

**Village of Mamaroneck**

**Illicit Discharge Detection and  
Elimination Study**

**Sewer System Investigation -  
Phase 3 Report**

Drainage Areas 3, 10, 17, 25, and 26

September 2013

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## 1.0 Background

The Village of Mamaroneck (Village) is a regulated MS4 and, as such, is required to implement an illicit discharge detection and elimination program. The Environmental Protection Agency (EPA) has reported that they identified illicit discharges from the MS4, which appeared to contain sanitary sewage. The EPA also collected samples at three locations on September 30, 2010. The results of these samples showed high levels of fecal and total coliform bacteria and were the basis for Administrative Order CWA-02-2001-3022 (Order) against the Village.

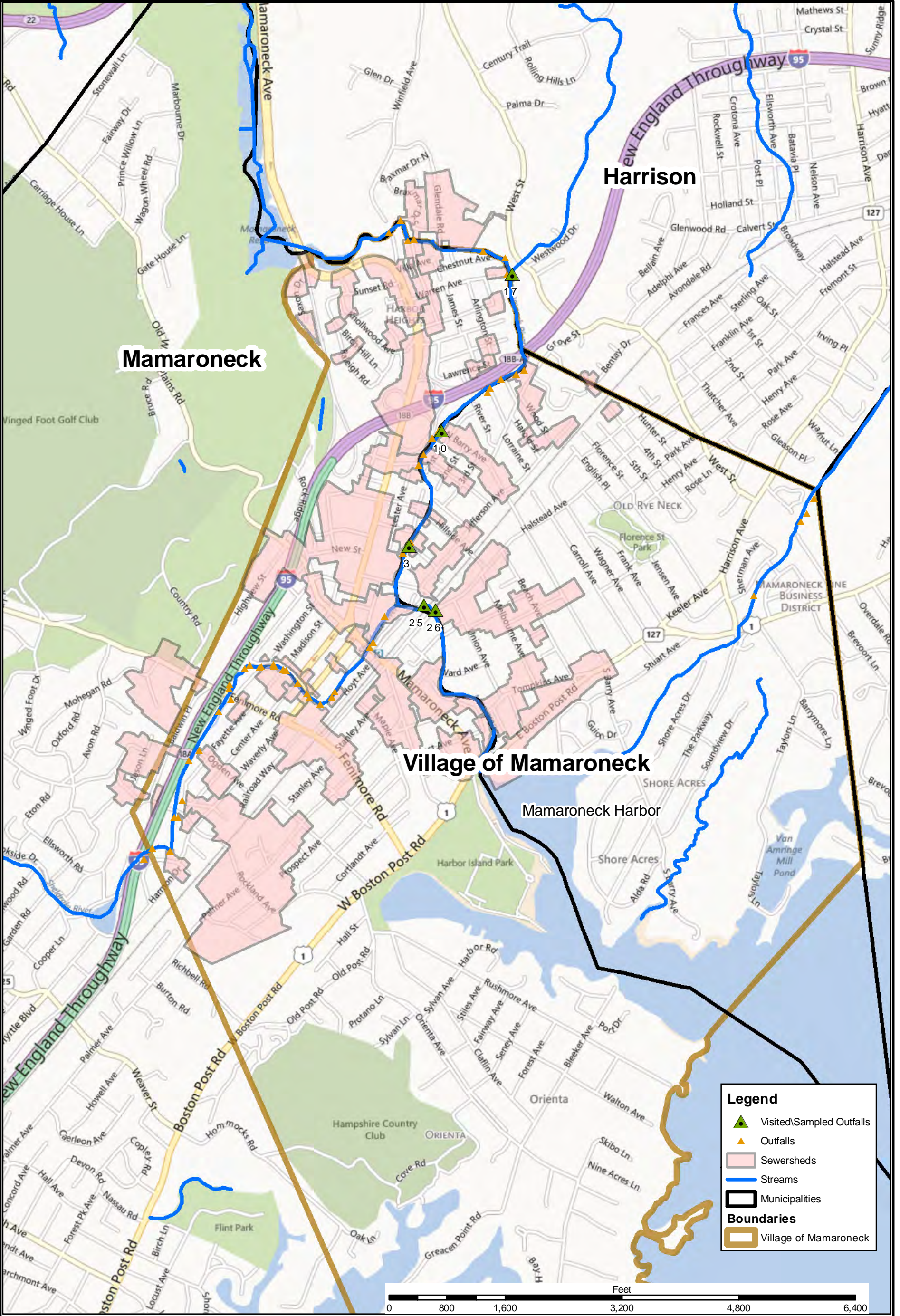
Malcolm Pirnie, the Water Division of ARCADIS (Pirnie/ARCADIS) was awarded a contract to assist the Village with their illicit discharge detection and elimination program. This contract included an amendment to collect river samples and storm sewer outfall samples to establish a general understanding of the fecal coliform pollutant load coming from adjacent municipalities and from the Village. The results of dry weather sampling completed by Pirnie/ARCADIS in October of 2012 showed that five storm sewer drainage areas had elevated fecal coliform bacteria concentrations. These included drainage areas 3, 10, 17, 25 and 26. Outfall 3 (Willow Street, West side of River behind A&P Store) was referenced incorrectly as Outfall 5 in the November 13, 2012 Outfall and River Sampling Results memo. A map showing the locations of these drainage areas is provided as Figure 1.

Pirnie/ARCADIS was awarded an amendment to the original contract to perform additional sampling and sewer system investigations in these five drainage areas. This Sewer System Investigation Report summarizes the results of the investigation.

## 2.0 Investigation Methodology

Drainage area fecal coliform pollution was monitored by collecting samples at the outfalls and within the drainage areas. Illicit discharges were tracked and isolated to discrete areas by collecting samples at manholes within the drainage areas and analyzing them for fecal coliform pollution. Once isolated, a combination of closed-circuit television (CCTV) investigations, dye testing, and manhole inspections were used to identify the source of the illicit discharge. An organic pollutant fluorimeter was also used during the investigation as a substitute for analytical sampling. The field team (Team) consisted of staff from Pirnie/ARCADIS, YEC Inc., and Fred Cook, Inc.







## **2.1 Sampling and Drainage Area Characterization**

During the initial investigation of a drainage area, field crews verified the extents and the terminal storm sewer manholes within the drainage areas that were selected for investigation. Manhole inspections were conducted at major branches of the system to assess structural and operational condition, hydraulic issues, unexpected dry-weather flow, and signs of illicit discharge.

Dry weather analytical sampling was completed at each of the five outfalls to confirm the samples previously collected in October of 2012 are replicable and to track down and isolate the sources of illicit discharges. For the purpose of this study, dry weather is defined as a duration of 48 hours with less than 0.1 inches of precipitation. Samples were collected in dry weather, as run-off from precipitation could dilute the sample, or conversely, pick-up additional sources of fecal coliform pollution that would not normally exist during dry weather conditions. Samples were analyzed for fecal coliform bacteria by a laboratory certified by the New York State Department of Health's (NYSDOH) Environmental Laboratory Approval Program (ELAP). Velocity, depth of flow, and pipe geometry were recorded during collection of samples in order to calculate the discharge rates.

As an alternative to analyzing samples in the laboratory, an organic pollutant fluorimeter was used to reduce laboratory costs and for real time water quality analysis. This instrument uses fluorescence to detect fecal contamination in water through the quantification of the signal for the amino acid tryptophan and related compounds. Studies have shown that the fluorescence of tryptophan correlates with fecal indicators, such as biochemical oxygen demand (BOD) and fecal coliform. The results are instantaneous, allowing for decisions on follow-up activities to be made in the field, which is a more efficient way to track down and isolate illicit discharges.

During previous Pirnie/ARCADIS illicit discharge investigations in other municipalities, samples were collected and analyzed by a laboratory for fecal coliform contamination and the results were compared to the fluorescence reading collected from the fluorimeter. The results showed that there was some variability between samples, but the correlation was strong enough to utilize this instrument to track sources of illicit discharges, especially once traditional sampling has established the pollutant concentration.

