City of **Fitchburg** Department of **Public Works**

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

STREETS & PARKS
301 Broad Street
978-829-1900
978-345-9687 FAX

WASTEWATER
166 Boulder Drive, Suite 108
978-345-9622
978-345-9623 FAX

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

WATER
1200 Rindge Road
978-345-9616
978-345-9555 FAX

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

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

August 31, 2018

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

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

Subject: Semi-Annual Progress Report
February 2018 – July 2018 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 (February 2018 thru July 2018 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. In this Semi-Annual Progress Report, the City is including an updated "Base Map" GIS map (Map 1 of 4) of parcel & roadways data and municipal boundaries.

GIS maps updates, hard copies will be provided together with a printed copy of this report, via U.S. mail. GIS maps updates will also be provided with the electronic submissions (via email) of this report.

Semi-Annual Progress Report
February 2018 through July 2018 Reporting Period

A. SEWER SYSTEM

Staffing

During the reporting period, the Collection System Team was operating at a reduced capacity, with a team of four operators, instead of the full complement of six operators. The team has been operating in this reduced capacity since February 2017. During the 6-month reporting period, no changes to the team have occurred. Operating in this reduced capacity, one team is typically fielded each day to conduct CMOM work, structural improvements to the system, or sewer meter maintenance. The City is currently having internal staffing planning discussions to fill these two vacant positions, and use the two new hires on a part time basis to conduct storm drain system work.

Within the reporting period the DPW Business Manager vacancy was filled with a new employee. This important position provides support to the DPW Wastewater Division on accounting, finance, and planning matters, and with improved operational efficiencies. Additionally, this position assists in pursuing and securing alternative financing opportunities to help mitigate cost burden and impacts to the Wastewater Enterprise's rate payers.

Long-Term Sewer System Preventative Maintenance Plan

The City's Long-Term Sewer System Preventive Maintenance Plan, submitted in January 2012, has been distributed to all collection system operators and copies are maintained in each vehicle for quick reference. This document is a "living/breathing document", and was most recently updated and submitted to the MassDEP and the EPA in March 2017.

Priority Cleaning Plan

The City's Priority Cleaning Plan, submitted in January 2012, has been distributed to all collection system operators and copies are maintained in each vehicle for quick reference. This document is a "living/breathing document", and was most recently updated and submitted to the MassDEP and the EPA in March 2017.

Routine Cleaning Plan

The City's Routine Cleaning Plan, submitted in January 2012, has been distributed to all collection system operators and copies are maintained in each vehicle for quick reference. This document is a "living/breathing document", and was most recently updated and submitted to the MassDEP and the EPA in March 2017.

Geographical Information Systems (GIS) Maps

Four maps were updated for this semi-annual report.

1.) Base Map: An updated base map has been submitted, to include updated property parcels.

2.) Infrastructure – 1: 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 continuing to acquire sewer rim elevations with its GPS unit. To date we have located 102-percent of all sewer manholes. These locations are shown. Note that the sewer manholes location percentage exceeds 100-percent of sewer manholes, because we have also been locating private manholes during our investigations in order to have a more complete picture of the sanitary system.

3.) Infrastructure – 2: 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 assets location survey program has begun under the DPW - Engineering Division.

4.) Extraneous Flow Investigation, Remediation, and Capital Improvement Projects: 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 completed a sewer replacement project on Goodwin Street to prevent SSOs, repaired a collapsed sewer and removed a manhole, and also separated numerous combination manholes. The locations of the manhole separations are also 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 44,811 feet.

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

The collection operators continue to make progress with CCTV inspections and condition coding all 142 miles (approximate length) of sewer pipe within the City. By the close of the reporting period, the City had condition coded approximately 87% of its sewer system. Production has slowed somewhat on CCTV operations, as the vast majority of pipes remaining to be coded are either located within difficult to access easements, egg-shaped pipes, 6-inch diameter pipes, the main interceptor sewer, or odd-shaped brick conduits. Numerous manholes were also inspected during this reporting period. During combination manhole repair or sewer line repair operations, CCTV operations are suspended due to the staffing need for more crew members to conduct the repairs.

As the majority of the remaining sewers to be inspected are outside of the City's capabilities to inspect, the City has actively been outsourcing this work. During the reporting period, the City completed inspecting 10,878 feet of its 37,000 foot trunk sewer using multi-sensor inspection, starting at the West WWTF. The multi-sensor inspection included TV, Sonar, and Radar, in order to assess pipe ovality, concrete loss, and sediment depth. Data from the multi-sensor inspection was submitted on July 30th, 2018, incorporated into the revised Phase I Sewer System Evaluation Study Report. The City plans to conduct additional inspection of its trunk sewer in the next reporting period. The City plans discuss these findings in the next reporting period. The City is currently

finalizing a new service agreement task order with our engineering consultant to complete this work. In addition to the below tabulation of sewers cleaned and CCTV'd to date, a graphical representation of the progress on this effort is also attached to this report.

Cleaning and CCTV status summary of the City's 24 sub-watershed areas are provided below, in Table 1 (Sewer Main Inspection - Total Length Inspected To July 31, 2018):

TABLE 1

SEWER MAIN INSPECTION - TOTAL LENGTH INSPECTED TO JULY 31, 2018

Area Number	Total Cleaned and CCTV'd (LF)	Total Sewer Pipe (LF)	Area Percent Completed
1	40,315	54,431	74.07%
2	18,361	20,613	89.07%
3	37,830	48,778	77.56%
4	33,341	43,090	77.38%
5	24,047	31,017	77.53%
6	13,824	18,714	73.87%
7	15,083	17,423	86.57%
8	23,165	23,916	96.86%
9	21,038	25,065	83.93%
10	12,231	19,429	62.95%
11	26,672	28,320	94.18%
12	19,483	20,328	95.84%
13	32,671	40,698	80.28%
14	31,382	32,367	96.96%
15	30,310	31,530	96.13%
16	29,307	30,901	94.84%
17	27,492	39,067	70.37%
18	49,216	51,201	96.12%
19	18,438	19,886	92.72%
20	43,411	45,409	95.60%
21	24,974	25,222	99.02%
22	44,201	44,526	99.27%
23	16,198	17,251	93.90%
24	17,404	18,666	93.24%
Totals in Feet	**650,394**	**747,848**	**87.0%**
Totals in Miles	**123.2**	**141.6**	**87.0%**

The following table (Table 2) summarizes manhole inspections to date:

TABLE 2			
CITY & WRIGHT-PIERCE SEWER MANHOLE INSPECTION TOTALS			
Inspected by	**Total Inspected**	**Total Manholes**	**Percent of Inspections Completed**
City of Fitchburg	432	3,586	12.05%
Overlap (manholes inspected by both City and Wright-Pierce)	92	3,586	2.57%
Wright-Pierce	1,533	3,585	42.76%
Inspection Totals	**2,011**	**3,585**	**56.1%**

Table 2 above includes both City-inspected manholes, as well as past inspections performed by the City's consultant engineer (Wright-Pierce), that was conducted in conjunction with past projects, including CSS 4D, the field investigative work associated with the hydraulic model development and the SSES Phases I and II, and with the Beech and Hazel Streets Sewer Separation Project. Between both the City's Engineer, and the City's in-house forces, 56.1% of manholes have been inspected. Additional manholes have been inspected as part of the SSES Phase II Investigations, and will be included in the next reporting period after the final SSES Phase II report is submitted to the EPA and MassDEP.

As reported above, one of the City's Engineering Consultants has inspected hundreds of manholes for various projects and SSES work. The City and its Consultant have encountered some difficulty transferring the manhole inspection data from the Consultant's software to the City's GraniteNET system, however all future manhole inspections and pipe inspections conducted by consultants for the City will conducted in a compatible format for the City's GraniteNET system, and this will become a requirement the City is writing into new engineering services contracts for sewer systems inspection work.

Global Positioning Satellite (GPS) System Update

During the reporting period, the City upgraded its GPS to a faster and more accurate unit made by Stonex. The GPS was purchased in conjunction with the City's DPW - Engineering Division to save costs. City is continuing to locate all of its sewer manholes, drain manholes and catch basins with its new GPS unit. To date the City has located the following assets:

- 3,671 sewer manholes (total public & private manholes) out of 3,588 (total publicly-owned system manholes) – 102.31% completed.
- 1,911 drain manholes (out of an unknown total).
- 3,629 catch basins (out of an unknown total).
- 180 Sewer Laterals
- 486 other asset types.

