Haverhill

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

October 26, 2020

Ms. Elizabeth Kudarauskas
U.S. EPA - Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Subject: City of Haverhill, MA NPDES Permit #MA 0101621
Consent Decree Submittal (Civil Action No. 16-11698-IT)
Compliance Report Number 8 – January 1, 2020 through June 30, 2020

Dear Ms. Kudarauskas:

Enclosed is Compliance Report No. 8 as required by Section IX.67 of the Consent Decree. This report is for the January 1, 2020 through June 30, 2020 reporting period.

If you require additional information, please call me at (978) 374-2382.

Sincerely,

Robert E. Ward
Deputy DPW Director

Enclosure

cc: Chief, Environmental Enforcement Section, U.S. DOJ
Susan Poswistilo, U.S. Attorney, MA District
Michael Wagner, USEPA, wagner.michael@epa.gov
Kevin Brander, DEP, kevin.brander@state.ma.us
I. Andrew Goldberg, MA Assistant Attorney General, andy.goldberg@state.ma.us
Mayor James J. Fiorentini, City of Haverhill, mayor@cityofhaverhill.com
William D. Cox, Jr., City Solicitor, billcoxlaw@aol.com
Michael Leon, Nutter, McClennen & Fish LLP, MLeon@nutter.com
Mike Stankovich, DPW Director, mstankovich@cityofhaverhill.com
Paul Jessel, WWTP Collection System Supervisor, pjessel@haverhillwater.com
Isaiah Lewis, WWTP Facility Manager, ilewis@haverhillwater.com
Kevin Olson, Wright-Pierce, kmo@wright-pierce.com

CITY OF HAVERHILL, MASSACHUSETTS

NPDES PERMIT No. MA0101621

CONSENT DECREE

(Civil Action No. 16-11698-IT, 11/10/16)

COMPLIANCE REPORT No. 8

JANUARY THROUGH JUNE 2020

OCTOBER 2020

CITY OF HAVERHILL, MASSACHUSETTS

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM

PERMIT No. MA0101621

CONSENT DECREE

(Civil Action No. 16-11698-IT, 11/10/2016)

COMPLIANCE REPORT No. 8

JANUARY THROUGH JUNE 2020

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
1	INTRODUCTION	
	1.1 Background	1-1
	1.2 Unforeseen Challenges	1-1
	1.2.1 Covid-19	1-1
	1.2.2 Vacant Positions	1-2
	1.3 Report Organization	1-2
	1.4 Certification Statement	1-3
2	IDDE Program	
	2.1 Introduction	2-1
	2.2 Current Revised Priority Listing	2-1
	2.3 IDDE Investigation Progress Reporting	2-2
	2.4 Identified Illicit Connections and Current Resolution Status	2-10
3	SSO AND BUILDING PRIVATE PARTY BACKUP EVENTS	3-1
4	CONSTRUCTION SITE INSPECTION AND ENFORCEMENT PROGRAM	4-1
5	GENERAL STATUS	
	5.1 Introduction	5-1
	5.2 Issues of Noncompliance	5-3
	5.3 Looking Ahead - Six Month Forecast	5-3
6	SECONDARY TREATMENT BYPASS	
	6.1 Introduction	6-1
	6.2 Bypass Events	6-1

TABLE OF CONTENTS (CONTINUED)

7 CMOM-CORRECTIVE ACTION PLAN
- 7.1 Introduction 7-1
- 7.2 CMOM Corrective Actions..... 7-1
- 7.3 Additional CMOM-Related Activities 7-1

APPENDICES

A CMMS GENERATED WORK ORDERS - OUTFALL INSPECTIONS
B IDDE PROGRAM SUPPORTING DOCUMENTS

LIST OF TABLES

TABLE	DESCRIPTION	PAGE
2-1	PRIORITIZED LIST OF OUTFALLS SUB-AREA INVESTIGATIONS.....	2-3
2-2	SUMMARY OF IDDE INVESTIGATIONS OF SYSTEMS WITH POTENTIAL ILLICIT CONNECTIONS BY BASIN .	2-4
2-3	OUTFALL MAINTENANCE PRIORITY TABLE.....	2-7
2-4	SUMMARY OF ILLICIT DISCHARGES IDENTIFIED BY BASIN AND CURRENT STATUS (JANUARY THROUGH JUNE 2020)	2-12
3-1	SANITARY SEWER OVERFLOW EVENTS JANUARY THROUGH JUNE 2020.....	3-2
5-1	SUBMISSIONS WITHIN CURRENT REPORTING PERIOD	5-2
5-2	FUTURE DELIVERABLES DURING THE PROCEEDING REPORTING PERIOD (JULY THROUGH DECEMBER 2020)	5-2
7-1	CMOM CORRECTIVE ACTION PLAN & STATUS	7-2
7-2	CMOM-RELATED EXPENSES THAT OCCURRED DURING REPORTING PERIOD (JANUARY THROUGH JUNE 2020)....	7-10

LIST OF FIGURES

FIGURE	DESCRIPTION	PAGE
3-1	SSO AND BUILDING/PRIVATE PARTY BACKUP LOCATIONS JANUARY THROUGH JUNE 2020.....	3-3

SECTION 1

INTRODUCTION

1.1 BACKGROUND

The United States Environmental Protection Agency (EPA), Massachusetts Department of Environmental Protection (MassDEP), and the City of Haverhill entered into a Consent Decree to require the City to take measures necessary to meet the requirements of the Clean Waters Act and the Massachusetts Clean Water Act, and to achieve and maintain compliance with the Small Municipal Separate Stormwater Sewer System (MS4) General Permit and the Publicly Owned Treatment Works (POTW) Permit, and all applicable federal and state regulations. The effective date of the Consent Decree is November 10, 2016.

As part of the Consent Decree, the City is required to submit a Compliance Report to EPA and MassDEP for the previous six-month period, referred to as a "Reporting Period." The bi-annual Reporting Periods run from January through June and July through December, with the Compliance Reports due on April 30th and October 31st for the previous period.

The goal of this Compliance Report is to provide the EPA and MassDEP an updated summary of the work performed by the City to achieve and maintain compliance over the course of the Reporting Period.

1.2 UNFORESEEN CHALLENGES

As previously discussed in Section 2.3 of Compliance Report No. 7 (June through December 2019) dated April 2020, the City is currently facing both external and internal challenges that impacts their ability to perform required tasks as originally scheduled.

1.2.1 COVID-19

During this reporting period, the Coronavirus (COVID-19) pandemic reduced collection systems operation activities. Collection System employees are considered essential, and the City implemented safety policies and procedures, such as one person per vehicle, mandatory mask wearing, and social distancing.

Through early March through May 2020; City Hall and Public Schools closed; and a majority of the City's employees were allowed to work from home. Though given the option, no collection system employee chose to work from home, however daily productivity levels were reduced due to coronovirus safety protocals that were put in place.

Even with safety precautions in place, two collection system employees tested positive for COVID-19 and were quarantined until they tested negative, reducing collection system manpower as the warmer weather began to set in. Fortunately, all other City employees that may have come in contact with them were tested and found to be negative. A month after testing positive, both employees were fully recovered and returned to work.

1.2.2 Vacant Positions

The Collection System Supervisor and Collection System Operator positions remain vacant during this reporting period. The Collection System Supervisor position is currently being filled by the former and retired Collection System Supervisor in an acting capacity. Every effort continues to be made to fill these vacancies.

1.3 REPORT ORGANIZATION

The Compliance Report is divided into several sections including:

- IDDE Program
- SSO and Building/Private Party Backup Events
- Construction Site Inspection and Enforcement Program
- General Status
- Secondary Treatment Bypass
- CMOM Corrective Action Plan (per MassDEP request)

Each section summarizes the City's actions, activities, and events that have occurred over the previous Reporting Period in accordance with the Consent Decree.

1.4 CERTIFICATION STATEMENT

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.

Robert E. Ward
Deputy DPW Director
City of Haverhill, Massachusetts

10/27/20
(date)

SECTION 2

IDDE PROGRAM

2.1 INTRODUCTION

The City identified and inspected 1,200 stormwater outfalls (13 of these outfalls are shared stormwater/combined sewer overflow (CSO) outfalls) as part of the 2014/2015 Stormwater Outfall Inspection Report. Based on the findings, the City established a draft schedule of prioritized inspections.

In 2017, the City prepared the "Illicit Discharge Detection and Elimination (IDDE) Manual." The manual identified the procedures that the City will follow to continue their comprehensive inspections of its stormwater outfalls, upstream system investigations, and enforcement procedures when an illicit connection is identified. Most recently, the IDDE Manual was updated to be in compliance with the City's MS4 permit.

The IDDE Manual can be found on the City's Stormwater website at:
www.cityofhaverhill.com/departments/storm_water_program/index.php

2.2 CURRENT REVISED PRIORITY LISTING

The City continues to conduct IDDE sampling and update priorities based on field investigation testing results. The current IDDE investigation priorities as of June 2020 are shown in Table 2-1. The current priorities categories reflect the following inventory: there are now 9 High Priority outfalls; 5 Medium Priority outfalls; 11 Low Priority outfalls; 25 Other Priority outfalls; and 7 Follow-up Investigation outfalls. Table 2-1 has been updated with the most recent sampling results for each outfall. The priority listing of outfalls with sample results is available online at the City's Stormwater website.

To maintain compliance with the 2016 Consent Decree and the 2016 NPDES Massachusetts MS4 Stormwater Permit priority rankings, the City is requesting an adjustment to the priority rankings to reflect the standard outlined in the 2016 MS4 Stormwater Permit. Those priority outfall rankings are as follows:

- Problem
- High Priority
- Low Priority
- Excluded

If acceptable to EPA and MassDEP, the City will begin using the MS4 priority outfall rankings as part of the next Compliance Report for the period of July through December 2020.

2.3 IDDE INVESTIGATION PROGRESS REPORTING

Table 2-2 shows the City's progress to date on their IDDE investigations during the reporting period (January through June 2020).

Using GIS, the City identified a total of 26.12 miles of storm drain piping and 2,617 drainage manholes and catch basins in the tributary area upstream of the outfalls included in the Priorities List as Low, Medium, and High priorities. The total length investigated is included and updated from previous reporting for a cumulative percentage investigated. Some outfalls are considered fully investigated if there was no upstream flow to initiate further investigation.

During this reporting period one outfall, MR1141, was removed from the High Priority category and moved to the Other Priorities category.

Table 2-1
PRIORITIZED LIST OF OUTFALL SUB-AREA INVESTIGATIONS
(BASED ON OUTFALL INSPECTION PROGRAM)
2014-2020 Dry-Weather MS4/Stormwater Outfall Inspection Program
Summary of Water Quality Testing of Dry Weather Flow at MS4/CSO Outfalls