For this particular instrument, when the instrument is in high sensitivity mode, the fluorescence readings range from 0 to 8,000. The results from the comparison with analytical data showed that high sensitivity fluorescence readings of 2,000 or more reliably identified the presence of fecal coliform concentrations greater than 3,000 Coliform Forming Units (CFU)/100 milliliter (ml). Fluorescence results below 2,000 were too variable for a consistent correlation, but the associated fecal coliform concentrations were generally lower.

At this time analytical sampling is the only accepted method for comparing pre and post repair data, and there are no water quality standards for fluorescence. This instrument does not replace traditional laboratory analysis of samples for fecal coliform, but it does provide benefit for expediting the track down and isolation of intermittent illicit discharges.

The recommended approach is to establish a pollutant load through traditional sample collection and laboratory analysis and then isolate the problem using the fluorimeter. For example, if analytical results show that the fecal coliform concentration in the storm sewer manhole is elevated (e.g., 10,000 CFU/100 ml), the fluorimeter can be used to test each upgradient manhole to determine in which pipe segment the illicit discharge originates.

## **2.2 Manhole Inspections**

Storm sewer manhole inspections provide a quick and inexpensive initial assessment of system conditions and can be used to identify illicit discharges by observing unexpected dry weather flow from incoming pipes, including building laterals, through detection of odors, by observing visual evidence of illicit discharges, or by observing excessive debris that may indicate breaks in upgradient sections of pipe. Excessive deposits, standing water, and evidence of surcharging in a manhole often indicate that a portion of the sewer has collapsed or that a blockage caused by roots and/or debris is present. Breaks in upgradient pipe sections not only pose a threat to the structural integrity of the pipe, but it also provides means for sewage to enter the storm drain.

During the investigation, the field teams observed the structural and operational condition of the manholes and inspected them for evidence of illicit discharge, such as unexpected dry-weather flow, odors, gray water, oils and grease, sanitary waste, suds and other unusual observations. The field team also recorded incoming and exiting pipe orientation, diameter, and an estimate of flow. Adjacent sanitary sewer depths



were measured to determine if the storm sewer was installed below the sanitary sewer, which could lead to sewage entering the storm sewer when breaks occur. Field staff also looked for visual evidence of pipes that daylight near the curb line and are illegally dumping sewage into catchbasins.

Field inspections confirmed that the historic drainage area mapping was largely accurate. However, there were some instances where actual field conditions were misrepresented on the existing Village geographic information system (GIS) mapping. In these instances, this GIS mapping was updated to represent the actual field conditions. These updated files are provided with this report on a CD ROM as Appendix A. A sample of the manhole inspection form and flow rate form is provided as Appendix B. The manhole inspection forms completed during this investigation are included in this report on the CD ROM in Appendix A.

### **2.3 Dye Testing and CCTV Inspections**

Once the illicit discharges were isolated through sampling and manhole inspections, dye testing and CCTV inspections were completed to locate the sources. Building and sanitary sewer dye testing was performed in coordination with CCTV inspections in order to document the results of the test and to determine the location where the dye was entering the storm drain. Sanitary sewer dye testing was only performed if there was a potential for leaking sewage from the sanitary sewer to enter the storm sewer system (i.e., the sanitary and storm sewers are adjacent and the storm sewer is at the same depth or deeper than the sanitary). A sanitary sewer dye test is performed by placing dye in the upgradient sanitary manhole and inspecting the adjacent storm sewer with a CCTV camera for the presence of the dye.

When testing homes and one to two-story commercial properties, all drains were dye tested and the results of each test documented. Washing machines were filled and drained to determine if they were properly connected to the sanitary sewer. There were no large multi-story apartment buildings or other large commercial properties in the drainage areas that were tested during this investigation. A copy of the dye test form is provided as Appendix C, Dye Test Form. The dye test forms completed during this investigation are included with the manhole inspection forms on the CD ROM in Appendix A.

To schedule building owners for a dye test, a letter was sent to residents notifying them that a dye test would need to be completed and who to contact for the test.



Pirnie/ARCADIS scheduled and completed the dye tests. If building owners did not call to be scheduled for a test, a Team representative would attempt to schedule them over the phone or by visiting the building. A copy of the dye test letter is provided as Appendix D, Sample Dye Test Letter.

Building owners were scheduled well in advance so that the dye test work was completed efficiently; testing neighbors on the same street instead of traveling back and forth across the Village. On the days dye testing was being performed, the Team knocked on the doors of building owners who had not responded to see if they would allow a dye test to be completed on their building that day. The neighbors often agreed, which reduced the number of return visits.

Elements of the investigation were imported into a GIS in order to produce thematic maps that graphically depict the status of an investigation. GIS is an effective tool for managing field activities, including mapping of sewer infrastructure, tracking of corrective actions, and displaying building dye tests, sewer dye tests, and fecal coliform sampling results.

During building dye tests, the Team occasionally is not provided access to the entire property. Where access to the first floor or basement was not granted, the properties were categorized as a priority for follow-up investigation in the GIS. Properties categorized as secondary priority include upper level floors where access was not granted, or businesses within a building which were not tested as long as the storm sewer trap and a representative sample of drains were tested within the building.

Once illicit discharge sources were identified, the Village of Mamaroneck was notified so that they could send a violation letter to the building owner.

### **3.0 Results of the Investigation**

The results of the investigation of the five drainage areas and the dye testing of the sanitary sewer stream crossings are provided in Table 3.1. Figures showing the results graphically are provided in Appendix E, Drainage Area Investigation Maps. The laboratory and fluorimeter sample results are provided as Appendix F. The CCTV inspection reports from Fred Cook, Inc. and the DVDs with inspections are enclosed separately with this report.



### 3.1 Drainage Area Investigations

Table 3.1 - Fecal Coliform Results

Client Sample ID	Flow	Collection Date	Result (CFU/100mL)
Outfall 26	20 gpm	3/4/2013 10:35	34,000
Outfall 10	~5 gpm	3/4/2013 9:45	300
Outfall 3	Drip	3/4/2013 9:10	100
Outfall 17			
Outfall 25	20 gpm	3/4/2013 12:25	<100
Outfall 25 (#2)	Trickle	3/4/2013 12:35	<100

Note: Outfall 25 #2 is believed to have only a few upgradient pipe connections on Jefferson Street.

CFU – Colony Forming Units.

- Outfall 26 (Halstead Avenue) – There are two main storm sewer lines in this drainage area, one located on Halstead Avenue (vh8-vh1a) and one that branches on to Union Avenue and extends to Brook Street and North Barry Avenue.

*Halstead Avenue/Union Avenue Branch* – Thirty seven dye test letters were sent to building owners in this drainage area and thirty three dye tests were completed. CCTV inspection of the storm sewer was completed on Union Avenue, Hinman Place, Melbourne Avenue, and Brook Avenue. Samples were collected throughout the drainage area. Sampling consistently showed high fecal coliform concentrations and fluorescence readings at vh27, at the corner of Union Avenue and Halstead Avenue. Raccoon tracks were discovered between vh19 and vh23, vh19 and vh11, and then again between vh10 and vh 9. The CCTV inspection did not reveal bacteria on pipe joints in these sections of pipe and only one lateral was discovered.

A significant illicit discharge was discovered at 415 Union Avenue. A dye test was completed Monday June 26, 2013. The results of the dye test and follow-up CCTV investigation in the sanitary sewer showed that the building did not have a sanitary sewer service connection to the sewer main and that sewage from the home was indirectly entering the storm sewer system.

