



# Haverhill

Robert Ward, Deputy DPW Director  
Water/Wastewater Division  
Phone: 978-374-2382 Fax: 978-521-4083  
rward@haverhillwater.com

April 29, 2015

Environmental Protection Agency  
Water Technical Unit (OES04-3)  
U.S. EPA - New England, Region 1  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912  
Attn: Joy Hilton

Massachusetts Department of Environmental Protection  
Northeast Regional Office  
Bureau of resource Protection  
205B Lowell Street  
Wilmington, MA 01887-2941  
Attn: Mihar Mohanty

Subject: City of Haverhill NPDES Permit # MA0101621  
Infiltration Inflow Report 2014

Dear Ms. Hilton & Mr. Mohanty:

In accordance with the City of Haverhill's NPDES Permit # **MA0101621**, we are providing this status report as required by item 3 Infiltration/Inflow Plan page 14 of 18. Please note the headings below are taken directly from the NPDES permit.

In past annual I/I reports, the city provided an analysis that indicated, based on an average system wide infiltration and inflow evaluation, that I/I was not excessive in the Haverhill collection system. Based on this analysis, the city requested a waiver of Part 1.F.3 of the City's NPDES Permit and had not completed further I/I investigations.

## **Inspection and Maintenance Activities Conducted and Corrective Actions Taken in 2014**

The city investigated infiltration and inflow in Sewer area 14 (Figure 1) and 23 (Figure 2) which were identified as having high extraneous flows. The 2010 Phase II LTCP flow metering program which showed that these areas had higher flows during high groundwater periods, but didn't necessarily exceed state standards for excessive flows per inch-dia-mile. Sewer Areas 14 and 23 comprise approximately 39,270 linear feet and 54,000 linear feet of pipe, respectively. The investigation of each sewer area included temporary flow monitoring, spot gauging and

television inspection. Infiltration and Inflow investigations in Areas 14 and 23 included the following.

- Five temporary flow meters were installed for eight weeks, starting on May 1, 2014 and ending on July 7, 2014.
- A rainfall-derived infiltration/inflow (RDII) analysis was performed to characterize excess flow within the sewer areas.
- Completed instantaneous flow measurement or spot gauging using portable weirs at select manholes at 1,000 foot intervals during low flow conditions (night time between 12 AM and 6 AM).
- Inspected 43 manholes in Area 14 and 56 manholes in Area 23
- A pipe television inspection program was performed in Area 14 and 23 to identify visible locations of extraneous flows and identify pipe defects. The CCTV program totals are shown in the table below.

Description	Units	Total
Sewer Total in the areas 14 and 23	LF	93,259
CCTV Proposed based on flow isolation	LF	29,088
CCTV Actual performed	LF	18,082
Percentage Completed	%	62%
Sewers Cleaned (for TV Inspection)	LF	12,484

- Using the television inspection, pipe defects were assigned a certain Pipeline Assessment and Certification Program (PACP) code as defined by the National Association of Sewer Service Companies (NASSCO).

CCTV inspection of sewer lines that experienced a sanitary sewer overflow were added to the procedure for following up on sanitary sewer overflows. To date these inspections have not shown any evidence that infiltration and inflow caused a sanitary sewer overflow.

#### **Expenditures for Any Infiltration/Inflow Related Maintenance Activities and Corrective Actions Taken During 2014**

The cost for the I/I work in sewer areas 14 and 23 in 2014 was \$ 161,621

#### **Annual Average and maximum Month I/I**

The Annual Average is 5.15 MGD and Maximum Month I/I was December base upon meter flow billable account information.

**Infiltration/inflow related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.**

CCTV inspection of sewer lines that experienced a sanitary sewer overflow were added to the procedure for following up on sanitary sewer overflows. To date these inspections have not shown any evidence that infiltration and inflow caused a sanitary sewer overflow.

No evidence - infiltration/inflow related effluent limit violations, and all unauthorized discharges of wastewater, including overflows and by-passes due to infiltration/inflow.

#### **Areas Identified for I/I-Related Investigation/Action in 2015**

Sewer Area 14 and 23 – The field investigations and flow data collected in these two sewer areas will be used to evaluate the areas to develop recommendations and costs for sewer system improvements.

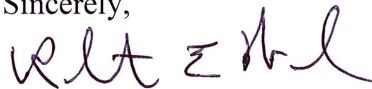
The City will be working with one of its consultants to develop a Capacity Management and Operations and Maintenance Plan. One of the objectives of the plan is to reduce infiltration and inflow. The scope of work also includes CCTV inspection of 10 percent of the collection system and providing recommendations for sewer system improvements. The cost of this project is \$945,000.

The City will be working with one of its consultants to update its CSO Long Term Control Plan. Part of the scope of work includes evaluating alternatives that will reduce inflow into the collection system. The cost for this project is approximately \$ 44,600.

The City's consultant, CDM Smith is schedule for 2015 to further investigate additional sewer areas. Based on these four investigative efforts, the city will also determine whether further I/I investigations should be attempted in other separated areas of the system.

