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Department of
Public Works

February 28, 2017

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
August 2016 – January 2017 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 2016 thru January 2017 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. Additionally, the City is also not including the "Base Map" GIS map of parcel & roadways data and municipal boundaries which do not change frequently. In the event there are significant changes in either property parcels divisions or roadways data (most likely due to property subdivision and development), 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, hard copies will be provided together with a printed copy of this report, via U.S. mail on or before February 28, 2017. GIS maps updates will also be provided with the electronic submissions (via email) of this report.



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Semi-Annual Progress Report
August 2016 through January 2017 Reporting Period

A. SEWER SYSTEM

Staffing

During the reporting period, the collection system team was operating at full capacity for the reporting period. In February 2017 (after the reporting period), the team lost one Collections Operator. With a full collection team during the reporting period, two dedicated crews have been used to maintain the collection system. Typically one crew conducts CMOM work, while one crew conducts structural improvements to the system such as frame/cover casting replacement, meter maintenance, or various manhole improvements.

Within the following reporting period the City hired a DPW Business Manager, who 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. The new DPW Business Manager began after Labor Day 2016.

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" subject to updates at any time.

Under separate cover, updates to the Long-Term Sewer System Long-Term Sewer System Preventative Maintenance Plan (LTSSPMP), Priority Cleaning Plan (PCP), Routine Cleaning Plan (RCP), and the Emergency Response Plan (ERP) will be provided.

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.

Under separate cover, updates to the Long-Term Sewer System Long-Term Sewer System Preventative Maintenance Plan (LTSSPMP), Priority Cleaning Plan (PCP), Routine Cleaning Plan (RCP), and the Emergency Response Plan (ERP) will be provided.



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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" subject to updates at any time.

Under separate cover, updates to the Long-Term Sewer System Long-Term Sewer System Preventative Maintenance Plan (LTSSPMP), Priority Cleaning Plan (PCP), Routine Cleaning Plan (RCP), and the Emergency Response Plan (ERP) will be provided.

The City has changed the software program, from that program the City had originally implemented (Cartograph), to fulfill the requirement for Sewer System SSO and dry-weather CSO outfall discharge complaint tracking system, to a new program, called "SeeClickFix". The former system was cited in the Long-Term Sewer System Preventative Maintenance Plan, the Priority Cleaning Plan, and the Routine Cleaning Plan. The City's experience with the previous system has not been positive, from the data entry or management review and analysis points of view. Within the time period that the former system has been in place, another program has been brought on board by the City, and has been utilized by DPW Administration and Streets Division for complaint tracking various public issues, including potholes, graffiti, signage, public trees. In addition, the City has purchased the "Work Module", which is part of SeeClickFix. This module will allow for better work flow management and operating efficiency for the Wastewater Division, and will also keep an electronic log of tasks completed.

Geographical Information Systems (GIS) Maps

Three maps were updated for this semi-annual report.

- 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 Leica GPS unit. To date we have located 96.6-percent of all sewer manholes. These locations are shown.
- 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 department's main concentration will be to locate all sewer related infrastructure.
- 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 its Sewer System Evaluation Survey (Phase I), and started construction on the Beech and Hazel Street Area Sewer Separation Project, and a Combination Manhole Separation Project. The location of the Separation project and the combination manholes to be separated are noted on the map.

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The "Base Map", Map 1 of 4, which has been omitted from this submission, has been reserved for future updating, as required, and Maps 2 thru 4 (Infrastructure – 1 thru Extraneous Flow Investigation, Remediation, and Capital Improvement Projects) have retained their prior sheet enumeration.

During the reporting period, the City completed Phase I of its SSES Scope of Work that was submitted August 12, 2016, and approved by EPA and the MassDEP on August 30, 2016. The meter sub-basins in which work was conducted are noted on the attached map ("Extraneous Flow Investigation, Remediation, and Capital Improvement Projects"). The City's Engineering Consultant, Wright-Pierce, also submitted, on behalf of the City, the City's Sewer Hydraulic Model Report, in December 2016, to EPA and the MassDEP for review and approval.

Other activities include numerous sewer repair projects. Also, contained on this "Extraneous Flow Investigation, Remediation, and Capital Improvement Projects" map 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. Following the CSS 2B and 3C Project and the CSS 4D Project, the City reported 55,855 feet, or approximately 10.58 miles of combined sewer remaining in the City. The next planned reduction of combined sewer is the Hazel Street Area and Beech Street Separation Project, which was awarded in August 2016, with a Spring 2017 start of construction.

**Capacity, Management, Operation & Maintenance (CMOM) Related Activities, and
Geographical Information Systems (GIS) Maps**

The collection operators continue to make progress with CCTV inspections and condition coding all 143 miles of sewer pipe within the City. By the close of the reporting period, the City had condition coded 80.1% of its sewer system. Production has slowed somewhat on CCTV operations, as the vast majority of pipes remaining to be coded are difficult to access easements, egg shaped pipes, the main interceptor sewer, or odd shaped brick pipes. Numerous manholes were also inspected during this reporting period. During manhole inspections, sewer CCTV work cannot be completed. In addition, numerous spot repairs were conducted. During spot repair operations CCTV operations are suspended, due to the staffing need for more crew members to conduct the repairs.

Despite the slowed production this past period, it is anticipated that the City will likely complete full condition coding of the system in 2017, as two crews are now being fielded on a daily basis, with one crew dedicated to CCTV work. In addition, the City is considering outsourcing condition assessment of the main interceptor sewer, and large egg shaped sewers due to the difficulties and risks associated with this work. Due to the large amount of flow in these pipes, the City is considering using an alternative technology such as sonar and electro-scanning to ascertain pipe condition. In addition to the below tabulation of sewers cleaned and CCTV'd to date, a graphical representation of the progress on this effort is attached to this report.

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The following includes the cleaning and CCTV status of the City's 24 sub-watershed areas.