During the investigation of this building, dye was poured into each toilet and the kitchen sink as another field team member observed the flow in the

sanitary sewer manhole on the corner of Halstead Avenue and Union Avenue to confirm the dye was properly draining to the sanitary sewer. At the same time a CCTV camera was installed in the storm sewer to identify if dye from the test was entering the storm sewer. No dye was observed from the dye test in either the sanitary or storm sewer. The CCTV camera was then placed in the sanitary sewer and there was no sanitary sewer service connection observed for the building. A second dye test was conducted with the CCTV camera in the sanitary sewer to determine if the building sanitary sewer lateral was connected to a neighbor's building lateral, but no dye was observed entering the sanitary sewer. Approximately two hours after the dye test was completed, green dye from the dye test of the building was observed in the storm sewer.

The building sanitary sewer lateral was re-routed to the sanitary sewer on August 8, 2013. YEC Inc. field staff completed a follow-up dye test at this building on September 3, 2013 and confirmed it is now properly plumbed. All building drains were tested and confirmed to enter the sanitary sewer system.

The owner of 333 Halstead Avenue had indicated that his lateral connection is broken in Halstead Avenue. If fecal coliform concentrations are elevated in this area after the repair of 415 Union Avenue, this lateral should be inspected.

The fluorescence readings on Hinman Place, Melbourne Avenue, and Brook Street, were relatively low, but indicated there is an additional source of fecal coliform on these streets. The drainage area investigation maps in Appendix E show the locations the samples were collected. Dye testing the buildings did not reveal any illicit discharges and, since the sanitary sewer is much lower than the storm sewer on these streets, a leaking sanitary sewer is not likely the cause for increased fecal coliform concentrations. The raccoon feces observed in the storm sewer is certainly a contributing factor. There is also a dead opossum in vh20 that could be contributing to the elevated concentrations. It is recommended that additional sampling be completed at Outfall 26 once the opossum is removed and the illicit discharge has been corrected. If the bacteria concentrations at that time warrant further investigations, DNA testing could be performed to determine if human fecal sources are more significant than animal sources. This could



help to determine if further investigation for human fecal sources are necessary.

*Halstead Avenue Branch* – The CCTV contractor indicated deteriorated corrugated metal pipe from VH1 to VH1a. Follow-up investigations should be considered and cured-in-place lining potentially implemented since this is a high traffic road.

Fluorescence reading increased on Halstead Avenue from (411) at vh-2, (1244) at vh-3, and (2751) at vh-6. There were very few laterals and they were all dry. Some mild bacteria were observed at the joints and the amount of biofilm at the base of the pipe increased gradually as the camera progressed down the line. Feces were observed in manhole vh-2, resembling that of a raccoon. The fecal coliform results from the samples collected in March were relatively low and not indicative of a direct connection from a building to the storm sewer.

Raccoon feces observed in the storm sewer is certainly a contributing factor, if not the most significant factor. There could also be sewage migrating through the soil from leaks in building lateral connections crossing above or below the storm sewer. This storm sewer has continuous dry weather flow from groundwater infiltration. Manhole inspections revealed flow from 10-30 gallons per minute (gpm) at various times throughout the year. Dye testing the buildings may not reveal a leaking building service connection, as it could take several hours for a leak to migrate through the soil and enter the storm sewer.

DNA testing could be performed to determine if human fecal sources are more significant than animal. This could help to determine if further investigation for human fecal sources are necessary.

- Outfall 10 (North Barry Avenue) – Manhole inspections were conducted on February 26, 2013 to verify the extent of the sewershed, measure dry weather flow, and inspect for illicit discharges. The analytical results from the March 4, 2013 event showed fecal coliform concentrations of 300 CFU\100ml, with a flow rate of approximately five gpm. Given the low fecal coliform concentrations, no follow-up investigation was conducted. The dry weather flow at this outfall could be groundwater infiltration. It is

recommended that this outfall is sampled annually to monitor for illicit discharges.

- Outfall 3 (Willow Street, West side of River behind A&P Store) - The dry weather flow at this outfall has been a drip/trickle the three times it was visited. A bottle was placed under the outfall for 24 hours during the October 2012 sampling event in order to collect enough volume for a sample. At that event the fecal coliform concentration was very high. A follow-up sampling event on March 4, 2013 showed a very low fecal coliform concentration of 100 CFU\100ml.

Investigations completed by Save the Sound found that grease and other liquid from a dumpster at the A&P grocery store was leaking and entering a catch basin in the parking lot. Samples collected from the outfall had the consistency of grease and the laboratory results showed high concentrations of fecal coliform bacteria. Save the Sound representatives presented the results to the Village. The Village visited the site and has discussed the matter with the store manager. A& P was issued a summons, and they have a date in court.

- Outfall 25 (Jefferson Street) - Manhole inspections were conducted on February 26, 2013 to verify the extent of the sewershed, measure dry weather flow, and inspect for illicit discharges. Analytical sampling completed on March 4, 2013 showed fecal concentrations of <100 CFU\100 ml. Given the low fecal coliform concentrations, no follow-up investigation was conducted. The dry weather flow at this outfall could be groundwater infiltration. It is recommended that it is sampled annually to confirm that no illicit discharges are occurring.
- Outfall 17 (Warren Street) – This outfall was found to be on the east side of the Mamaroneck River, which is in the Town of Harrison. Therefore, this outfall was not sampled or inspected.
- Mamaroneck Beach and Yacht Club Force Main – A very significant illicit discharge was discovered through a collaborative effort between the Village, a Village resident, Save the Sound, and ARCADIS.



A concerned Village resident, who has been active in the community with regards to improving water quality, notified the Village of an aging private sewer force main in the vicinity of the Shore Acres Beach Club beach and recent Department of Health sampling events that uncovered high fecal coliform concentrations in the same area. ARCADIS reviewed the data, identified it as a priority location for Save the Sounds summer sampling program, and provided them with sampling locations. The sampling results reinforced the suspicions that the force main was leaking. Follow-up investigations from Save the Sound volunteers confirmed there was a leak on August 12, 2013. The Village notified the Mamaroneck Beach and Yacht Club about the break on the same day and told them they were required to make a repair. The Yacht Club took immediate action to evaluate the problem and come up with a solution for a repair. A temporary repair was completed on August 14, 2013 and they are working cooperatively with the Village on a proper permanent repair.

Westchester County Department of Health has completed four sampling events since the date of the repair. The enterococcus concentration has been consistently low for each of these events. The Village will continue to coordinate with the Department of Health and monitor the sampling results.

### **3.2 Sanitary Sewer Stream Crossings**

ARCADIS dye tested the sanitary sewers that cross bodies of water. Twenty seven dye tests were completed. A summary and map of the stream crossing dye test results is provided in Appendix G. The photos and sketches from the events are included on the CD ROM in Appendix A.

Not all of the dye tests were conclusive. Many of the manholes were partially flooded or surcharged. The Jefferson Avenue Bridge is currently being reconstructed and so the sewage flow is being pumped across the river. The Village believes that this has caused the flow rate to slow and some segments to have mild surcharged/flooded conditions. The pipe segments that could not be tested properly during the bridge reconstruction should be retested once the bridge construction has been completed.

One illicit discharge was identified at a stream crossing near Harmon Drive at sanitary sewer segment 65639-65640. This sewer had been abandoned; however,

the plugged discharge line was leaking and sewage was entering the abandoned line. The concrete plug has since been repaired. In addition, two feet of the abandoned pipe were removed and the manhole and pipe end was capped with brick and concrete.

There was also one bridge crossing that had dampness under the sanitary sewer. Although no dye was observed, a follow-up inspection is recommended when there has been 72 hours of dry weather and the groundwater is low to observe if the dampness is still there. The pipe segment is 68645-68430 at Valley Place and Anita.

Two pipe segments could not be accessed. Pipe segment 67137-67135 on Hornidge Road could not be accessed due to ongoing construction at the school, and as previously discussed, the Jefferson Avenue Bridge is being reconstructed, so that sewer crossing will need to be dye tested once the reconstruction has been completed.

### **3.3 Results of Additional Illicit Discharge Detection Activities Requested by Village**

Pirnie/ARCADIS completed additional illicit discharge detection and elimination actions at the request of the Village.