The City's gas company, Unitil, has been CCTV'ing sewer laterals in natural gas project areas, in order to reduce damage to private sewer laterals. As part of these investigations, Unitil marks out the locations of the sewer laterals. The City has been following Unitil and locating the service

laterals with the City's GPS, in order to update and improve the City's sewer system map. During the last reporting period additional laterals were marked out in the west side of the City where Unitil gas work was being conducted.

Service Call Activities

The Collection Operators have been performing service calls for system users with blocked service laterals. Often the problem is a private matter, as sewer service laterals are private ownership (not City-owned) and the City is not responsible for blockages in private sewer laterals. Nonetheless, the City responds to all calls to determine the cause for the blockage because the cause of a problem for a service call is unknown until the City can investigate the call. Manholes in the street are inspected for surcharging. Inspection frequently includes cleaning the line where the private lateral enters blindly into the public sewer and occasionally includes CCTV'ing the line to look up the private lateral for blockages. If the issue is a private ownership issue, the City will inform the customer that a private infrastructure issue exists and the customer should call a private sewer service or plumbing company.

Following a response to a service call, the collection operators fill out a Service Call Inspection Form which is then inputted in to the City's call-logging software, "See-Click-Fix". SeeClickFix creates a record of the service call including the issue, the date and time, the name and address of the customer, the details of the request and notes on how the matter was handled. If work was performed at the site, SeeClickFix allows entry of who performed the work, and what time the work was completed. The major benefit of SeeClickFix is the ability for residents and business owners to interact with City officials. Constituents can initiate an issue, can see that the City has responded to an issue, and see when an issue is resolved. Also included is a commenting feature which allows residents to express additional information on an issue.

To date, our experience with the SeeClickFix system has been useful in creating an electronic tracking system of service calls.

Asset Management

Recently, the DPW Wastewater Division adopted the "Asset Management" philosophy and approach to sustain levels of service, while minimizing risk of failure and the corresponding consequence of failure that could result from the failure of a City wastewater infrastructure asset. This methodology will go hand-in-hand with capital planning and financial sustainability of the Wastewater Enterprise, and will help to prioritize and focus the financial resources towards the renewal of assets.

At the end of the previous reporting period, the City received its final asset management model, built on the InfoMaster platform by Innovyze. The model will be a focal point for the City going forward in prioritizing its management and rehabilitation of the collection system. The City is expected to implement a Microsoft SQL Server in the coming reporting period in order to have the software loaded on the Wastewater Division's computers.

CSO-039, 007, 048, 011 Sewer Separation Project

During the reporting period, the City received a proposal from it's new engineering consultant (Weston & Sampson) to design the City's next sewer separation and rehabilitation project in the

areas of CSO Regulators 039, 007, 048, and 011, for an expected 2020 construction start date. The reasoning for target these regulators is as follows:

- CSO-039 is the most active regulator in the City, and has a history of dry-weather overflow events due to poor regulator configuration leading to blockages. MassDOT replacing the bridge at CSO Regulator 039's location, prompting the City to coordinate with MassDOT to close the regulator and replace the sewer suspended from the bridge.

- CSO-048 is relatively inactive but is also located within the MassDOT Project area, prompting the City to schedule this regulator's closure.

- CSO-007 is located adjacent to the CSO-039 project area and consists of a problematic chamber configuration prone to blockages. The sewer upstream on South Street is also in very poor condition.

- CSO-011 is closed, however on an approximate annual basis, basement backups occur due to combined sewer in the former CSO-011 area.

Intermittent Stream Connections to Sewer

For five (5) years the City has attempted to gain access to 34 Highview Street, a foreclosed property, to determine if the sanitary lateral from the property was connected to a culverted stream that discharged to the sanitary system. Rehabilitation work has recently been noticed at the property, which will likely allow the City to conduct an investigation to determine connectivity and remove the intermittent stream from the sanitary system.

Meter Maintenance

The City has been maintaining its 13 flow meters located at regulator manholes throughout the reporting period. Current meters include 13 ADS Triton Flow meters. The table below (Table 3) includes the reporting period's summary of CSO overflows. The reporting period is from February 1, 2018 to July 31, 2018. In accordance with Paragraph 70, Subparagraph d. of the Consent Decree, the City recorded 69 CSO events and total overflow volume of 13,790,739 total gallons. At the risk of penalty, the City certifies that it has performed all calculations in good faith. Additional data shown in Table 3 includes notes on whether or not the meter was malfunctioning for a time during the reporting period. During the reporting period, the City had good meter coverage, with little downtime.

TABLE 3 - OVERFLOW DATA FOR REPORTING PERIOD FEBRUARY 1, 2018 TO JULY 31, 2018

Meter	Location	Events	Volume (Gallons)	Notes:
CSO-004	Cleghorn St. at Oak Hill Road	4	80,000	
CSO-007	Cushing St. at Riverfront Park	1	610	Regulator rehabilitation design to begin next reporting period.
CSO-010	Main St. at River St.	7	408,642	
CSO-032	543 Main St. at Post Office	15	672,000	
CSO-039	Water St. at Walnut St.	12	1,667,000	Next combined sewer area to be targeted for separation due to bridge replacement at regulator.
CSO-041	Benson Rd. near Falulah St.	2	194,000	Installed a downward looking ultrasonic sensor to more accurately calculate overflows
CSO-045	Main St. at Oliver/Putnam St.	13	1,260,000	
CSO-048	85 Water St.	1	3,534	Regulator closure design to begin next reporting period.
CSO-064	Water St. Easement at former "Halloween World"	7	9,254,336	Regulator on main interceptor sewer. Inflow removal upstream and sewer upsizing necessary for closure. Two days of meter downtime.
CSO-076	Birch St. at Heywood St.	2	5,000	Pipe undersized with high I/I in contributory area. No known combined sewer upstream. Meter was down for February 2018.
CSO-83	Main St. at Prichard St.	5	245,617	
	Totals	**69**	**13,790,739**	

The City has also been servicing the meters on a roughly 1-month frequency to help in maintaining high data quality. At times the meter manufacturer (ADS Environmental Services) has conducted visits to the City to troubleshoot problematic meters.

During the next reporting period, the City will be working with ADS in an effort to provide better public notification for CSO Events. The technology to provide accurate and instant notification of CSOs is in its infancy, leading the City to explore multiple options for better notification.

Sewer Structural Repairs

During the reporting period, the City conducted various structural repairs to strengthen the integrity of its sewer system. The major structural repairs conducted were:

- Replacement of 80 linear feet of sewer on Shea Street at Jane Street to repair a collapsed sewer and eliminate an unnecessary manhole from the sanitary system.
- Replacement of a collapsed sewer manhole and sewer main on Shea Street at Alice Street.
- Replacement of 250-feet of 8-inch diameter sewer line on Goodwin Street to prevent future SSOs resulting from poor pipe condition.

Other collection system repair improvements performed in the period include:

- Replacement of dozens of frames and covers, that had defects or that contained vent holes, during street paving.

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 receive a response from either the MassDEP or EPA.

Emergency Response Plan

The City's Emergency Response Plan, submitted in August 2011, subsequently revised in January 2012, has been distributed to all collection system operators and copies are maintained in each vehicle for quick reference. This document is a "living/breathing document", and was 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 reporting period, the City received conditional approval of its Hydraulic Model. The model was approved based on the understanding that additional model runs and analysis would be conducted under the Capacity Assessment Report which will be submitted (under separate cover) at the end of August 2018.

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 were 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. As a strategic deviation, largely due to the criticality of the trunk line sewer asset, the City is prioritizing 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). This

trunk line sewer investigative work commenced during the previous reporting period as mentioned under the "CMOM" section on Page 3, and is expected to be completed during the next reporting period. In addition to being a high priority for the City, MassDEP requested a portion of the trunk sewer be inspected as part of their SSES Phase 1 comments.

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.