Outfall Information					Field Inspection Information				Dry-Weather Flow Characteristics					Field Parameter Test Results							Coliform Laboratory Sampling/Analysis					
							Dry Weather																			
GIS Identifier	Diameter	Material	Outfall Location	Owner-ship	Date	Previous Rainfall	< 24 hours	<48 hours	Flow Description	Odor	Color	Floatables	Turbity	Sample Time	Sample Temp (F)	pH	Conductivity	Ammonia (mg/l)	Surfactants (mg/l)	Chlorine (mg/l)	Sample Date for Bacteria	Previous Rainfall (inches)	Previous Rainfall (Date)	Previous Rainfall (End Time)	E.Coli (MPN/ 100 ml)	Entrococcus (MPN/ 100 ml)
High Priority																										
UNK0955	36"	RCP	South Main St(Dominator Plaza)	City	9/29/2014	0.36" ON 9/21/14			MODERATE	NONE	CLEAR	NONE	NONE	1058	69.2	7.54	1673	0	0.5		9/21/2015	0.1	9/13/2015		>48,000	
MR24314	24"	RCP	Groveland Street/Water Street	City	9/2/2015	0.19" ON 8/23/15			NO INFORMATION	RANCID/SOUR	BROWN, YELLOW	GREASE	CLOUDY	800	70.1	7.6	1009	0	3	0	9/9/2015	0.19	8/23/2015		>24,000	>24,190
PL0891	30"	RCP	Main St @ Marsh Ave	City	6/9/2020	0.01" ON 6/6/20			MODERATE	DETERGENT	NONE	NONE	CLEAR	1011	58	7.9	1200	0.17	2.19	0.02	6/9/2020	0.01	6/6/2020		>2400	
MR1109	12"	RCP	350 Water Street	City	10/26/2015	0.06" ON 10/25/15			TRICKLE	``	NONE	NONE	NONE	930	59.3	7.31	3	0	0	0	12/10/2015	0.1	12/3/2015		1413.6	> 2420
UNK1767	36"	CMP	Tudor Ct	City	10/10/2014	0.08" ON 10/8/14			TRICKLE	NONE	CLEAR	DEBRIS	CLEAR	1055	60.6	7.41	373	0	0.25		10/14/2014				2,420	
UNK0951	48"	RCP	61 Brook St	City	9/29/2014	0.36" ON 9/21/14			MODERATE	NONE	CLEAR	NONE	CLEAR	900	65.5	7.98	334	0	0.25		10/14/2014				>2419.6	
DPI0946	48"	RCP	High School	City	11/5/2015	0.02" ON 11/1/15			TRICKLE	NONE	NONE	NONE	NONE	815	56.4	7.22	849	0	0.25	0	12/10/2015	0.1	2/3/2015		>2420	
DPO0696	12"	RCP	Pamela Lane	City	6/5/2015	1.38" ON 6/2/15			MODERATE	NONE	NONE	NONE	NONE	1010	64.2	6.75	365	0	0	0	6/12/2015	0.1	6/6/2015		>2,419	
MR1138	36"	RCP	Merrimac River (River St)	City	9/23/2014	0.36" ON 9/21/14			TRICKLE	NONE	CLEAR	OTHER (DIRT)	CLEAR	920	58.6	7.24	613	0	0		9/30/2014	0.01	9/29/2014		2420	
Medium Priority																										
LR1260	3'x4'	OTHER, Blocks	140 Hale Street	City	9/28/2015	0.10" ON 9/13/15			NO INFORMATION	NONE	NONE	NONE	NONE	1040	69.9	7.1	927	0	0.5	0	11/4/2015	0.02	11/1/2015		1986.3	
UNK1166	34"	RCP	8 Franzone Dr	City	6/11/2020	0.01 ON 6/11/2020			SUBSTANTIAL	NONE	CLEAR	NONE	CLEAR	831	62	6.5	1000	0.09	0	0.03	6/11/2020	0.01	6/11/2020		461.1	
UNK1177	48"	RCP	Franzone Dr	City	6/11/2020	0.01" ON 6/11/2020			SUBSTANTIAL	NONE	CLEAR	NONE	CLEAR	925	63	6.1	1000	0.1	0.15	0.01	6/11/2020	0.01	6/11/2020		770.1	
JC1028	15"	RCP	Kali Way	City	10/7/2014	0.12" ON 10/4/14			TRICKLE	NONE	CLEAR	NONE	CLEAR	950	67.3	7.4	433	0	0		10/20/2014	0.02	10/18/2014		1046.2	
LR0993	16"	CMP	100 Newark Street	City	11/7/2015	0.02" ON 11/1/15			MODERATE	NONE	NONE	NONE	NONE	840	59.6	6.81	765	0	0	0	12/1/2015	0.39	11/28/2015		1046.2	33.6
Low Priority																										
UNK1835	15"	PVC	Broadway	City	6/10/2015	0.1" ON 6/6/15			NO INFORMATION	NONE	NONE	NONE	NONE	935	69	7.08	240	0	0	0	6/12/2015	0.1	6/6/2015		980.4	
LR1103	15"	RCP	Bennington St	City	9/10/2014	0.5" ON 9/7/14			TRICKLE	NONE	CLEAR	NONE	NONE	830	68.1	7.35	683	0	0		9/16/2014	0.18	9/13/2014		920.8	
BZB0847	15"	RCP	Fermanagh St	City	10/20/2014	0.02" ON 10/19/14			TRICKLE	NONE	CLEAR	NONE	NONE	1306	60	7.7	287	0	1		11/13/2014	0.06	11/7/2014		770.1	
MR20718	10"	RCP	1 Water Street	City	8/14/2015	0.57" ON 8/11/15			NO INFORMATION	NONE	NONE	NONE	NONE	1000	78	7.99	2		0	0	8/31/2015	0.19	8/23/2015		556	631
MR1164	36	RCP	Water Street	City	8/25/2015	0.36" ON 8/21/15				NONE	CLEAR	NONE	NONE		72.2	7.6	2	0	0	0	08/31/2015	0.19	08/23/2015		461	< 10
FBO0638	12"	RCP	Hilldale Ave.	City	6/27/2015	0.04" ON 6/27/15			TRICKLE	NONE	NONE	NONE	NONE	945	64.5	6.91	453	0	0	0	7/7/2015	0.02	7/4/2015		435.2	
PL1222	36"	RCP	West Gile St.	City	5/20/2015	0.07" ON 5/19/15			NO INFORMATION	NONE	NONE	NONE	NONE	825	65.4	7	548	0	0.25	0	6/5/2015	1.38	6/2/15		410.6	
UNK0661	24"	RCP	Parkridge Rd.	City	9/26/2014	0.36" ON 9/21/14			TRICKLE	NONE		NONE	NONE		67.1	7.84	815	0	0		11/13/2014	0.06	11/7/2014		365.4	
UNK1063	15"	RCP	Crystal Ct.	City	5/26/2015	0.07" ON 5/19/15			TRICKLE	NONE	NONE	NONE	NONE	1015	66	7.6	49	0	0	0	6/5/2015	1.38	6/2/2015		344.8	
MR0982	18"	CLAY	20 Back Lane	City	10/14/2015	0.02" ON 10/13/15			NO INFORMATION	NONE	NONE	NONE	NONE	1150	63.1	7.25	3	0	0	0	11/4/2015	0.02	11/1/15		547.5	183.5
MR23912	8"	STEEL	120 Merrimack St	City	8/27/2015	0.19" ON 8/23/15			TRICKLE	NONE	NONE	NONE	NONE	915	55.1	6.71	6	0	0	0	8/31/2015	0.19	8/23/2015		12.1	148
Other Priorities (based on non-bacteria results)																										
MR1141	36"	RCP	Merrimac River (River St)	State	6/9/2020	0.01" ON 6/6/20			TRICKLE	NONE	CLEAR	NONE	CLEAR	848	59	7.7	1200	0	0.01	0.02	6/9/2020	0.01	6/6/2020		166.4	160.7
MR1140	15"	RCP	River St	City	9/23/2014	0.36" ON 9/21/14			TRICKLE	NONE	BROWN	OTHER	CLOUDY		42.6	8.18	484	0	0		11/13/2014	0.06	11/7/2014		62.4	
LRO0995	18"	RCP	Newark St	City	9/10/2014	0.5" ON 9/7/14			TRICKLE	NONE	CLEAR	NONE	CLEAR	915	71.4	7.41	120	0	0.75		10/14/2014	0.18	10/11/2014		52	
MR0834	48"	RCP	Merrimac River (Bradley Ave)	City	9/19/2014	0.02" ON 9/16/14			MODERATE	NONE	CLEAR	NONE	NONE	831	50	7.6	295	0	0		11/13/2014	0.06	11/7/2014		43.2	
UNK0883	12"	CMP		City	9/24/2014	0.36" ON 9/21/14			TRICKLE	NONE	CLEAR	NONE	NONE	925	64.7	7.41	224	0	0.25		10/20/2014	0.02	10/18/2014		28.8	
MR0662	18"	RCP		City	9/25/2014	0.36" ON 9/21/14			TRICKLE	NONE	CLEAR	NONE	NONE	1120	65.4	7.5	475	0	0.25		10/6/2014	0.12	10/4/14		23.8	
LR0963	15"	HDPE	Alvanos St	City	9/11/2014	0.5" ON 9/8/14			MODERATE	NONE	CLEAR	NONE	SLIGHT CLOUDINESS	1015	68.1	7.87	855	0	0.25		9/16/2014	0.18	9/13/2014		22.6	
CB1198	NA	RCP	Research Dr	City	11/4/2014	0.25" ON 11/2/14			MODERATE	NONE	CLEAR	NONE	CLEAR	1003	50.2	7.06	208	0	0.25		11/13/2014	0.06	11/7/2014		21.3	
MR0770	36"	RCP	Merrimac River (River St)	City	9/23/2014	0.36" ON 9/21/14			TRICKLE	NONE	CLEAR	NONE	CLEAR	930	60.6	7.86	713	0	0.25		9/30/2014	0.01	9/29/2014		19.9	
UNK1836	36"	RCP	Computer Dr	City	11/6/2014	0.25" ON 11/2/14			MODERATE	NONE	CLEAR	NONE	CLEAR	850	53.7	7.48	3	0	0.5		11/13/2014	0.06	11/7/2014		18.3	
FP7115	12"	RCP	Brickett Ln	City	5/18/2015	0.03" ON 5/12/15			NO INFORMATION	NONE	BROWN	OTHER	CLOUDY	920	56	7.4	6	0	0.5	0.25	5/22/2015	0.07	5/19/15		8.4	
DPI0969	15"	RCP	Diana Road	City	6/4/2015	1.38" ON 6/2/15		X	MODERATE	NONE	NONE	NONE	NONE	1035	65.3	7.22	610	0	0	0.25	6/5/2015	1.38	6/2/2015		5.2	
DPO0657	45"	RCP	44 Sarah J Circle	City	6/9/2015	0.1" ON 6/6/15			TRICKLE	NONE	NONE	NONE	SLIGHT CLOUDINESS	925	65.4	6.94	206	0	0	0	7/7/2015	0.02	7/4/15		4.1	
UNK1011	24"	RCP	Lake Street	City	6/8/2015	0.1" ON 6/6/15			TRICKLE	NONE	NONE	NONE	NONE	915	59.3	6.95	794	0	0.25	0	6/12/2015	0.1	6/6/2015		3.1	
UNK0627	15"	RCP		City	5/21/2015	0.07" ON 5/19/15			NO INFORMATION	NONE	NONE	NONE	NONE	840	64.5	6.82	791	0	0	0.25	5/22/2015	0.07	5/19/15		2	
DPI0947	18"	RCP	177 Brook Street	City	10/31/2015	0.66" ON 10/29/15			MODERATE	RANCID/ SOUR	NONE	NONE	NONE	800	52.3	7.4	283	0	0	0	12/10/2015	0.1	12/3/15		1	
UNK1189	NA	NA	Primrose St (Dpw)	City	9/12/2014	0.01" ON 9/9/14			TRICKLE	NONE	CLEAR	NONE	CLEAR	1025	64.7	7.86	343	0	0.25		9/16/2014	0.18	9/13/2014		<1	
TS0984	24"	RCP		City	5/11/2015	0.03" ON 5/12/15			MODERATE	NONE	BROWN	NONE	SLIGHT CLOUDINESS	1111	62.2	6.81	76	0	0	0.25	5/22/2015	0.07	5/19/15		<1	
TS0989	24"	RCP	Newton Rd	City	5/18/2015	0.03" ON 5/12/15			SUBSTANTIAL	NONE	Clear	NONE	SLIGHT CLOUDINESS	1100	63.3	7.2	48	0	0	0.25	5/22/2015	0.07	5/19/15		<1	
UNK1020	24"	RCP		Private	9/30/2014	0.36" ON 9/21/14			TRICKLE	NONE	NONE		SLIGHT CLOUDINESS	840	44.9	7.77	301	0	0		11/13/2014	0.06	11/7/2014		34.1	
UNK1750	24"	RCP	36 Magnavista	City	5/18/2015	0.03" ON 5/12/15			TRICKLE	NONE	NONE	NONE	NONE	955	64.7	7.6	574	0	0	0.25	5/22/2015	0.07	5/19/2015		<1	
UNK1040	24"	RCP	Gile St.	City	5/20/2015	0.07" ON 5/19/15			TRICKLE	NONE	ORANGE	NONE	SLIGHT CLOUDINESS	930	63.1	7.3	877	0	0.25	0	5/22/2015	0.07	5/19/2015		<1	
UNK0902	40"	CMP	Shelley Rd	City	9/24/2014	0.36" ON 9/21/14			MODERATE	NONE	CLEAR	OTHER (RUST)	CLEAR		62.6	7.02	1567	0	0.25							
UNK1680	15"	HDPE	Colonial Farm Road	Private	6/27/2015	0.04" ON 6/27/15			TRICKLE	NONE	BROWN	NONE	NONE		66.9	6.9	238	0	0	0						
DPI1007	54"	CMP	Kenilworth Ln	City	10/10/2014	0.08" ON 10/8/14			TRICKLE	NONE	CLEAR	OTHER (DIRT/DEBRIS)	CLEAR	1040	51.5	7.86	471	0	0.25							
Needs Follow-up Testing																										
UNK0848	18"	RCP	Woodrow Ave	City	9/26/2019	0.01" ON 9/23/19			NO FLOW																	
FBO0723	18"	RCP	Hanna Ridge Rd.	City	7/31/2019	1.2" ON 7/23/19			MODERATE	NONE	NONE	NONE	CLEAR	923	76.6	7.77	440	0	<0.05	0	7/31/2019	1.2	7/23/2019	1045	8.5	
UNK0888	NA	NA	West Lowell Street	City	6/12/2015	0.1" ON 6/6/15			MODERATE																	
UNK1188	32"	RCP	Primrose Street	City	7/16/2019	0.45" ON 7/12/19			TRICKLE	NONE	NONE	NONE	CLEAR	930	73.9	7.48	855	0.5	<0.05	0	7/16/2019	0.45	7/12/2019	2045	770.1	
UNK1762	6"	PVC		City	6/11/2020	0.01 ON 6/11/2020			TRICKLE	NONE	NONE	OTHER(FOAM)	SLIGHT CLOUDINESS	929	63	7	1100	1	0.08	0.02	6/11/2020	0.01	6/11/2020	120	<1	2
MR38714	6"	PVC		City	3/9/2016	0.01" ON 3/4/16			TRICKLE																	
MR38718	18"	RCP	Merrimack River	City	9/26/2019	0.01" ON 9/23/19			TRICKLE	NONE	NONE	NONE	CLEAR	1013	68.1	8.01	509	0	<0.05	0	9/29/2019	0.01	9/23/2019	2240	>2400	
LR39512	48"	RCP	Little River	City	7/31/2019	1.2" ON 7/23/19			NO FLOW																	

NOTE: Data exceeds one of the parameter thresholds that suggest it should be added to the IDDE program

Laborary Sampling Dates in Red are the samples taken with less than 48 hours of dry weather.

TABLE 2-2
SUMMARY OF IDDE INVESTIGATIONS OF SYSTEMS WITH POTENTIAL ILLICIT CONNECTIONS BY BASIN
(BASED ON OUTFALL INSPECTION PROGRAM)
2014-2020 Dry-Weather MS4/Stormwater Outfall Inspection Program
REVISED (December 2020) IDDE INVESTIGATION PRIORITIES

				Current Report Period				Completed to Date			
				January 2020 - June 2020				Including this Reporting Period			
Basin ID	Outfall ID	Existing System Estimates		Upstream Basin Investigations				Upstream Basin Investigations			
		Length of Pipe (ft)	Number of Manholes and Catch Basins	Length of Pipe (ft)	Percent Completed	Number of Manholes and Catch Basins	Percent Completed	Length of Pipe (ft)	Percent Completed	Number of Manholes and Catch Basins	Percent Completed
Buswell Brook	BZB0847	1,697	24					1,697	100%	24	100%
Buswell Brook TOTAL		**1,697**	**24**	**0**	**0%**	**0**	**0%**	**1,697**	**100%**	**24**	**100%**
Creek Brook	CB1193	70	0					70	100%		
	CB1198	144	5								
	CB1710	71	0					71	100%		
Creek Brook Outlet TOTAL		**285**	**5**	**0**	**0%**	**0**	**0%**	**141**	**49%**	**0**	**0%**
Detention Pond Outlet	DPO0657	422	7								
	DPO0696	61	2					61	100%	2	100%
	DPO1079	37	0								
Detention Pond Outlet TOTAL		**520**	**9**	**0**	**0%**	**0**	**0%**	**61**	**12%**	**2**	**22%**
Detention Pond Inlet	DPI0946	7,421	172					7,421	100%	172	1
	DPI0947	1,360	11								
	DPI0969	1,515	22								
	DPI1007	1,634	0								
	DPI1074	694	14								
	DPI1094	22	0					22	100%		
Detention Pond Inlet TOTAL		**12,646**	**219**	**0**	**0%**	**0**	**0%**	**7,443**	**59%**	**172**	**79%**
Fishing Brook	**FBO0638**	**852**	**15**					**852**	**100%**	**15**	**100%**
Fishing Brook TOTAL		**852**	**15**	**0**	**0%**	**0**	**0%**	**852**	**100%**	**15**	**100%**
Frey's Pond	FP7115	72	3								
Frey's Pond TOTAL		**72**	**3**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
Johnston's Creek	JC1028	1,397	12					1,397	100%	12	100%
Johnston's Creek TOTAL		**1,397**	**12**	**0**	**0%**	**0**	**0%**	**1,397**	**100%**	**12**	**100%**
Little River	LR0952	7,268	88								
	LR0963	703	11								
	LR0993	539	4					539	100%	4	100%
	LR0995	822	0								
	LR1103	4,418	4					4,418	100%	4	100%
	LR1260[1]	26,134	614					6,214	24%	146	24%
Little River TOTAL		**39,884**	**721**	**0**	**0%**	**0**	**0%**	**11,171**	**28%**	**154**	**21%**

				Current Report Period				Completed to Date			
				January 2020 - June 2020				Including this Reporting Period			
Basin ID	Outfall ID	Existing System Estimates		Upstream Basin Investigations				Upstream Basin Investigations			
		Length of Pipe (ft)	Number of Manholes and Catch Basins	Length of Pipe (ft)	Percent Completed	Number of Manholes and Catch Basins	Percent Completed	Length of Pipe (ft)	Percent Completed	Number of Manholes and Catch Basins	Percent Completed
Merrimack River	MR0662	210	5								
	MR0770	2,980	47								
	MR0834	756	8								
	MR0982	**128**	**10**					**128**	**100%**	**10**	**100%**
	MR1109	941	12								
	MR1138	289	18					289	100%	18	100%
	MR1140	90	2								
	MR1141[2]	3,899	104					3,899	100%	104	100%
	MR1164	**1,746**	**116**					**1,746**	**100%**	**116**	**100%**
	MR20718	NA									
	MR23912	0	1								
	MR38718	1713	30								
	MR24314	541	24					541	100%	24	100%
Merrimack River TOTAL		**13,293**	**377**	**0**	**0%**	**0**	**0%**	**6,603**	**50%**	**272**	**72%**
Pentucket Lake	PL0891	5,463	128					5,463	100%	128	100%
Followup Investigation	PL0891	5,463	128	71	1.3%	3	2%	5,463	1.3%	128	2%
	PL1222[1]	**3,292**	**102**					**3,292**	**100%**	**102**	**100%**
Pentucket Lake TOTAL		**14,218**	**358**	**71**	**0%**	**3**	**1%**	**14,218**	**100%**	**358**	**100%**
Tilton Swamp	TS0984	52	1								
	TS0989	3,893	47								
Tilton Swamp		**3,945**	**48**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
Unknown	UNK0627	254	8								
	UNK0661	410	11					410	100%	11	100%
	UNK0668	854	18								
	UNK0788	869	16					869	100%	16	100%
	UNK0836	842	12								
	UNK0883	570	7								
	UNK0898	91	0					91	100%		
	UNK0902	54	2								
	UNK0951	1,910	34					1,910	100%	34	100%
	UNK0953	225	0					225	100%		
	UNK0954	81	0					81	100%		
	UNK0955	6,058	146					6,058	100%	146	100%
	UNK1011	5306	44								
	UNK1020	71	2								
	UNK1040	1,414	21								
	UNK1063	49	0								
	UNK1166	1,079	28					1,079	100%	28	100%
	UNK1177	156	3					156	100%	3	100%
	UNK1188	25,926	470					25,926	100%	470	100%
	UNK1189	2,043	17								
	UNK1680	719	8								
	UNK1750	1,239	23								