1. Regatta Condominiums (Mamaroneck Avenue) - The Village asked Pirnie/ARCADIS to investigate the area around this building for outfalls and evidence of illicit discharges based on an inquiry from a concerned resident on May 20, 2013 regarding a potential past sanitary sewer problem in this area. Pirnie/ARCADIS walked along the riprap behind the property along the River on June 24, 2013. There were no stormwater outfalls visible, no odors, and no evidence of debris or bacteria that would be indicative of an illicit discharge. Sanitary sewer pipe segment SA65020 to SA65002 behind the Regatta was also dye tested on July 18, 2013 and no dye was observed in the River. No further action is recommended for illicit discharge detection at this time.
2. Outfalls 30 and 31 (Plaza and Waverly) – The Village asked Pirnie/ARCADIS to investigate these two outfalls based on an inquiry from a concerned resident on May 20, 2013 regarding dry weather flow observed at these two outfalls.

Pirnie/ARCADIS visited these outfalls on May 22, 2013. The flow rate at outfall 30 was about 5-10 gpm. Pirnie/ARCADIS sampled this outfall previously on



October 23, 2012 and the result was 600 CFU/100 ml. ARCADIS collected a fluorimeter reading of 1700 on May 22, 2013, which was consistent with the low fecal coliform concentration. No further follow-up action is required at this time, but it is recommended that outfalls with dry weather flow are sampled annually to confirm no illicit discharges are occurring.

Outfall 31 was only dripping when we sampled it on May 22, 2013, but the fluorimeter reading was very high at 8,000. On June 24, 2013, ARCADIS revisited the outfall and it was dry. A five-gallon bucket was placed under the outfall for eight hours to check for intermittent flows, but it remained dry. The drip observed in May could have been residual from a rain event or from an isolated event in the parking lot. The high fluorescence readings may have been from animal feces in a catch basin. No further action is recommended at this outfall at this time.

3. Fayette Transfer Station – Village staff had reported seeing trucks dumping liquid from the dump trucks in the catch basins in front of the entrance to the transfer station. The Village asked Pirnie/ARCADIS to locate and inspect the outfall on Fayette Avenue that discharges to the Sheldrake River to see if there is any indication that illicit discharges are occurring.

Pirnie/ARCADIS located the Fayette Avenue outfall on June 24, 2013. It was discharging approximately 5-10 gpm to the Sheldrake River. During the inspection, petroleum odors were detected, orange and white staining was observed on the discharge pipe, and a sample collected had a high fluorimeter reading (5,616). It is our recommendation that the transfer station and surrounding facilities be inspected further to determine where the illicit discharges are occurring and to evaluate the transfer station to ensure best management practices are being implemented.

4. Columbus Park Outfall Inspections and Samples – The Village asked ARCADIS to investigate outfalls and water quality in Columbus Park based on some historic complaints regarding brown film and soap foam or other matter on the water.

Pirnie/ARCADIS performed an investigation on June 23, 2013. Outfall 23 and 24, both of which discharge to the Sheldrake River, were inspected and sampled.



## Village of Mamaroneck

### Illicit Discharge Detection and Elimination Study

### Sewer System Investigation – Phase 3 Report

Outfall 23 is located in the restoration between two foot bridges and Outfall 24 is at the Mamaroneck Avenue Bridge. Both of these outfalls had relatively low fluorimeter readings and flow. Outfall 23 had a fluorescence of 679 and a dry weather flow of approximately 3 gpm. Outfall 24 had a fluorescence of 1,036 and a dry weather flow of approximately 5 gpm. There was no evidence of illicit discharges at either of these outfalls.

A sample was also collected from the Sheldrake River at this location. The fluorescence was 1,648, which shows some fecal coliform bacteria but does not indicate a significant illicit discharge at this location. There was no soap suds or other evidence of an illicit discharge at the time of the inspection. Illicit discharges can be intermittent, so monitoring should continue.





## **Appendix A**

### Electronic Files on CD ROM

- GIS Files
- Blank Inspection Forms and Dye Test Letter
- Completed Manhole Inspection and Dye Testing Forms
- Field Photos and Stream Crossing Diagrams



## **Appendix B**

Sample Manhole Inspection Form

# MANHOLE INSPECTION FORM

**Manhole ID:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Drainage Basin:** \_\_\_\_\_

**Inspector:** \_\_\_\_\_

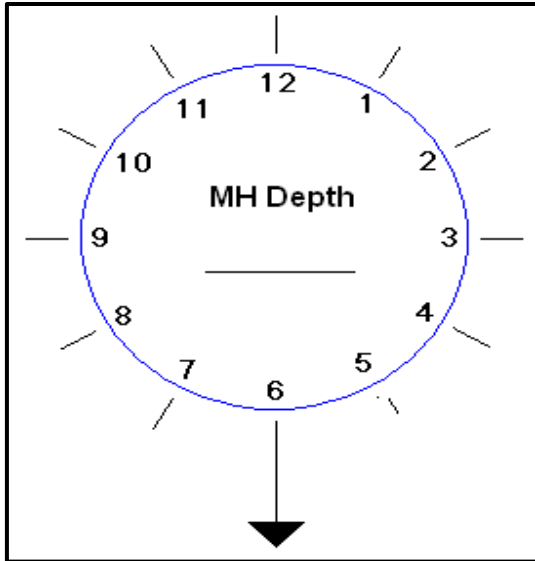
**Street/Location:** \_\_\_\_\_

**Rain in Last 48 hrs:** \_\_\_\_\_

(none, drizzle, light, moderate, heavy)

**Sewer Type:** ☐ **Sanitary** ☐ **Storm**

☐ **Dual Purpose**



Clock Position (1-12)	Pipe Diameter (in)	Upgradient Structure/Source (MH ID, CB, Priv, Unk)	Flow (gpm or ft/s)

**Data Unattainable:** \_\_\_\_\_

(flooded, debris, lid stuck, not visible)

**Depth of Adjacent Sanitary Sewer:** \_\_\_\_\_

**Structural Condition:** \_\_\_\_\_

(good, fair, poor)

**Operational Condition:** \_\_\_\_\_

(good, fair, poor)

**Debris:** \_\_\_\_\_

(slight, moderate, heavy)

**Sanitary:** \_\_\_\_\_

**Illicit Discharge Comments:**

**Structural/Configuration Comments:**

**General Comments / Notes:**



## **Appendix C**

Sample Dye Test Form



# DYE TEST INSPECTION FORM

**Time:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Inspector(s):** \_\_\_\_\_

**Drainage Basin:** \_\_\_\_\_ **Observation Street:** \_\_\_\_\_

**Building Address:** \_\_\_\_\_ **Upgradient Manhole:** \_\_\_\_\_

**Property Address:** \_\_\_\_\_ **Observation Manhole:** \_\_\_\_\_

## Contact Information:

**Business Name:** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Owner's Name:** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Site Contact's Name:** \_\_\_\_\_ **Phone:** \_\_\_\_\_

## Property Description:

**Property Type:** \_\_\_\_\_ **Age of Building:** \_\_\_\_\_

**Number of Stories /** \_\_\_\_\_ **Number of** \_\_\_\_\_  
**Apartment/ Units:** \_\_\_\_\_ **Bathrooms** \_\_\_\_\_ **Number of** \_\_\_\_\_  
**Kitchens:** \_\_\_\_\_

<b>Dye Test Floor:</b> (Basement/ First/ Second)	<b>Dye Test Floor:</b> (Kitchen/Bath/Laundry)	<b>Dye Color:</b>	<b>Results:</b> (Pos/Neg)
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<b>Location 1</b>	_____	_____	_____
<b>Location 2</b>	_____	_____	_____
<b>Location 3</b>	_____	_____	_____
<b>Location 4</b>	_____	_____	_____
<b>Location 5</b>	_____	_____	_____
<b>Location 6</b>	_____	_____	_____
<b>Location 7</b>	_____	_____	_____
<b>Location 8</b>	_____	_____	_____
<b>Location 9</b>	_____	_____	_____
<b>Location 10</b>	_____	_____	_____