SEWER MAIN INSPECTION TOTAL LENGTH INSPECTED TO JANUARY 31, 2017			
Area Number	Total Cleaned and CCTV'd (LF)	Total Sewer Pipe (LF)	Area Percent Completed
1	22,833	55,628	41.05%
2	17,169	21,086	81.42%
3	27,486	48,907	56.20%
4	31,554	42,998	73.38%
5	24,047	30,682	78.37%
6	13,540	18,713	72.36%
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	17,876	28,383	62.98%
12	19,103	20,211	94.52%
13	31,141	40,656	76.60%
14	31,382	33,387	93.99%
15	30,064	31,520	95.38%
16	29,440	30,902	95.27%
17	25,645	39,349	65.17%
18	48,259	51,201	94.25%
19	18,292	19,907	91.89%
20	40,657	45,242	89.87%
21	24,029	25,172	95.46%
22	44,163	44,634	98.94%
23	16,439	18,966	86.68%
24	17,394	18,295	95.08%
Totals in Feet	602,030	751,672	80.1%
Totals in Miles	114.0	142.0	80.1%

The following table summarizes manhole inspections to date:

SEWER MANHOLE INSPECTIONS THROUGH JANUARY 31, 2017			
Area Number	Total Inspected	Total by Area	Area Percent Completed
1	21	213	9.86%
2	0	98	0.00%
3	0	232	0.00%
4	48	216	22.22%

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5	13	146	8.90%
6	0	96	0.00%
7	0	96	0.00%
8	0	122	0.00%
9	1	132	0.76%
10	0	85	0.00%
11	0	132	0.00%
12	0	91	0.00%
13	5	220	2.27%
14	0	168	0.00%
15	0	136	0.00%
16	0	151	0.00%
17	0	192	0.00%
18	0	257	0.00%
19	0	107	0.00%
20	0	212	0.00%
21	0	130	0.00%
22	0	206	0.00%
23	0	99	0.00%
24	0	73	0.00%
Manhole Totals	88	3,610	2.4%

It should be noted that the above summary of sewer manhole condition assessment inspections only includes those performed by City personnel. In the next Semi-Annual Report, we will update this tabulation to include both the newly inspected manholes (during the February 1, 2017 to July 31, 2017 period) and those past inspections performed by the City's 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 Phase I, and with the Beech and Hazel Streets Sewer Separation Project.

As seen in the attached graph, our CCTV production has slowed the last three reporting periods. The previous two reporting periods realized low production due to understaffing, however the current reporting period experienced a slowed pace of production, as only difficult portions of the system to inspect remain. The vast majority of areas remaining to be inspected are difficult to access easements, the main interceptor sewer, or odd-shaped brick pipes. Pipe inspection reports are being generated by the collection operators and are being scanned, named and filed, and linked to the sewer main assets. These reports include the condition code of each sewer pipe cleaned and CCTV'd. To date there has been a total of 3,222 pipe inspection reports generated and linked to sewer mains throughout the City's 24 watershed areas.

During the reporting period, the City has put itself into position for upgrading our CCTV/Condition coding software from GraniteXP to GraniteNET. With the purchase of the new camera van system, the City was eligible to upgrade to the newest CCTV software

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provided by CUES for a few thousand dollars. The City has paid for this new upgrade, and also has a 3-day scheduled training program with the manufacturer's representative for the new software. At this time, the City is finalizing a quote with Cues for the addition of a tablet with a GraniteNET Manhole Inspection Module. Once the quote is finalized, the City will implement its upgrade to GraniteNET. The City was also waiting on initiating the CCTV/Condition coding software, in order to determine how GraniteNET would integrate with its purchase of InfoMaster by Innovyze for Asset Management (see "Asset Management" discussion below).

The City made some progress with manhole inspections during the reporting period, as shown in the above table. The City's Engineering Consultant (Wright-Pierce) inspected hundreds of manholes during the previous reporting period as part of the SSES Phase I Work, and will inspect additional manholes in the next reporting period under SSES Phase II Work. During the reporting period, it was also determined that the manhole inspections conducted under the SSES Work can be imported with ease into the City's inspection database. The SSES work is discussed in greater detail in the following sections.

Global Positioning Satellite (GPS) System Update

Among other assets, the City is locating all of its sewer manhole, drain manholes and catch basins with its Leica GPS unit. To date the City has located the following assets:

- 3,485 sewer manholes out of 3,610 (From record drawings) – 96.6% completed.
- 1,802 drain manholes (out of an unknown total).
- 3,458 catch basins (out of an unknown total).
- 579 ground shot locations.
- 301 other asset types.

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



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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. During the next reporting period, Wastewater will be implementing the "Work" feature within SeeClickFix. This feature will allow for the assigning and management of work orders and tasks.

Asset Management

Within the previous (August 2015 – January 2016) reporting period, 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. During the previous reporting period, the City contracted with Wright-Pierce to assist the City in setting up an Asset Management Program for its sewer system and treatment plant. As part of the Contract, Wright-Pierce and the City investigated multiple software platforms that could replace Cartograph and its service request capabilities, but also provide Asset Management benefits. At the end of the reporting period, the City had scheduled two vendor presentations: Innovyz for its InfoMaster software program, and Cues for GraniteNET. After the presentations, Wright-Pierce provided a technical memorandum report to the City. Since the conclusion of the screening process of potential software programs, the City, through its Purchasing Department, is pursuing the procurement of the InfoMaster software program.

Also within the reporting period, DPW Wastewater was informed by the City's insurer Massachusetts Interlocal Insurance Association (MIIA), that Wastewater has been a selected recipient for \$10,000 in grant funding, through MIIA's FY-17 "Risk Management and Loss Control Grants" program, for partially funding the Asset Management software procurement.

The City anticipates that the procurement, development, implementation and training for the InfoMaster software program will take place within the next reporting period.

Beech and Hazel Streets Sewer Separation Project

The Hazel Street Separation Project was conceptualized as the result of the closure of CSO-036 at 98 Laurel Street, and possibly CSO-007 at Riverfront Park. When the Contractor closed CSO-036 during the Summer of 2013, as part of the CSS 2B, 3C and CSO 038 Modifications Project, the City experienced an SSO at this site shortly thereafter. The City investigated this matter and discovered 13 additional catch basins in the Hazel Street area, upstream and tributary to

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CSO-036, tied into the system. The 12-inch pipe at the CSO regulator did not have the capacity to handle the flow.

Due to time availability constraints of in-house staff, the City contracted Wright-Pierce to design, bid, and provide construction phase services for sewer separation within the Hazel Street area and Beech Street area. Upon Wright-Pierce's initial investigations in the previous reporting period, they identified the Hazel Street area separation might be larger than initially assumed. During the previous reporting period, Wright-Pierce determined that numerous additional areas of combined sewer contributed to the CSO-036 catchment area. These areas consisted of combined sewer on Wilson Street, Pratt Road, and Hazel Street.

During the previous reporting period, bids were received for the project on July 28, 2016.