				Current Report Period				Completed to Date			
				January 2020 - June 2020				Including this Reporting Period			
Basin ID	Outfall ID	Existing System Estimates		Upstream Basin Investigations				Upstream Basin Investigations			
		Length of Pipe (ft)	Number of Manholes and Catch Basins	Length of Pipe (ft)	Percent Completed	Number of Manholes and Catch Basins	Percent Completed	Length of Pipe (ft)	Percent Completed	Number of Manholes and Catch Basins	Percent Completed
Unknown	UNK1767	2,077	52					2,077	100%	52	100%
Followup Investigation	UNK1767	2,077	52	1,606	77%	6	12%	1,606	77%	6	12%
	UNK1835	**761**	**10**					**761**	**100%**	**10**	**100%**
	UNK1836	1,179	22								
	UNK1886	20	0					20	100%		
	UNK1887	20	0					20	100%		
	UNK1888	21	0					21	100%		
	UNK1889	21	0					21	100%		
Unknown TOTAL		**56,396**	**1,006**	**1,606**	**3%**	**6**	**1%**	**41,331**	**73%**	**776**	**77%**
West Meadow Brook	WMB0738	80	0					80	100%		
	WMB0739	80	0					80	100%		
	WMB0740	82	0					82	100%		
	WMB0759	20	0					20	100%		
West Meadow Brook TOTAL		**262**	**0**	**0**	**0%**	**0**	**0%**	**262**	**100%**	**0**	**0%**
GRAND TOTAL		**145,467**	**2,797**	**1,677**	**1%**	**9**	**0%**	**85,176**	**59%**	**1,785**	**64%**
		27.55mi.		**0.32mi.**				**16.13mi.**			

[1] **Estimate Base upon Percentage of Manholes Inspected**

[2] **Catchment includes State owned drainage and outfall. City inspected City owned drainage.**

TABLE 2-3
OUTFALL MAINTENANCE PRIORITY TABLE
January through June 2020

Outfall ID	Work Order Number	High Priority		Medium Priority	Low Priority					Inspection Date	Re-Inspection Date
		Could Not Locate	Buried	Fully Submerged in Sediment	Partially Submerged in Sediment	Fully Submerged in Water	Partially Submerged in Water	Abnormal Vegatation	Outfall Damage		
DPI1056	ST00000521	X								June-18	
KL1227	ST00001275	X								June-18	
LR1101	ST00001276	X								June-18	
UNK1015	ST00001278	X								June-18	
UNK1016	ST00001279	X								June-18	
UNK1035	ST00001280	X								June-18	
DPI0942	ST00000517		X							August-18	
DPI0943	ST00001281		X							August-18	March-19
DPI0944	ST00000518		X							August-18	March-19
LR1150	ST00001282		X							June-19	
MR0778	ST00000536		X							August-18	
UNK0888	ST00000478		X							March-19	
UNK0889	ST00000554		X							August-18	
UNK0905	ST00000556		X							August-18	
UNK0997	ST00000560		X							August-18	
UNK1033	ST00000562		X							June-18	
UNK1136	STI0001311		X							August-18	
UNK1207	STI0001312		X							March-19	
UNK1221	ST00000568		X							August-18	
UNK1907	STI0001313		X							August-18	
UNK35912	STI0001314		X							August-18	
UNK1773	ST00000575		X							March-19	
UNK1774	ST00000576		X							August-18	
BZB0959	ST00000508			X						April-19	
CB1196	ST00000510			X						March-19	
DPI0655	ST00000514			X						March-19	
DPI1008	ST00000520			X						April-19	
DPO1154	ST00000524			X						March-19	
FP7112	ST00000529			X						March-19	
JP1179	ST00000530			X						April-19	
KL1230	ST00001152			X						March-19	
LR0844	ST00000083			X						March-19	
LR1118	ST00001283			X						March-19	
MR1278	ST00000541			X						April-19	
MR24329	ST00000544			X						April-19	
SB11512	ST00000545			X						August-18	
TS0987	ST00000548			X						March-19	
UNK0064	ST00000551			X						April-19	
UNK0782	ST00000553			X						March-19	
UNK0935	ST00000558			X						March-19	
UNK1017	ST00000561			X						March-19	
UNK1076	ST00000563			X						March-19	
UNK1137	ST00000564			X						March-19	
UNK1183	ST00000566			X						March-19	
UNK1678	ST00000572			X						March-19	
UNK1748	ST00000573			X						March-19	
UNK1772	ST00000574			X						March-19	
UNK1906	ST00000580			X						March-19	
UNK25513	ST00000583			X						March-19	
UNK31513	ST00000584			X						March-19	
CB1148	ST00000591				X					August-19	
CB1199	ST00000595				X					August-19	
CB1200	ST00000596				X					August-19	
CB1201	ST00000597				X					August-19	
CL0681	ST00000600				X					April-19	
CL0683	ST00000601				X					April-19	
CL0690	ST00000602				X					April-19	
CL0701	ST00000603				X					April-19	
CLO0688	ST00000605				X					April-19	
DPI0634	ST00000606				X					April-19	
DPI0841	ST00000608				X					April-19	
DPI0965	ST00000609				X					April-19	
DPI1001	ST00000612				X					April-19	
DPI1004	ST00000613				X					July-19	
DPI1081	ST00000615				X						

Table 2-3 Continued

Outfall ID	Work Order Number	High Priority		Medium Priority	Low Priority					Inspection Date	Re-Inspection Date
		Could Not Locate	Buried	Fully Submerged in Sediment	Partially Submerged in Sediment	Fully Submerged in Water	Partially Submerged in Water	Abnormal Vegatation	Outfall Damage		
DPI1090	ST00000617				X					April-19	
FBO0721	ST00000628				X					April-19	
FP7114	ST00000629				X					April-19	
FP7115	ST00000630				X					April-19	
KL30718	ST00000634				X					April-19	
LR0931	ST00000635				X					April-19	
LR1099	ST00000636				X					April-19	
LR1102	ST00000637				X					April-19	
LR1251	ST00000641				X					April-19	
MR23513	ST00000650				X						
MR23514	ST00000651				X						
MR23515	ST00000652				X						
MR23516	ST00000653				X						
MR23517	ST00000654				X						
MR23518	ST00000655				X						
MR23519	ST00000656				X						
MR23520	ST00000657				X						
MR23522	ST00000659				X						
MR23523	ST00000660				X						
MR23524	ST00000661				X						
MR23525	ST00000662				X						
MR24316	ST00000663				X					April-19	
MR24318	ST00000664				X						
MR24718	ST00000665				X					April-19	
MR5112	ST00000666				X					April-19	
PL1181	ST00000667				X					April-19	
SB1117	ST00000668				X					April-19	
UNK0626	ST00000674				X					April-19	
UNK0663	ST00000677				X					April-19	
UNK0669	ST00000682				X						
UNK0756	ST00000691				X					April-19	
UNK0882	ST00000700				X					April-19	
UNK0885	ST00000701				X					April-19	
UNK0950	ST00000706				X					April-19	
UNK0962	ST00000709				X						
UNK1000	ST00000710				X					April-19	
UNK1005	ST00000711				X					April-19	
UNK1006	ST00000712				X					April-19	
UNK1111	ST00000717				X					April-19	
UNK1123	ST00000718				X					April-19	
UNK1158	ST00000721				X					April-19	
UNK1160	ST00000722				X					April-19	
UNK1170	ST00000724				X					April-19	
UNK1174	ST00000726				X					April-19	
UNK1205	ST00000732				X					April-19	
UNK1213	ST00000734				X					April-19	
UNK1263	ST00000736				X					April-19	
UNK1265	ST00000737				X					April-19	
UNK13512	ST00000738				X					April-19	
UNK16715	ST00000741				X						
UNK1684	ST00000742				X					April-19	
UNK1685	ST00000743				X					July-19	
UNK1686	ST00000744				X					July-19	
UNK1738	ST00000751				X						
UNK1801	ST00000758				X					July-19	
UNK1802	ST00000759				X					July-19	
UNK1806	ST00000760				X						
UNK1864	ST00000767				X						
UNK1865	ST00000768				X						
UNK1867	ST00000770				X						
UNK1868	ST00000771				X					April-19	
UNK1880	ST00000772				X					April-19	
UNK1891	ST00000773				X					April-19	
UNK1896	ST00000774				X					April-19	
UNK1899	ST00000775				X					July-19	
UNK1900	ST00000776				X					July-19	
UNK24721	ST00000780				X					August-19	
UNK32717	ST00000791				X					May-19	
UNK34712	ST00000793				X						

Table 2-3 Continued

Outfall ID	Work Order Number	High Priority		Medium Priority	Low Priority					Inspection Date	Re-Inspection Date
		Could Not Locate	Buried	Fully Submerged in Sediment	Partially Submerged in Sediment	Fully Submerged in Water	Partially Submerged in Water	Abnormal Vegatation	Outfall Damage		
UNK34713	ST00000794				X					May-19	
UNK26725	ST00001286				X					May-19	
UNK26726	ST00000784				X						
UNK29512	ST00000787				X					May-19	
CB0976	ST00001287							X		May-19	
CB0977	ST00001288							X			
CB1147	ST00001289							X		August-19	
DPO0657	ST00001291							X		May-19	
DPO1007	ST00001292							X		August-19	
FB0715	ST00001293							X			
UNK0906	ST00001294							X			
UNK1901	ST00001295							X		May-19	
UNK1902	ST00001296							X		May-19	
UNK5113	ST00001297							X			
CB1198	ST00001298					X				May-19	
DPI0945	ST00000519					X				May-19	
DPI1133	ST00000522					X				May-19	
MR20719	ST00000542					X					
TS0989	ST00000549					X				April-19	
KL26714	ST00000533					X					
DPI0970	ST00000610						X				
DPI1007	ST00000614						X				
DPI1084	ST00000616						X				
DPI1125	ST00000618						X				
DPI1131	ST00000619						X			May-19	
DPI1162	ST00000621						X			May-19	
DPI1197	ST00001299						X				
FBO0719	ST00000627						X			April-19	
KL1178	ST00000633						X			April-19	
LR1260	ST00000642						X				
TS0984	ST00000670						X			April-19	
TS33514	ST00000673						X			April-19	
UNK0665	ST00000678						X			May-19	
UNK0666	ST00000679						X			May-19	
UNK0728	ST00000688						X			May-19	
UNK0729	ST00000689						X				
UNK0730	ST00000690						X			May-19	
UNK0902	ST00000703						X			July-19	
UNK0955	ST00000708						X				
UNK1168	ST00000723						X				
UNK1176	ST00000728						X			July-19	
UNK1177	ST00000729						X			June-19	
UNK1188	ST00001301						X			April-19	
UNK1206	ST00000733						X			May-19	
UNK1220	ST00000735						X				
UNK1695	ST00000745						X			April-19	
UNK1696	ST00000746						X			April-19	
UNK1749	ST00000752						X			April-19	
UNK1767	ST00000755						X			June-20	
UNK1823	ST00000761						X				
UNK1829	ST00000762						X				
UNK1835	ST00000763						X			May-19	
UNK1910	ST00000777						X			May-19	
UNK6316	ST00001303						X			May-19	
UNK8312	ST00000797						X				
UNK1775	ST00000756						X			August-19	
LR0979	ST00001304								X	April-19	
MR0607	ST00001305								X	May-19	
TS0983	ST00001307								X	April-19	
UNK1173	ST00001308								X		
MR0927	ST00001309										
UNK1189	ST00001310										
Unknown Ownership Outfalls											

2.4 IDENTIFIED ILLICIT CONNECTIONS AND CURRENT RESOLUTION STATUS

The ongoing and cumulative status of the City's efforts to remove any identified illicit connections or discharges is summarized in Table 2-4.

The status of the twelve most recently identified illicit connections is as follows:

- Merrimack River Basin
    - Outfall MR1141: Results from sampling conducted on 6/9/2020 were below MS4 permit requirements. This outfall was moved to the Other Priorities ranking for follow-up testing. See map of progress in Appendix B.
- Pentucket Lake Basin
    - Outfall PL0891: Refer to previous Compliance Reports for more comprehensive detail in the ongoing resolution for this illicit connection. Additional sampling conducted on 6/9/2020 tested high for bacteria and surfactants. The outfall is located directly across the street from the Marsh Avenue Wash & Clean Center laundromat. Dye testing was performed at the laundromat on 6/17/2020. Dye was introduced in the toilet and was contained within the sewer line. Additional dye was introduced during a wash cycle with additional water added to increase flow. The washing cycle with additional flow resulted in dye infiltration from SMH 2190 to a catch basin, and ultimately to Outfall PL0891. CCTV investigation was done on 6/18/20 for the main sewer line between SMH2190 and SMH7800. CCTV found no breaks in the sewer main that would result in infiltration to CB3318. The service line from Marsh Avenue Wash & Clean Center was then CCTV'd and a break in the lateral service line was found and that there is a flow channel through the soil to CB3318, and ultimately to Outfall PL0891. Next steps are to contact business owner for repair of lateral service line and to retest outfall for surfactants. CB3318, directly upstream from outfall PL0891 has four inlet connections the three o'clock connection was sampled on 6.18.20. The four o'clock connection will be sand bagged to divert flow for sampling without cross contamination. See map of progress in Appendix B.

- Unknown or Unnamed Basins
    - Outfall UNK 1166: Sampling conducted on 6/11/2020, upstream connections UNK1177 and UNK1762 were also sampled. UNK1762 will need CCTV investigation to trace flow origination. In field UNK1162 was identified but per system records outfall is asset UNK1762. Samples from 6/11/12 were mislabeled as UNK1162 but were taken from outfall UNK1762. See maps of progress for UNK1166 to 1177 in Appendix B.
    - Outfall UNK1767: Sampling investigation conducted on 6/23/20, as well as sampling of outfall and upstream connections DMH-702, 703, and 704 were also sampled as there was minimal flow. Additional testing will be needed further upstream as possible groundwater-only infiltration on DMH-4897 and DMH-4898. Infiltration sampled on DMH 702-3 inlet pipe, no flow at catch basin upstream on Kenilworth, infiltration source between CB1547 and DM702 will need CCTV to investigate further. See map of progress in Appendix B.

TABLE 2-4
SUMMARY OF ILLICIT DISCHARGES IDENTIFIED BY BASIN AND CURRENT STATUS
(January through June 2020)

Description		Illicit Discharge/Connection Verified				Ongoing Illicit Discharge Removal Activities					Final Illicit Connection Removal Actions				
CD Requirement		67.a.iii.1			67.a.iii.2	67a.iii.7		67.a.iii.8		67.a.iii.9	67.a.iii.3	67.a.iii.4	67.a.iii.5	67.a.iii.6	
Basin ID	Outfall ID	Date Verified	Address Location	Type of Discharge[1]	Estimated Flow (gpd)	Removed?	Reasons Why Not	Schedule for Removal	Reason why expedited	Legal Actions against Private Property Owners	Actions Taken (with Dates)	Date Connection Eliminated	Est. Cost of Removal	Estimated Volume Removed (gallons)	Assessment: Is the City in compliance with the schedule?
Little River	LR1260	10/26/2017	29 Union Street	Single family broken sewer	400 gpd	not removed	gave extension	Was removed on 2/24/18						60,000	
Merrimack River	MR1164	11/19/2016	Market Basket Parking Lot	groundwater into drain	Seasonal Flow/ Not able to estimate	N/A	N/A	N/A	N/A	N/A	This dry weather flow appears to be from a groundwater discharge into the drainage system across a parking lot. Additional testing is required to confirm bacteria source is groundwater.	N/A	N/A	N/A	Yes, the City is in compliance with resolving this "illicit discharge".
	MR1141	12/20/2018	River St	Sewer pipe joint offset leaking in DMH	Not able to estimate	Yes		Was repaired 5/16/2019			Sewer pipe joint and DMH were repaired on 5/16/2019	5/16/2019	$500	Not able to estimate	Yes, the City is in compliance
	MR1109		350 Water St	IDDE conducted and needs further investigation to determine the source.											
	MR1138	10/20/2017	River St	Upstream contamination from culvert inlet.											
	MR24314	7/27/2016	15 Groveland St., 19 Groveland St, 312 Water St	3 Single family	N/A		N/A	N/A	N/A		New gravity sewer installed on Nov 11, 2016 and 3 homes removed from drain system	11/4/2016	$ 12,788	26,377	Yes, the City is in compliance
Pentucket Lake	PL0891	10/5/2016	Marsh Avenue	leaking sewer/ exfiltration	Not able to estimate	X	Sewer replacement costs/lengths are extensive; cost exceeds discretionary funds; new fund required in next fiscal year to complete project	Fiscal Year 2019	This connection is being removed as quickly as possible and dependent on the availability of funds within the fiscal year.	N/A	10/5/18-10/10/18: SMH-2190 point repair and manhole rehibilitation complete. 10/11/18-10/16/18: Installation of CIPP main line liner on Main St 10/17/18-10/23/18: Installation of CIPP main line liner on Marsh Ave. 10/24/18: Began installing CIPP of sewer laterals. Groundwater too high causing flooding in homes. Project on hold until mid-end March. Project is complete. Post lining CCTV was reviewed and determined that more CCTV needs to be conducted and 1 defect in lining needs to be repaired.6/9/2020: illicit connection located at lateral from laundromat, owner notified to repair	-	$446,000	-	Marsh Ave sewer repair project was bidded and awarded to National Water Main Cleaning Co. and contract had to be extended to 6/30/19 due to high groundwater. Project was completed by the end of June 2019 but after review of CCTV, it was determined that more CCTV needs to be conducted and 1 defect in lining needs to be repaired.
	UNK0951	11/1/2017	Brook Street	Leaking sewer running through drain	Not able to estimate	not removed	Not able to fix due to weather	As soon as weather permits	-	-	Section of sewer was dug up and replaced	4/17/2018	$ 4,277	-	Yes, the City is in compliance
	UNK0788	7/27/2016	West Lowell Ave	Possible contamination from leaching septic system	Not able to estimate	N/A	N/A	N/A	N/A	N/A	City drain was disconnected from culvert and residence was connected to City sewer.	Jun-18	$ 16,700	-	Yes, the City is in compliance
	UNK1767	6/23/2020	Tudor Ct	IDDE conducted. CCTV needs to be completed. High ammonia from private pipe. Dye tested home and their wastes go to sewer.											