**Observation Points:** \_\_\_\_\_

**Dye observed in Sanitary Manhole?** \_\_\_\_\_ **If Not Where?** \_\_\_\_\_

**General Problem Description:** \_\_\_\_\_

**Schedule a Second Dye Test?** \_\_\_\_\_ **If so, Why?** \_\_\_\_\_

**Additional Notes:**

## **Appendix D**

Sample Dye Test Letter

Village of



Mamaroneck

*Village Hall At The Regatta  
P.O. Box 369  
123 Mamaroneck Avenue  
Mamaroneck, N.Y. 10543*

OFFICE OF  
RICHARD SLINGERLAND  
VILLAGE MANAGER

TELEPHONE  
(914) 777-7703  
FAX NUMBER  
(914) 777-7760

February 18, 2014

XXXXXX or Current Resident  
XX XXXX XXX  
Mamaroneck, NY 10543

Re: Possible Illegal Discharge into the Storm Water Systems Flowing into Mamaroneck Harbor

**Dye Test Building Location: XXX XXXX (One Family) – Section-Block-Lot #: XX.XX.XXX**

Dear Building Owner:

In accordance with Administrative Order CWA-02-2011-3022, from the United States Environmental Protection Agency, the Village of Mamaroneck has contracted with the engineering firm XXXX to conduct a sewer system investigation in the Mamaroneck Harbor drainage area.

In an effort to identify and remediate any problems associated with the Village of Mamaroneck sewer system, XXXXX will be conducting dye tests of buildings on your street. To determine whether or not your building is discharging sewage into a storm sewer, a dye test of your drain must be conducted.

As such, the Village requests that you contact XXXX representative XXXX XXXXX at XXX-XXX-XXXX within ten (10) days of the receipt of this letter to schedule a mutually convenient time for XXXX and Village staff to visit your home. This representative will fully explain the dye test process and answer any questions you might have. If you own a portion of a multifamily building, and there are multiple owners, please notify the other owners of this letter or tell us about the situation when you call so that we may contact them. If you are a tenant, please have your property owner contact us.

Failure to respond in a timely manner may result in an enforcement action or other administrative action.

The Village of Mamaroneck thanks you in advance for your cooperation on this matter.

