Year 1 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: May 1, 2018-June 30, 2019

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed.

Part I: Contact Information

Name of Municipality or Organization: Town of Norwood

EPA NPDES Permit Number: MAR041053

Primary MS4 Program Manager Contact Information

Name: Tony Mazzucco Title: Town Manager

Street Address Line 1: 566 Washington Street

Street Address Line 2:

City: Norwood State: MA Zip Code: 02062

Email: tmazzucco@norwoodma.gov Phone Number: (781) 762-1240

Fax Number: (781) 762-9378

Stormwater Management Program (SWMP) Information

SWMP Location (web address):

Date SWMP was Last Updated:

If the SWMP is not available on the web please provide the physical address and an explanation of why it is not posted on the web:

Currently working with our consultant to implement a SWMP - per MS4 General Permit (NOI) it will be done in year 2.

Part II: Self Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4.

Impairment(s)

☐ Bacteria/Pathogens ☐ Chloride ☐ Nitrogen ☒ Phosphorus

☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: ☐ Assabet River Phosphorus ☒ Bacteria and Pathogen ☐ Cape Cod Nitrogen

☐ Charles River Watershed Phosphorus ☐ Lake and Pond Phosphorus

Out of State: ☐ Bacteria/Pathogens ☐ Metals ☐ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 1 Requirements

☒ Develop and begin public education and outreach program

☒ Identify and develop inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years

- ◉ The SSO inventory is attached to the email submission
- ○ The SSO inventory can be found at the following website:

☐ Develop written IDDE plan including a procedure for screening and sampling outfalls

☐ IDDE ordinance complete

☐ Identify each outfall and interconnection discharging from MS4, classify into the relevant category, and priority rank each catchment for investigation

- ○ The priority ranking of outfalls/interconnections is attached to the email submission
- ○ The priority ranking of outfalls/interconnections can be found at the following website:

No known interconnections

☒ Construction/ Erosion and Sediment Control (ESC) ordinance complete

☐ Develop written procedures for site inspections and enforcement of sediment and erosion control measures

☐ Develop written procedures for site plan review

☐ Keep a log of catch basins cleaned or inspected

☐ Complete inspection of all stormwater treatment structures

Annual Requirements

- ☐ Annual opportunity for public participation in review and implementation of SWMP
- ☐ Comply with State Public Notice requirements
- ☒ Keep records relating to the permit available for 5 years and make available to the public
- ☒ Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- ☒ Annual training to employees involved in IDDE program
- ☒ All curbed roadways have been swept a minimum of one time per year

Bacteria/ Pathogens (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- ☒ Annual message encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Permittee or its agents disseminate educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time
- ☐ Provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Phosphorus (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- ☒ Distribute an annual message in the spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorus-free fertilizers
- ☐ Distribute an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Distribute an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

- ☒ Increase street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Potential structural BMPs

- ☐ Any structural BMPs listed in Attachment 3 to Appendix F already existing or installed in the regulated area by the permittee or its agents shall be tracked and the permittee shall estimate the phosphorus removal by the BMP consistent with Attachment 1 to Appendix H. Document the BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP in each each annual report

Solids, Oil and Grease (Hydrocarbons), or Metals

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increase street sweeping frequency of all municipal owned streets and parking lots to a schedule to target areas with potential for high pollutant loads

☐ Prioritize inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Clean catch basins more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings

Use the box below to input additional details on any unchecked boxes above or any additional information you would like to share as part of your self assessment:

In Year 2 - Planning Board to develop BY-LAWS on site inspection and the documentation of structural BMP's in place by permittee.

DPW to establish budget for additional catch basin cleaning and inspections.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

Yes ☐ No ☒

If yes, describe below, including any relevant impairments or TMDLs:

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed during the reporting period: 1

Below, report on the educational messages completed during the first year. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.

BMP:[Message name here]

Message Description and Distribution Method:
NSP - fertilizer outreach fliers

Targeted Audience: Residents/Commercial/Industrial

Responsible Department/Parties: DPW

Measurable Goal(s):
Mailings included in all electrical bills sent town wide (15,000+/-)

Message Date(s): May 2019

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

Was this message different than what was proposed in your NOI? Yes ☐ No ☒

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) during the reporting period:

SWMP public review to begin in year 3 per MS4 General Permit (NOI)

Was this opportunity different than what was proposed in your NOI? Yes ☐ No ☒

Describe any other public involvement or participation opportunities conducted during the reporting period:
Per MS4 Permit (NOI)

Household Waste Days	Biannual
Winter St Compost Facility	Year round
Mercury Recovery Program	Year round

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Below, report on the number of SSOs identified in the MS4 system and removed during this reporting period.

