pounds)	26,619	11,469	19,401
TSS Removal Efficiency	96.0%	98.13%	97.8%

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, we have not received a response from either 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 documents.

Estimated costs for sewer separation projects and CSO Control Alternatives were analyzed to determine their extent of social and economic impact 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 May 2020, the City executed an agreement with Weston & Sampson to develop the second phase of the City's WWMP. The WWMP Phase II Report was due to be submitted by or before December 31, 2020, as stated in the CD. The Report was required to 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.

During the previous reporting period, the City submitted the WWMP Phase II Report to MassDEP and EPA. The report included the above requirements specified in the CD. In addition, the report included a preliminary performance review of the SSU upgrades. Limited Plant performance data was available for the report, since the improvements were not fully complete until August 2020. However, the preliminary performance results has indicated improvements in BOD, TSS, and Ammonia treatment, although further analysis is required with a larger and more substantial 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 2023.

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

A catch basin was found to discharge to a sanitary service at 550 Oak Hill Road during the last reporting period. This issue was corrected, removing a large amount of inflow to the sanitary system, upstream of CSO-004.

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. During the next reporting period, more sources are expected to be removed, and the program is planned to be extended to the 'Downtown Separation Project' area.

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.

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

Since the completion of the Secondary System Upgrades Project, on August 24, 2020, we had a slight increase in the phosphorus average for the months of September 2020 and October 2020 until the facility recovered from the process interruptions that were needed to accommodate construction. Since October 2020, the Plant performance has have seen a steady decline in the monthly phosphorus averages of: Oct. 2020 (0.52 mg/L); Nov. 2020 (0.25mg/L); and Dec. 2020 (0.17 mg/L); Jan. (.2 mg/L); Feb. (.2 mg/L); Mar. (.2 mg/L); Apr. (.2 mg/L); May (.2 mg/L); Jun. (.3 mg/L); Jul. (.5 mg/L); Aug (.84 mg/L); Sept (.40 mg/L); Oct (.19 mg/L); Nov (.19 mg/L). We have seen an increase in our monthly average Total Phosphorus (TP) when the season changed and the weather warmed. After reviewing and studying the "Anaerobic Selector Operation" training event that was presented to Fitchburg Wastewater personnel during the Secondary System Upgrade Project (SSU) it was noted that the anaerobic selector zones could be adversely affected with the addition of Ferric Chloride to the treatment process. The chemical Ferric Chloride was discontinued on August 9, 2021. Since the discontinuation of Ferric Chloride the Total Phosphorus (TP) weekly results have begun to improve once again.

#### **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



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Mark McNamara  
Fitchburg DPW Interim Deputy Commissioner of Wastewater

Electronic & Hard Copy:      Beth Kudarauskas, USEPA, Region 1 Office  
    David Boyer, 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:      Vincent Pusateri, II, Fitchburg City Solicitor  
    Nicholas J. Ericson, P.E., Fitchburg Assistant City Engineer

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Mark McNamara, DPW Interim Deputy Commissioner Wastewater