Combination Manholes Program

There was one rain event during the reporting period that met the criteria necessary to perform combination manhole inspections (2-inches in a 24-hour period). The rain event occurred on April 16, 2018 with 2.55 inches of recorded at the City's rain gage at the Department of Public Works.

During the reporting period, there were a total of 47 flow transferences to either the drain side, or sewer side of the manholes. These overflows are taking place in a total of 191 remaining combination manholes. Attachment 1 includes all combination sewer manhole checks in the remaining combination manholes.

The NPDES permit states that the City has two years to fix 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 3.5 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 location and concentrating in specific areas to receive better pricing, but also drastically reduce the chance for transference from a specific area.

During the reporting period, good progress was made on separating combination manholes throughout the City. Thirteen manholes were separated during the reporting period via in-house forces, the City's paving contractor, and the City's On-Call and "Combination Manhole Separation Project" contractor. All manholes separated during the reporting period, and also all manholes planned to be separated during the next reporting period are noted on the "***Extraneous Flow Investigation, Remediation, and Capital Improvement Projects***" map (Map 4 of 4). Additional manholes are likely to be separated during the next reporting period that are not shown on the map. In Table 4 below, during the reporting period, the following combination manholes were separated:

TABLE 4

CMH No.	Sewer Sub-Area	Location
180	21	Shea Street/50-ft SW of Bernard Drive
176	21	441 Shea Street, 40-ft NE of Hollywood Street
179	21	400 Shea Street
114	11	25 Mack Road
181	21	Shea Street, 20-ft NE of Miles Street
77	21	Hollywood Street/Shea Street Intersection

43	1	225 Canton Street
182	21	5-ft N of Shea Street/Ronald Street Intersection
183	21	5-ft S of Shea Street/Ronald Street Intersection
178	21	331 Shea Street
326	3	Boulder Drive, between Beemer's and ATM
186	21	303 Shea Street
240	18	Ellis Street at Kingsbury Street

The City is also continuing in negotiations with the MassDOT Highway Division, as the City is pursuing separating an additional 6 combination manholes on Lunenburg Street (Route 2A) prior to paving of the road by the state. The City planned to conduct these combination manhole separations during the previous reporting period, however prolonged discussions with MassDOT has delayed this project. The work has been delayed as MassDOT is considering increasing the drain line size in this area, conducting intersection and streetscape improvements on Lunenburg Street, and then possibly conveying ownership of the road to the City. During the reporting period, the City installed temporary measures at the two lowest elevation manholes on Lunenburg Street to prevent storm discharge to the Sanitary System. These temporary measures consisted of installing steel plates with lift rings over the sanitary sewer inverts in order to prevent storm water entering the sanitary system from the drain side of the combination manhole. The remaining combination manholes on Lunenburg Street are at a high enough elevation where water will exit catch basins on the lower manholes before transferring flow over the weir walls on the remaining 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.

Status of Regulators and Outfalls

The City had hoped to be able to close Regulator CSO-007 during the next reporting period, however one event did occur during a large rain event on June 18. The City is actively pursuing methods to close this regulator. As part of the combined sewer separation project mentioned above, the City will begin design of a project in the next reporting period to condition assess and reconfigure the regulator in order to provide closure in 2020. For the near future, the City will be cleaning the regulator chamber to remove debris, and will also consider installing bolted covers on the regulator to maximize volume within the collection system and close the regulator.

Subsequent to DEP and EPA approval (or conditional approval) of the City's Capacity Assessment in the next reporting period, the City intends to utilize the hydraulic model as a tool in determining how much combined sewer separation and inflow removal work is necessary for closure of each of the remaining regulators.

The next area of sewer separation to be targeted is the CSO Regulators 039, 007, 048, and 011 Project as noted in previous sections.

Sewer Rate Increase

During the current reporting period, the City has developed a rate study model which incorporated estimated expenses in order to further the City's goals in regard to Consent Decree, NPDES Permit

and Clean Water Act Compliance. The rate is expected to increase approximately 42% over five years, and be close to (but under) the 2% Medium Household Income threshold for the City.

On April 17th, 2018, City Council passed an Ordinance revision, amending and adopting the sewer use rates as presented in Table 5 below:

TABLE 5

Minimum Monthly Sewer Use Charges (includes usage of up to and including 300 cubic feet per month)					
Current Rate	June 1, 2018	June 1, 2019	June 1, 2020	June 1, 2021	June 1, 2022
$18.85	$20.36	$21.99	$23.53	$25.17	$26.81

Monthly Sewer Rate to be charged for usage in excess of 300 cubic feet per month						
	Current Rate	June 1, 2018	June 1, 2019	June 1, 2020	June 1, 2021	June 1, 2022
Rate per 100 cubic feet (which equals 748 gallons)	$7.30	$7.88	$8.51	$9.11	$9.75	$10.38

Monthly 'Sewer-Only' Sewer Use Charges					
Current Rate	June 1, 2018	June 1, 2019	June 1, 2020	June 1, 2021	June 1, 2022
$60.83	$65.67	$70.92	$75.92	$81.25	$86.50

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 (2nd stage) which has not yet gone through the Secondary Systems Upgrades (SSU) Project selector zone installation. For the process that has undergone selector zone installation (1st stage), CEPT has been discontinued as the new selector zone treatment process has been able to maintain significantly greater nutrient removal and has not needed the addition of the CEPT chemicals (Ferric Chloride and Polymer). We are also primarily using polymer to enhance the removal rates at all times. 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 but the SSU Project which began on March 3, 2017 requires us to take a portion of our treatment process offline. The reduced treatment process has lowered our treatment capacity but the plant effluent quality this period remains in compliance with the interim 0.5 ppm phosphorus limit.

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. The policies effective dates run from January 4, 2018 thru January 4, 2019. The policies were through the National Flood Insurance Program, and were for the following buildings within the Easterly Wastewater Treatment Facility:

Chlorination Building ……...…….. Policy No. 8705863123
Blower Building ……...…. Policy No. 8705863124
Process Building & Primary Gallery ….. Policy No. 8705863125

Through the end of the current reporting period, the SSU Project has progressed to approximately 65% of Substantial Completion (and 55% of Final Completion), and the work completed represents approximately 69% of the construction contract price.

By the SSU Contract's Contract Days, the Project is to be substantially complete within 822 consecutive calendar days, on or before May 15, 2019, and is to be final complete within 974 consecutive calendar days, on or before October 14, 2019.

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 February 1, 2018 and July 31, 2018 included:

February 2018

- #2 Boiler – repaired gas leak
- Boiler Burner Upgrade (initiated)
- #2 Primary Sludge Grinder – replaced cutter pack – rebuilt cutter pack taken out
- #4 Final Sampler – replaced power supply
- CEPT Caustic Tanks – installed platform with safety railings over tanks to service Automatic fill valve actuators.
- West Plant Elevator – State Inspected
- #2 Primary Basin, Side B – replaced broken shear pin
- #1 Primary Sludge Pump - replaced check ball gasket assembly
- #2 Blended Sludge Pump – replaced lower gasket
- #1 Fournier Press Rebuild (ongoing)
- Completed 52 Preventative Maintenance work orders and 22 Demand work orders.

March 2018

- # 1 Primary Basin Gear reducer – rebuilt and back online
- Boiler Burner Upgrade (ongoing)
- #1 Fournier Press Rebuild (ongoing)
- 1st Stage #1 RAS Pump – troubleshoot and repair MAG Clutch
- #2 Blended Sludge Pump – replaced lower gasket
- Blended Sludge Lines – installed saddle taps to flush lines
- #3 Primary Basin, Side A – replaced chain idler
- AC Chiller – Replaced heat exchanger and water control valve
- #2 Gravity Thickening Tank – Drained & cleaned Tank- replaced tank sludge valve
- 2nd Stage #1 Aeration Tank - Took train off line clean tank for SSU Project
- Completed 59 preventative maintenance work orders and 17 demand work orders.