Number of SSOs identified: 0

Number of SSOs removed:

Below, report on the total number of SSOs identified in the MS4 system and removed to date. At a minimum, report SSOs identified since 2013.

Total number of SSOs identified: 2

Total number of SSOs removed: 2

MS4 System Mapping

Describe the status of your MS4 map, including any progress made during the reporting period (phase I map due in year 2):

Town wide system map - draft submitted and currently undergoing QAQC by Engineering and DPW staff.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

- ◉ The outfall screening data is attached to the email submission
- ○ The outfall screening data can be found at the following website:

  See attached "Annual Report 2019" - letter dated May 31, 2019 RE: Order of Compliance on Consent Docket 13_011

Below, report on the number of outfalls/interconnections screened during this reporting period.

Number of outfalls screened: 82

Below, report on the percent of total outfalls/ interconnections screened to date.

Percent of total outfalls screened:

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

- ○ The catchment investigation data is attached to the email submission
- ○ The catchment investigation data can be found at the following website:

Catchment areas are mapped and investigation data to be provided in Year 2

Below, report on the number of catchment investigations completed during this reporting period.

Number of catchment investigations completed this reporting period:

Below, report on the percent of catchments investigated to date.

Percent of total catchments investigated:

Optional: Provide any additional information for clarity regarding the catchment investigations below:

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- ◉ The illicit discharge removal report is attached to the email submission
- ○ The illicit discharge removal report can be found at the following website:

See attached "Annual Report 2019" - letter dated May 31, 2019 RE: Order of Compliance on Consent Docket 13_011

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed during this reporting period.

Number of illicit discharges identified: 5

Number of illicit discharges removed:

Estimated volume of sewage removed: [UNITS]

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed since the effective date of the permit.

Total number of illicit discharges identified:

Total number of illicit discharges removed:

Optional: Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

See attached "Annual Report 2019" - letter dated May 31, 2019 RE: Order of Compliance on Consent Docket 13_011

Employee Training

Describe the frequency and type of employee training conducted during the reporting period:

MCM4: Construction Site Stormwater Runoff Control

Below, report on the construction site plan reviews, inspections, and enforcement actions completed during this reporting period.

Number of site plan reviews completed:

Number of inspections completed:

Number of enforcement actions taken:

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

Ordinance Development

Describe the status of the post-construction ordinance required to be complete in year 2 of the permit term:

Planning and Building Departments to work on post-construction ordinance for Town Meeting approval in Year 2.

As-built Drawings

Describe the status of the measures the MS4 has utilized to require the submission of as-built drawings and ensure long term operation and maintenance of completed construction sites required to be complete in year 2 of the permit term:

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

Currently working with DPW and Planning Board

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

Consultant hired for Town wide audit of green infrastructure.

Retrofit Properties Inventory

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

Currently working with DPW and Planning Board

MCM6: Good Housekeeping

Catch Basin Cleaning

Describe the status of the catch basin cleaning optimization plan:

DPW to budget for private contractors for 100% annual cleaning of catch basins in year 2.

If complete, attach the catch basin cleaning optimization plan or the schedule to gather information to develop the optimization plan:

- ○ The catch basin cleaning optimization plan or schedule is attached to the email submission
- ○ The catch basin cleaning optimization plan or schedule can be found at the following website:

Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins during this reporting period.

Number of catch basins inspected:

Number of catch basins cleaned:

Total volume or mass of material removed from all catch basins: [UNITS]

Below, report on the total number of catch basins in the MS4 system, if known.

Total number of catch basins:

If applicable:

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

Street Sweeping

Describe the status of the written procedures for sweeping streets and municipal-owned lots:

Currently sweepings are sent to a disposal facility and reported by number of loads. Starting Year 2 quantities of material removed to be reported by weight and volume.

Report on street sweeping completed during the reporting period using one of the three metrics below.