During the current reporting period, bids were reviewed, and the City transmitted the request to the MassDEP – Division of Municipal Services on August 26, 2016, for authorization to award the construction contract, as is required for Clean Water State Revolving Fund financed projects. On September 6, 2016, the City received authorization to award the construction contract, to the Contractor (Baltazar Contractors Inc.), and the contractual "Notice of Award" was sent to Baltazar on September 20, 2016. The Contract Agreement, between the City and Baltazar, was executed on October 3, 2016. The pre-construction conference was held on October 4, 2016, at which the contractual "Notice to Proceed" was issued to Baltazar. The Notice to Proceed contractually memorialized the commencement of construction days to begin on October 6, 2016.

By the "Beech and Hazel Streets Sewer Separation" Contract's Contract Days, the Project is to be substantially complete within 380 consecutive calendar days, on or before October 21, 2017, and is to be final complete within 410 consecutive calendar days, on or before November 20, 2017.

Intermittent Stream Connections to Sewer

In accordance with Paragraph 25 of the Consent Decree, the City issued a report in March 2014 stating the City was unaware of any intermittent streams that were connected to its sanitary sewer system. On May 13, 2014, the collections crew discovered an intermittent stream associated with 42 Highview Street. Record drawings indicate a culvert entrance to the sanitary system in the middle of the backyard of this property. This culvert entrance no longer exists as the owner filled in the backyard to extend the lawn and garden. In order to make these improvements to the yard, the owner built a new culvert upstream at the edge of his improvements and piped the stream underground to connect to the old culvert. This relocated culvert entrance was not recognized by the City's consultant when performing the sewer separation design for Areas CSS 1, 2 and 3, in 2004. As a result, the City performed separation of this street but the intermittent stream remains connected to the sewer.

The City is in the process of investigating the feasibility of removing this intermittent stream from the sewer to the drain. Upon CCTV's inspection of the culvert pipe, it was discovered there are three lateral connections coming from the direction of 42 Highview Street. Dye

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testing this home will be the next step to assess connectivity, but the home is abandoned and efforts to track down the owner have failed. The Wastewater Division will work with the City's Board of Health in the next reporting period to coordinate property access. The City is will attempt to enter the home and conduct a dye test within the next reporting period, assuming entrance to the home is granted. A plan for separation will follow shortly thereafter.

Two intermittent streams run in high groundwater conditions or wet weather on Beech Street. These streams runoff the adjacent hillside and into catch basins which enter the combined sewer on Beech Street. With the completion of the Beech Street Separation project, which is now under contract, these streams will be directed to the new storm sewer 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 two tables below include the reporting period's summary of overflows. The reporting period is from August 1, 2016 to January 31, 2017. In accordance with Paragraph 70, Subparagraph d. of the Consent Decree, the City recorded 77 CSO events and total overflow volume of 2,442,351 total gallons. At the risk of penalty, the City certifies that it has performed all calculations in good faith. Additional data shown in Table 1 and 2 includes notes on whether or not the meter was broken for a time during the reporting period. During the reporting period, the City had excellent meter coverage, with some meters experiencing 100% uptime.

Table 1 - Triton Meters for Reporting Period August 1, 2016 to January 31, 2017

Meter	Location	Events	Volume (Gallons)	Notes:
CSO-004	Cleghorn St. at Oak Hill Road	5	54,000	
CSO-007	Cushing St. at Riverfront Park	1	77,079	Possible closure after Hazel Street Project.
CSO-010	Main St. at River St.	6	113,000	Issues with meter connectivity and data recording.
CSO-032	543 Main St. at Post Office	9	248,000	Battery issues for a month.
CSO-036	98 Laurel St.	7	297,000	Will be closed at end of 2017 after Hazel Street Separation project.
CSO-039	Water St. at Walnut St.	11	817,000	Likely next combined sewer area to be targeted for separation due to bridge replacement at regulator.
CSO-041	Benson Rd. near Falulah St.	4	260,464	Pipe undersized and substantial inflow in contributory area. No known combined sewer upstream.

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CSO-45	Main St. at Oliver/Putnam St.	18	1,816,000	
CSO-048	85 Water St.	2	28,970	High inflow in contributory area. No known combined sewer upstream.
CSO-064	Water St. Easement at former "Halloween World"	9	1,544,378	Regulator on main interceptor sewer. Inflow removal upstream necessary for closure.
CSO-076	Birch St. at Heywood St.	2	180,882	Pipe undersized, and suspected high I/I in contributory area. No known combined sewer upstream.
CSO-83	Main St. at Prichard St.	5	147,855	
Totals		77	5,337,565	

In the previous reporting period, the City replaced all of the older Flow Alert meters with the Triton+ Meters that were purchased during 2015 Flow Monitoring Period. The City has realized the benefits of the upgraded system, with a substantially higher meter uptime and accuracy. The City has also been servicing the meters on a roughly 3-week basis to maintain the meters in optimum condition.

The City's existing rain gauges (RG-1 and RG-2) were approximately 15 years old, with outdated and unreliable technology. During the reporting period, the City traded in the old rain gauges for a new ADS RainAlert III Rain Gauge and placed it on the DPW roof, where the Sewer Collections Team is located. The location of the new rain gauge location is ideal, as it is centrally located in the downtown area where the majority of CSO Regulators are located. The previous rain gauges were at Fire Stations which led to difficult access as the stations are only occupied intermittently by firefighters.

During the current reporting period, the City held Web-Ex trainings with ADS Environmental on methods for calculating overflow volumes using the ADS Profile Software. With this training, the ease and accuracy of CSO reporting has substantially improved.

The City has also been working to execute an On-Call Agreement with ADS Environmental Services, to provide services and expertise on an "as-needed" basis to the City. By having a contract in place, with the City will be able to have ADS respond to meter sites that are having issues beyond the capability of the City's staff to troubleshoot.

Sewer Structural Repairs

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



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- Replacement of 15-linear feet of 10-inch diameter collapsing clay sewer on High Street.
- Replacement of 10-linear feet of 10-inch diameter clay pipe on Summer Street due to collapse.
- Replacement of 12-linear feet of 8-inch diameter clay pipe on Westminster Street (Route 2A) due to a structural defect which caused a rag ball, which led to an SSO.
- Replacement of 137-linear feet of 8-inch diameter clay pipe on Westminster Street (Route 2A), which was identified for replacement in the previous reporting period due to a severely deteriorated condition.

Other collection system repair improvements performed in the period include:

- Replacement of 17 frames and covers that were defected or contained vent holes.
- Installation of two back-flow preventers in the Ray Ave neighborhood to protect against SSOs due to sewer surcharging.