Description		Illicit Discharge/Connection Verified				Ongoing Illicit Discharge Removal Activities					Final Illicit Connection Removal Actions				Assessment: Is the City in compliance with the schedule?
CD Requirement		67.a.iii.1			67.a.iii.2	67a.iii.7		67.a.iii.8		67.a.iii.9	67.a.iii.3	67.a.iii.4	67.a.iii.5	67.a.iii.6	
Basin ID	Outfall ID	Date Verified	Address Location	Type of Discharge[1]	Estimated Flow (gpd)	Removed?	Reasons Why Not	Schedule for Removal	Reason why expedited	Legal Actions against Private Property Owners	Actions Taken (with Dates)	Date Connection Eliminated	Est. Cost of Removal	Estimated Volume Removed (gallons)	
Unknown	UNK0955	10/14/2016	South Main St	Contaminated private line discharges to City line.											
	UNK1762	6/11/2020	Franzone Dr	Upstream contamination needs additional IDDE											
	UNK1166	6/11/2020	Franzone Dr	Upstream contamination needs additional IDDE	10gpm est										
	UNK1188	12/25/2012	34 Columbia Pk., 66 Columbia Pk., 74 Columbia Pk., 80 Columbia Pk., 90-92 Columbia Pk.	5 Single family		N/A	N/A	N/A	N/A	N/A	5-house sewer services through a drain pipe that were dripping. Install a PVC sleeve through drain	6/8/2016	$ 13,000	26,481	City is in compliance. 60 day deadline was not applicable until November 2016.
Detention Pond Outlet	DPO0696	6/12/2015	Pamela Lane	Private drain and outfall DPI0697 that discharge to detention pond and not contaminated. Contaminated detention pond.											

[1] Type of Discharge single-family residential, multifamily residential, commercial, industrial, exfiltration from a sanitary sewer

Current Report Period Total =	$ -	-
Grand Total =	$ 493,265	112,858

SECTION 3

3.1 SSO AND BUILDING/PRIVATE PARTY BACKUP EVENTS

A chronological list of the sanitary sewer overflows (SSO) and building/private party backup events that occurred during this Reporting Period (January through June 2020), are listed in Table 3-1 and shown in Figure 3-1.

Over the Reporting Period, there were a total of six reportable SSO events associated with the City's sewer collection system and are listed in Table 3-1. One of the six reported SSO's associated with the City have occurred previously and were addressed as follows:

- SSO-20-01 Danielle Drive Lift Station; repaired bubbler line; installed backup floats
- SSO-20-02 40 South Porter Street - process tank overflow; flushed area
- SSO-20-03 687 South Main Street; flushed sewer main
- SSO-20-04 322 North Avenue; flushed sewer main
- SSO-20-05 Hazel & Griffin Street; flushed sewer main
- SSO-20-06 200 Monument Street; flushed sewer main

It is important to note that the SSO's associated with the City collection system operations continue to not be a result of pipe capacity deficiencies and the City continues to make significant progress in reducing the number of SSOs that occur in the system attributed to City operations. For this six-month reporting period, the City had six SSOs that were directly attributable to unanticipated collection system conditions. The EPA reported annual average SSOs in a typical nationwide system is about four SSOs per 100 miles. Accordingly, Haverhill continues to have less SSOs than the national average.

TABLE 3-1
SANITARY SEWER OVERFLOW EVENTS
JANUARY THROUGH JUNE 2020

SSO Ownership City or Private	CITY	CITY	CITY	CITY	CITY	CITY
MaintStar Work Order	WW00001806	WW00001812	WW00001825	WW00001836	WW00001846	WW00001848
SSO ID	SSO-20-01	SSO-20-02	SSO-20-03	SSO-20-04	SSO-20-05	SSO 20-06
SSO Address	DANIELLE DRIVE LIFT STATION	40 SOUTH PORTER STREET	687 SOUTH MAIN STREET	322 NORTH AVENUE	HAZEL @ GRIFFIN STREET	200 MONUMENT STREET
Start Date/Time	1/23/2020 6:00	2/3/2020 14:45	3/1/2020 10:40	3/22/2020 17:00	4/8/2020 12:59	4/10/2020 19:45
End Date/Time	1/23/2020 6:30	2/3/2020 15:00	3/1/2020 11:40	3/22/2020 18:15	4/8/2020 13:25	4/10/2020 20:45
Date Reported EPA/DEP	1/23/2020 15:00	2/4/2020 8:00	3/2/2020 8:00	3/23/2020 8:00	4/9/2020 o8:00	4/11/2020 8:30
Who notified	ISIAH LEWIS	ISIAH LEWIS	ISIAH LEWIS	PAUL JESSEL	PAUL JESSEL	PAUL JESSEL
Reason for occurrence	BUBBLER LINE BROKE	TWAS TANK OVERFLOWED	SEWER MAIN BLOCKED	SEWER MAIN BLOCKED	SEWER MAIN BLOCKED	SEWER MAIN BLOCKED
Date of last SSO occurrence	12/6/2019	FIRST OCCURANCE FOR TWAS TANKS	FIRST OCCURANCE	5/15/2002	8/11/2003	FIRST OCCURANCE
SSO est. vol.	500	500	500	1,000	200	2,000
Receiving Waters if sewerage entered	DETENTION POND	DRAINAGE SWALE	GROUND SURFACE	SNOW'S BROOK	WETLANDS	RESIDENT'S BASEMENT
Method Use to Estimate volume	VISUAL	VISUAL	VISUAL	VISUAL	VISUAL	VISUAL
Nearest CB location ID	CB-2182	CB-7980	CB-3330	CB-3935	NONE	CB-1698
Distance to Nearest CB (ft.)	11	85	40	200	NONE	58
Name of receive Water whether or not there was a release	WEST MEADOW BROOK	DRAINAGE SWALE THEN PEABODY BROOK	MERRIMACK RIVER	SNOW'S BROOK	WETLANDS	NA
Entered CB Yes or No						
Measure Taken to Stop SSO	FIX BUBBLE LINE	INSTRUCT PLANT STAFF	FLUSH SEWER MAIN	FLUSH SEWER MAIN	FLUSH SEWER MAIN	FLUSH SEWER MAIN
Decontaminate	YES	YES	YES	YES	YES	PRIVATE
Measures taken to prevent future overflows	BUBBLER LINE WAS REPAIRED AND BACKUP FLOATS WERE ADDED.	INSTRUCT WWTP STAFF TO MONITOR TANK LEVELS	CCTV'D NO OTHER ACTIONS ARE REQUIRED	CCTV'D NO OTHER ACTIONS ARE REQUIRED	CCTV'D NO OTHER ACTIONS ARE REQUIRED	
SEWERAGE LOCATION INTO STREAM	UNK0667	MR23513		SNOW'S BROOK	WETLANDS	NO

Roads, surface water, and town boundaries from MassGIS and NH GRANIT. SSO and facility locations from City of Haverhill. Map produced by Wright-Pierce.

ATKINSON, NH

PLAISTOW, NH

MERRIMAC

WEST NEWBURY

GROVELAND

METHUEN

NORTH ANDOVER

BOXFORD

SALEM, NH

SSO-20-01

SSO-20-02

SSO-20-03

SSO-20-04

SSO-20-05

SSO-20-06

WTF

KENOZA LAKE

Merrimack River

AMESBURY ROAD

BROADWAY

NORTH BROADWAY

KENOZA AVENUE

S MAIN STREET

WILLOW AVENUE

KINGSBURY AVENUE

495

Legend

- SSO
- WTF — Water Treatment Facility
- WPAF

N

0 0.25 0.5 1 Miles

SSO and Building/Private Party Backup Locations

January through June, 2020

City of Haverhill, MA

Haverhill

DATE:	FIGURE:
Sept 2020	3-1

JMN W:\GIS_Development\Projects\MA\Haverhill\13703_EPA-ConsentDecree\MXDs\SSOs_Jan-June2020_11x17.mxd

SECTION 4

4.1 CONSTRUCTION SITE INSPECTION AND ENFORCEMENT PROGRAM

At their June 26, 2018 Haverhill City Council meeting, the Council passed and adopted a Pre and Post Construction Stormwater Management Ordinance as required as part of the Consent Decree.

Currently, there are no "non-exempt" projects within the City that meet the requirement of one acre or more of land disturbance that would require an individual stormwater permit and thus no site inspections have been conducted and enforcements made during this Reporting Period. Thus far, projects meeting the one acre and MS4 connection requirements have been exempt under the Ordinance due to their being permitted by the Conservation Commission under the Massachusetts stormwater regulations. In addition, the Ordinance has served as a deterrent, as there have been instances where projects have been redesigned to reduce proposed disturbances to less than one acre.

SECTION 5

GENERAL STATUS

5.1 INTRODUCTION

This section summarizes the actions taken by the City of Haverhill to achieve Consent Decree compliance within the Reporting Period.

For the eighth Reporting Period (January through June 2020) there were two deliverables and/or activities due within that timeframe to achieve compliance. The two deliverables/activities are shown in Table 5-1 below.

The City continuous to make progress related to their Combined Sewer Overflow Final Long-Term Control Plan, however anticipated bidding of the CSO Dry Weather Connector Pipe Improvements in Spring 2020 was delayed due to Covid-19.

Major construction activities have been completed for both the Odor Control and Administration Building HVAC Improvements at the City's Water Pollution Abatement Facility, where both projects were granted Substantial Completion in June.

The City is developing an application for a Massachusetts Clean Water Trust Asset Management Grant with an anticipated amount of $250,000 to be submitted during the next reporting period. This grant will assist the City towards developing an asset management plan for its sewer and stormwater system that will provide a risk-based approach towards rehabilitation.

A draft Request for Qualifications for the design of the City's Water Pollution Abatement Facility's Rehabilitation and Upgrade Project has been prepared.

The City has requested that their cleaning and inspection subcontractor, Ted Berry, add the Upper Siphon and connecting interceptor be added to their scope of services.

The City is also currently reviewing their computer maintenance management system (CMMS) to seek another CMMS that will be utilized to develop consequence of failure and likelihood of failure values through CCTV to be inputted into the City's long-term CIP.

In addition to CSO progress and improvements at the WPCF, in January 2020, the City filled the following positions:

- Water/Wastewater Asset Manager: responsible for tracking activities utilizing the City's CMMS.
- Industrial Pretreatment Program/Stormwater Manager: responsible for the City MS4 Permit and tracking IDDE and CMOM Progress.

The City is also actively searching to fill the Collection System Supervisor and Operator position vacancies, as stated in Section 1.

Work orders generated from the City's computerized maintenance management system, MaintStar, for the outfall inspection program from January through June 2020 are attached to this Compliance Report in Appendix A. There were no work orders generated for outfall investigations during this reporting period.

TABLE 5-1

SUBMISSIONS WITHIN CURRENT REPORTING PERIOD

Part	*Activity*	Due Date	Submittal Date
Effective Date of Consent Decree (11/10/2016)			
M	CSO Monitoring		
	Annual CSO Activation Report	5/1/2020	4/17/2020
IX	Compliance Reporting		
	Compliance Report No. 7	4/30/2020	4/28/2020

5.2 ISSUES OF NONCOMPLIANCE

The City is in compliance with the requirements of this Consent Decree.

5.3 LOOKING AHEAD - SIX MONTH FORECAST

The anticipated future deliverable required under the Consent Decree for the next Reporting Period, July through December 2020, is shown in Table 5-2.

TABLE 5-2
FUTURE DELIVERABLES DURING THE PROCEEDING REPORTING PERIOD
(JULY THROUGH DECEMBER 2020)

Part	*Activity*	*Trigger Event*	*# Days Due Post Trigger Event*	Due Dates
Effective Date of Consent Decree		11/10/2016		
IX	Compliance Reporting			
	Compliance Report No. 8	4/30/20	180	10/31/2020

SECTION 6

SECONDARY TREATMENT BYPASS

6.1 INTRODUCTION

The intent of this section is to summarize the secondary treatment bypass events that occurred at the City of Haverhill's Water Pollution Abatement Facility during the reporting period, January through June 2020.

6.2 BYPASS EVENTS

There were no secondary treatment bypass events that occurred during the reporting period. Particularly of note, this is the fifth consecutive reporting period (two and a half years), that the secondary treatment bypass facilities have not been activated. They have not been activated since September 7, 2017.

SECTION 7

CMOM CORRECTIVE ACTION PLAN

7.1 INTRODUCTION

Pursuant to the Consent Decree, the City of Haverhill submitted the Capacity, Management, Operation, and Maintenance Program Assessment Corrective Action Plan (CMOM), dated February 22, 2017, to MassDEP and EPA. In their review letter dated August 3, 2017, MassDEP requested that a summary of the status of CMOM-Related corrective actions that occurred during the reporting period be included in the Compliance Reporting.

7.2 CMOM CORRECTIVE ACTIONS

The CMOM identified 27 deficiencies, their recommended corrective actions, and an implementation schedule, which are listed below in Table 7-1. Table 7-1 also provides an updated status for each corrective action.

7.3 ADDITIONAL CMOM-RELATED ACTIVITIES

In conjunction with the corrective activities, the City has also performed additional activities as outlined and recommended in the CMOM Program, which includes collection system maintenance and construction activities. The expenses related to collection system maintenance activities performed from January through June 2020 (Reporting Period 8) are listed in Table 7-2 below.

In addition, continued construction activities occurred during the reporting period include the sewer repair and replacement included under the Phase II Water Transmission Main and Distribution Improvements, DWSRF #4397. The total bid price for the sewer work within the contract was approximately $2,000,000. Funds expended for this reporting period is $630,430, which includes activities such as spot repairs, sewer reconstruction, and the use of trenchless technology. In total, approximately 60% of the project is complete.

Table 7-1
CMOM Corrective Action Plans & Status

Action #	Deficiency	Recommended Corrective Action	Implementation Schedule	Status
1	The City does not have a formal long-term plan to mitigate SSO.	The recommendations in the Wastewater Treatment Plant & Collection System Staffing Analysis (Woodard & Curran, 2017), Collection System CIP and Sewer Inspection SOP (Appendices B and F), and the Pump Station Evaluation (Wright Pierce, 2016) will serve as a long term plan to reduce the causes of SSOs.	Ongoing	The City has a capital improvement plan which includes recommendations from the Wastewater Treatment Plant & Collection System Staffing Analysis, Collection System CIP and Sewer Inspection SOP, and the Pump Station Evaluation which is the long-term plan to reduce the causes of SSOs. A majority of SSO's are caused by unanticipated sewer blockages. Every effort is taken to minimize the overflow and to take corrective action to prevent reoccurrences. The City has made great strides in order to reduce the number of SSOs over the years, which has seen a downward trend in the annual total occurrences.
2	The City does not have a comprehensive system to prioritize investigations, repairs, and rehabilitation.	Use the risk-based methods described in Appendices B and F from Capacity, Management, Operations and Maintenance (CMOM), Program Assessment and Corrective Action Plan prepared by Woodard & Curran (February 2017) to prioritize investigations, repairs, and rehabilitation.	Ongoing	A PEF was submitted to complete planning and implementation of various CMOM corrective action plans including pipe inspections. The City has also began adding CCTV and LOF pipe ratings to their new CMMS software (Utility Cloud). The City has also added sewer rehab/repair work to the Water Departments Phase II water main replacement project, which included CCTV and inspection of about 19,000 ft of sewer, and design of all excavation sewer repairs. This project began in September 2019 and is expected to cost about $1.8 million. The City to continue utilizing Engineering services for risk-base method whenever there is a water, sewer, or other infrastructure project as their standard operating procedure. The City has hired an Asset Manager who will update, revise, and develop further CoF and LoF values that will be used to develop the City's long-range CIP. The City will use this data and incorporate into a capital asset planning tool.