- ○ Number of miles cleaned: 110
- ○ Volume of material removed: [UNITS]
- ○ Weight of material removed: [UNITS]

If applicable:

For rural uncurbed roadways with no catch basins, describe the progress of the inspection, documentation, and targeted sweeping plan:

Winter Road Maintenance

Describe the status of the written procedures for winter road maintenance including the storage of salt and sand:

Salt and sand storage in covered facilities - new DPW facility completed in 2015.
Snow and Ice policy can be found in Town of Norwood - DPW Dept. website

Inventory of Permittee-Owned Properties

Describe the status of the inventory, due in year 2 of the permit term, of permittee-owned properties, including parks and open spaces, buildings and facilities, and vehicles and equipment, and include any updates:

O&M Procedures for Parks and Open Spaces, Buildings and Facilities, and Vehicles and Equipment

Describe the status of the operation and maintenance procedures, due in year 2 of the permit term, of permittee-owned properties (parks and open spaces, buildings and facilities, vehicles and equipment) and include maintenance activities associated with each:

Currently working with DPW and Planning Board

Stormwater Pollution Prevention Plan (SWPPP)

Describe the status of any SWPPP, due in year 2 of the permit term, for permittee-owned or operated facilities including maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater:

Presently inspected and cleaned as required. Written procedure to be included in SWMP.

Below, report on the number of site inspections for facilities that require a SWPPP completed during this reporting period.

Number of site inspections completed:

Describe any corrective actions taken at a facility with a SWPPP:

O&M Procedures for Stormwater Treatment Structures

Describe the status of the written procedure for stormwater treatment structure maintenance:

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

- (•) Not applicable
- ( ) The results from additional reports or studies are attached to the email submission
- ( ) The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 2 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Complete system mapping Phase I

- Begin investigations of catchments associated with Problem Outfalls
- Develop or modify an ordinance or other regulatory mechanism for post-construction stormwater runoff from new development and redevelopment
- Establish and implement written procedures to require the submission of as-built drawings no later than two years after the completion of construction projects
- Develop, if not already developed, written operations and maintenance procedures
- Develop an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; review annually and update as necessary
- Establish a written program detailing the activities and procedures the permittee will implement so that the MS4 infrastructure is maintained in a timely manner
- Develop and implement a written SWPPP for maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater
- Enclose or cover storage piles of salt or piles containing salt used for deicing or other purposes
- Develop, if not already developed, written procedures for sweeping streets and municipal-owned lots
- Develop, if not already developed, written procedures for winter road maintenance including storage of salt and sand
- Develop, if not already developed, a schedule for catch basin cleaning
- Develop, if not already developed, a written procedure for stormwater treatment structure maintenance
- Develop a written catchment investigation procedure *(18 months)*

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4 in the last 5 years
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually

Provide any additional details on activities planned for permit year 2 below:

Part V: Certification of Small MS4 Annual Report 2019

40 CFR 144.32(d) Certification

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, I certify that 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.

Name: TONY MAZZUCCO Title: GENERAL MANAGER

Signature: Date: 4/15/19

[Signatory may be a duly authorized representative]

The Town of Norwood

566 Washington St
Norwood, MA 02062
781-762-1240

Tony Mazzucco
General Manager

May 31, 2019

United States Environmental Protection Agency
Region 1 – New England
5 Post Office Square, Suite 100
Boston, MA 02109-3912
Attn: Jeffrey Kopf (Mail Code: OES04-4)

United States Environmental Protection Agency
Region 1 – New England
5 Post Office Square, Suite 100
Boston, MA 02109-3912
Attn: Andrew Spejewski (Mail Code: OES04-1)

Massachusetts Department of Environmental Protection
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347
Attn: David Burns

Subject: Town of Norwood, Massachusetts
Order for Compliance on Consent Docket 13-011
Annual Report – May 1, 2018 to April 30, 2019

Gentlemen:

As required in the above referenced Order, the Town of Norwood hereby submits its annual report for the period from May 1, 2018 to April 30, 2019. The report presents the required information as described in Item 9a. through 9e. of the above referenced Order for Compliance on Consent (the Order).

a. A description of activities undertaken during the previous year directed at achieving compliance with this Order:

The Town of Norwood has undertaken several activities during the reporting period directed at achieving compliance with this Order. Details of work done to achieve compliance are presented below.

Underdrain Area

Sewer Rehabilitation Design and Construction – Design of the Area 5 sewer rehabilitation was completed in summer of 2018. Area 5 is the final priority area which will be lined under the existing Underdrain Control Plan. This priority area is located south of the MBTA commuter rail tracks and west of Nahatan Street. Design and construction are being completed using MWRA Local Financial Assistance funds. Bids for the project were received on September 27, 2018, with the low bidder being BLD Services, LLC. BLD has performed prior construction contracts in this area for the Town. The contract was awarded, and construction is currently underway with an anticipated completion in late summer 2019.