During the reporting period, the City entered the final phases of executing a contract with FR Mahoney to install a HighTide monitoring system at the Cobbler Drive Pump Station. The HighTide system is currently in place at the Sawyer Passway Pump Station, and has performed very well. Installing a HighTide system at the Cobbler Drive Station will allow for monitoring of pump performance and alarms via a hosted-website. The City will also save approximately \$700 per year on cell connectivity charges.

Post Construction Monitoring Plan

Within the previous reporting period, in late May 2016, the City was approved to proceed with the Post-Construction Monitoring Plan (PCMP) field sampling program. Prior to the ending of the reporting period, the City conducted the initial sampling run, during a "dry-weather" period, in order to become comfortable with the procedures, sequence and order of sites sampling, without the added variable of a wet weather event. Since approved to commence with this work, the City has been hampered with respect to "wet-weather" sampling, due to the unusually dry weather the area has experienced. Within the PCMP sampling time frame of June 15th to November 15th, the City was able to conduct two (2) full sets of qualifying dry-weather samples and one (1) full set of qualifying wet-weather samples. The City anticipates that the requisite number of dry-weather and wet-weather will be performed within calendar 2017, such that the Post-Construction Monitoring Report (PCMR) shall be submitted for review and approval with the February 2018 Semi-Annual Remedial Measures Report Submission.

Emergency Response Plan

The City's Emergency Response Plan, submitted in August 2011, and last 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" subject to updates at any time.



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Under separate cover, updates to the Long-Term Sewer System Long-Term Sewer System Preventative Maintenance Plan (LTSSPMP), Priority Cleaning Plan (PCP), Routine Cleaning Plan (RCP), and the Emergency Response Plan (ERP) will be provided.

Hydraulic Model

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. During the previous reporting period, the engineer finished entering the flow data into the hydraulic model. The model was calibrated for both dry weather and wet weather based on 2015 flow data. The calibration results showed that the model predicted flows that matched the actual flow meter data. The engineer then ran a verification storm to confirm the results of the calibration. The engineer has begun running model simulations for design storms.

During this reporting period, the engineer completed the model simulations. The hydraulic model report was prepared and submitted to the City, the MassDEP, and EPA by December 31, 2016. The engineer is reviewing the MassDEP and EPA comments on the hydraulic model report.

Sewer System Evaluation Survey

As required under Paragraphs 26 and 27 of the Consent Decree, the City is 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 December 31, 2015 deadline. EPA and MassDEP approved the draft SOW and gave the City permission to perform the Phase 1 SSES work this year. The final SSES SOW was submitted August 12, 2016 to EPA and MassDEP.

The City's engineer has completed the SSES Phase 1 tasks this summer, and the SSES Phase 1 Report was submitted to EPA and the MassDEP on January 11, 2017. The SSES Phase 1 tasks included:

- Inspecting 566 manholes,
- CCTV inspecting over 35,000 linear feet of pipe,
- Smoke testing approximately 130,000 linear feet of pipe,
- Dye testing 31 catch basins,
- Conducting 184 building inspections,
- Conducting 120 night flow isolations, and
- Installing and maintaining a short-term micro-basin flow meter.

The SSES Phase 2 work is anticipated to commence in Spring 2017 (within the next reporting period).



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Combination Manholes Program

There was one rain event (October 21, 2016) during the reporting period that has met the criteria necessary to perform inspections (2-inches in a 24-hour period).

Since 2008 there are a total of **479 flow transferences** to either the drain side, or sewer side of the manholes. These overflows are taking place in a total of **214 combination manholes** as there have been multiple events observed at some 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. The City is prioritizing CMHs that transfer sanitary water to the storm drain over CMHs that transfer storm drain water to the sanitary sewer. As a result, the City will first prioritize those manholes that show evidence of transference to the drain side of a manhole.

During the reporting period, decent progress has been made on separating combination manholes throughout the City. The City, using in-house capabilities, separated three combination manholes. The City also utilized the City's Chapter 90 Paving Contractor to separate a combination manhole in a street that was being paved. During the Contract period, the City also executed a contract to separate 13 combination manholes. During the reporting period, the construction had started under the contract and two manholes were separated before winter shut-down. 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. During the reporting period, the following combination manholes were separated:

CMH No.	Sewer Sub- Area	Location
328	5	18 Read Street
323	14	657 Pearl Street
324	14	683 Pearl Street
321	13	Mt. Vernon Street, 200 Feet uphill from Blossom Street
26	1	Belmont Street @ Norval Street
27	1	Belmont Street @ Saint Paul Street

The City is in internal discussions of possibly reorganizing its approach to combination manhole separation during the next two years. The City has received very favorable pricing under its Chapter 90 Paving Contract, with costs about 50% less, on average, than the current Combination Manhole Separation Contract. With the Water Division planning water work on streets with combination manholes, the City is considering conducting an integrated planning and cost saving approach by separating combination manholes on these streets using the Chapter 90 Contract, prior to a full width reconstruction of the roads.

The City also has plans to separate additional combination manholes using DPW crews, many of the combination manholes are shallow in depth, and simple in separation. In the coming



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reporting period the City expects to make significant progress in separating additional manholes.

Status of Regulators and Outfalls

During the reporting period, the City did not make any adjustments to regulators, as significant adjustments were made in the previous reporting period. In the coming reporting period, the City plans to make adjustments to maximize the collection system capacity at Regulators 064 and 083. Additional combined sewer separation work and inflow removal is required upstream to close this regulator. With the completion of the sewer system hydraulic model near the end of the reporting period, the City intends to utilize the model as a tool in determining how much combined sewer separation and inflow removal work is necessary for closure of each of various regulators.

B. POTW TREATMENT PLANT

Chemically Enhanced Primary Treatment (CEPT) Upgrade Project

The consultant engineer has assisted the City in getting the documentation of the changed default settings of the VFDs, and various outstanding SCADA and control-related issues. The O&M manual was provided to the City, and project record drawings have been received by the City for the CEPT Project. Future reporting on this Consent Decree project will be limited to the operational comment updates, as noted in the following paragraph.

Plant operations have implemented a continuous CEPT mode, using primarily polymer to enhance the removal rates at all times. Wet weather CEPT operations appears to be increasingly effective, and operations staff appear to have addressed process issues that relate to low pH. Plant effluent quality this period are in compliance with the interim 0.5 ppm phosphorus limit. The overall compliance of the treatment operation appears to be significantly improved compared to the prior reporting period, but mixed liquor inventory is still high, which can impact the secondary system performance.