Very Truly Yours,

Richard Slingerland  
Village Manager

cc: file

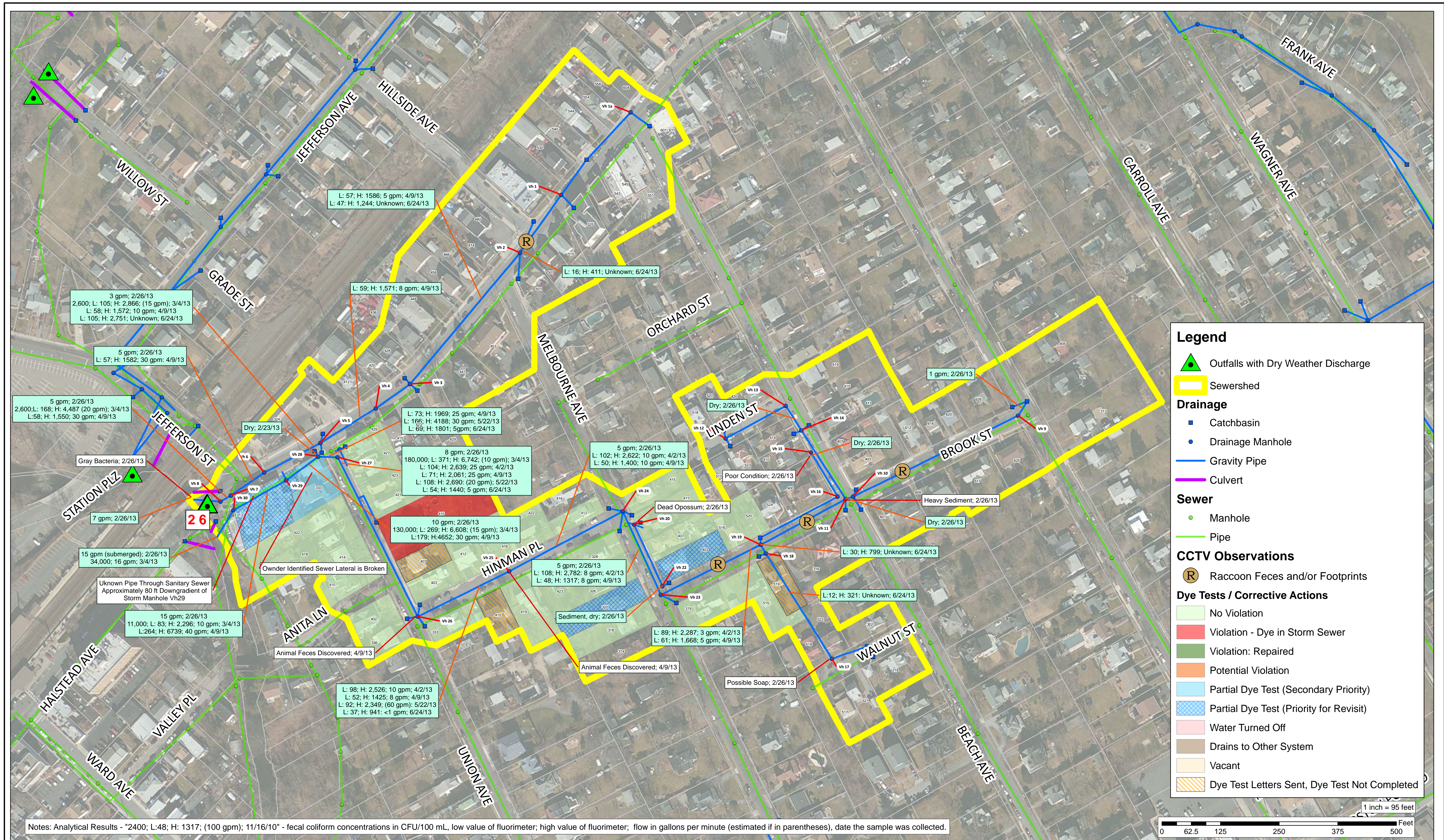
THE FRIENDLY VILLAGE



## **Appendix E**

Drainage Area Investigation Maps

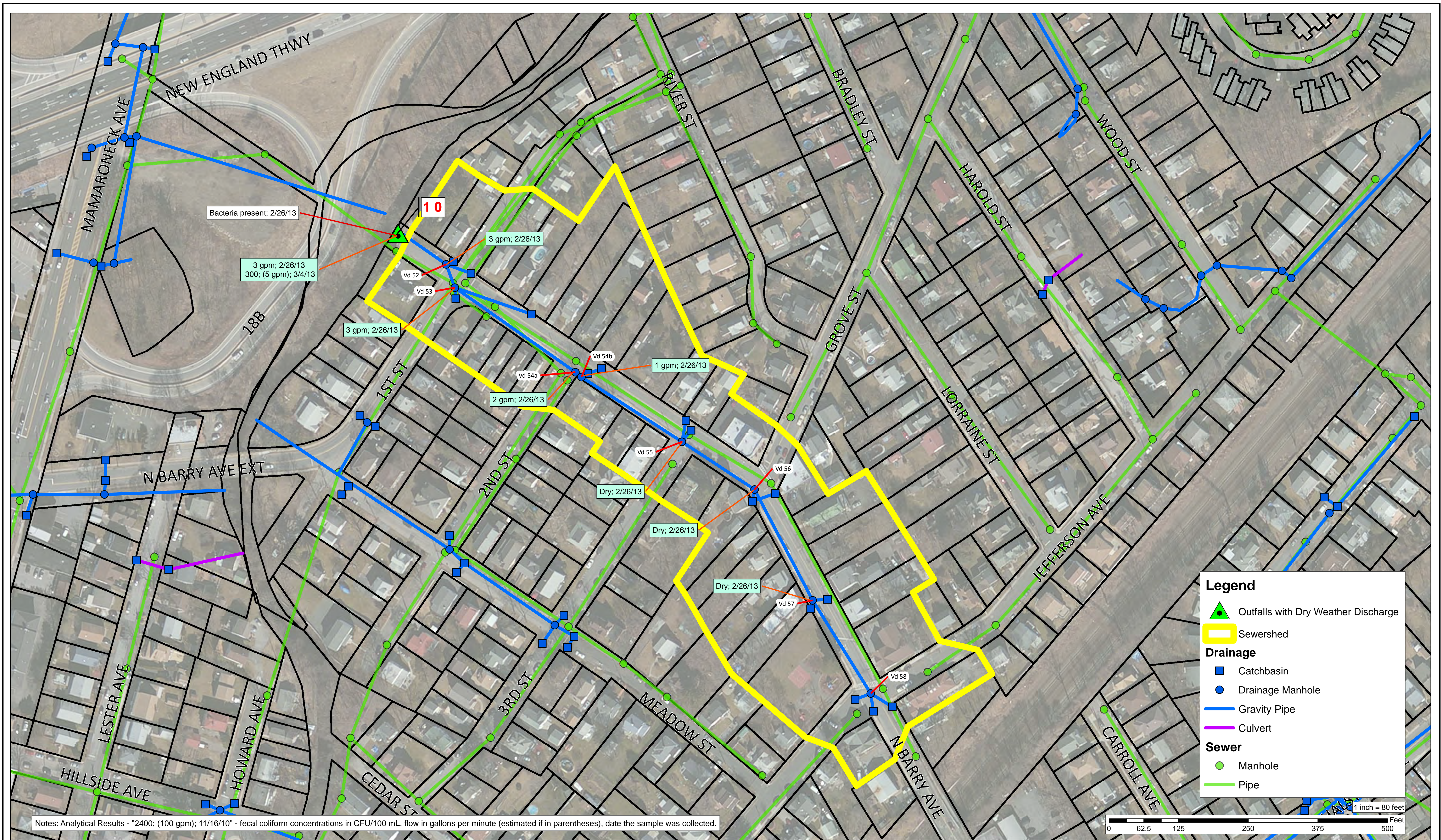
















Notes: Analytical Results - "2400; (100 gpm); 11/16/10" - fecal coliform concentrations in CFU/100 mL, flow in gallons per minute (estimated if in parentheses), date the sample was collected.



## **Appendix F**

### Sample Results

**Village of Mamaroneck**  
**2013 Organic Pollutant Fluorimeter Sample Results**

Date	Sampled OF	Trial	High Range Value	Avg High Range Value	Flow (gpm)	Comments
3/4/2013	Vh8	1	4751	4487	(20)	
		2	4618			
		3	4092			
3/4/2013	Vh30	1	2450	2296	(10)	
		2	2434			
		3	2004			
3/4/2013	Vh6	1	3226	2866	(15)	
		2	2954			
		3	2417			
3/4/2013	Vh29	1	6610	6608	(15)	
		2	6610			
		3	6604			
3/4/2013	Vh27	1	6730	6742	(10)	
		2	6742			
		3	6753			
3/4/2013	Outfall 3	1	6627	6627	1	
		2	6627			
		3	6627			
3/4/2013	Outfall 10	1	1449	1625	5	
		2	1730			
		3	1697			
3/4/2013	Outfall 26	1	1837	1834	16	
		2	1830			
		3	1834			
3/4/2013	Outfall 25	1	1641	1687	20	
		2	1781			
		3	1638			
3/4/2013	Outfall 25UNK	1	2910	2646	.03	
		2	2704			
		3	2324			
4/2/2013	VH 23	1	2308	2287	3	
		2	2405			
		3	2147			
4/2/2013	VH 24	1	2820	2782	8	
		2	2790			
		3	2736			
4/2/2013	VH 25	1	2672	2622	10	
		2	2596			
		3	2597			
4/2/2013	Vh 26	1	2529	2526	10	
		2	2578			
		3	2471			
4/2/2013	VH 27	1	2607	2639	25	
		2	2667			
		3	2642			
4/9/2013	VH 30	1	6794	6739	40	
		2	6718			
		3	6705			
		1	4619			

**Village of Mamaroneck**  
**2013 Organic Pollutant Fluorimeter Sample Results**

Date	Sampled OF	Trial	High Range Value	Avg High Range Value	Flow (gpm)	Comments
4/9/2013	VH 29	2	4670	4652	30	
		3	4668			
4/9/2013	VH 28	1	1917	1969	25	
		2	2057			
		3	1934			
4/9/2013	VH 27	1	1958	2061	25	
		2	1857			
		3	2454			
		4	1975			
4/9/2013	VH 26	1	1455	1425	8	Feces Observed
		2	1405			
		3	1414			
4/9/2013	VH 25	1	1510	1400	10	Feces Observed
		2	1445			
		3	1334			
		4	1309			
4/9/2013	VH 24	1	1318	1317	8	
		2	1346			
		3	1287			
4/9/2013	VH 23	1	1661	1668	5	
		2	1696			
		3	1648			
4/9/2013	Vh 19	1	1551	1553	1	
		2	1528			
		3	1644			
		4	1487			
4/9/2013	VH 8	1	1504	1550	30	
		2	1581			
		3	1565			
4/9/2013	VH 7	1	1592	1582	30	
		2	1523			
		3	1630			
4/9/2013	VH 6	1	1509	1572	10	
		2	1571			
		3	1682			
		4	1525			
4/9/2013	VH 5	1	1494	1571	8	
		2	1532			
		3	1688			
4/9/2013	Vh 3	1	1583	1586	5	
		2	1556			
		3	1620			
5/22/2013	Outfall 30	1	1752	1719	5 - 10	
		2	1573			
		3	1831			
5/22/2013	Outfall 31	1	8032	8043	<<1	
		2	8043			
		3	8055			
		1	2440			

**Village of Mamaroneck**  
**2013 Organic Pollutant Fluorimeter Sample Results**

Date	Sampled OF	Trial	High Range Value	Avg High Range Value	Flow (gpm)	Comments
5/22/2013	VH 30	2	2302	2349	60	
		3	2306			
5/22/2013	VH 28	1	4244	4188	30	
		2	4165			
		3	4154			
5/22/2013	VH 27	1	2732	2690	25	
		2	2746			
		3	2593			
5/22/2013	VH 26	1	1970	2027	10	
		2	1966			
		3	2145			
5/22/2013	VH 24	1	1819	1673	5	
		2	1626			
		3	1574			
5/22/2013	VH 23	1	1156	1125	1	
		2	1196			
		3	1024			
6/24/2013	Outfall 23	1	706	679	3	Columbus Park Restoration Area (36" concrete)
		2	651			
		3				
6/24/2013	Outfall 24	1	1079	1036	5	Columbus Park - Concrete - Mamaroneck Ave Bridge
		2	993			
		3				
6/24/2013	Outfall 4	1	605	566	0.5	Willow Street
		2	551			
		3	543			
6/24/2013	Outfall 31				dry	Bucket was left under outfall for 8 hours and there was no flow
6/24/2013	STVH27	1	1450	1440	5	
		2	1435			
		3	1436			
6/24/2013	STVH28	1	1809	1801	5	
		2	1833			
		3	1762			
6/24/2013	STVH26	1	1008	941	<1	
		2	968			
		3	847			
6/24/2013	CBVH27	1	416	394	Inter-mittent	Adjacent to 415 Union Ave. Flow from sump pump.
		2	395			
		3	372			
6/24/2013	STVH18	1	382	321	UNK	
		2	296			
		3	285			
6/24/2013	STVH19	1	781	799	UNK	
		2	838			
		3	779			
6/24/2013	Jefferson Ave HM	1	1307	1260	UNK	
		2	1235			

**Village of Mamaroneck**  
**2013 Organic Pollutant Fluorimeter Sample Results**

Date	Sampled OF	Trial	High Range Value	Avg High Range Value	Flow (gpm)	Comments
		3	1239			
6/25/2013	Sheldrake River - Columbus Park	1	1648	1648	na	9:00 AM
6/25/2013	Outfall 25	1	908	908	5	12:35 PM
6/25/2013	Transfer Station - Fayette	1	5771	5616	5	Recycling Industries Transfer Station - 306 Fayette Ave Petroleum odor, orange staining and sediment
		2	5576			
		3	5502			
6/25/2013	vh-6		2809	2751		Drainage area #26 - Halstead Ave
			2737			
			2708			
6/25/2013	vh-3		1269	1244		Drainage area #26 - Halstead Ave
			1218			
6/25/2013	vh-2		169	411		Feces observed in the manhole. Suspected to be raccoon. CCTV inspection showed there were not laterals in this line.
			873			
			191			

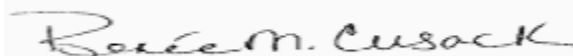
Note: Samples were analyzed using an Organic Pollutant Fluorimeter. Three samples were collected and averaged. The fluorimeter has three ranges, low, medium and high. The high range was used for all of these samples.