Underdrain Sampling Program– Underdrain sampling was completed three times during this reporting period. The dates for the events were May 9, 2018, October 16, 2017 and April 23, 2019. Due to some limitations in the field, not all locations were sampled on each event. Progress continues to be made as measured at many of the individual locations and in the overall system as a whole. Sampling results are attached in Table 1. The town will continue to monitor progress and advance / adjust the plan as necessary to achieve the overall water quality goals.

Illicit Discharge Detection and Elimination

As part of the Order, the Town is required to perform sampling and commence investigations at various outfalls in the stormwater system. Overall this reporting period was wet, marked with ongoing rain events which limited the ability to perform work in this area. It is anticipated that work will resume in the next reporting period and the town will continue to make progress in addressing the needs identified. A summary of the ongoing status is presented below.

Outfall Sampling Program

During the summer of 2017 the Town of Norwood conducted an outfall sampling program in accordance with the proposed Municipal Separate Storm Sewer System (MS4) standards. The outfall sampling program was a follow up to the ongoing program which began in 2010. The eighty-two outfalls included in this round of sampling and investigations were chosen because they had either been flowing, submerged or unable to be located during prior efforts. This data along with prior sampling data will be used to guide future efforts in the IDDE program.

Outfall 22 – Alpine St and Ash St

Outfall 22 was identified by the Town as a priority for upstream Illicit Discharge Detection and Elimination (IDDE) investigations following sampling by others and town-wide outfall screening in 2010. Work in this area has included repair of defective sewers, additional

sampling and analysis (E. coli, ammonia, surfactants) dye water flooding of sewers, and dye testing of 28 homes. Through this follow up investigative work and human marker analysis, the town identified a problem and resolved the issues with the sewer service at #24 Alpine Road. A sewer service has also been repaired at #5 Barberry Lane which likely contributed to the contamination at the outfall during this reporting period.

Confirmatory sampling in this area concluded that additional contamination is present, specifically upstream of the new junction manhole uncovered by the DPW last year at the intersection of Alpine Road and Springvale Road.

In response to continued sampling results above the water quality limit the Town of Norwood has rehabilitated approximately 672 linear feet of 8" sewer on Springvale Road using CIPP in September 2016. Following this work, sampling trends have been favorable and the water quality is improving. Additional sampling has been conducted at the Alpine and Ash Outfall #22 as well as upstream since the CIPP lining efforts. Outside of one result at 1,732 CFU/100mL there have been three samples taken at the outfall recorded at 320, 355 and 550 CFU/100mL which is just above the water quality limit (235 CFU/100mL). Of the E. coli samples taken up system, the highest value was recorded at the intersection of Springvale and Alpine street. This result of 631 CFU/100mL was reported downstream of previous CIPP lining.

No work was performed in this area during this period and at the present time, additional investigation, sampling and CCTV may be necessary to check on previous repairs or make additional corrective actions. DEP performed sampling at this outfall on 9/6/18 and high E. Coli results were identified.

Outfall 54B/C – Fieldbrook Drive

The Town has addressed illicit discharges in the Fieldbrook Drive area (previously referred to as outfall 50). Dye testing had identified direct connections from sewer or basement drains at #7 Fieldbrook Drive, #23 Fieldbrook Drive and #21 Garden Parkway during previous reporting periods. Two of the defective services have been repaired but additional dye testing or confirmatory sampling is needed for #23 Fieldbrook Drive.

Additional sampling and smoke testing in conjunction with closed-circuit-television (CCTV) of this drainage network determined that additional issues persisted after the initial CIPP lining in 2015. Through these efforts, it was determined that exfiltration between the sewer and drains lines is prevalent in this system especially along Garden Parkway.

CIPP lining was completed on Garden Parkway and the remaining sewer lines and laterals on Fieldbrook Drive during the prior reporting period. The work included approximately 1,465 LF of CIPP lining, 26 full length service lateral liners and comprehensive manhole rehabilitation at eight manholes.

Confirmatory sampling will be conducted in 2019 in this area.

Outfall 63 – Mill Pond Lane
The Mill Pond Lane Outfall #63 had bacteria counts of 24,000 CFU/100mL during the initial outfall sampling on August 22nd, 2017. After these results were obtained a follow up sampling event was planned the following week for August 29th, 2017. During this event, the nearest upstream manhole was found to be mostly dry with not enough flow to sample.