Secondary Systems Upgrades (SSU) Project

During the reporting period, the FEMA Letter of Map Revision (LOMR) became effective on October 6, 2016, revising the Flood Insurance Study Report, Flood Insurance Rate Map, and Flood Boundary and Floodway Map for the communities of Fitchburg and Leominster, Massachusetts, for the affected flood maps.



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For the SSU Project, filed sub-bids were received on October 25, 2016, and general bids were received on November 16, 2016. The City received the MassDEP - Division of Municipal Services required flood insurance policies certificates on December 13, 2016. The policies effective dates run from January 4, 2017 thru January 4, 2018. 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

Immediately after receipt of flood insurance policies, the City transmitted the request to the MassDEP - Division of Municipal Services on December 15, 2016, for authorization to award the construction contract, as is required for Clean Water State Revolving Fund financed projects. On January 5, 2017, the City received authorization to award the construction contract, to the Contractor (Waterline Industries), and the contractual "Notice of Award" was sent to Waterline on January 9, 2017. The Contract Agreement, between the City and Waterline, was executed on January 23, 2017. The pre-construction conference was held on January 26, 2017, at which the contractual "Notice to Proceed" was issued to Waterline. The Notice to Proceed contractually memorialized the commencement of construction days to begin on February 12, 2017.

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 August 1, 2016 and January 31, 2017 included:

August 2016

- #3 Primary Basin, Annual inspection - Replaced 1 flight and all wear shoes (August)
- Emergency Generator - Replaced Batteries (August)
- 1st Stage #3 RAS Pump - replaced coupling Element (August)
- HVAC System - Replaced Chiller Compressor (August)
- #1 Aeration Grit Chamber - Cleaned, removed grit and rags (August)
- 1st Stage #1 RAS Pump - replaced coupling element (August)



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- Hypochlorite Transfer Pump, in the CEPT Bldg. - replaced O-rings & clamps (August)
- West Plant Lift Station - replaced check valves, rebuild air release valves (August)
- Completed 65 preventative maintenance work orders and 27 demand work orders (August)

September 2016

- #2 Primary Basin, Annual inspection - replace wear shoes (September)
- 1st Stage Aeration Blower #4 - Replaced motor, installed motor Terminator (September)
- Duall Odor Control - Changed Belts (September)
- #1 Sodium Bisulfite Pump - Repaired Leak (September)
- Process Wing Interior - painting (September)
- Building #6 - replaced roof vent fan belts (September)
- Water Champ - Scheduled Maintenance (September)
- Completed 54 preventative maintenance work orders and 21 demand work orders (September)

October 2016

- Aeration Basins Poly Lines - flushed all lines (October)
- #4 Sampler - Replaced peristaltic pump hose (October)
- Fournier Press SC-1 Screw Conveyor - replaced liners, weld shaftless screw at adaptor plate (October)
- Chlorination Hypo Pump #1 - Replaced Peristaltic Pump Hose (October)
- #2 Plant Air Compressor - replaced condensate drain piping (October)
- Painted - Yard hydrants, Fire hydrants, and Valve risers (October)
- Bay #4 Screw Conveyor - Weld Broken Screw (October)
- #2 TWAS Tank - Run New conduit and wiring to feed Vaughn Pump (October)
- Boiler Condensate System - repair McDonald Miller Level control Valve (October)
- #1 Aeration Blower - Replace Coupling Element (October)
- West Plant #4 & #5 Transformer - serviced (October)
- Wet Well Pump - Replaced seal water lines (October)
- Completed 62 preventative maintenance work orders and 25 demand work orders (October)

November 2016

- #1 Gravity Thickener - Replace spray water piping (November)
- HVAC Southeast Air Handler - Replaced Steam Coil (November)
- Electrical Manholes - Remove covers pump out water (November)
- Blower Building Foul Air System - Replaced box filters (November)
- #1 & #2 Gravity Thickeners - Drained, removed rags, clean and evaluated. (November)
- Fire Alarm System - replaced batteries #55 power supply (November)
- #1 Primary Sludge Grinder - disassembled cleared rag ball (November)
- Completed 51 preventative maintenance work orders and 22 demand work orders (November)



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December 2016

- 1st Stage #1 RAS Pump – Replace brushes in magnetic clutch (December)
- 1st Stage #2 Clarifier – Repair skimming arm (December)
- Final Effluent pH Probe – Replace probe (December)
- #1 Gravity Thickener Hypochlorite Pump – replace supply hose (December)
- Fourier Press Screw Conveyor SC-1 – weld broken conveyor screw (December)
- Plant Air Compressor – replaced motor, sheave and motor bolts (December)
- 1st Stage #1 RAS Pump – replaced brushes in mag clutch (December)
- Admin Wing Drain Line – Cleared line of debris (December)
- Locker Room/Shower – Painted walls, lockers and applied floor coatings (December)
- Maintenance Shop Overhead Door – Replaced (December)
- Completed 56 preventative maintenance work orders and 15 demand work orders (December)

January 2017

- #3 Primary Basin – Replace wear shoes (January)
- Press Room Air Handler – repaired circulating pumps (January)
- #4 Sample Shed Chlorine Analyzer – Replace stepper motor (January)
- #1 Transfer Pump West Plant – Replaced rear motor bearing and fan (January)
- #1 Gravity Belt Thickener (GBT) – Replaced bearing on guide roll (January)
- West Plant Transfer Pumps – Serviced check valves (January)
- Primary Basins #1, #2 and #3 – replaced oil in Rotork Skimmer Actuators (January)
- #1 Septage Receiving Station – replaced key pad (January)
- #1 Boiler – Replaced high pressure gas valve control actuator and vent solenoid. (January)
- #2 Boiler – Replaced broken linkage (January)
- Degritters – Started demolition (January)
- #2 Fournier Started Rebuild (January)
- Completed 58 preventative maintenance work orders and 26 demand work orders (January)

Other accomplishments of note include:

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

In the previous reporting period, DPW Wastewater briefed the Mayor on the Final Feasibility Report and the next steps if the project was to go forward. Due to a flaw/deficiency in the Final Feasibility Report deliverable, the financial worthiness as the best financial option for the City was not clearly demonstrated.

To date, Wastewater has been unable to attain a decision consensus from the City, concerning willingness to pursue this long-term treatment sludge residuals management alternative. Wastewater has continued discussions with energy service performance contractor representatives, and MassCEC, for an “energy service contract” (or “ESCO”) procurement solution for the contemplated anaerobic digestion facility in Fitchburg.



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Wastewater's hope is that City decision consensus will be attained in the next planning period, so that appropriate long-term planning and budgeting can be made for the City's selected long-term treatment sludge residuals management alternative.