Table 7-1
CMOM Corrective Action Plans & Status

Action #	Deficiency	Recommended Corrective Action	Implementation Schedule	Status
3	The City does not have updated job descriptions that match technical requirements for a modern collection system utility.	Update job descriptions for the revised organizational structure proposed in the Wastewater Treatment Plant & Collection System Staffing Analysis (Woodard & Curran, 2017)	Within one year after EPA approves the CMOM Action Plan	Complete.
4	Although the City training program includes some key safety training, staff would benefit from a formalized safety and technical training program.	Implement a staff training program using the guidelines outlined in Appendix C.	Within **one year** after EPA approves the CMOM Action Plan	The City is in contact with innovative safety to put a training schedule in place. Currently, the City provides annual CPR/AED, Lockout/Tagout training to its wastewater system employees.
5	Although the City uses MaintStar to track customer complaints, they do not use the database to prioritize preventative maintenance.	Annually review customer complaint data using GIS to identify areas that may require further investigation.	Within **one year** after EPA approves the CMOM Action Plan	On going
6	The City lacks a comprehensive, risk-based approach to maintenance planning.	Use the risk-based methods described in Appendices B and F from CMOM Program Assessment and Corrective Action Plan prepared by Woodard & Curran, February 2017 to prioritize investigations, repairs, and rehabilitation.	Ongoing	The City's Asset Manager will use the risk base approach from Appendix B and F from the CMOM Program Assessment and Corrective Action Plan prepared by Woodard & Curran, February 2017, along with developing a CIP
7	Local limits need to be updated.	Perform a local limits study and update the limits table in the ordinance (per Appendix E, Sewer Ordinance Review from CMOM Program Assessment and Corrective Action Plan prepared by Woodard & Curran, February 2017).	Within **one year** after EPA approves the CMOM Action Plan	Final NPDES Permit went into effect on January 1, 2020. Local limits evaluation is being finalized and should be ready December 2021.

Table 7-1
CMOM Corrective Action Plans & Status

Action #	Deficiency	Recommended Corrective Action	Implementation Schedule	Status
8	The City needs to improve implementation and enforcement of their Sewer Use Ordinance (SUO).	Improve implementation and enforcement of the SUO. Begin mapping Food Service Establishments in GIS and building database of grease trap inspectional data.	Within **one year** after EPA approves the CMOM Action Plan	Utility Cloud (CMMS) has been updated to reflect all food service establishments (FSE) and is updated as new permits are submitted. The City hired Watermark Environmental Inc. to conduct FSE annual FOG inspections and to update Utility Cloud system with pass/fail designations. The City is awaiting on a scope and fee from Hoyle and Tanner to review our SUO and Enforcement Response Plan
9	The City should update recordkeeping pertaining to private systems.	Input private lift stations into CMMS to track issues & contact information.	Within **three months** after EPA approves the CMOM Action Plan	Complete.
10	The City does not have a finalized version of their capital improvement plan – which will include pump station upgrades, collection system rehabilitation, and WWTP upgrades.	The City should finalize their CIP and appropriate funds as necessary.	Within **three months** after EPA approves the CMOM Action Plan	Complete, and as part of the annual budget process, the city updates the CIP each year. The CIP is used to develop the wastewater 5-year financial plan to fund the CIP. The CIP includes pump station upgrades, collection system rehabilitation, and WWTP upgrades. In order to fund the CIP, the City has raised sewer user rates by 40% over the last four years.
11	The City does not have a finalized version of their capital improvement plan – which will include pump station upgrades, collection system rehabilitation, and WWTP upgrades.	The City should finalize their CIP and appropriate funds as necessary.	Within **three months** after EPA approves the CMOM Action Plan	Complete, See status of Action #10.
12	The City has not verified that other air relief valves do not exist. Maintenance of air relief valves has not been performed historically.	Review record drawings and inspect force main routes to confirm location of air relief valves. If located, enter in GIS and schedule routine maintenance in CMMS.	Within **one year** after EPA approves the CMOM Action Plan	Ongoing.
13	The City does not have a standard procedure for maintaining safety training records.	The City will utilize their CMMS program to organize safety training records.	Within **one year** after EPA approves the CMOM Action Plan	Ongoing The city will incorporate training in the new CMMS utilizing a problem code for training.

Table 7-1
CMOM Corrective Action Plans & Status

Action #	Deficiency	Recommended Corrective Action	Implementation Schedule	Status
14	The City has a general emergency response plan (ERP). The Division recently completed an ERP for responding to SSOs. The Division lacks ERP for other collection system emergencies.	Develop ERP for collections-specific emergencies, in particular those affecting critical assets. For example, there should be an SOP for providing backup power to pump stations during a system-wide power outage.	Within **one year** after EPA approves the CMOM Action Plan	Complete. The City has purchased a vac-truck, which is scheduled for delivery in Spring 2021. The ERP will be updated to incorporate the utilization of the vac-truck.
15	The City does not have formal emergency response training.	Implement a program for training and practicing emergency response.	Within **one year** after EPA approves the CMOM Action Plan	The City is working with Innovative Safety to put a training schedule in place. The City plans to get all necessary training done to be OSHA compliant.
16	The City has a hydraulic model for interceptors and CSOs, but there is no city-wide hydraulic model.	Although developing a comprehensive hydraulic model is not a high priority, Woodard & Curran recommends building out the model as required to address capacity issues and plan for new development as the need arises.	As Needed	The City's GIS system is updated on an ongoing basis which will provide a good foundation for a future model.
17	The City does not have adequate staff to perform sufficient preventative maintenance on all 36 pump stations part of the collection system.	Follow the recommendations of the Wastewater Treatment Plant & Collection System Staffing Analysis (Woodard & Curran, 2017) to assign sufficient resources to keep up with required maintenance.	Within **one year** after EPA approves the CMOM Action Plan	The City developed a job description for a new Collection System MEO/laborer and hired a qualified candidate. The City outsources many tasks. See response to Item #19. The Mission Systems improve the monitoring of pump stations resulting in reduced staff time for routine inspections (weekly vs. daily) and more time on preventative maintenance.

Table 7-1
CMOM Corrective Action Plans & Status

Action #	Deficiency	Recommended Corrective Action	Implementation Schedule	Status
18	Although there is generally sufficient redundancy of pumps and level controls, some stations require specific upgrades related to redundancy.	The City will utilize the recommendations of the Pump Station Evaluation (Wright Pierce, 2016) to evaluate future rehabilitation. The City is planning for Carleton Street PS and North Ave PS to be in construction by EOY 2019.	Ongoing	The replacement/upgrades to the Carleton Street and North Avenue Pump Stations are complete and online. The City will be standardizing all their pump stations during upgrades and additional pump stations will be recommended for rehabilitation/upgrades as outlined in the Pump Station CIP. Mission alarms are currently installed in sixteen (16 out of 36) lift stations with seven (7) budgeted for FY 21. The remaining thirteen (13) will be budget over the next few fiscal years. All lift station with bubblers will be changed to Vega Radar level control with backup floats. Six (6) station have been budgeted for this upgrade.
19	Not all pump stations have communication ability. Lack of communication at pump stations has contributed to SSOs.	The City will utilize the recommendations of the SCADA Study (Woodard & Curran, 2011) and Pump Station Evaluation (Wright Pierce, 2016) to evaluate communication improvements.	Ongoing	All pump stations have the ability to communicate alarms. City has selected the use of Mission Alarm and Monitoring Systems for communication. Currently, 16 out of the City's 36 pump stations have Mission Systems. The City has budgeted money to install Mission RTU alarms at 5+/- additional stations this fiscal year (the number of stations will depend on the bid price). The City will be continuing to install Mission Systems until all lift stations are equipped, which is estimated to be complete within the next five years.

Table 7-1
CMOM Corrective Action Plans & Status

Action #	Deficiency	Recommended Corrective Action	Implementation Schedule	Status
20	11 pump stations do not have working backup power, though most of these have connections for a portable generator or are small enough to pump out.	The City will utilize the recommendations of the SCADA Study (Woodard & Curran, 2011) and Pump Station Evaluation (Wright Pierce, 2016) to evaluate emergency power improvements. Develop an ERP to address a system-wide power outage including monitoring fuel supplies, mobilizing portable generators, and pumping out with trucks.	Ongoing ERP for system wide power outage will be developed within **three month**s after EPA approves the CMOM Action Plan	Ongoing. There are currently seven stations without backup generators. The ERP will be updated to include new generator at the North Avenue Station and the use of the City's new vac-truck.
21	There is currently no schedule for cleaning sewer lines on a system-wide basis.	The City will utilize a 20-year plan to inspect all sewer pipes calculated to have a consequence of failure value ≥ 3 (approximately 57% of system). See the Collection System CIP (Appendix B) for additional information.	Will begin to implement program within **six months** after EPA approves the CMOM Action Plan	The City has focused on cleaning major interceptors and siphons to increase capacity and storage within the system. The Middle Siphons, Middle Interceptor, Bradford Interceptor, and all combined sewers in the Locke St CSO catchment area were cleaned in 2019, as well as as-needed projects. The City has purchased their own vac truck (anticipated delivery Spring 2021)
22	The City does not have a dedicated location for offloading and dewatering sewer cleanings. The City does not have an enclosed location for storage of their sewer maintenance vehicles.	The City will purchase a dewatering dumpster for sewer cleanings. The City will construct a facility for storage of sewer maintenance vehicles.	Within **three years** after EPA approves the CMOM Action Plan	Dewatering dumpsters – Complete. Maintenance Vehicle Facility – Included in 5-year CIP
23	The City does not have a list of assets located on right-of-ways. The City has also not developed an SOP for maintenance of right-of-ways and easements.	Identify off-street assets using GIS. Schedule preventative maintenance for maintaining accessibility in CMMS. Develop SOPs for specific easements as necessary, including contacting property owners to obtain keys, etc.	Within **two years** after EPA approves the CMOM Action Plan	The City has inputted easements into GIS and assets. These assets will be populated, and SOPs will be made; as well as the development of preventative maintenance plan.

Table 7-1
CMOM Corrective Action Plans & Status

Action #	Deficiency	Recommended Corrective Action	Implementation Schedule	Status
24	There is no systematic program for uncovering manholes that have been paved over.	Develop an SOP which includes: • Identification of paved over manholes as part of routine inspections • Add paved-over manholes to GIS. • Adding work orders to CMMS for raising paved-over manholes.	Within **two years** after EPA approves the CMOM Action Plan	The City's highway department distributes a street paving list to each department. The engineering department investigates those streets and puts a list together of buried manholes. This list is then given to the contractor and the contractor raises the manholes. Paved over manholes are added to GIS on an ongoing basis as they are discovered.
25	Although the City has identified areas with high measured inflow, building inspections have not been performed.	The City will perform trial building inspections to a sample of 10% of buildings located in Areas 14 & 23 Infiltration and Inflow Report (CDM Smith, 2011). Sample brochures will be sent out to buildings where inspections are not successfully completed.	Within **two years** after EPA approves the CMOM Action Plan	The City is considering this as part of their Phase 3 CSO work however recommended corrective action is only practical in separated sewer areas. Under Phase 3 CSO, the City will evaluate the development of informative brochures to send to all homeowners.
26	The City lacks public education materials associated with roof leaders and sump pumps.	The City will consider using a public education campaign to inform residents of proper plumbing in areas of separated sewer.	Within **one year** after EPA approves the CMOM Action Plan	The City is considering this as part of their Phase 3 CSO work. Refer to Item #25 status
27	The City does not have a system-wide manhole inspection program.	Perform manhole inspections using NASSCO Level 1 MACP. Prioritize and schedule using the risk-based approach described in Appendices B and F rehabilitation. The City plans to complete manhole inspections while performing pipe inspections.	Will begin to implement program within **six months a**fter EPA approves the CMOM Action Plan	Manholes inspection are ongoing as part of pipe inspections. As the City contracts with engineering firms for CCTV work, their scope will also include manhole inspections. The City has implemented NAASCO MACP sewer inspection standards and requires contractors to be NAASCO certified when performing inspections. In addition, MACP Level 1 form has been created in the City's CMMS Utility Cloud.

In December 2019, a 36-inch diameter sewer failed at a bridge abutment. This sewer repair project included both replacement and rehabilitation construction. Approximately 30 linear feet of sewer was replaced with new ductile iron pipe via conventional open cut construction; and approximately 265 linear feet of sewer was rehabbed with cured-in-place liner. The total project cost for this repair work was $507,000.

The City has developed a “Sink Hole Crew” comprised of Water, Highway and Collection Division employees. In the event that a sink hole is found within the City, a multi-divisional investigation is conducted and repairs, if warranted, are completed.

TABLE 7-2

CMOM-RELATED EXPENSES THAT OCCURRED

DURING REPORTING PERIOD 8

(JANUARY THROUGH JUNE 2020)

Account	Funds Expended During Reporting Period	Account Description
Lift Station Operation and Maintenance	$98,101	Used to fund day-to-day costs for maintenance and repair of the wastewater collection system.
Sewer Assessment & Inspection	$37,880	Used to fund cleaning, CCTV inspection, and assessment of sewer lines and grit removal
Service Contracts	$39,607	Used to fund the annual service contracts for various items in the wastewater department.
Wastewater Infrastructure	$83,994	This account is use for sewer repair miscellaneous items. This is an annual appropriation funded from current year revenues.
Wastewater Capital	$16,662	Funds are used for expenditures greater than $10,000 with a life greater than 3-years . This is an annual appropriation funded from current year revenues.
Storm Water - Capital	$34,100	Funds capital expenditures greater than $10,000 with a life greater than 3-years. Funds are annual appropriations from user rates and fees.
Stormwater Expense	$23,099	Funds various expenses related to stormwater system operation and maintenance, street sweeping, federal and state permit requirements, and the downtown flood system.
Total Spent During Reporting Period	**$333,442**	

APPENDIX A

CMMS GENERATED WORK ORDERS – OUTFALL INSPECTIONS

Haverhill IDDE Inspection Form
Catch Basin

SECTION 1: BACKGROUND DATA

ASSET ID:	CB-3318	**OUTFALL ID:**	PL0891
Date/Time:	2020-06-18 8:32:00		
Temperature: °F	70	**Inspector(s):**	James Conte|Jesse Middleton|Zebulan Day|Justin Mazzotta
Street Name/Structure Location:	MAIN ST		
Previous Precipitation Date/End Time:	2020-06-11 12:45:00	**Amount (inches):**	0.2

Pictures

SECTION 2: OUTLET PIPE ASSET DESCRIPTION

Location	CB Interior Condition	Material	Shape	Diameter/Dimension (in.)	Submerged	
CB Outlet Pipe	Fair	Reinforced Concrete	Circle	30	In Water:	No
					With Sediment:	No

SECTION 3A: INLET PIPE NO. 1 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 1	DMH-1153	Cement Concrete	9:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3A: INLET PIPE NO. 1 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description
Asset Damage	None	
Deposits/Stains	None	
Pool Quality	None	
Pipe Algae/Growth	None	
***Do physical indicators suggest an illicit discharge is present (Y/N):**	No	
Is Inlet Pipe No.1 Flowing?	No	**Estimated GPM:**

SECTION 3A: INLET PIPE NO. 1 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3A: INLET PIPE NO. 1 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	**Result**	**Typical EPA Benchmarks**	**Equipment**
Temperature (degrees F)			Hanna portable PH and Temp meter
pH			Hanna portable PH and Temp meter
Specific Conductivity (uS)			To be sent to lab or EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)		≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3B: INLET PIPE NO. 2 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 2	DMH-7891	Poly Vinyl Chloride	12:00	Circle	8	In Water:	No
						With Sediment:	No

SECTION 3B: INLET PIPE NO. 2 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description
Asset Damage	Other	Pipe caved in
Deposits/Stains	None	
Pool Quality	None	
Pipe Algae/Growth	None	
***Do physical indicators suggest an illicit discharge is present (Y/N):**	Yes	Dye from sewer showed up in line
Is Inlet Pipe No.2 Flowing?	No	**Estimated GPM:**

SECTION 3B: INLET PIPE NO. 2 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3B: INLET PIPE NO. 2 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	**Result**	**Typical EPA Benchmarks**	**Equipment**
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)		≥ Reporting Limit	EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3C: INLET PIPE NO. 3 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 3	DMH-548	Vitrified Clay	3:00	Circle	24	In Water:	No
						With Sediment:	No

SECTION 3C: INLET PIPE NO. 3 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	Cracking			
Deposits/Stains	None			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.3 Flowing?	Yes	Trickle	Estimated GPM:	1