Subsequent sampling events over the next month revealed that the last manhole before the outfall typically was flowing, while the rest of the system remained dry. Sampling at the drain manhole had bacteria counts of >24,196 CFU/100mL. With these recent results, CCTV was performed by the Town to determine the source of illicit flow. Knowing that only one sewer lateral crossed the drain in this location, a dye test was performed in conjunction with CCTV. The tapes revealed minor exfiltration from the service lateral of #65 Mill Pond Lane on November 28th, 2017.

The Town is currently gathering information and evaluating options for removing this illicit flow.

Outfall 74 – Rt.1 / Elda Drive
The Rt. 1 / Elda Drive Outfall #74 primarily serves Hillcrest Road in Norwood. It remained on the list of flowing or unknown outfalls because it could not be located in 2010. There is no apparent receiving water body or outfall where the discharge is indicated on the GIS. In 2010, the upstream manhole was dry, however, when revisited in 2017, the upstream manhole at Westview Drive and Hillcrest Road was seen to have a small flow.

During the initial sampling visit on August 29th, 2017 the nearest upstream manhole to the outfall had a strong sewage smell. Since there were only four additional manholes in the system, they all were inspected during this visit. It was found that the flow stopped by the third manhole upstream. Post inspection E. coli results yielded 241,000 CFU/100mL, a clear indication of a direct connection upstream.

Shortly after these bacteria results were returned, the Town deployed CCTV to determine the potential source of flow. A dye test of #19 Hillcrest Road utilizing CCTV was conducted on October 3rd, 2017 and showed a direct connection of the sewer pipe to the drain. Eventually, it was determined that the internal plumbing in the basement was crossed. This resulted in the sewer lateral being incorrectly tied to the drain and the foundation drain tied to the sewer. This connection was removed approximately two weeks later on October 18th, 2017.

Follow up sampling remains to be completed at this location to confirm that this work has eliminated the illicit discharge from this outfall.

Outfall 92 – Ridgewood Drive
The last of the three illicit connections found during this reporting period was located upstream of Outfall #93 on Ridgewood Drive. Outfall sampling had bacteria counts 4,352 CFU/100mL on August 29th, 2017.

Subsequent upstream sampling was conducted on two separate occasions and results ranged from 754 CFU/100mL to 14,136 CFU/100mL. Similar to the results above for Outfall #74, it was then found that flow upstream of the outfall was confined between two upstream manholes. After narrowing down the source of illicit flow, CCTV and dye testing of house #235 Ridgewood Drive was conducted as its sewer service crossed the drain near the source of flow to the drain. On November 6th, 2017 #235 Ridgewood failed a dye test.

Currently, the Town is gathering information and evaluating options for removing this illicit flow. Potential removal options may include installing a full-length lateral liner for #235 Ridgewood Drive or replacement.

Infiltration / Inflow

The Town has been monitoring its wastewater and potential extraneous flow using data collected and reported by MWRA. Over the last 1 to 2 years, the town has noticed an increasing trend in total metered wastewater flow without a corresponding increase in water use. It was suspected that I/I was the primary cause and given the magnitude and nature of the increase (large increase and not specifically wet weather related), a constant source of extraneous flow was suspected.

The town began a program with the assistance of CDM Smith to assess areas of the system that may be likely contributors to this extraneous flow. The work included physical inspection of large cross-country sewers in wet areas and in and around stream crossings. As noted previously in this report, 2018 and in particular, fall of 2018, was a particularly wet period with a high rainfall total. It was suspected that a constant source or sources was likely responsible for the increase in flow. Investigations conducted in March and April of 2019 identified several significant sources of extraneous flow including active manhole infiltration and inflow. A major source of inflow was also located in a cross-country sewer which consisted of an 8-in pipe from the ground surface into a sewer manhole. Due to the location of this pipe and manhole, the inappropriate connection was seen to be actively conveying inflow to the sewer system. It was further noted based information provided by the town and supported with photographs, that this area was flooded in fall of 2018 to a depth of approximately 2 feet. Inflow rates from this source were estimated to exceed 1.5 MGD. The town immediately blocked this connection to eliminate the source and is currently preparing to perform a CCTV program in this area to assess the sewer system and will likely follow up with additional corrective action such as lining of sewers and manhole rehabilitation.

b. A description of activities expected to be completed during the next year to achieve compliance with this Order:

The Town of Norwood expects to continue with work in all areas described below in the remaining portion of the reporting period. Anticipated tasks include:

Area 5 Sewer Rehabilitation project - Area 5 is the final priority area which will be lined under the existing Underdrain Control Plan. The Town will be completing the construction of rehabilitation work in Area 5 in summer 2019. The project is funded by the MWRA local financial assistance program.