City Ordinance Revision, to Strengthen City Code Relative to the Prevention of Fats, Oils, and Grease ("FOG") Discharges to the City Sewer System.

In the reporting period, DPW Wastewater has continued with collaborative teaming with the Board of Health, the Building Department, the Economic Development Director and representation of City Council, in the updating of City Code ("ordinance") in order to better regulate sewer customer classes that are pervasive FOG generators. Due to the political perception of adversely impacting local business, and being deemed "business unfriendly", the approach has been careful, methodical, and engaged the input of key City Offices and City Authorities. Within this reporting period, Wastewater, Health, Building and Economic Development have engaged City Councilors prior to messaging outreach on the subject, prior to initiating and controlling the messaging outreach (rather than being reactive to messaging initiated from sources outside the City Offices).

Within the next reporting period, Wastewater anticipates, directly engages the affected sewer customer stake holders prior to the motion being submitted to Council for changes to the ordinance.

In addition, Wastewater is working with the Health Department to develop the data base of "commercial kitchen establishments", who are permitted through the Health Department's permitting, for food production, distribution and sales by way of a mandatory survey questionnaire in association with permit renewal applications. This data base development will identify those commercial kitchen establishments, and the best management practices (BMPs) implemented to prevent discharge of FOG to the sewers, and the management practices being implemented to properly own, operate and maintain those BMPs. The survey questionnaires are scheduled to be sent out in mid-March 2017.

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

- Replace the media for the Pure Air odor control (planned to be replaced during the Fall 2017).
- Install Paging Phones, Horns and Speakers – CEPT Building, Headworks Grit Chamber Room, Headworks Control Room, Headworks Blower Room, Odor Control Room, Blend Tank Room and GBT Room.
- Secondary Systems Upgrades (SSU) Project started in February 2017.

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

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two hours. With the implementation of State Point analysis the plant has been able, on occasion, to treat flows in the 25 MGD range without the need to bypass and without experiencing an exceedance of the NPDES limits. 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

The Consent Decree requires that the City submit to EPA and the MassDEP for review and approval a Wastewater Management Plan ("WWMP") by July 1, 2018. In order to comply with the milestone schedule, the City is at this time (end of current reporting period, into the next reporting period) soliciting engineering services proposals for the scope of work required under the Consent Decree. Additionally, the services solicitation will also more broadly include the services typically entailed in a Comprehensive Wastewater Management Plan. The City intends to make an engineer selection early in the next reporting period (before the end of March), and to budget for this services fee for the City Fiscal Year 2018 (which begins July 1, 2017).

D. ILLICIT CONNECTIONS

The City will continue to remove and redirect all confirmed illicit connections identified during the Beech and Hazel Street Sewer Separation Project.

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, equal to the interim phosphorus limit of 0.5 ppm. The increase from the last report (0.46 ppm) had been caused by the seriously reduced plant flows during the severe water drought the area had experienced during this time period. The City attributes the performance, 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.



City of
Fitchburg

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978-345-9687 FAX

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Department of **Public Works**

VIII.

SUPPLEMENTAL ENVIRONMENTAL PROJECT (SEP)

During the reporting period, the Contractor for the SEP came to the City in December 2016, and replaced all the stream bank dormant-live stake plantings within the project limits that did not take root.

If there are any comments or questions regarding the above subject please feel free to give me a call at (978) 345-9622.

Sincerely,

FITCHBURG DPW, WASTEWATER DIVISION

Jeffrey A. Muranski

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

City of
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Department of
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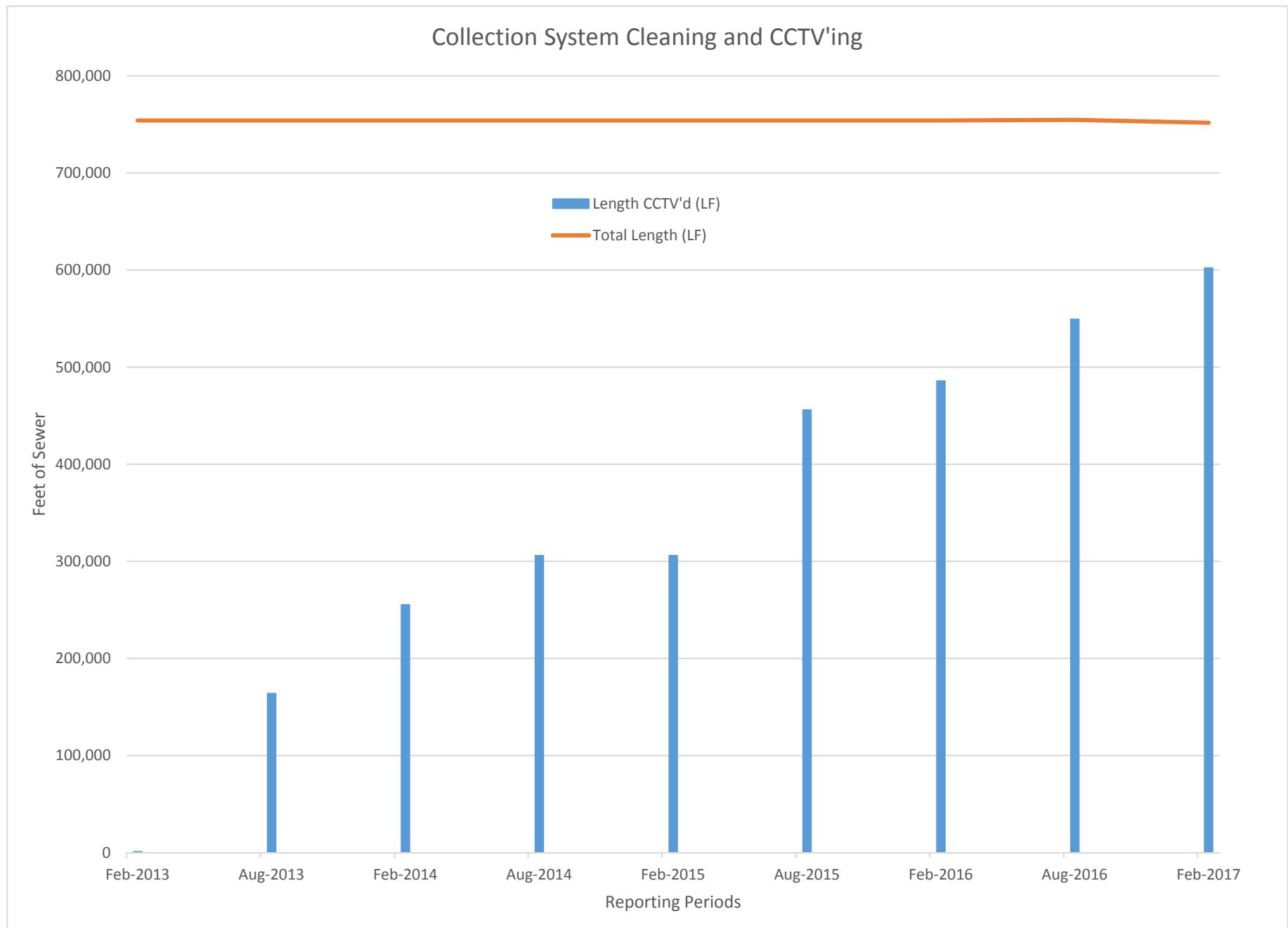
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"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based 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."