SECTION 3C: INLET PIPE NO. 3 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 3C: INLET PIPE NO. 3 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:	2020-06-18 8:46:00		
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	61.7		EXTECH EC500
pH	7.1		EXTECH EC500
Specific Conductivity (uS)	1175		EXTECH EC500
Salinity (ppm S)	573		EXTECH EC500
Chlorine (ppm)	0.03	≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)	0.23	≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)	0.05	≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)	1986.3	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)	488.4	> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3D: INLET PIPE NO. 4 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 4	Under drain no US ID	Clay	4:00	Circle	4	In Water:	No
						With Sediment:	No

SECTION 3D: INLET PIPE NO. 4 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	None			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.4 Flowing?	Yes	Substantial	Estimated GPM:	10

SECTION 3D: INLET PIPE NO. 4 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 3D: INLET PIPE NO. 4 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3E: INLET PIPE NO. 5 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 5						In Water:	
						With Sediment:	

SECTION 3E: INLET PIPE NO. 5 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage				
Deposits/Stains				
Pool Quality				
Pipe Algae/Growth				
*Do physical indicators suggest an illicit discharge is present (Y/N):				
Is Inlet Pipe No.5 Flowing?			Estimated GPM:	

SECTION 3E: INLET PIPE NO. 5 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3E: INLET PIPE NO. 5 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3F: INLET PIPE NO. 6 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 6						In Water:	
						With Sediment:	

SECTION 3F: INLET PIPE NO. 6 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage				
Deposits/Stains				
Pool Quality				
Pipe Algae/Growth				
*Do physical indicators suggest an illicit discharge is present (Y/N):				
Is Inlet Pipe No.6 Flowing?			Estimated GPM:	

SECTION 3F: INLET PIPE NO. 6 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3F: INLET PIPE NO. 6 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments :	Inlet pipe 4 is underneath inlet pipe 3. Need to isolate flow.
Signature of Inspector :	JL JM 25 JM

Haverhill IDDE Inspection Form
Drain Manhole

SECTION 1: BACKGROUND DATA

ASSET ID:	DMH-702	**OUTFALL ID:**	UNK1767
Date/Time:	2020-06-23 8:42:00		
Temperature: °F	69	**Inspector(s):**	James Conte|Jesse Middleton|Samuel Marinez|Zebulan Day|Justin Mazzotta
Street Name/Structure Location:	SHERWOOD DR		
Previous Precipitation Date/End Time:	2020-06-11 12:45:00	**Amount (inches):**	0.2

Pictures

SECTION 2: OUTLET PIPE ASSET DESCRIPTION

Location	DMH Interior Condition	Material	Shape	Diameter/Dimension (in.)	Submerged	
DMH Outlet Pipe	Good	Reinforced Concrete	Circle	15	In Water:	No
					With Sediment:	No

SECTION 3A: INLET PIPE NO. 1 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 1	CB-1074	Reinforced Concrete	8:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3A: INLET PIPE NO. 1 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.1 Flowing?	No		Estimated GPM:	

SECTION 3A: INLET PIPE NO. 1 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3A: INLET PIPE NO. 1 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			Hanna portable PH and Temp meter
pH			Hanna portable PH and Temp meter
Specific Conductivity (uS)			To be sent to lab or EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)		≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3B: INLET PIPE NO. 2 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 2	CB-1076	Reinforced Concrete	11:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3B: INLET PIPE NO. 2 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	Cracking			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.2 Flowing?	No		Estimated GPM:	

SECTION 3B: INLET PIPE NO. 2 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3B: INLET PIPE NO. 2 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)		≥ Reporting Limit	EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3C: INLET PIPE NO. 3 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 3	DMH-774	Reinforced Concrete	12:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3C: INLET PIPE NO. 3 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.3 Flowing?	Yes	Trickle	Estimated GPM:	0.8

SECTION 3C: INLET PIPE NO. 3 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 3C: INLET PIPE NO. 3 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:	2020-06-23 8:57:00		
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	70		EXTECH EC500
pH	7.4		EXTECH EC500
Specific Conductivity (uS)	467		EXTECH EC500
Salinity (ppm S)	220		EXTECH EC500
Chlorine (ppm)	0	≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)	0.11	≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)	0	≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)	>2400	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3D: INLET PIPE NO. 4 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 4	CB-1574	Reinforced Concrete	3:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3D: INLET PIPE NO. 4 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	Chipping			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.4 Flowing?	Yes	Trickle	Estimated GPM:	0.3

SECTION 3D: INLET PIPE NO. 4 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 3D: INLET PIPE NO. 4 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:	2020-06-23 9:37:00		
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	71		EXTECH EC500
pH	7.3		EXTECH EC500
Specific Conductivity (uS)	696		EXTECH EC500
Salinity (ppm S)	340		EXTECH EC500
Chlorine (ppm)	0.11	≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)	0.05	≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)	0	≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)	74.3	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3E: INLET PIPE NO. 5 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 5	CB-1073	Reinforced Concrete	5:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3E: INLET PIPE NO. 5 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.5 Flowing?	No		Estimated GPM:	

SECTION 3E: INLET PIPE NO. 5 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3E: INLET PIPE NO. 5 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab

Phosphorus (mg/L)			To be sent to lab

SECTION 3F: INLET PIPE NO. 6 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 6						In Water:	
						With Sediment:	

SECTION 3F: INLET PIPE NO. 6 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage				
Deposits/Stains				
Pool Quality				
Pipe Algae/Growth				
*Do physical indicators suggest an illicit discharge is present (Y/N):				
Is Inlet Pipe No.6 Flowing?			Estimated GPM:	

SECTION 3F: INLET PIPE NO. 6 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3F: INLET PIPE NO. 6 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	**Result**	**Typical EPA Benchmarks**	**Equipment**
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments :	
Signature of Inspector :	JC JM SM ZD JM

Haverhill IDDE Inspection Form
Drain Manhole

SECTION 1: BACKGROUND DATA

ASSET ID:	DMH-703	**OUTFALL ID:**	UNK1767
Date/Time:	2020-06-23 8:23:00		
Temperature: °F	65	**Inspector(s):**	James Conte|Jesse Middleton|Samuel Marinez|Zebulan Day|Justin Mazzotta
Street Name/Structure Location:	SHERWOOD DR		
Previous Precipitation Date/End Time:	2020-06-11 12:45:00	**Amount (inches):**	0.2

Pictures

SECTION 2: OUTLET PIPE ASSET DESCRIPTION

Location	DMH Interior Condition	Material	Shape	Diameter/Dimension (in.)	Submerged	
DMH Outlet Pipe	Good	Reinforced Concrete	Circle	18	In Water:	No
					With Sediment:	No

SECTION 3A: INLET PIPE NO. 1 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 1	CB-1078	Reinforced Concrete	7:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3A: INLET PIPE NO. 1 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.1 Flowing?	No		Estimated GPM:	

SECTION 3A: INLET PIPE NO. 1 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3A: INLET PIPE NO. 1 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			Hanna portable PH and Temp meter
pH			Hanna portable PH and Temp meter
Specific Conductivity (uS)			To be sent to lab or EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)		≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3B: INLET PIPE NO. 2 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 2	DMH-702	Reinforced Concrete	10:00	Circle	15	In Water:	No
						With Sediment:	No

SECTION 3B: INLET PIPE NO. 2 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.2 Flowing?	Yes	Trickle	Estimated GPM:	0.5

SECTION 3B: INLET PIPE NO. 2 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 3B: INLET PIPE NO. 2 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:	2020-06-23 8:30:00		
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	68		EXTECH EC500
pH	7.5		EXTECH EC500
Specific Conductivity (uS)	487		EXTECH EC500
Salinity (ppm S)	235	≥ Reporting Limit	EXTECH EC500
Chlorine (ppm)	0.02	≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)	0.11	≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)	0	≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)	>2400	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3C: INLET PIPE NO. 3 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 3	CB-1077	Reinforced Concrete	1:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3C: INLET PIPE NO. 3 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	None			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.3 Flowing?	No		Estimated GPM:	

SECTION 3C: INLET PIPE NO. 3 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3C: INLET PIPE NO. 3 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3D: INLET PIPE NO. 4 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 4	CB-1079	Reinforced Concrete	3:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3D: INLET PIPE NO. 4 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	None			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.4 Flowing?	No		Estimated GPM:	

SECTION 3D: INLET PIPE NO. 4 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3D: INLET PIPE NO. 4 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3E: INLET PIPE NO. 5 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 5						In Water:	
						With Sediment:	

SECTION 3E: INLET PIPE NO. 5 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage				
Deposits/Stains				
Pool Quality				
Pipe Algae/Growth				
*Do physical indicators suggest an illicit discharge is present (Y/N):				
Is Inlet Pipe No.5 Flowing?			Estimated GPM:	

SECTION 3E: INLET PIPE NO. 5 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3E: INLET PIPE NO. 5 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab

Phosphorus (mg/L)			To be sent to lab

SECTION 3F: INLET PIPE NO. 6 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 6						In Water:	
						With Sediment:	

SECTION 3F: INLET PIPE NO. 6 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage				
Deposits/Stains				
Pool Quality				
Pipe Algae/Growth				
*Do physical indicators suggest an illicit discharge is present (Y/N):				
Is Inlet Pipe No.6 Flowing?			Estimated GPM:	

SECTION 3F: INLET PIPE NO. 6 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3F: INLET PIPE NO. 6 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments :	
Signature of Inspector :	JL JM SM 2D JM

Haverhill IDDE Inspection Form
Drain Manhole

SECTION 1: BACKGROUND DATA

ASSET ID:	DMH-704	**OUTFALL ID:**	UNK1767
Date/Time:	2020-06-23 8:03:00		
Temperature: °F	65	**Inspector(s):**	James Conte|Jesse Middleton|Samuel Marinez|Zebulan Day|Justin Mazzotta
Street Name/Structure Location:	TUDOR CT		
Previous Precipitation Date/End Time:	2020-06-23 12:45:00	**Amount (inches):**	0.2

Pictures

SECTION 2: OUTLET PIPE ASSET DESCRIPTION

Location	DMH Interior Condition	Material	Shape	Diameter/Dimension (in.)	Submerged	
DMH Outlet Pipe	Good	Corrugated Metal	Circle	36	In Water:	Partially
					With Sediment:	No

SECTION 3A: INLET PIPE NO. 1 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 1	CB-1081	Reinforced Concrete	10:00	Circle	12	In Water:	No
						With Sediment:	No

SECTION 3A: INLET PIPE NO. 1 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	Chipping			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.1 Flowing?	No		Estimated GPM:	

SECTION 3A: INLET PIPE NO. 1 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3A: INLET PIPE NO. 1 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			Hanna portable PH and Temp meter
pH			Hanna portable PH and Temp meter
Specific Conductivity (uS)			To be sent to lab or EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)		≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3B: INLET PIPE NO. 2 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 2	Open ended pipe	Corrugated Metal	12:00	Circle	36	In Water:	Partially
						With Sediment:	No

SECTION 3B: INLET PIPE NO. 2 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.2 Flowing?	No		Estimated GPM:	

SECTION 3B: INLET PIPE NO. 2 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3B: INLET PIPE NO. 2 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)		≥ Reporting Limit	EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3C: INLET PIPE NO. 3 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 3	DNH-703	Reinforced Concrete	3:00	Circle	18	In Water:	No
						With Sediment:	No

SECTION 3C: INLET PIPE NO. 3 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.3 Flowing?	Yes	Trickle	Estimated GPM:	0.5

SECTION 3C: INLET PIPE NO. 3 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 3C: INLET PIPE NO. 3 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:	2020-06-23 8:10:00		
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	66		EXTECH EC500
pH	7.6		EXTECH EC500
Specific Conductivity (uS)	530		EXTECH EC500
Salinity (ppm S)	240		EXTECH EC500
Chlorine (ppm)	0.03	≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)	0.05	≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)	0	≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)	>2400	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3D: INLET PIPE NO. 4 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 4						In Water:	
						With Sediment:	

SECTION 3D: INLET PIPE NO. 4 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage				
Deposits/Stains				
Pool Quality				
Pipe Algae/Growth				
*Do physical indicators suggest an illicit discharge is present (Y/N):				
Is Inlet Pipe No.4 Flowing?			Estimated GPM:	

SECTION 3D: INLET PIPE NO. 4 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3D: INLET PIPE NO. 4 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

SECTION 3E: INLET PIPE NO. 5 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 5						In Water:	
						With Sediment:	

SECTION 3E: INLET PIPE NO. 5 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage				
Deposits/Stains				
Pool Quality				
Pipe Algae/Growth				
*Do physical indicators suggest an illicit discharge is present (Y/N):				
Is Inlet Pipe No.5 Flowing?			Estimated GPM:	

SECTION 3E: INLET PIPE NO. 5 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3E: INLET PIPE NO. 5 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab

Phosphorus (mg/L)			To be sent to lab

SECTION 3F: INLET PIPE NO. 6 ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Clock Postion (Outlet Pipe at 6:00)	Shape	Diameter/Dimension (in.)	Submerged	
Inlet Pipe No. 6						In Water:	
						With Sediment:	

SECTION 3F: INLET PIPE NO. 6 PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage				
Deposits/Stains				
Pool Quality				
Pipe Algae/Growth				
***Do physical indicators suggest an illicit discharge is present (Y/N):**				
Is Inlet Pipe No.6 Flowing?			**Estimated GPM:**	

SECTION 3F: INLET PIPE NO. 6 PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor			
Color			
Turbidity	-	-	
Floatables (Does Not Include Trash)			-

SECTION 3F: INLET PIPE NO. 6 SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:			
Parameter	**Result**	**Typical EPA Benchmarks**	**Equipment**
Temperature (degrees F)			EXTECH EC500
pH			EXTECH EC500
Specific Conductivity (uS)			EXTECH EC500
Salinity (ppm S)			EXTECH EC500
Chlorine (ppm)		≥ Reporting Limit	Hach Test Strips
Ammonia (mg/L)		≥ 0.5 mg/L	Hach Test Strips
Surfactants (mg/L)		≥ 0.25 mg/L	To be sent to Lab or CHEMets Detergents Kit K-9400
E.coli (cfu/100mL)		> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments :	
Signature of Inspector :	JL JM SM ZD JM

Haverhill IDDE Investigation & Inspection Form
Outfall

SECTION 1: BACKGROUND DATA

ASSET ID:	MR1141	**OUTFALL ID:**	MR1141
Date/Time:	2020-06-09 8:37:00		
Temperature: °F	58	**Inspector(s):**	James Conte|Jesse Middleton
Street Name/Structure Location:	Cross Country		
Previous Precipitation Date/End Time:	2020-06-06 20:50:00	**Amount (inches):**	0.01

Pictures

SECTION 2: OUTFALL PIPE ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Shape	Diameter/Dimension (in.)	Submerged	
Outfall Pipe	DMH-5806	Reinforced Concrete	Circle	34	In Water:	No
					With Sediment:	No

SECTION 3: OUTFALL PIPE PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	Cracking|Corrosion			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	Brown|Green			
***Do physical indicators suggest an illicit discharge is present (Y/N):**	No			
Is Inlet Pipe No.1 Flowing?	Yes	Trickle	**Estimated GPM:**	1

SECTION 4: OUTFALL PIPE PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 5: OUTFALL PIPE SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time: 2020-06-09 8:48:00

Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	59		Hanna portable PH and Temp meter
pH	7.7		Hanna portable PH and Temp meter
Specific Conductivity (uS)	1200		To be sent to lab or EXTECH EC500
Salinity (ppm S)	577		EXTECH EC500
Chlorine (ppm)	0.02	≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)	0.05	≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)	0.01	≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)	166.4	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)	160.7	> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)	0.078		To be sent to lab

Comments : Phosphorus sample take on 7/21/2020

Signature of Inspector : JC JM

Haverhill IDDE Inspection Form
Outfall

SECTION 1: BACKGROUND DATA

ASSET ID:	PL0891	**OUTFALL ID:**	PL0891
Date/Time:	2020-06-09 9:56:00		
Temperature: °F	67	**Inspector(s):**	James Conte|Jesse Middleton
Street Name/Structure Location:	Cross Country		
Previous Precipitation Date/End Time:	2020-06-06 20:50:00	**Amount (inches):**	0.01

Pictures

SECTION 2: OUTFALL PIPE ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Shape	Diameter/Dimension (in.)	Submerged	
Outfall Pipe	CB-3318	Reinforced Concrete	Circle	30	In Water:	No
					With Sediment:	No

SECTION 3: OUTFALL PIPE PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	Chipping|Corrosion			
Deposits/Stains	Flow Line			
Pool Quality	Odors			
Pipe Algae/Growth	Brown			
***Do physical indicators suggest an illicit discharge is present (Y/N):**	Yes	Faint smell of detergent		
Is Inlet Pipe No.1 Flowing?	Yes	Moderate	**Estimated GPM:**	5

SECTION 4: OUTFALL PIPE PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	Yes	Laundry	Faint
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 5: OUTFALL PIPE SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time: 2020-06-09 10:11:00

Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	58		Hanna portable PH and Temp meter
pH	7.9		Hanna portable PH and Temp meter
Specific Conductivity (uS)	1200		To be sent to lab or EXTECH EC500
Salinity (ppm S)	630		EXTECH EC500
Chlorine (ppm)	0.02	≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)	0.17	≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)	2.19	≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)	>2400	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)	325.5	> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments : Faint smell of laundry odors. Laundromat across street.