A Project Evaluation Form will be submitted in August for SRF Funding. Work may include construction of an additional sewer rehabilitation projects, IDDE and Municipal Separate Storm Sewer System (MS4) investigations and follow-up activities.

Completion of additional ongoing sampling and monitoring at outfalls and underdrain sampling manholes. It is anticipated that underdrain sampling will be performed at key locations 3 times per year (spring, summer, and fall).

Continue program to identify and eliminate illicit connections when found. Follow up sampling will be conducted at outfalls which were flowing during initial outfall inspections in 2010 and 2017.

Additional sampling areas and efforts will be coordinated and undertaken along with support from the DEP Southeast Regional Office.

The Town has developed a GIS system of the sewer, underdrain and storm drain systems. This GIS system is now completed. In addition, the GIS will include mobile applications that will allow the town to actively use the system to implement and track work performed under this order.

The town will continue investigations in the cross-country sewer areas described above and initiate corrective action to eliminate extraneous flow.

c. Results of underdrain and outfall testing completed in the previous year:

The Town continued to perform sampling and analysis at underdrain manholes and stormwater outfalls during the reporting period. Testing was performed on May 9, 2018, October 16, 2017 and April 23, 2019. The information is included in the attached Table 1.

d. A listing of all unauthorized connections removed in the previous year, including estimates of annual gallons of unauthorized flow removed:

Indirect connection(s) were observed at joints in the sewer on Mill Pond Lane as well as Ridgewood Drive using the Town's CCTV truck with assistance from the Department of Public Works employees. The Town is currently gathering additional information and working on removal of both sources.

e. A listing of all Sanitary Sewer Overflows in the previous year (excluding overflows completely contained within basements or other areas, where the overflow did not reach the Town's storm sewer system or a water body), including dates, times, locations, amount discharged, and steps taken to eliminate the overflow:

The Town of Norwood reports that no Sanitary Sewer Overflows occurred during the reporting period as a result of the Town's operations.

We remain available to meet with you to discuss these matters further. If you have any questions or concerns please contact me.

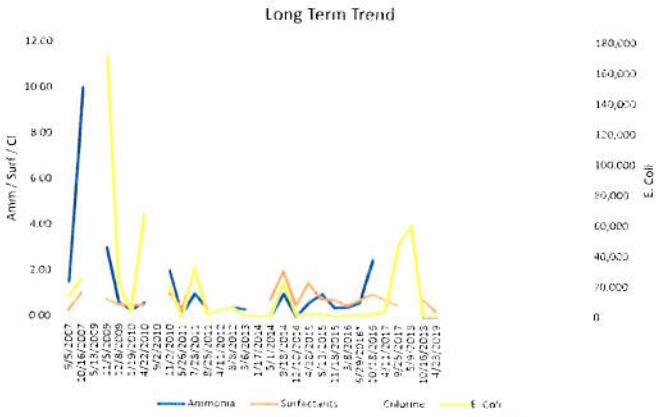
Sincerely,

Tony Mazzucco
General Manager
Town of Norwood

cc: Norwood Board of Selectmen
Mark Ryan, Norwood DPW
Gary Schorer, Norwood DPW
John Flynn, Murphy, Hesse, Toomey and Lehane
David Polcari, CDM Smith

Site 2: Washington @ Winter					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007	1.50	0.25		12,000	
10/16/2007	10.00	1.00		24,000	
5/13/2009					No flow
11/5/2009	3.00	0.75		170,000	
12/8/2009	0.60	0.50		23,000	
1/19/2010	0.25	0.50		3,000	
4/22/2010	0.60	0.50		67,000	
9/2/2010					H2S Alarm
11/2/2010	2.00	1.00		20,000	
5/26/2011	0.10	0.35		34	
7/28/2011	1.00	2.00		32,000	
8/25/2011	0.30	0.30		920	
4/11/2012				4,000	
8/8/2012	0.40	0.25		5,600	
3/6/2013	0.30			580	
1/17/2014				61	
5/1/2014	0.00	0.75		230	
9/18/2014	1.00	2.00		22,000	
12/10/2014	0.00	0.50		770	
4/28/2015	0.60	1.50		1,600	
8/13/2015	1.00	0.75		1,600	
11/18/2015	0.40	0.75		170	
3/8/2016	0.40	0.50		480	
6/29/2016*	0.60	0.75	0.00	1,200	
10/18/2016	2.50	1.00	0.00	1,700	
4/11/2017		0.75	0.10	3,500	
9/25/2017	0.50	0.50	0.00	47,000	
5/9/2018				60,000	
10/16/2018	0.00	0.75		686	
4/23/2019	0.00	0.25		649	