A handwritten signature in blue ink that reads "Jeffrey A. Murawski".

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



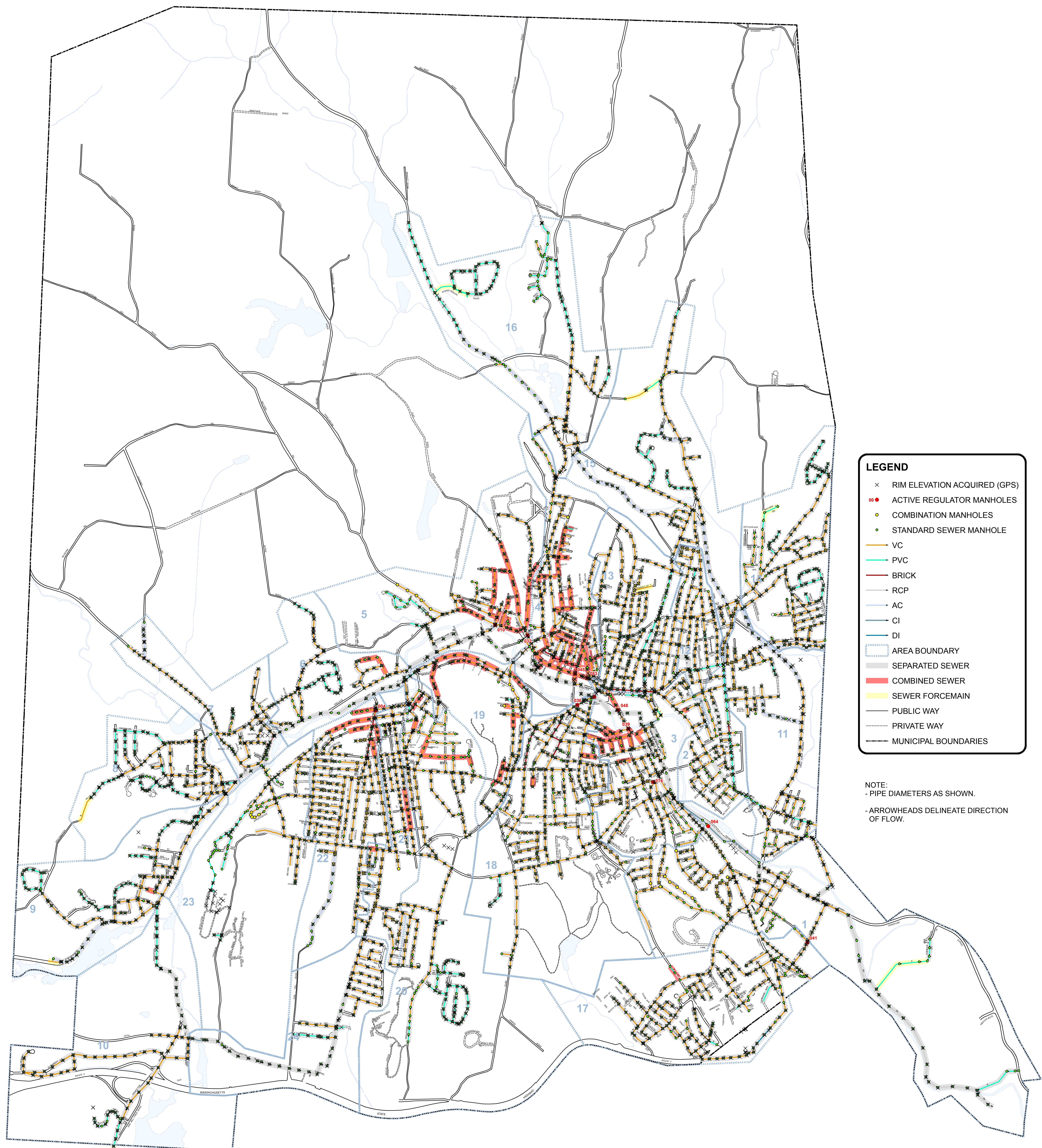
ATTACHMENT 1 - COMBINATION SEWER MANHOLES CHECKS 2016																	
		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Stantec Checks		Stantec Checks			
		Rain Date: 10/21/2016		Rain Date: 09/30/2015		Rain Date: 10/23/ 2014		Rain Date: August 9, 2013		Rain Date: April 20&21, 2012-12		January 1, 2008		April 1, 2008			
		Rainfall: 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	Total Overflows	
1	3	Albee St/Belli						1								1	2
1	4	Albee St/Nimitz		1		1		1		1		1		1		1	7
1	5	Albee St/Krysiak Ave Intersection		1		1				1		1			1	1	5
1	6	399 Albee St			1			1		1				1	1	1	5
1	7	219 Albee St				1								1		1	2
1	8	364 Albee St				1				1				1		1	4
1	28	252 Belmont		1	1				1					1		1	3
1	40	Canton Street/Valley St Place Easement				1								1		1	2
1	42	Canton Street, 50 N of Romano					1							1		1	2
1	43	225 Canton St				1										1	4
1	86	27 Krysiak		1	1											1	3
1	87	56 Krysiak		1										1		1	3
1	91	Leyte/98 Normandy		1		1									1	1	5
1	92	Leyte/Normandy		1										1		1	3
1	93	37 Leyte					1							1			2
1	94	18 Leyte			1												1
1	95	52 Leyte			1		1								1	1	4
1	96	66 Leyte			1										1	1	3
1	125	26 Nimitz		1		1		1									3
1	126	Normandy Rd/Office Entrance		1											1	1	3
1	127	Normandy Rd/Office Parking Lot		1										1			2
1	129	62 Normandy Rd				1	1	1		1				1		1	5
1	131	123 Normandy		1		1		1					1			1	5
1	154	Romano/Belmont				1											2
1	155	Romano/Canton		1					1						1		3
1	156	37 Romano		1												1	2
1	167	33 St Paul St			1			1								1	3
1	221	762 Water St			1												1
1	222	792 Water St			1			1								1	4
1	223	Water/Krysiak					1	1							1		3
1	224	Water/100 N of Duckmill		1			1	1						1	1	1	5
1	128	Water St/Normandy Rd Intersection		1			1					1				1	4
1	307	73 Valley St			1	1											2
1	308	95 Valley St		1		1											2
1	309	Easement First CMH				1											1
1	310	Easement Second CMH at Rock				1											1
1	313	49 Valley St		1													1
2	68	Harrison/Margerie					1										1
2	69	238 Harrison Ave			1			1									1
2	70	246 Harrison Ave		1				1									2
2	71	Harvard/Harrison				1				1							2
2	72	Harvard St/St. Bern School		1		1			1								3
2	121	Mathew St/Boylston St Intersection		1		1											2
3	18	22 Beekman		1													1
3	20	Belmont Street/Mt. Carmel St Intersection				1											1
3	239	38 Birch St															0
3	19	Belmont St/Capone St Intersection					1										1
3	55	76 Everett St		1													1
3	56	Everett St/Maplecrest Ave Intersection		1				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							3
3	232	Salem St/Birch St Intersection		1	1			1									3
3	172	Salem St/Beekman St Intersection		1		1		1</									