Signature of Inspector : JC JM

Haverhill IDDE Inspection Form
Outfall

SECTION 1: BACKGROUND DATA

ASSET ID:	UNK1166	**OUTFALL ID:**	UNK1166
Date/Time:	2020-06-11 8:25:00		
Temperature: °F	71	**Inspector(s):**	James Conte|Jesse Middleton|Zebulan Day|Justin Mazzotta
Street Name/Structure Location:	Cross Country		
Previous Precipitation Date/End Time:	2020-06-11 1:20:00	**Amount (inches):**	0.01

Pictures

SECTION 2: OUTFALL PIPE ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Shape	Diameter/Dimension (in.)	Submerged	
Outfall Pipe	CB-9423	Reinforced Concrete	Circle	36	In Water:	No
					With Sediment:	No

SECTION 3: OUTFALL PIPE PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	None			
Pipe Algae/Growth	None			
***Do physical indicators suggest an illicit discharge is present (Y/N):**	No			
Is Inlet Pipe No.1 Flowing?	Yes	Substantial	**Estimated GPM:**	10

SECTION 4: OUTFALL PIPE PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 5: OUTFALL PIPE SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time: 2020-06-11 8:31:00

Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	62		Hanna portable PH and Temp meter
pH	6.5		Hanna portable PH and Temp meter
Specific Conductivity (uS)	1000		To be sent to lab or EXTECH EC500
Salinity (ppm S)	8.77		EXTECH EC500
Chlorine (ppm)	0.03	≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)	0.09	≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)	0	≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)	461.1	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)	111.2	> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments :

Signature of Inspector : JL JM JM ZD

Haverhill IDDE Inspection Form
Outfall

SECTION 1: BACKGROUND DATA

ASSET ID:	UNK1177	**OUTFALL ID:**	UNK1177
Date/Time:	2020-06-11 9:09:00		
Temperature: °F	71	**Inspector(s):**	James Conte|Jesse Middleton|Zebulan Day|Justin Mazzotta
Street Name/Structure Location:	Cross Country		
Previous Precipitation Date/End Time:	2020-06-11 1:20:00	**Amount (inches):**	0.01

Pictures

SECTION 2: OUTFALL PIPE ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Shape	Diameter/Dimension (in.)	Submerged	
Outfall Pipe	DMH-7485	Reinforced Concrete	Circle	48	In Water:	Partially
					With Sediment:	No

SECTION 3: OUTFALL PIPE PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line			
Pool Quality	Excessive Algae			
Pipe Algae/Growth	Brown			
***Do physical indicators suggest an illicit discharge is present (Y/N):**	No			
Is Inlet Pipe No.1 Flowing?	Yes	Substantial	**Estimated GPM:**	10

SECTION 4: OUTFALL PIPE PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 5: OUTFALL PIPE SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time: 2020-06-11 9:25:00

Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	63		Hanna portable PH and Temp meter
pH	6.1		Hanna portable PH and Temp meter
Specific Conductivity (uS)	1000		To be sent to lab or EXTECH EC500
Salinity (ppm S)	505		EXTECH EC500
Chlorine (ppm)	0.01	≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)	0.1	≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)	0.15	≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)	770.1	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)	198.8	> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments :

Signature of Inspector : JC JM JM 2D

Haverhill IDDE Inspection Form
Outfall

SECTION 1: BACKGROUND DATA

ASSET ID:	UNK1762	**OUTFALL ID:**	UNK1762
Date/Time:	2020-06-11 9:19:00		
Temperature: °F	71	**Inspector(s):**	James Conte|Jesse Middleton|Zebulan Day|Justin Mazzotta
Street Name/Structure Location:	Cross Country		
Previous Precipitation Date/End Time:	2020-06-11 1:20:00	**Amount (inches):**	0.01

Pictures

SECTION 2: OUTFALL PIPE ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Shape	Diameter/Dimension (in.)	Submerged	
Outfall Pipe		Poly Vinyl Chloride	Circle	6	In Water:	No
					With Sediment:	No

SECTION 3: OUTFALL PIPE PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Flow Line|Other	Brown/orange deposit stains		
Pool Quality	None			
Pipe Algae/Growth	None			
*Do physical indicators suggest an illicit discharge is present (Y/N):	No			
Is Inlet Pipe No.1 Flowing?	Yes	Trickle	Estimated GPM:	0.8

SECTION 4: OUTFALL PIPE PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)		Description	Severity
Odor	No			
Color	No			
Turbidity	-		-	Slight Cloudiness
Floatables (Does Not Include Trash)	Yes	Few/slight, origin not obvious	Suds and Foam	-

SECTION 5: OUTFALL PIPE SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time:	2020-06-11 9:29:00		
Parameter	**Result**	**Typical EPA Benchmarks**	**Equipment**
Temperature (degrees F)	63		Hanna portable PH and Temp meter
pH	7		Hanna portable PH and Temp meter
Specific Conductivity (uS)	1100		To be sent to lab or EXTECH EC500
Salinity (ppm S)	548		EXTECH EC500
Chlorine (ppm)	0.02	≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)	1	≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)	0.08	≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)	<1	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)	2.0	> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments :	Possible mineral deposit stains
Signature of Inspector :	JC JM JM ZD

Haverhill IDDE Inspection Form
Outfall

SECTION 1: BACKGROUND DATA

ASSET ID:	UNK1767	**OUTFALL ID:**	UNK1767
Date/Time:	2020-06-23 7:44:00		
Temperature: °F	65	**Inspector(s):**	James Conte|Jesse Middleton|Samuel Marinez|Zebulan Day|Justin Mazzotta
Street Name/Structure Location:	Cross Country		
Previous Precipitation Date/End Time:	2020-06-11 12:45:00	**Amount (inches):**	0.2

Pictures

SECTION 2: OUTFALL PIPE ASSET DESCRIPTION

Location	Upstream Asset ID	Material	Shape	Diameter/Dimension (in.)	Submerged	
Outfall Pipe	DMH-704	Corrugated Metal	Circle	36	In Water:	Partially
					With Sediment:	No

SECTION 3: OUTFALL PIPE PHYSICAL INDICATORS

Indicator	Indicator Present?	Indicator Description		
Asset Damage	None			
Deposits/Stains	Other	Rust		
Pool Quality	None			
Pipe Algae/Growth	None			
***Do physical indicators suggest an illicit discharge is present (Y/N):**	No			
Is Inlet Pipe No.1 Flowing?	Yes	Trickle	**Estimated GPM:**	0.3

SECTION 4: OUTFALL PIPE PHYSICAL INDICATORS (ALL FLOWING ASSETS)

Indicator	Indicator Present (Yes/No)	Description	Severity
Odor	No		
Color	No		
Turbidity	-	-	Clear
Floatables (Does Not Include Trash)	No		-

SECTION 5: OUTFALL PIPE SAMPLING/TESTING RESULTS (ALL FLOWING ASSETS)

Sample Date/Time: 2020-06-23 7:50:00

Parameter	Result	Typical EPA Benchmarks	Equipment
Temperature (degrees F)	64		Hanna portable PH and Temp meter
pH	7		Hanna portable PH and Temp meter
Specific Conductivity (uS)	453		To be sent to lab or EXTECH EC500
Salinity (ppm S)	226		EXTECH EC500
Chlorine (ppm)	0.01	≥ Reporting Limit	Hach pocket Colorimeter
Ammonia (mg/L)	0.07	≥ 0.5 mg/L	To be sent to lab
Surfactants (mg/L)	0	≥ 0.25 mg/L	To be sent to Lab or Hanna Instruments HI96769C
E.coli (cfu/100mL)	>2400	> 235 cfu/100mL	To be sent to lab
Enterococcus (cfu/100mL)		> 61 cfu/100mL	To be sent to lab
Phosphorus (mg/L)			To be sent to lab

Comments :

Signature of Inspector : JC SM JM JM ZD

APPENDIX B

IDDE PROGRAM SUPPORTING DOCUMENTS

Outfall MR1141

Summary of IDDE Investigations

Assets

- Sewer
- Stormwater
- Catchment Pipes
- Sewer CCTV
- Catchment CCTV
- Manhole Sampled
- Catch Basin Sampled
- Outfall Sampled

CCTV Comments

Miscellaneous Comments

Inspection Results

Bacteria Results

Other Sampling Parameter Results

- City Owned Road
- Private Owned Road
- State Owned Road

Dry weather flow samples collected in each DMH from the mainline pipe entering the DMH. Branch flow collected as noted on plans.

Each inspection result is noted with a date, flow/no flow (at time of inspection), sample parameter and concentration.

Pipes that are not highlighted in red do NOT connect to this drainage system

DMH and SMH invert elevations in NGVD 1929 Datum

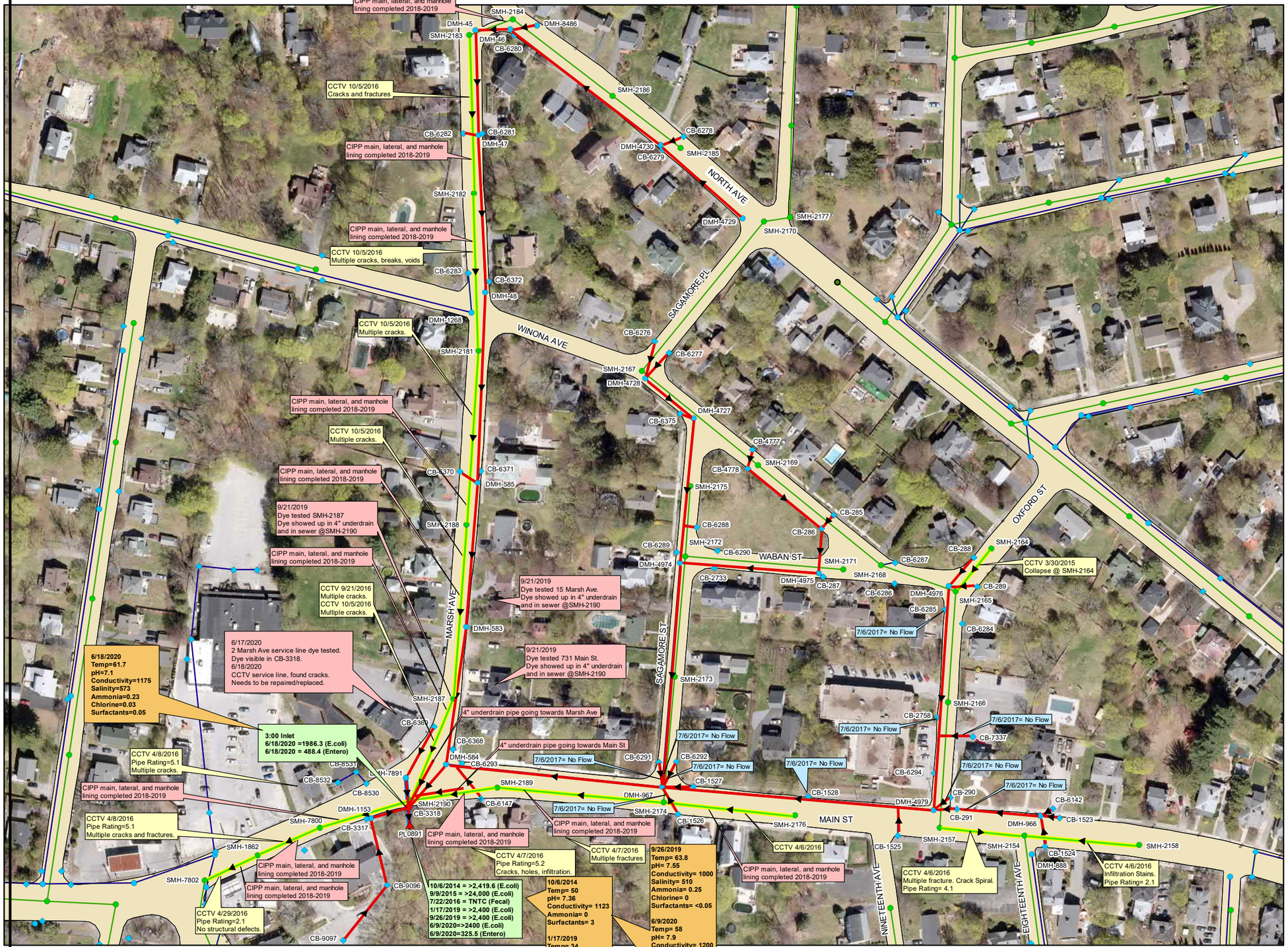
N W E S

0 30 60 120 180 240 300 Feet

September 1, 2020

Outfall PL0891

Summary of IDDE Investigations



Assets

- Culvert
- Sewer Gravity
- Sewer Force Main
- Stormwater
- Catchment Pipes
- Sewer CCTV
- Catchment CCTV
- Manhole Sampled
- Catch Basin Sampled
- Outfall Sampled

CCTV Comments

Miscellaneous Comments

Inspection Results

Bacteria Results

Other Sampling Parameter Results

- City Owned Road
- Private Owned Road
- State Owned Road

Dry weather flow samples collected in each DMH from the mainline pipe entering the DMH. Branch flow collected as noted on plans.

Each inspection result is noted with a date, flow/no flow (at time of inspection), sample parameter and concentration.

Pipes that are not highlighted in red do NOT connect to this drainage system

DMH and SMH invert elevations in NGVD 1929 Datum

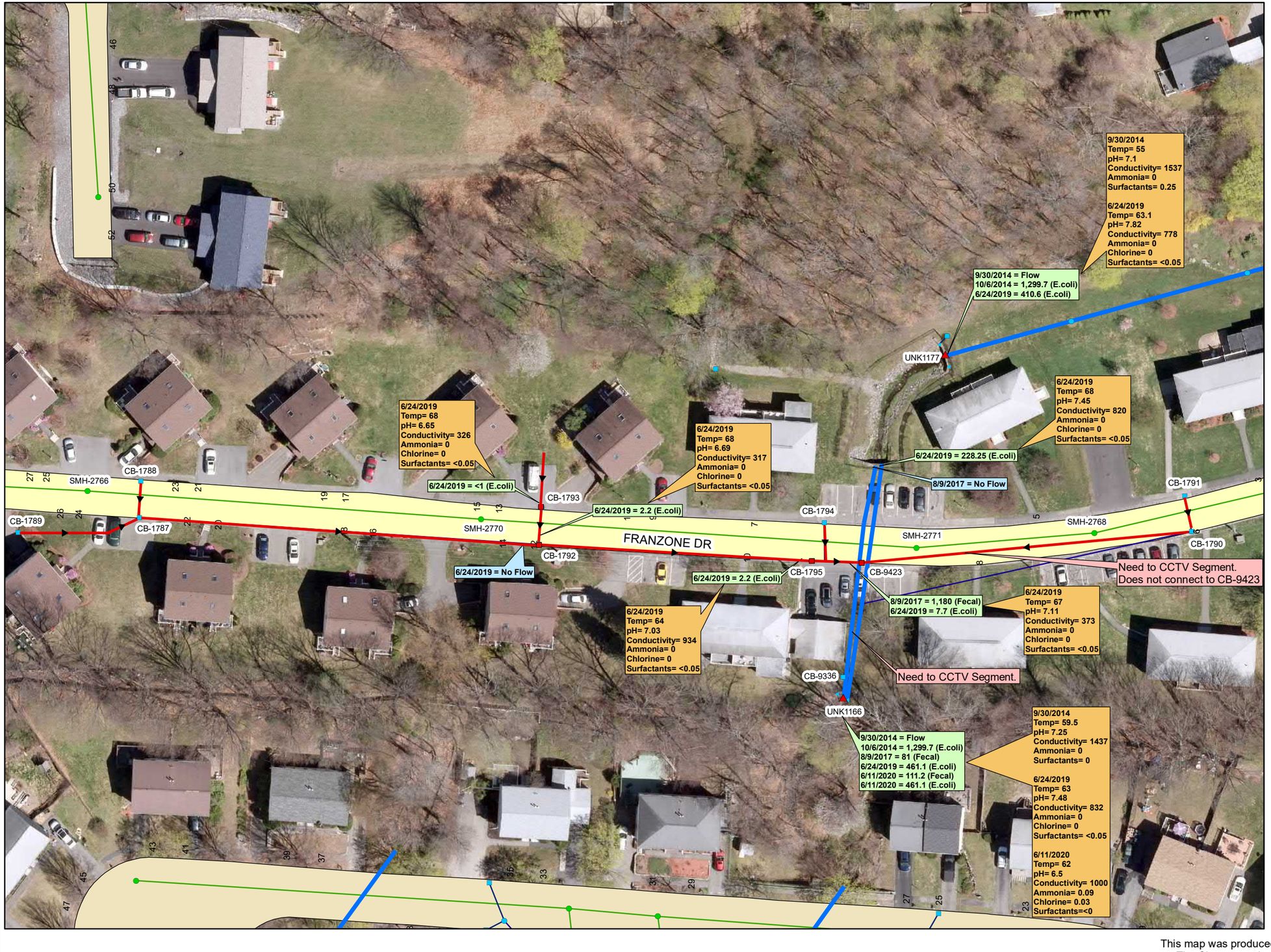
N E S W

0 40 80 160 240 320 400 Feet

July 20, 2019

Outfall UNK1166

Summary of IDDE Investigations



Assets

- Culvert
- Sewer
- Stormwater
- Catchment Pipes
- Sewer CCTV
- Catchment CCTV
- Manhole Sampled
- Catch Basin Sampled
- Outfall Sampled

CCTV Comments

Miscellaneous Comments

Inspection Results

Bacteria Results

Other Sampling Parameter Results

- City Owned Road
- Private Owned Road
- State Owned Road

Dry weather flow samples collected in each DMH from the mainline pipe entering the DMH. Branch flow collected as noted on plans.