If you require additional information, please contact Paul Jessel call me at 978-374-2382 or [pjessel@haverhillwater.com](mailto:pjessel@haverhillwater.com)

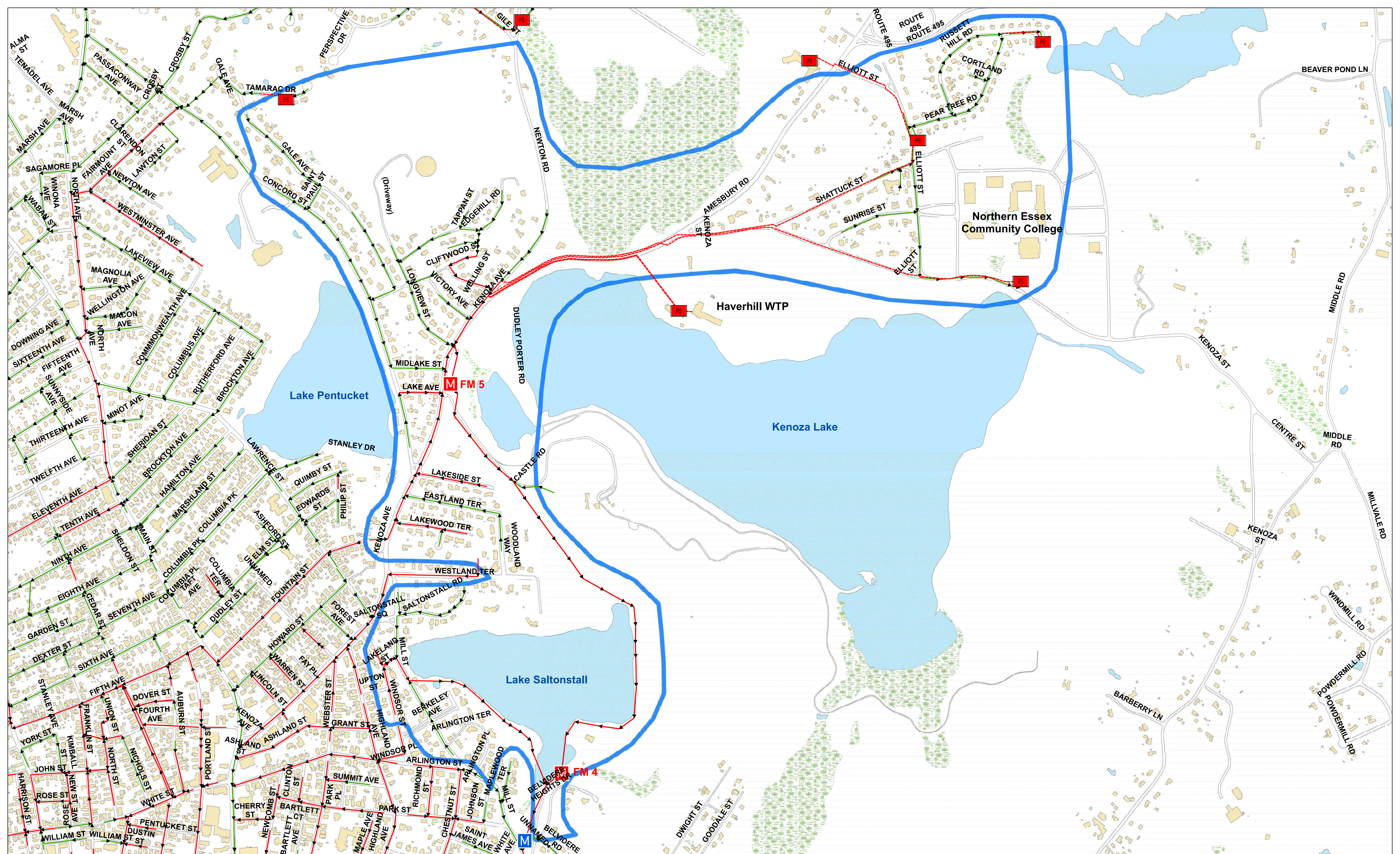
Sincerely,



Robert Ward  
Deputy DPW Director  
Water/Wastewater Division

cc: Mike Stankovich, DPW Director  
Paul Jessel, Collection system Supervisor  
Fred Haffty WWTP Facility Manager  
Jeff Kennedy Massachusetts Division of Marine Fisheries  
[jeff.kennedy@state.ma.us](mailto:jeff.kennedy@state.ma.us)