ATTACHMENT 1 - COMBINATION SEWER MANHOLES CHECKS 2016

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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	Total Overflows
22	337	61 York Avenue		1													1
23	9	97 Appleton Circle		1													1
23	10	79 Appleton Circle			1			1									2
23	11	97,105,108 Appleton	1														1
23	59	Fairmount/Leroy		1		1			1								3
23	60	532 Fairmount St	1		1												4
23	89	Leroy St/Clearview Ave Intersection	1		1												2
23	90	Leroy St/Newtonville Ave Intersection		1				1			1						3
23	300	59 Appleton Circle	1														1
23	301	80 Appleton Circle	1														2
		Totals	91	77	67	41	20	12	37	11	14	6	29	12	33	16	466



City of Fitchburg, Massachusetts

INFRASTRUCTURE - 1

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

February 1, 2017



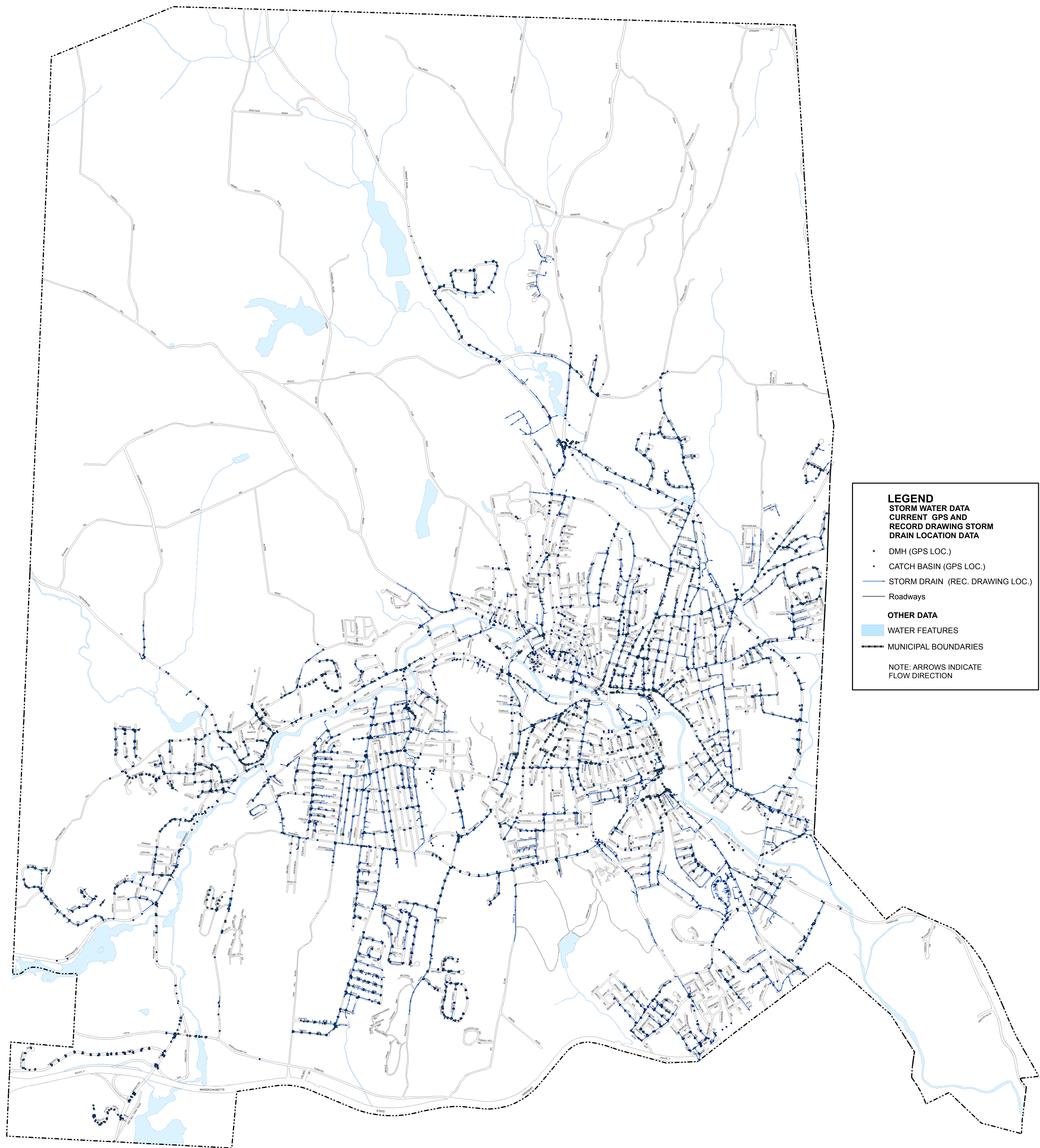
0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

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

Author: kdupont

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City of Fitchburg, Massachusetts

INFRASTRUCTURE - 2

STORM DRAINAGE

MAP 3 OF 4


February 1, 2017



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Miles
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City of Fitchburg, Massachusetts

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

February 1, 2017



0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

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