April 2018

- #1 Fournier Press - Completed and Back online April 20th
- Bay #4 – Installed new unit heater
- Boiler Burner Upgrade - Completed
- CEPT - Magnesium Hydroxide Tank – Drained and cleaned
- Bucket Truck – Annual Safety Inspection
- #1 Primary Sludge Grinder – opened and removed debris from grinder
- Sludge Galley Sump Pump – removed and repair
- #2 Stage Aeration Basin Side #2 – repaired broken diffuser line
- 2nd Stage Eaton Auto Strainer - repaired worn shaft
- Aeration Blower Filters – replaced roll media
- Wet Well Pump – repaired burnt wires to pump
- Completed 62 preventative maintenance work orders and 12 demand work orders.

May 2018

- 1st Stage, #2 Wasting Pump - replaced coupling element
- CEPT Building #1 Caustic Tank – rotate valve actuator for serviceability
- Water Champ Rapid Mixer –removed rope from impeller
- Fournier Press Manich Makeup Polymer System – replace #2 pump rotor, cleaned debris from #1 pump
- 1st Stage, Side #2 Clarifier - Leveled saw tooth weir that dropped check all others for tightness
- #2 Penn Valley Blended Sludge Pump – replaced drive assembly and rebuilt pump
- MCC 11 AC – repaired
- #4 Penn Valley Pump – replaced Diaphragm discs and gaskets
- Completed 64 preventative maintenance work orders and 12 demand work orders.

June 2018

- 1st Side #2 Clarifier – cleared Draft Tube
- Wet Well Pump – replace Power end
- Vaughn Pump – replaced low level oil switch
- South East Air Handler – replaced cooling coil
- Primary Basin #3 – inspected and replaced wear shoes
- Bay 4 Screw Conveyor – replaced motor
- #1 Penn Valley Blended Sludge Pump – replaced motor bearings

- 2nd Stage Side #2 Aeration Tank – replaced DO Probe
- GBT Room MCC Room – Serviced AC
- 1st Stage WAS Pump – replaced shorted VFD key pad
- Settled Effluent Skid – replaced UPS Batteries
- Completed 66 preventative maintenance work orders and 20 demand work orders.

July 2018

- #2 Sampler – rebuild compressor unit
- Incinerator Basement – cleared drain
- 1st Stage Clarifiers – replaced shear pin #1 Clarifier , lubed and adjust chain #2 Clarifier
- DO-ALL Odor Control - repaired caustic leak
- #1 Penn Valley Blended Sludge Pump – adjusted belt tension
- Sample Sheds – waster sealed platforms.
- CEPT Building Caustic System - reprogrammed tank dilution valve actuators
- Bay #5 – Installing floor plates (ongoing)
- Completed 63 preventative maintenance work orders and 7 demand work orders.

Other accomplishments of note include:

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

East Plant

- Replace Primary Basin Gear Reducers.
- Install Bay #5 Floor Plates.
- Generator service agreement for new Standby Power Electrical Generators at the East WWTF.
- Secondary Systems Upgrades (SSU) Project started in February 2017 Completion date Fall 2019.

Anaerobic Digestion Facility Feasibility Study, for Siting at the Westerly Wastewater Treatment Facility.

To date, Wastewater has continued to be unable to attain a decision consensus from the City, concerning willingness to pursue this long-term treatment sludge residuals management alternative, and the initiative has been "back-burnered". However, there has been sustained interest in the prospective project within the City, and from energy service performance contractor representatives and private development investors interested in exploring Fitchburg as a location to site an anaerobic digestion facility. Additionally, Wastewater has continued to explore alternative approaches that may enable long-term sustainability and costs control with technologies such as low-temperature sludge drying in order to reduce volume and weight, provide disinfection of sludge, and to produce stabilized sludge residuals that are suitable for beneficial reutilization, diverting this treatment byproduct material away from solid waste landfill disposal or incineration disposition pathways.

On a related front, the City and the Town of Westminster are continuing to pursue an expansion of the jointly owned "Fitchburg/Westminster Landfill". An expansion of the landfill's

volumetric capacity will correspondingly also extend the landfill's useful life, however such an expansion will only allow a finite term extension, and will not be a long-term, sustainable management practice for the disposal of wastewater treatment sludge residuals. As a result, the DPW – Wastewater Division continues to work with the Mayor's Office, the City's Community Development Office, and the Purchasing Department Office to pursue opportunities for a long-term, sustainable solution for the wastewater treatment sludge residuals and useful repurposing and revitalizing the underutilized Westerly Wastewater Treatment Plant property.

City Ordinance Revisions

In the previous reporting period, on October 10, 2017, the City executed a professional services task with on-call engineering firm, Arcadis, for assistance in reviewing and updated City Ordinances (specifically Chapter 147 – Sewers, and Chapter 154 – Stormwater Management and Erosion Control). The scope also included assistance for development of "Sewer Use Rules & Regulations" to better assist the DPW- Wastewater Division in the POTW & Collection System operation & management, and regulation of sewer system users.

In July 2016, the City executed a professional service task with on-call engineering firm, Wright-Pierce, to develop technically-based local limits for implementation into the City's Industrial Pretreatment Program for protection of the sewer collection system, the wastewater treatment plant, and City workers.

In the reporting period, DPW Wastewater has continued with updating of City Code ("ordinance"). With assistance from consulting engineers (Wright-Pierce), the City has completed drafting of the updated technically-based Local Limits. In the next reporting period (August 2018 – January 2019), the City submitted the final Local Limits Report to USEPA Region 1 for review and approval (submitted August 27th, 2018) to the Office of the EPA Region 1 Industrial Pretreatment Coordinator.

Also in the reporting period, with assistance from consulting engineers (Arcadis), the following Ordinances review and updating tasks were accomplished:

- Review of existing Ordinances (Sewer Ordinance & Stormwater Management Ordinance);
- Ordinances updates recommendations memoranda were prepared by consultant for Sewer & Stormwater;
- Draft updated Sewer Ordinance and Stormwater Management Ordinance were provided to City by consultant for review & comment, and City provided written review comments and questions to consultant.

In the next reporting period, the following ordinance updating milestones are projected:

- Consultant will lead workshops with City departmental and officials stakeholders, where the details of the ordinances, and use rules and regulations will be discussed, and to work out any conflicts in protocols for implementing the proposed revised ordinances, and use rules and regulations;

- DPW – Wastewater Division and DPW – Engineering Division leadership will plan and hold outreach meetings with the Mayor's Office and City Councilors, to brief the City authorities on the proposed ordinances, and use rules and regulations, prior to the process for Ordinance legislation change begins;
- Finalize the ordinances;
- Submit petition to Council for Ordinances change, and give presentation to Council regarding the petition for Ordinances change; and
- Finalize use rules and regulations (Sewer & Stormwater Management).

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. The Secondary System Upgrade (SSU) Project began on March 3, 2017. The project requires us to take a portion of our treatment process offline for construction upgrades. This first phase of this project has been completed with the installation of selector zones within the 1st Stage Aeration Tanks (Side 1 and Side 2) on March 14th, 2018. The second phase of the project required us to take 2nd Stage, Side 1 Aeration Tank and Clarifier offline, and this was accomplished on March 16th, 2018, and presently remains offline. The reduced treatment process has also lowered our treatment capacity. 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.

Since the implementation of the State Point Analysis system, developed by Wright-Pierce, plant operations have seen reductions in the length of time 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) is to be submitted to the EPA and the MassDEP for review and approval. This plan will lay the framework for the City to come into compliance with the Federal Clean Water Act and the terms of the Consent Decree.

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) is being 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.

The City's engineering consultant, Weston & Sampson, is currently working on the WWMP project. Within this reporting period, Weston & Sampson has summarized the existing conditions of the current combined sewer system, investigated historical and current water quality data for the North

Nashua River, and began investigating effluent water quality data from the Easterly Wastewater Treatment Facility (WWTF).

The Hydraulic Capacity Assessment is a vital component for the creation of the WWMP and LTCP and is expected to be completed on or before September 2, 2018. This submittal date was delayed due to the prolonged process of Hydraulic Model approval review discussions, and supplementary modeling analyses. As a result, the City formally requested a 9-month extension for the WWMP on May 22, 2018. This would extend the WWMP project deadline to March 28, 2019. The City has not received confirmation of acceptance of the extension request from EPA and MassDEP, and Weston & Sampson has been, on behalf of the City, following up monthly with EPA and MassDEP regarding a formal response.