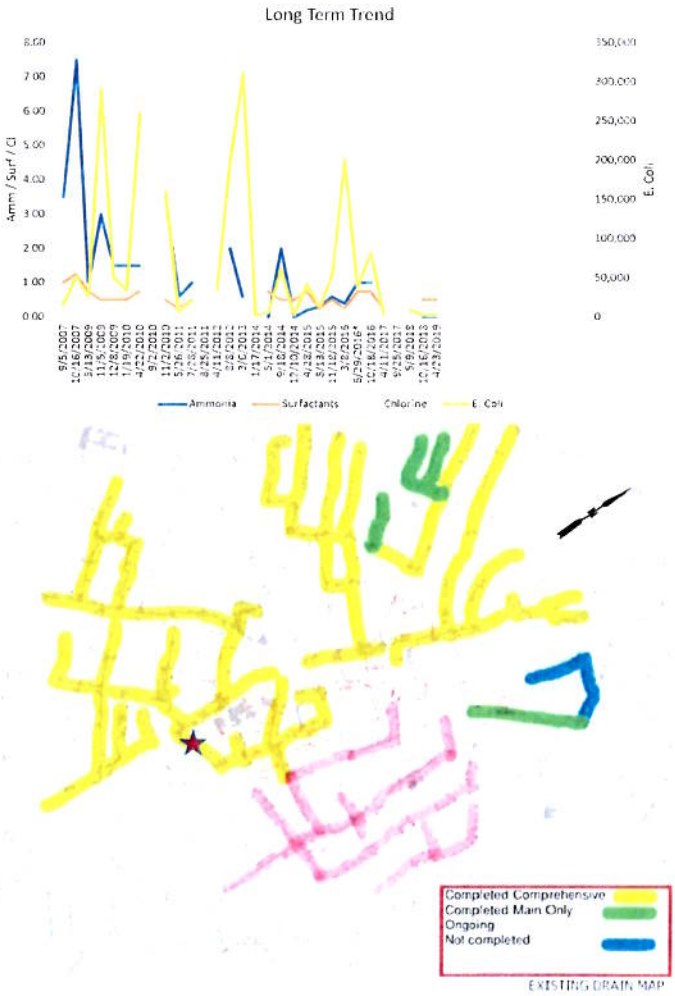
Notes:
Independent Site - no upstream influence.
10/18 Monitor recent trend for improvement



EXISTING DRAIN MAP

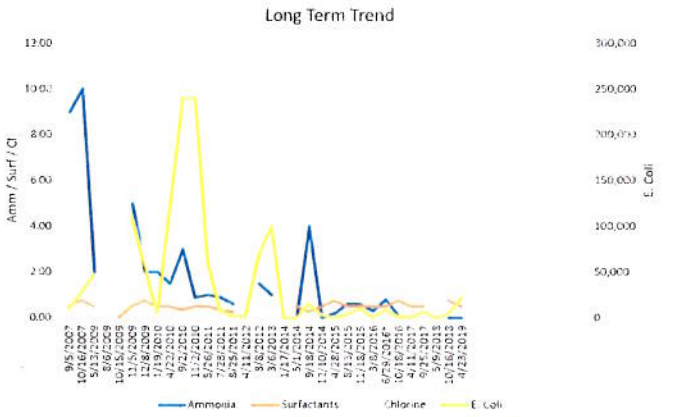
Site 3: East Hoyle Street (Beehive)					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007	3.50	1.00		15,000	
10/16/2007	7.50	1.25		52,000	
5/13/2009	1.00	0.75		26,000	
11/5/2009	3.00	0.50		290,000	
12/8/2009	1.50	0.50		50,000	
1/19/2010	1.50	0.50		34,000	
4/22/2010	1.50	0.75		260,000	
9/2/2010					H2S Alarm
11/7/2010	3.50	0.50		160,000	
5/26/2011	0.60	0.25		7,500	
7/28/2011	1.00	0.50		20,000	
8/25/2011					MH Flooded
4/11/2012				34,000	
8/8/2012	2.00	0.50		200,000	
3/6/2013	0.60			310,000	
1/17/2014				2,400	
5/1/2014	0.00	0.75		5,500	
9/18/2014	2.00	0.50		62,000	
12/10/2014	0.00	0.50		2,700	
4/28/2015	0.20	0.75		42,000	
8/13/2015	0.30	0.25		13,000	
11/18/2015	0.60	0.50		54,000	
3/8/2016	0.40	0.25		200,000	
6/29/2016*	1.00	0.75	0.20	39,000	
10/18/2016	1.00	0.75	0.00	82,000	
4/11/2017		0.25	0.10	4,000	
9/25/2017					MH Flooded
5/9/2018				8,700	
10/16/2018	0	0.5		2,419	
4/23/2019	0.00	0.50		1,733	