## **ANALYTICAL REPORT**

Job Number: 420-63947-1  
SDG Number: Mamaroneck  
Job Description: Yonkers Illicit Discharge Detection

For:  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Attention: Mr. Kevin Hogan



---

Renee Cusack  
Lab Director  
rcusack@envirotestlaboratories.com  
03/06/2013

cc: Ms. Katherine Clubine

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NELAP Accredited, NYSDOH 10142, NJDEP NY015, CTDOPH PH-0554, EPA NY00049.

## METHOD SUMMARY

Client: Arcadis US, Inc.

Job Number: 420-63947-1

Sdg Number: Mamaroneck

Description	Lab Location	Method	Preparation Method
<b>Matrix: Water</b>			
Membrane Filter Technique - Fecal Coliform Procedure	EnvTest	SM18 SM 9222D	

### Lab References:

EnvTest = EnviroTest

### Method References:

SM18 = "Standard Methods For The Examination Of Water And Wastewater", 18th Edition, 1992.



## SAMPLE SUMMARY

Client: Arcadis US, Inc.

Job Number: 420-63947-1

Sdg Number: Mamaroneck

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
420-63947-1	Outfall 10	Water	03/04/2013 0945	03/04/2013 1525
420-63947-2	Outfall 3	Water	03/04/2013 0910	03/04/2013 1525
420-63947-3	Outfall 26	Water	03/04/2013 1035	03/04/2013 1525
420-63947-4	Vh8_Vh7	Water	03/04/2013 1100	03/04/2013 1525
420-63947-5	Vh_30_Vh29	Water	03/04/2013 1130	03/04/2013 1525
420-63947-6	Outfall 25	Water	03/04/2013 1225	03/04/2013 1525
420-63947-7	Outfall 25 UNK	Water	03/04/2013 1235	03/04/2013 1525
420-63947-8	Vh6_Vh5	Water	03/04/2013 1315	03/04/2013 1525
420-63947-9	Vh29_Vh28	Water	03/04/2013 1335	03/04/2013 1525
420-63947-10	Vh27_Vh26	Water	03/04/2013 1350	03/04/2013 1525

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Outfall 10  
**Lab Sample ID:** 420-63947-1

Date Sampled: 03/04/2013 0945  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	300	CFU/100mL	100	100

Date Analyzed: 03/04/2013 1619

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Outfall 3  
**Lab Sample ID:** 420-63947-2

Date Sampled: 03/04/2013 0910  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	100	CFU/100mL	100	100

Date Analyzed: 03/04/2013 1619

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Outfall 26  
**Lab Sample ID:** 420-63947-3

Date Sampled: 03/04/2013 1035  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	34000	CFU/100mL	Date Analyzed: 03/04/2013 1619 1000	1000

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Vh8\_Vh7  
**Lab Sample ID:** 420-63947-4

Date Sampled: 03/04/2013 1100  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	2600	CFU/100mL	100	100

Date Analyzed: 03/04/2013 1619

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Vh\_30\_Vh29  
**Lab Sample ID:** 420-63947-5

Date Sampled: 03/04/2013 1130  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	11000	CFU/100mL	1000	1000

Date Analyzed: 03/04/2013 1619

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Outfall 25  
**Lab Sample ID:** 420-63947-6

Date Sampled: 03/04/2013 1225  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	<100	CFU/100mL	Date Analyzed: 03/04/2013 1634 100	100



Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Outfall 25 UNK  
**Lab Sample ID:** 420-63947-7

Date Sampled: 03/04/2013 1235  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	<100	CFU/100mL	100	100

Date Analyzed: 03/04/2013 1634

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Vh6\_Vh5  
**Lab Sample ID:** 420-63947-8

Date Sampled: 03/04/2013 1315  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	2600	CFU/100mL	100	100

Date Analyzed: 03/04/2013 1634

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Vh29\_Vh28  
**Lab Sample ID:** 420-63947-9

Date Sampled: 03/04/2013 1335  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	130000	CFU/100mL	Date Analyzed: 03/04/2013 1634 1000	1000

Mr. Kevin Hogan  
Arcadis US, Inc.  
855 Route 146 Suite 210  
Clifton Park, NY 12065

Job Number: 420-63947-1  
Sdg Number: Mamaroneck

**Client Sample ID:** Vh27\_Vh26  
**Lab Sample ID:** 420-63947-10

Date Sampled: 03/04/2013 1350  
Date Received: 03/04/2013 1525  
Client Matrix: Water

Analyte	Result/Qualifier	Unit	RL	Dilution
<b>Method:</b> SM 9222D Coliform, Fecal	180000	CFU/100mL	Date Analyzed: 03/04/2013 1634 1000	1000

# EnviroTest Laboratories Inc.

## CHAIN OF CUSTODY

315 Fullerton Avenue  
Newburgh, NY 12550  
TEL (845) 562-0890  
FAX (845) 562-0841

CUSTOMER NAME <i>Acadis</i>	
ADDRESS <i>44 S. Broadway</i>	
CITY, STATE, ZIP <i>White Plains 10602</i>	
NAME OF CONTACT <i>Kevin Hogan</i>	PHONE NO. <i>518 250 7500</i>
PROJECT LOCATION <i>Mammoth, NY</i>	
PROJECT NUMBER / PO NO. <i>001547034, 0002</i>	

NOTE: SAMPLE TEMPERATURE UPON RECEIPT MUST BE 4° ± 2°C.

REPORT TYPE	TURNAROUND
STANDARD <input type="checkbox"/> ISRA <input type="checkbox"/>	<input type="checkbox"/> NORMAL
NU REG <input type="checkbox"/>	<input type="checkbox"/> QUICK
NYASP A <input type="checkbox"/> B <input type="checkbox"/> CLP <input type="checkbox"/>	<input type="checkbox"/> VERBAL
OTHER _____	

Matrix  
DW = DRINKING WATER S = SOIL O = OIL  
WW = WASTE WATER SL = SLUDGE GW = GROUND WATER

REPORT # (Lab Use Only) <i>63947</i>	
SAMPLE TEMP: <i>22.2</i>	
SAMPLE REC'D ON ICE <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
pH CHECK <input type="checkbox"/> Y <input type="checkbox"/> N	
CHLORINE (RESIDUAL) <input type="checkbox"/> Y <input type="checkbox"/> N	
REVIEWED BY: _____	
NY PUBLIC WATER SUPPLIES	
SOURCE ID _____	ELAP TYPE _____
FEDERAL ID _____	

ANALYSIS REQUESTED

ETL #	SAMPLING DATE TIME AM PM	COMP GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	40ml Glass HCL	Liter Amber HCL	250ml Amber Sulfuric	Liter Amber Organic Washed	250ml Plastic Nitric Acid	250ml Plastic Sodium Hydroxide	Liter Plastic	250ml Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250ml Plastic NAOH/ZN ACC	40ml Glass Sulfuric	40ml Glass	DO
34130945		X	WW	Outfall 10	1														
0910		X		Outfall 3	1														
1035		X		Outfall 26	1														
1100		X		Vh 8 - Vh 7	1														
1130		X		Vh 30 - Vh 29	1														
1225		X		Outfall 25	1														
1235		X		Outfall 25 UNK	1														
1315		X		Vh 6 - Vh 5	1														
1335		X		Vh 29 - Vh 28	1														
1350		X		Vh 27 - Vh 26	1														

Fecal Coliform

SAMPLES SUBMITTED FOR ANALYSIS WILL BE SUBJECT TO THE ETL TERMS AND CONDITIONS OF SALE UNLESS ALTERNATE TERMS ARE AGREED IN WRITING.