In the next reporting period, Weston & Sampson plans to perform a peer review and incorporate the completed Hydraulic Capacity Assessment into the WWMP (pending EPA and MassDEP final approval). Estimated costs for sewer separation projects and CSO Control Alternatives will be analyzed to determine their extent of social and economic impact on the community. Based on the findings of these steps, recommendations will be formulated for the City's approach for future CSO mitigation. In addition, recommendations for improvements to the Easterly WWTF will be created based on current loads and projected requirements of the City's next NPDES Permit. These tasks will be 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.

WPI Students Team, "Interactive Qualifying Project" (or, "IQP"), Spring 2018

Within the reporting period, the City (DPW - Wastewater Division, DPW - Engineering Division, and the Fitchburg Public Schools) collaborated with Worcester Polytechnic Institute (WPI) on a WPI undergraduate students project. The WPI Students project team developed an environmental education program consisting of a Student Workbook and complementary Educator Resource Guide. First and foremost, these materials improved the City of Fitchburg's compliance with the MS4 Permit's first minimum control measure, Public Education and Outreach. Together the Student Workbook and Educator Guide combine interdisciplinary learning and hands-on, outdoor activities to instill environmental stewardship among Fitchburg's younger generations. These project deliverables will continue to be a resource to the Fitchburg Public Schools in their Science, Technology Engineering and Math curriculum, to educate Fitchburg youth in environmental education, including subjects that relate to "green infrastructure".

In addition, in the course of the project, the WPI Students project team also engaged with the Fitchburg High School's Envirothon Team (High School A.P. Science Students) to produce a short educational video, titled "Runoff Randy and the Rain Wranglers", which can be viewed on YouTube at: https://youtu.be/pUpjm0b7YJ4 .

The WPI Students project team also participated in the Boys & Girls Club of Fitchburg and Leominster's Fifth Annual "Central Massachusetts Science Festival", that was held on April

14th, 2018. At the Science Festival, the WPI Students project team had a presentation booth, and focused their activities on stormwater runoff and pollution prevention education.

The students team's project culminated in a project presentation to the Fitchburg Public Schools Committee on April 23, 2018, and the students team's project had a good article written and published in the local newspaper (Sentinel & Enterprise) in an article that ran on April 7, 2018, titled "WPI Students' Stormwater Project to Help Fitchburg".

This project was a great success, and also served to create and strengthen networking bonds between City Departments, the Nashua River Watershed Association, the Fitchburg Conservation Commission, which will help future efforts on the "green infrastructure" development and implementation front.

In the next reporting period, DPW - Wastewater Division will explore an opportunity to partner again with the Fitchburg Public Schools to site and install a "green infrastructure" learning laboratory that can work with the FPS STEM curricula program for Fitchburg students.

Fitchburg City 'Rain Barrels Program', 2018

Within the reporting period, the City (collaboration between the DPW - Wastewater Division, DPW - Engineering Division, and the Fitchburg Conservation Commission) launched a 'Rain Barrels Program' in the Spring of 2018. The City partnered with the 'Great American Rain Barrel Company' to facilitate a program where residents can purchase rain barrels to harvest rainwater runoff from rooftops for beneficial use in irrigating the private property where the runoff was captured, thereby diverting this runoff from the MS4 system, and promoting the infiltration and bioattenuation of the runoff.

In this inaugural year of the program, the collaborating City partners offered the rain barrels at discounted purchase pricing, and sold a total of 118 rain barrels, which were distributed to the purchasers in early June 2018. The City partners were pleased with the success of the program's inaugural year, and intend to continue the program in the Spring of 2019.

This 'Rain Barrels Program' will also be a key development and networking tool to help grow 'green infrastructure' in the City into other forms that will serve to help attenuate and infiltrate stormwater runoff on private properties, helping to prevent that water from entering into and adversely affecting both the City's sewer system and the hydraulic loading to the WWTF that is associated with wet weather events.

City Ordinances & "Green Infrastructure"

As noted previously in this report, the development of updated City Ordinances will help to facilitate and encourage the implementation of "green infrastructure" and "low-impact development" techniques. As this City initiative develops, the City's DPW – Wastewater Division will have a key participating and leadership role in this program, which will also involve a number of other program partners from within the City departments and offices, but also with private partners and stakeholders from the community.

D. ILLICIT CONNECTIONS

Within the reporting period, there were no discovered and confirmed illicit connections during the Beech and Hazel Street Sewer Separation Project to be redirected.

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.

E. INTERIM PHOSPHORUS LIMITS

The City has been complying with the interim phosphorus limits contained in Attachment 9b of the Consent Decree and have had a 12-month rolling phosphorus average of 0.5 ppm, which is at 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. Grow-in environmental conditions of the Spring and early Summer months of 2018 have continued to be very favorable. Wastewater asserts the project has been a success, and has received the WPA Form 8B – Certificate of Compliance closeout documents for the SEP's Order of Conditions from the Fitchburg Conservation Commission. Wastewater will have the WPA Form 8B recorded at the Worcester North Registry of Deeds within the next reporting period.

Stabilized Brook Bank, Facing North
(Photo taken 8/24/2018).

Stabilized Brook Bank, Facing South
(Photo taken 8/24/2018).

If there are any comments or questions regarding the above subject please contact the undersigned at (978) 345-9622.

Sincerely,

FITCHBURG DPW, WASTEWATER DIVISION

Jeffrey A. Murawski

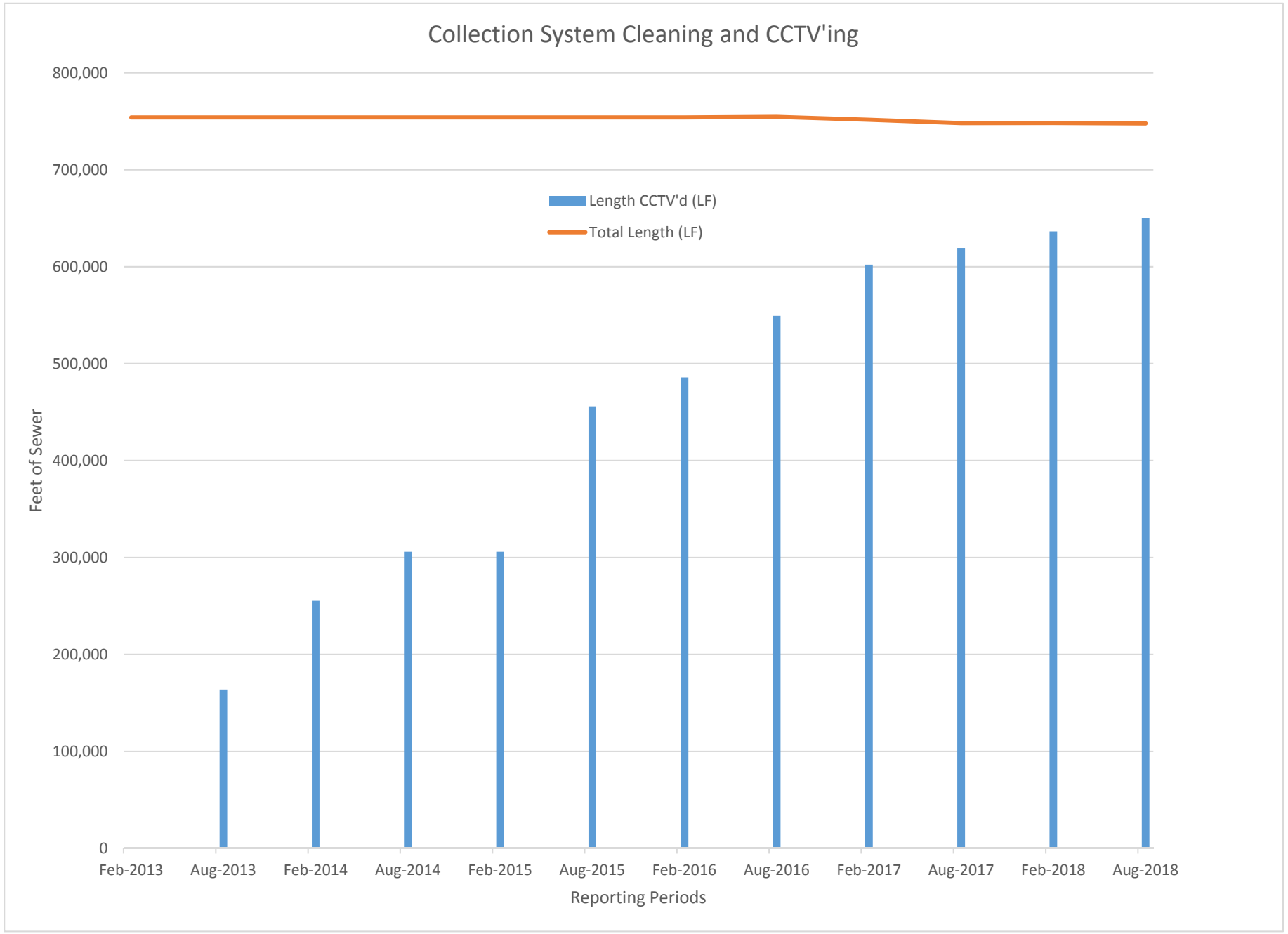
Jeffrey A. Murawski, P.E.
Fitchburg DPW Deputy Commissioner of Wastewater