Each inspection result is noted with a date, flow/no flow (at time of inspection), sample parameter and concentration.

Pipes that are not highlighted in red do NOT connect to this drainage system

DMH and SMH invert elevations in NGVD 1929 Datum

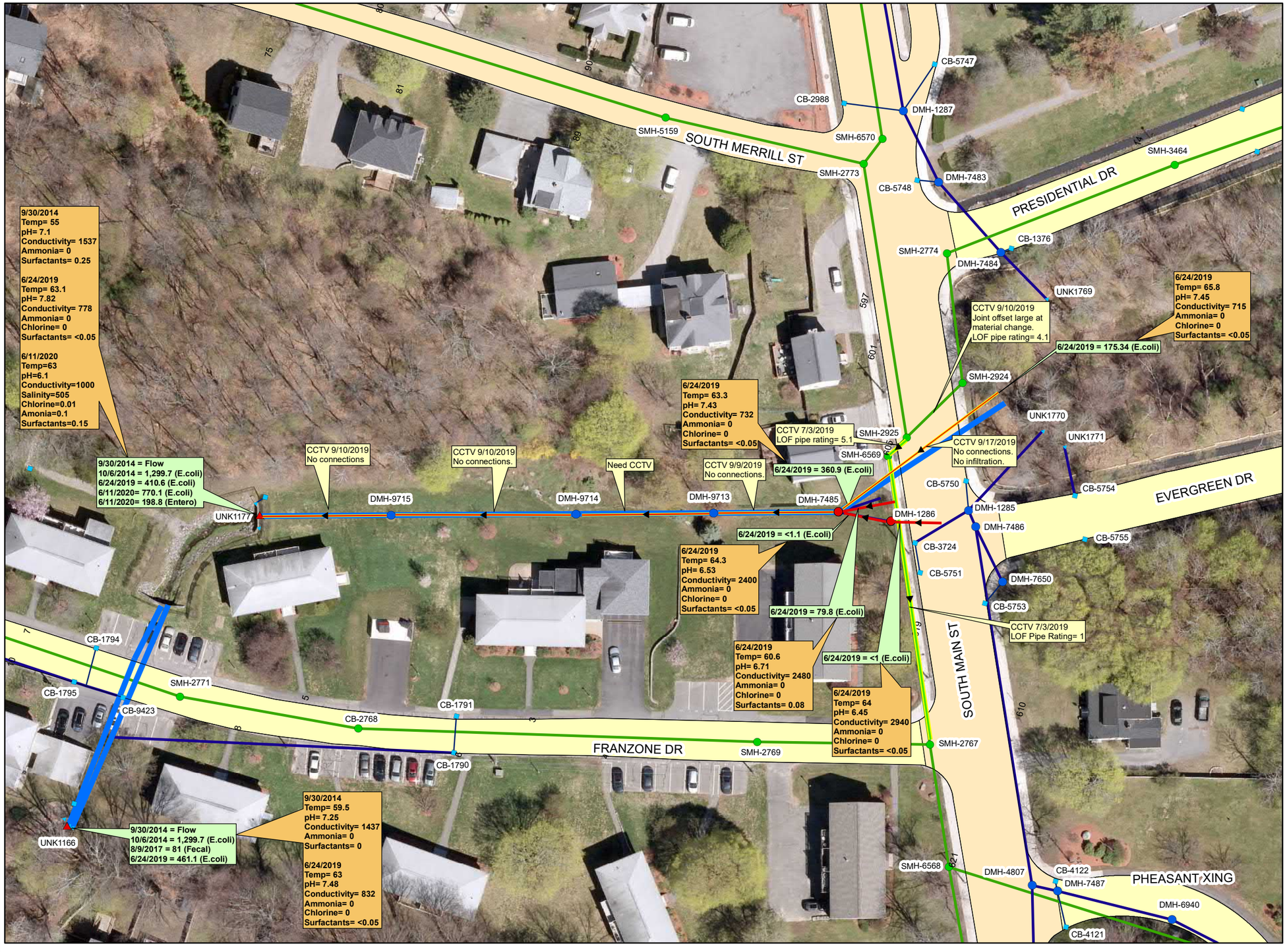
N E S W

0 15 30 60 90 120 150 Feet

August 31, 2020

Outfall UNK1177

Summary of IDDE Investigations



Assets

- Culvert
- Sewer
- Stormwater
- Catchment Pipes
- Sewer CCTV
- Catchment CCTV
- Manhole Sampled
- Catch Basin Sampled
- Outfall Sampled

CCTV Comments

Miscellaneous Comments

Inspection Results

Bacteria Results

Other Sampling Parameter Results

- City Owned Road
- Private Owned Road
- State Owned Road

Dry weather flow samples collected in each DMH from the mainline pipe entering the DMH. Branch flow collected as noted on plans.

Each inspection result is noted with a date, flow/no flow (at time of inspection), sample parameter and concentration.

Pipes that are not highlighted in red do NOT connect to this drainage system

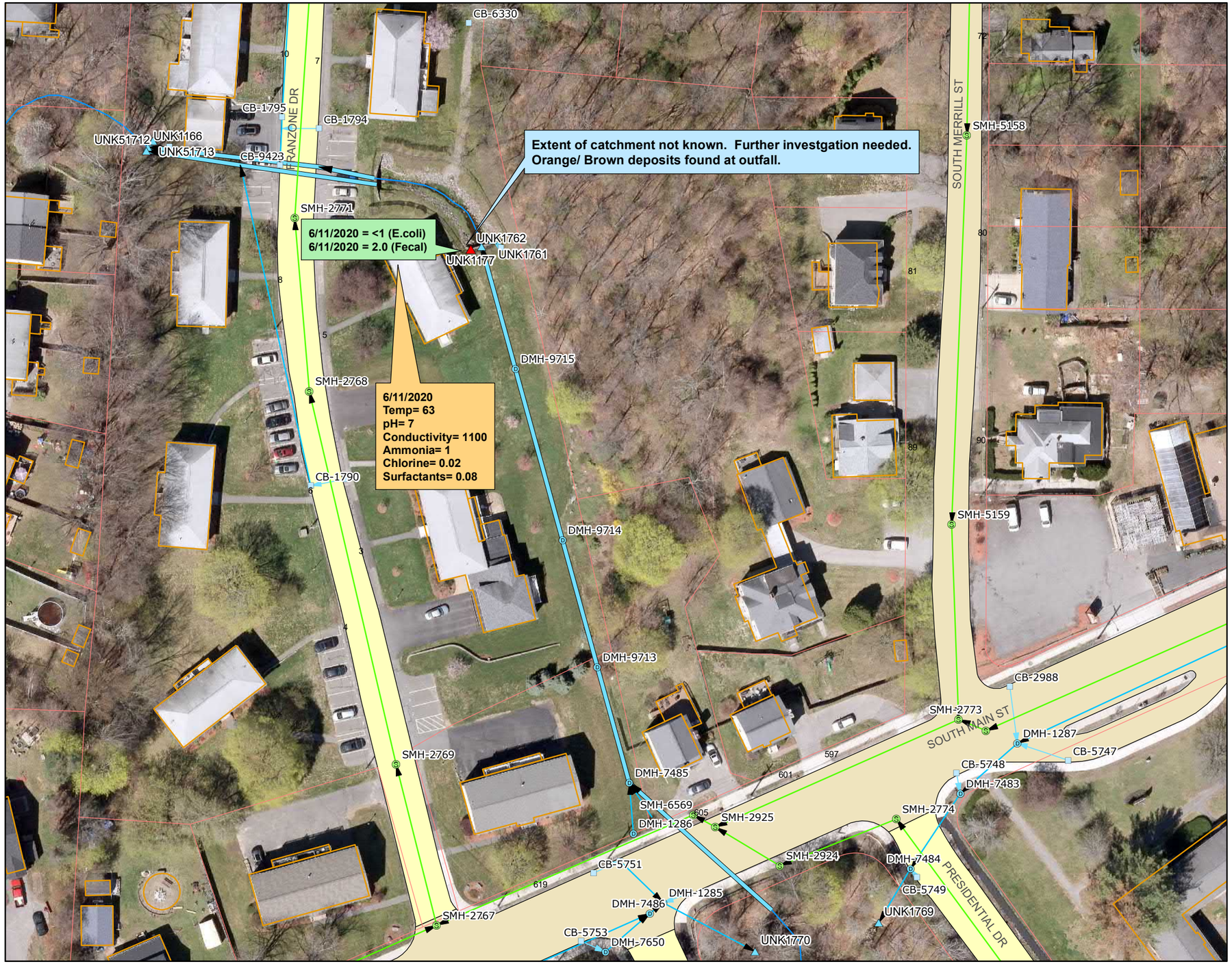
DMH and SMH invert elevations in NGVD 1929 Datum

N E S W

0 15 30 60 90 120 150 Feet

August 3, 2020

Outfall UNK1762
Summary of IDDE Investigations



Assets

- Catchment
- Outfall Sampled
- Manhole Sampled
- Catch Basin Sampled
- Catchment CCTV
- Sewer CCTV
- Outfall
- Catch Basin
- Sewer Manhole
- Storm Water Manhole
- Sewer Lamphole
- Catch Basin Lateral
- Sewer
- Stormwater
- Combined
- Flood Protection Diversion
- Combined System Overflow
- Culvert

- City Owned Road
- Private Owned Road
- State Owned Road

Bacteria Results

Other Sampling Parameter Results

Inspection Results

CCTV Comments

Miscellaneous Comments

Dry weather flow samples collected in each DMH from the mainline pipe entering the DMH. Branch flow collected as noted on plans.

Each inspection result is noted with a date, flow/no flow (at time of inspection), sample parameter and concentration.

Pipes that are not highlighted in red do NOT connect to this drainage system

DMH and SMH invert elevations in NGVD 1929 Datum

September 1, 2020

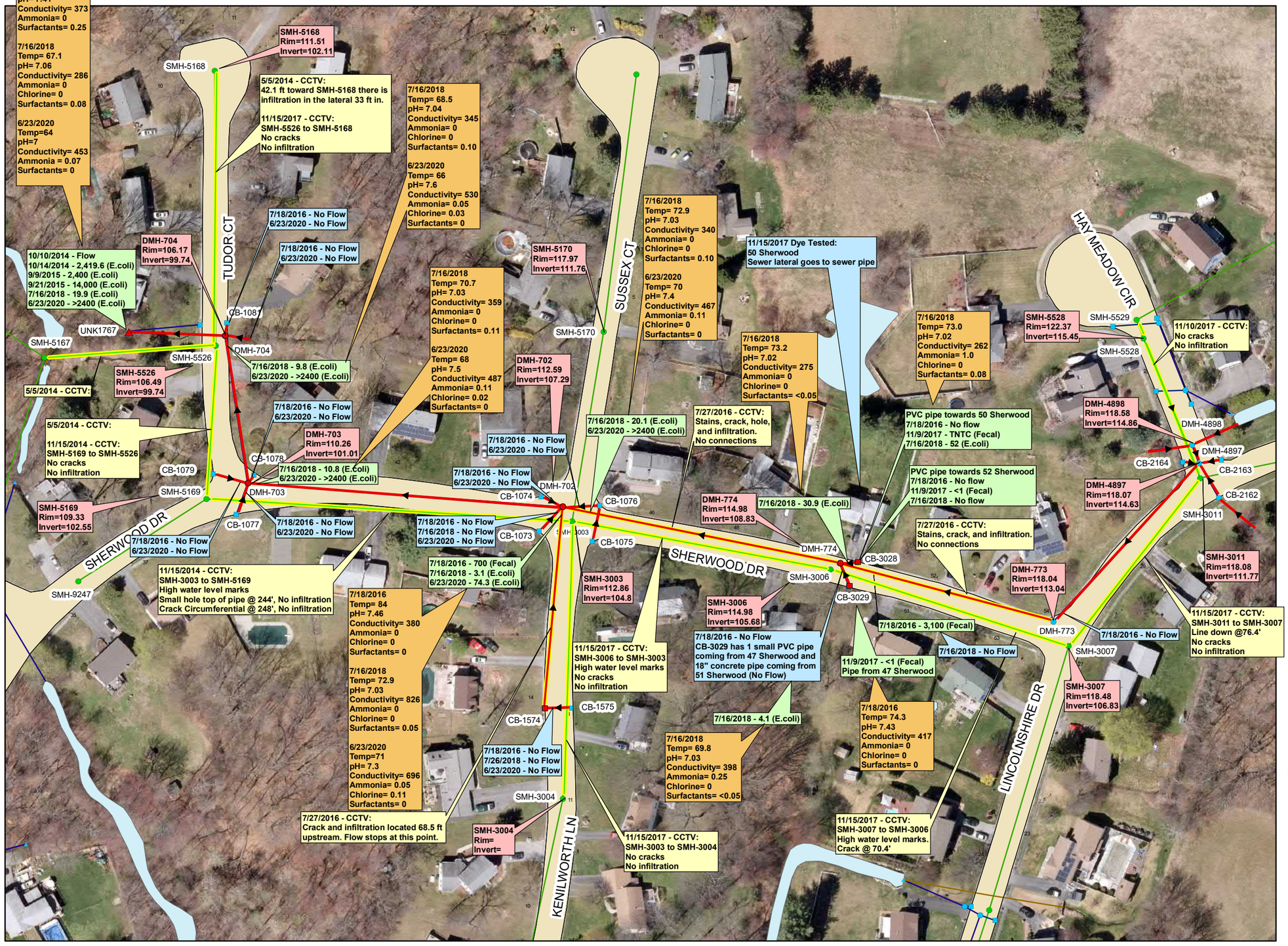
75 37.5 0 75 Feet

N W E S

This map was produced from the City of Haverhill's Geographic Information System. The City expressly disclaims any liability that may result from use of this map.

Outfall UNK1767

Summary of IDDE Investigations



Assets

- Sewer
- Stormwater
- Catchment Pipes
- Sewer CCTV
- Catchment CCTV
- Manhole Sampled
- Catch Basin Sampled
- Outfall Sampled

CCTV Comments

Miscellaneous Comments

Inspection Results

Bacteria Results

Other Sampling Parameter Results

- City Owned Road
- Private Owned Road
- State Owned Road

Dry weather flow samples collected in each DMH from the mainline pipe entering the DMH. Branch flow collected as noted on plans.

Each inspection result is noted with a date, flow/no flow (at time of inspection), sample parameter and concentration.

Pipes that are not highlighted in red do NOT connect to this drainage system

DMH and SMH invert elevations in NGVD 1929 Datum

N

W E

S

September 1, 2020


HAVERHILL
PENTUCKET
SETTLED 1640. INSTITUTED A CITY. 1870.