RELINQUISHED BY <i>S. Christopher</i>	COMPANY <i>Vec Inc</i>	DATE <i>3/4/13</i>	TIME <i>1410</i>	RECEIVED BY <i>Ch. V. ...</i>	COMPANY <i>ETL</i>	DATE <i>3/4/13</i>	TIME <i>1410</i>
SAMPLED BY <i>S. Christopher</i>	COMPANY <i>Vec Inc</i>	DATE <i>3/4/13</i>	TIME <i>1410</i>	RECEIVED BY <i>Ch. V. ...</i>	COMPANY <i>ETL</i>	DATE <i>3/4/13</i>	TIME <i>1525</i>
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME

COMMENTS

## LOGIN SAMPLE RECEIPT CHECK LIST

Client: Arcadis US, Inc.

Job Number: 420-63947-1

Sdg Number: Mamaroneck

**Login Number: 63947**

Question	T/F/NA	Comment
Samples were collected by ETL employee as per SOP-SAM-1	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is recorded.	True	2.0 C
Cooler Temp. is within method specified range.(0-6 C PW, 0-8 C NPW, or BAC <10 C	True	
If false, was sample received on ice within 6 hours of collection.	NA	
Based on above criteria cooler temperature is acceptable.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	NA	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	



## **Appendix G**

Sanitary Sewer Steam Crossing Dye  
Test Summary and Map



Village of Mamaroneck  
2013 Sanitary Sewer Stream Crossing Dye Test Results

Location	Date	Street	Downgradient Structure	Upgradient Structure	Dye Test Completed	Results	Notes
1	3/14/2013	Rockland Avenue	65617	65618	No - stagnant water <sup>(1)</sup>	NA	Stagnant water. Could not dye test
2	3/14/2013	Near Harmon Drive (north of the street)	65639	65640	Yes	Dye leaking from structure - follow-up needed	Structure leaking significantly when dye tested and smells like sewage. According the Village this line is abandoned and a new sewer was installed in the street. Sample collected and analyzed with fluorimeter - results indicate possible fecal coliform. Flow stagnant in line. Further investigation recommended - there may be a house still connected to this line.
3	3/14/2013	Near Harmon Drive (west of the street)	63641	65643	No	NA	Could not locate upstream structure. The structure is believed to be in a homeowners yard. Downgradient structure overgrown with weeds, flow is stagnant, manhole is flooded.
4	3/14/2013	Fayette Avenue	65615	65616	No	NA	Flooded to top of manhole rim
5	3/14/2013	Northrop Avenue/Fenimore Road	65588	65589	No	NA	Car was parked on downstream manhole and upstream manhole was not located. Dye added to manhole upgradient of manhole that could not be located. Dye was not observed in River, but dye could not be verified in downstream structures. (first downgradient manhole was parked over, next manhole could not be opened)
6	3/14/2013	Northrop Avenue/Plaza Avenue	65583	65577	Yes	No dye observed in River, dye confirmed in downgradient structure.	Upgradient structure - flooded and debris. Downgradient structure - flooded, debris, and roots. Crossing located near landfill. Trees and trash in the River. The River is very cloudy, so there is a chance dye entering the River would not be visible.
7	3/14/2013	Plaza Avenue/Center Avenue	65562	65561	Yes	No leaks observed, dye confirmed in downgradient structure.	Some flooding in downstream structure on Plaza Avenue
8	3/14/2013	Plaza Avenue/Waverly Avenue	65547	65548	No	Dye cannot be confirmed at the downgradient structure	Flooded, could not confirm dye tests
9	3/14/2013	Mamaroneck Avenue	65467	65466	Yes	No dye in river, dye observed in downgradient structure	
10	3/14/2013	Jefferson Street	65132	65131	No	NA	New bridge is being constructed. Sewer flow is currently being pumped through temporary line. This will need to be dye tested once the work is complete. The contractor may have drilled through the existing sanitary sewer.
2-revisited	3/20/2013	Near Harmon Drive - revisit <sup>(2)</sup>	65639	65640	Yes	No dye observed in River	This is a follow-up sampling and inspection. Fluorimeter readings indicate the presence of fecal coliform bacteria. Additional upgradient investigation needed
11	3/20/2013	Arthur and River Street	65230	65232A	Yes	No dye observed in River	
12	3/20/2013	I-95 on ramp / N. Barry	65166	65165A	Yes	No dye observed in River	Adjacent to SA pipe there is a unknown 6-inch iron (steel) pipe entering the River.

**Village of Mamaroneck**  
**2013 Sanitary Sewer Stream Crossing Dye Test Results**

Location	Date	Street	Downgradient Structure	Upgradient Structure	Dye Test Completed	Results	Notes
13	3/20/2013	First St / Howard Ave	65155	65156	No	No dye observed in River, but did not see dye in downgradient	Could not verify dye in downgradient structure - both manholes flooded
14	3/20/2013	Hillside Ave	65144	65145	No	No dye observed in River, but did not see dye in downgradient structure	Downgradient structure is flooded and could not confirm dye present. Nearby the First Baptist Church has pipes entering the river - recommend discussion with the church and perform building dye test.
15	3/20/2013	Willow Street	65135	65136	Yes	No dye observed in River	Upgradient structure - bench was wet Downgradient strcuture - flooded but dye was observed
16	3/20/2013	Valley Place & Anita	68645	68430	Yes	No dye observed in River	SA line is built into a bridge which crosses the river. Dampness was observed at the base of the SA line on the downgradient side, source of dampness not confirmed. Follow-up inspections recommended. Visit on a day with 72 hours of dry weather and when the groundwater is low.
17	3/20/2013	Halstead	65074	65073	No	N/A	Upgradient structure had a significant amount of grease. Depth to grease surface was 18.97 feet
18	4/2/2013	South Barry	66332	66650	Yes	No dye Observed in River	
19	4/2/2013	Shore Drive South	66525	66524	Yes	No dye Observed in River	
20	4/2/2013	Parkway	66578	66527	Yes	No dye Observed in River	
21	7/18/2013	Halstead Avenue	65073	65072	Yes	No dye Observed in River	
22	7/18/2013	Tompkins Avenue\Philips Park Road	65035	65034	Yes	No dye Observed in River	
23	7/18/2013	East Boston Post Road\Mamaroneck Avenue	66302	(66301)	Yes	No dye Observed in River	No access to 66301 due to traffic. Heavy flow in this 42 inch line - no dye observed in the River
24	7/18/2013	East Boston Post Road\Mamaroneck Avenue	65004	(65003)	Yes	No dye Observed in River	No access to 65003 due to traffic. Five gpm in this 8 inch line - no dye observed in the River
25	7/18/2013	Short Street/Sunny Side Avenue	67124	67123	Yes	No dye Observed in River	
26	7/18/2013	Behind Regatta Condos	65020	65002	Yes	No dye Observed in River	East Boston Post Road\Mamaroneck Avenue
27	7/18/2013	Hornidge Road			Yes	No dye Observed in River	

**Notes:**

- (1) - Sewage was found to be entering the abanded sanitary sewer line, which was leaking. A repair was completed to correct the problem.  
(2) - The bypass pumping due to the Jefferson Avenue Bridge reconstruction was causing the flow rate in the sanitary lines to decrease.