Electronic & Hard Copy:	Neil Handler, USEPA, Region 1 Office David Boyer, MassDEP, Central Region Office
Electronic copy: (Transmittal letter only)	Chief, Environmental Enforcement Section, DOJ Susan M. Poswistilo, Assistant U.S. Attorney Michael Wagner, U.S.E.P.A. Louis Dundin, Assistant Attorney General, Massachusetts AG
Electronic copy:	Lenny R. Laakso, P.E., Fitchburg Commissioner of Public Works Anthony Maressa, P.E., Sewer System Manager Vincent Pusateri, II, Fitchburg City Solicitor Mary A. Delaney, Fitchburg Chief Procurement Officer Nicholas J. Ericson, P.E., Fitchburg DPW Civil Engineer

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Jeffrey A. Murawski

Jeffrey A. Murawski, P.E., DPW Deputy Commissioner Wastewater


Collection System Cleaning and CCTV'ing
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Feet of Sewer
Length CCTV'd (LF)
Total Length (LF)
Feb-2013
Aug-2013
Feb-2014
Aug-2014
Feb-2015
Aug-2015
Feb-2016
Aug-2016
Feb-2017
Aug-2017
Feb-2018
Aug-2018
Reporting Periods

ATTACHMENT 1 - COMBINATION MANHOLE CHECKS - REMAINING CMHs

			Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Stantec Checks		Stantec Checks		
			Rain Date: 4/16/2018		Rain Date:10/26 & 10/30/17		Rain Date: 9/7/17		Rain Date:5/26/17		Rain Date:10/21/2016		Rain Date:09/30/2015		Rain Date: 10/23/ 2014		Rain Date: August 9, 2013		Rain Date: April 20&21, 2012-12		January 1, 2008		April 1, 2008		
			Rainfall: 2.55"		Rainfall: 3.45" & 4.03"		Rainfall: 2.69 in.		Rainfall: 2 in.		Rainfall: 3.17 in.		Rainfall: 3.12 in.		Rainfall: 3.22 in.		Rainfall: 2.3 in.		Rainfall: 2.8 in.		1st Round		2nd Round		
Sub Watershed	CMH#	CMH Location	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Total Overflows
1	3	Albee St/Belli														1								1	2
1	4	Albee St/Nimitz						1	1		1			1	1		1		1		1		1		9
1	5	Albee St/Krysiak Ave Intersection									1		1				1		1					1	5
1	6	399 Albee St					1			1		1				1	1				1		1		7
1	7	219 Albee St	1						1					1									1		4
1	8	364 Albee St					1							1					1		1			1	5
1	40	Canton Street/Valley St Place Easement	1			1			1								1						1		5
1	42	Canton Street, 50 N of Romano	1			1	1		1				1										1		6
1	86	27 Krysiak					1					1	1						1						4
1	87	56 Krysiak							1			1					1				1				4
1	91	Leyte/98 Normandy									1		1				1		1				1		5
1	92	Leyte/Normandy	1		1			1	1		1										1			1	7
1	93	37 Leyte		1	1									1							1				4
1	94	18 Leyte					1		1			1													3
1	95	52 Leyte		1				1		1		1		1								1		1	7
1	96	66 Leyte	1				1			1		1										1	1		6
1	340	Courtyard between 23 and 1 Leyte																							0
1	125	26 Nimitz	1							1	1		1		1										5
1	126	Normandy Rd/Office Entrance			1					1	1											1	1		5
1	127	Normandy Rd/Office Parking Lot			1				1		1											1			4
1	129	62 Normandy Rd			1		1		1					1	1		1				1		1		8
1	131	123 Normandy		1				1		1	1		1		1					1			1		8
1	155	Romano/Canton				1		1		1	1					1					1				6
1	156	37 Romano								1	1												1		3
1	167	33 St Paul St										1			1								1		3
1	325	56 St. Peter St																							0
1	221	762 Water St				1				1		1													3
1	222	792 Water St				1						1			1			1					1		5
1	341	824 Water Street																							0
1	224	Water/100 N of Duckmill	1			1			1		1			1	1						1		1		8
1	307	73 Valley St							1			1	1												3
1	308	95 Valley St							1		1		1												3
1	309	Easement First CMH											1												1
1	310	Easement Second CMH at Rock											1												1
1	313	49 Valley St				1				1	1														3
3	18	22 Beekman									1														1
3	239	38 Birch St			1																				1
3	55	76 Everett St									1														1
3	56	Everett St/Maplecrest Ave Intersection									1														1
3	231	Fairbanks St/Everett St Intersection										1		1											2
3	57	44 Fairbanks St										1													1
3	58	Fairbanks St/Maplecrest Ave Intersection																							0
3	235	21 Fairbanks St									1													1	2
3	169	Salem/St Ant Church								1		1	1				1								4
3	232	Salem St/Birch St Intersection										1	1		1										3
3	172	Salem St/Beekman St Intersection									1		1		1		1								4
3	173	65 Sawyer Passway (Quality Fab)		1	1						1				1							1		1	6
3	187	South St/Everett St Intersection																							0
3	316	Sawyer Passway at Hayden Pass									1														1
4	51	Elm St/Marshall Dr Intersection									1						1								2
4	52	Elm St, 100 S of Mattson									1		1												2
4	53	Elm/Mattson						1				1	1				1					1			5
4	117	Marshall St/Dr	1								1														2
4	338	491 Main Street (On Oliver St @ Main)																							0
5	39	Caldwell St/Arlington St Intersection	1												1										2
5	146	25 Read St																	1						1
5	329	166 Ashburnham Hill Road						1			1														2
5	330	130 Ashburnham Hill Road																							0
5	331	100 Ashburnham Hill Road									1														1
5	332	88 Ashburnham Hill Road									1														1
5	333	36 Ashburnham Hill Road										1													1
5	334	115 Arlington Street									1														1
9	214	Cascade/Plain									1						1								2
9	314	Cascade/Overland						1		1		1	1		1										5
9	322	Westminster/Overland								1		1			1										3
9	226	Westminster St/Princeton Rd Intersection					1			1	1														3
9	227	Westminster St/Eureka St Intersection					1			1		1		1											4
11	29	Berry St/Hardy Pass Intersection									1														1
11	106	Lunenburg/Berry	1																						1
11	107	Lunenburg/Perkins	1			1		1			1		1												5
11	108	Lunenburg St/Garland St Intersection				1		1			1		1				1				1				6
11	109	185 Lunenburg St/Oakland St Intersection									1														1
11	110	Lunenburg/Redman Pl/171									1			1											2
11	236	Lunenburg St/Linwood Ave Intersection												1										1	2
11	112	37 Mack										1													1
11	113	49 Mack				1						1													2
12	37	Downstream from 50 Brown Ave																							0
12	38	Upstream from 50 Brown Ave	1																						1
12	76	Highland Ave/Brown Ave Intersection										1	1				1								3
12	98	Lincoln St/Rogers Ave Intersection										1	1				1								3
12	99	320 Lincoln St										1	1				1								3
12	147	Rogers Ave/Highland Ave Intersection						1			1		1												3
12	148	Rogers Ave/Brown Ave Intersection										1		1											2
12	233	32 Rogers Ave									1			1											2
13	32	436 Blossom St		1		1					1														3
13	33	Blossom/Crescent	1					1	1					1								1		1	6
13	242	Blossom St/Ryefield Rd Intersection				1			1			1		1										1	5
13	100	Longwood/Lyman										1													1
13	101	113 Longwood										1										1		1	3
13	102	Longwood Ave/Caswell St Intersection	1					1			1														3
13	104	148 Longwood Ave																							0