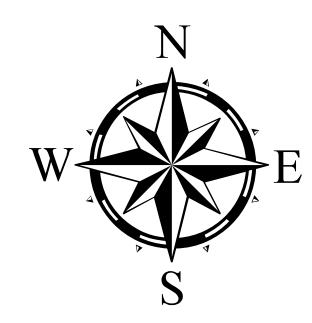


- Pump Station
- Phase II Flow Meter
- Flow Meter

- Legend**
- Combined Sewer
  - Sewer
  - Force Main
  - Area 14

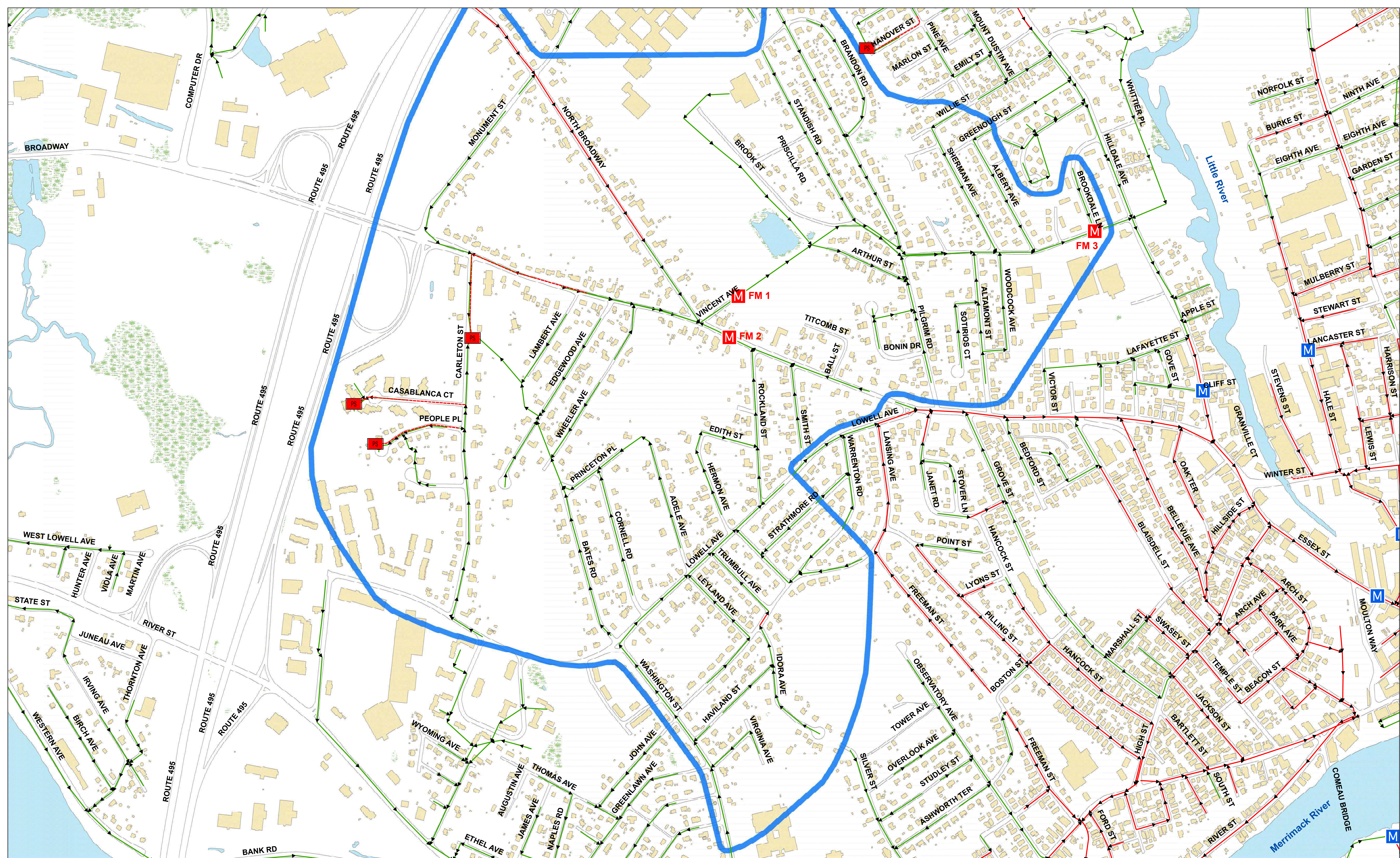
- Water
- Wetlands
- Building


0 400 Feet





City of Haverhill, Massachusetts  
CSO LTCP Phase IIA - Infiltration/Inflow Study  
Figure 1 - Area 14 Temporary Flow Meter Locations  
January 2015








 Pump Station


 Phase II Flow Meter

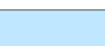
 Flow Meter


 Combined Sewer


 Sewer

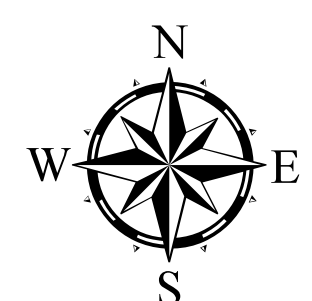
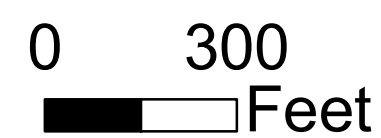
 Force Main

 Area 23

 Water

 Wetlands

 Building



City of Haverhill, Massachusetts  
CSO LTCP Phase IIA - Infiltration/Inflow Study  
Figure 2 - Area 23 Temporary Flow Meter Locations  
January 2015