ATTACHMENT 1 - COMBINATION MANHOLE CHECKS - REMAINING CMHs

			Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Stantec Checks		Stantec Checks		
			Rain Date: 4/16/2018		Rain Date:10/26 & 10/30/17		Rain Date: 9/7/17		Rain Date:5/26/17		Rain Date:10/21/2016		Rain Date:09/30/2015		Rain Date: 10/23/ 2014		Rain Date: August 9, 2013		Rain Date: April 20&21, 2012-12		January 1, 2008		April 1, 2008		
			Rainfall: 2.55"		Rainfall: 3.45" & 4.03"		Rainfall: 2.69 in.		Rainfall: 2 in.		Rainfall: 3.17 in.		Rainfall: 3.12 in.		Rainfall: 3.22 in.		Rainfall: 2.3 in.		Rainfall: 2.8 in.		1st Round		2nd Round		
Sub Watershed	CMH#	CMH Location	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Total Overflows
13	105	95 Longwood Ave												1			1						1		3
13	103	49 Osgood St																							0
13	141	Osgood/Longwood				1																			1
13	320	Blossom at Ross			1							1													2
13	158	91 Ryefield							1																1
13	159	45 Ryefield	1										1												2
13	339	30 Ryefield / Wendell Rd Intersection	1																						1
14	85	Klondike/Thorndike	1		1				1		1		1				1								6
14	238	Pearl/Charlton			1					1		1		1							1		1		6
14	317	640 Pearl	1		1			1		1		1	1		1										7
15	207	Townsend St/Normal Rd Intersection		1					1				1				1							1	5
15	210	67 Townsend St		1									1								1		1		4
15	211	91 Townsend St		1					1			1	1									1	1		6
15	304	31 Townsend St		1							1		1												3
18	61	Forest Hill Rd/J Keating Rd Intersection		1					1			1													3
18	62	Forest/Paulsons										1	1												2
18	63	Forest Hill Rd/Forest Pk Intersection								1		1		1									1		4
18	64	Forest Hill Rd/Forest Hill Ave										1	1												2
18	315	21 Forest Park								1			1												2
18	73	Henry St/Rainville Ave Intersection												1											1
18	74*	Henry St/Mountain Ave Intersection												1											1
18	75	Henry St/Marion Ave Intersection											1												1
18	118	22 Marion St											1												1
18	144	31 Putnam Pk		1							1			1											3
18	145	61 Putnam									1						1				1				3
18	149	42 Rainville Ave						1		1		1					1								4
18	150	68 Rainville								1		1													2
18	189	500 Old South St	1							1		1	1												4
18	190	480 Old South St							1		1														2
18	191	Old South St/St. Peter St Intersection					1				1														2
18	192	Old South/Heywood												1											1
19	151	182 Rollstone																							0
19	152	Rollstone/100' Fr Shattuck																							0
19	153	Rollstone/Bruce 50 Downhill									1			1											2
20	241	377 Beech St										1													1
20	12	Beech/Alden									1														1
20	13	429 Beech St								1															1
20	14	Beech/Delisle									1						1		1				1	1	5
20	15	490 Beech									1														1
20	16	Beech/Legros									1										1				2
20	17	Beech/200 From Franklin										1													1
20	142	Parker/Thurston											1												1
20	143	67 Parker St											1												1
20	228	184 Woodland St		1						1															2
20	230	Woodland St/Alden St Intersection										1						1							2
21	44	26 Chabot Drive	1						1		1				1						1				5
21	115	427 Maddison								1		1	1												3
21	116	Madison/Cemetery		1						1		1	1									1			5
21	123	44 Miami St																							0
21	303	381 Shea St					1			1		1													3
22	46	Clearview Ave/Foch Ave Intersection									1														1
22	47	24 Clearview Ave										1													1
22	48	174 Columbus																							0
22	49	152 Columbus										1	1												2
22	78	Hope St/Fredette St Intersection						1		1		1											1		4
22	79	Hurd/St Andrew									1														1
22	80	60 Hurd St									1														1
22	81	94 Hurd St										1	1												2
22	88	150 Legros									1														1
22	119	39 Maryland Ave		1											1					1					3
22	122	26 Macdonald Ave									1														1
22	124	Newtonville/Foch									1														1
22	132	Oak Hill Rd/Bernadette St Intersection									1														1

ATTACHMENT 1 - COMBINATION MANHOLE CHECKS - REMAINING CMHs

			Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Stantec Checks		Stantec Checks		
			Rain Date: 4/16/2018		Rain Date:10/26 & 10/30/17		Rain Date: 9/7/17		Rain Date:5/26/17		Rain Date:10/21/2016		Rain Date:09/30/2015		Rain Date: 10/23/ 2014		Rain Date: August 9, 2013		Rain Date: April 20&21, 2012-12		January 1, 2008		April 1, 2008		
			Rainfall: 2.55"		Rainfall: 3.45" & 4.03"		Rainfall: 2.69 in.		Rainfall: 2 in.		Rainfall: 3.17 in.		Rainfall: 3.12 in.		Rainfall: 3.22 in.		Rainfall: 2.3 in.		Rainfall: 2.8 in.		1st Round		2nd Round		
Sub Watershed	**CMH#**	**CMH Location**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Drain to Sanitary**	**Sanitary to Drain**	**Total Overflows**
22	133	Oak Hill Rd/Exeter St Intersection									1														1
22	134	Oak Hill Rd/Hurd St Intersection	1																						1
22	135	Oak Hill/Mcdonald							1			1	1							1					4
22	136	Oak Hill Road/England Ave Intersection										1													1
22	138	Oak Hill/Daniels 30 feet uphill.										1													1
22	318	Oak Hill/Jeanette									1		1												2
22	139	541 Oak Hill Road	1					1	1		1														4
22	140	570 Oak Hill		1					1				1												3
22	157	43 Ronald Ave																							0
22	160	St. Joseph St/Pratt Rd Intersection									1														1
22	161	St Joseph/Delisle									1						1				1		1		4
22	162	St Joseph/St Andrew									1		1				1				1				4
22	163	St Joseph/Legros		1							1								1						3
22	164	153 St Joseph									1														1
22	165	210 St. Joseph St								1															1
22	166	282 St Joseph St										1													1
22	195	Theresa St/St. Andrew St Intersection	1					1		1	1			1				1			1		1		8
22	196	Theresa/Legros	1								1						1								3
22	197	Theresa/Deslisle	1					1	1		1			1	1		1		1				1		9
22	198	Theresa St/Hope St Intersection	1								1														2
22	199	51 Theresa St		1				1		1	1			1		1		1							7
22	200	21 Theresa St						1		1	1			1		1		1							6
22	201	80 Theresa St	1					1	1			1	1		1		1				1		1		9
22	203	143 Theresa									1														1
22	204	192 Theresa St							1		1			1			1								4
22	302	Newtonville/Oak Hill					1					1													2
22	335	24 York Avenue										1													1
22	336	44 York Avenue		1								1													2
22	337	61 York Avenue		1								1													2
23	9	97 Appleton Circle		1								1													2
23	10	79 Appleton Circle							1				1			1									3
23	11	97,105,108 Appleton							1		1														2
23	59	Fairmount/Leroy						1	1			1	1				1								5
23	89	Leroy St/Clearview Ave Intersection						1	1		1		1												4
23	90	Leroy St/Newtonville Ave Intersection						1					1				1			1					4
23	300	59 Appleton Circle									1														1
23	301	80 Appleton Circle								1	1					1									3
		Totals	27	20	11	13	12	25	31	33	77	60	50	28	18	7	30	5	9	4	22	8	27	10	527

ASHBY

ASHBURNHAM

LUNENBURG

WESTMINSTER

LEOMINSTER

WESTMINSTER

Legend

- PUBLIC WAY
- PRIVATE WAY
- MUNICIPAL BOUNDARIES
- PRIVATE PROPERTY DELINEATIONS

City of Fitchburg, Massachusetts

BASE MAP

PARCEL & ROADWAY DATA
MUNICIPAL BOUNDARIES
MAP 1 OF 4

August 1, 2018

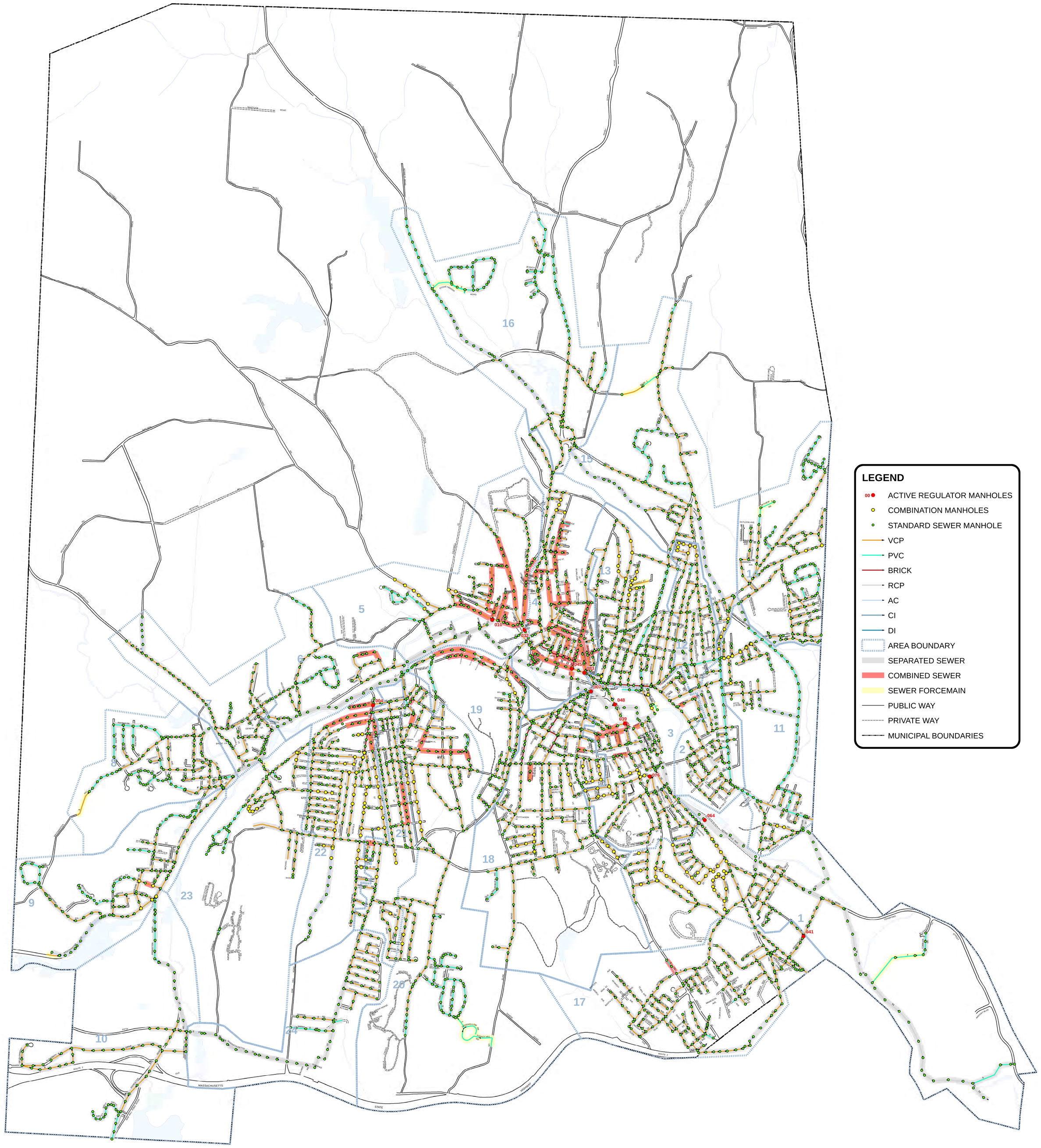
NORTH

0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

Author: kdupont

Path: P:\WASTE WATER\GIS\GIS Maps\Consent Decree\2018-08 Semi Annual Report\1of4_Fitchburg_BaseMap1.mxd



City of Fitchburg, Massachusetts

INFRASTRUCTURE - 1

COMBINED AND SEPARATE SEWERS, SEWER MATERIAL AND SIZE MAP 2 OF 4

August 1, 2018

NORTH

0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

Prepared by:
The City of Fitchburg Massachusetts,Wastewater, GIS Engineer.

Author: kdupont

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LEGEND

STORMWATER FEATURES

- DRAIN MANHOLES
- CATCH BASINS
- STORM DRAINS

OTHER DATA

- ROADWAYS
- WATER FEATURES
- MUNICIPAL BOUNDARIES

City of Fitchburg, Massachusetts

INFRASTRUCTURE - 2

STORM DRAINAGE

MAP 3 OF 4

August 1, 2018

NORTH

0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

Prepared by:
The City of Fitchburg Massachusetts,Wastewater, GIS Engineer.

Author: kdupont

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ASHBY

ASHBURNHAM

WESTMINSTER

LUNENBURG

LEOMINSTER

M13

M 6

M14

M20

SEWER REPLACEMENT FOR SSO PREVENTION

DESIGN OF SEWER SEPARATION AT CITY HALL IN PREPARATION FOR RENEVATIONS

PROPOSED: ILLICIT CONNECTION REMOVAL.

BEGIN DESIGN FOR CSO-039 AREA SEPARATION & CSO-048 & CSO-007 CLOSURES

FORMER CSO 011 AREA COMBINED SEWER SEPARATION DESIGN

REPLACED COLLAPSED SEWER MANHOLE & SEWER

COLLAPSED SEWER REPAIR & REMOVAL OF UNNECESSARY SEWER MANHOLE

TRUNK SEWER MULTI-SENSOR INSPECTION BETWEEN THESE LOCATIONS

CLEAN AND CCTV SIPHON

CCTV AND CONDITION MAIN TRUNK LINE AND SIPHONS FROM BEMIS RD. TO EWWTP

CLEAN AND CCTV SIPHONS

EAST WASTE WATER TREATMENT PLANT - SECONDARY SYSTEMS UPGRADE (ON GOING)

010 032 045 007 048 039 004 076 064 041

LEGEND

CCTV'D & GRADED SEWERS

- 0 - NO DEFECTS
- 1 - EXCELLENT
- 2 - GOOD
- 3 - FAIR
- 4 - POOR
- 5 - FAIL
- NOT GRADED

PROJECTS

- WORK DURING CURRENT REPORTING PERIOD
- (....) DESCRIPTION OF WORK DURING CURRENT REPORTING PERIOD
- WORK PROPOSED FOLLOWING REPORTING PERIOD
- (....) DESCRIPTION OF WORK FOLLOWING REPORTING PERIOD

SSES

- SSES WORK DURING CURRENT PERIOD

COMBINATION MANHOLES (CMH)

- EXISTING CMH
- CMH SEPARATED DURING CURRENT PERIOD

ACTIVE REGULATORS

- REGULATOR 004
- REGULATOR 007
- REGULATOR 010
- REGULATOR 032
- REGULATOR 039
- REGULATOR 041
- REGULATOR 045
- REGULATOR 048
- REGULATOR 064
- REGULATOR 076
- REGULATOR 083

City of Fitchburg, Massachusetts

EXTRANEOUS FLOW INVESTIGATION, REMEDIATION, AND CAPITAL PROJECTS MAP 4 OF 4

August 1, 2018

NORTH

0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

Prepared by:
The City of Fitchburg Massachusetts,Wastewater, GIS Engineer.

Author: kdupont

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