Notes:
Impacted by upstream sites / systems including Site 1 & 2
10/18 Improvement following additional corrective action, Montor progress



Site 5: Broadway at Guild					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007	9.00	0.50		9,000	
10/16/2007	10.00	0.75		27,000	
5/13/2009	2.00	0.50		47,000	
8/6/2009					H2S Alarm
10/15/2009		-			
11/5/2009	5.00	0.50		110,000	
12/8/2009	2.00	0.75		56,000	
1/19/2010	2.00	0.50		5,900	
4/22/2010	1.50	0.50		120,000	
9/2/2010	3.00	0.35		240,000	
11/2/2010	0.90	0.50		240,000	
5/26/2011	1.00	0.50		61,000	
7/28/2011	0.90	0.35		8,200	
8/25/2011	0.60	0.25		2,000	
4/11/2012				2,000	
8/8/2012	1.50	0.60		69,000	
3/6/2013	1.00			100,000	
1/17/2014				<1	
5/1/2014	T	0.50		120	
9/18/2014	4.00	0.25		15,000	
12/10/2014	T	0.50		2,800	
4/28/2015	0.20	0.75		<1	
8/13/2015	0.60	0.50		4,000	
11/18/2015	0.60	0.50		9,900	
3/8/2016	0.30	0.50		330	
6/29/2016*	0.80	0.50	0.10	8,500	
10/18/2016	0.10	0.75	0.00	1,400	
4/11/2017		0.50	0.00	280	
9/25/2017	0.75	0.50	0.00	6,400	
5/9/2018				<10	
10/16/2018	0.00	0.75		4,134	
4/23/2019	0.00	0.50		21,614	

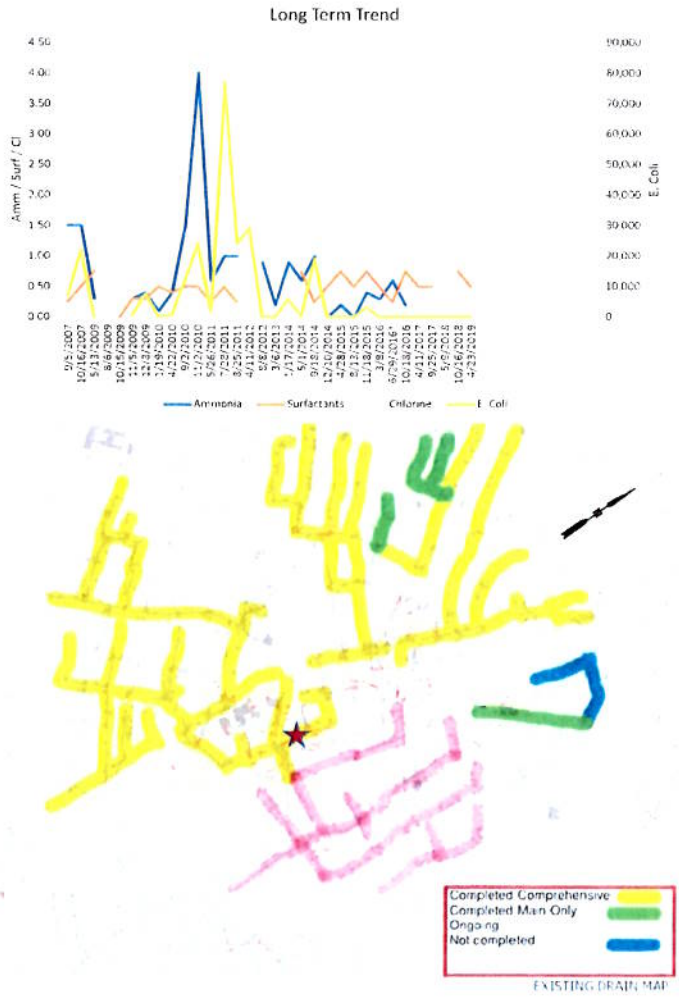
Notes:
Impacted by upstream Sites (1, 2, & 3)



EXISTING DRAIN MAP

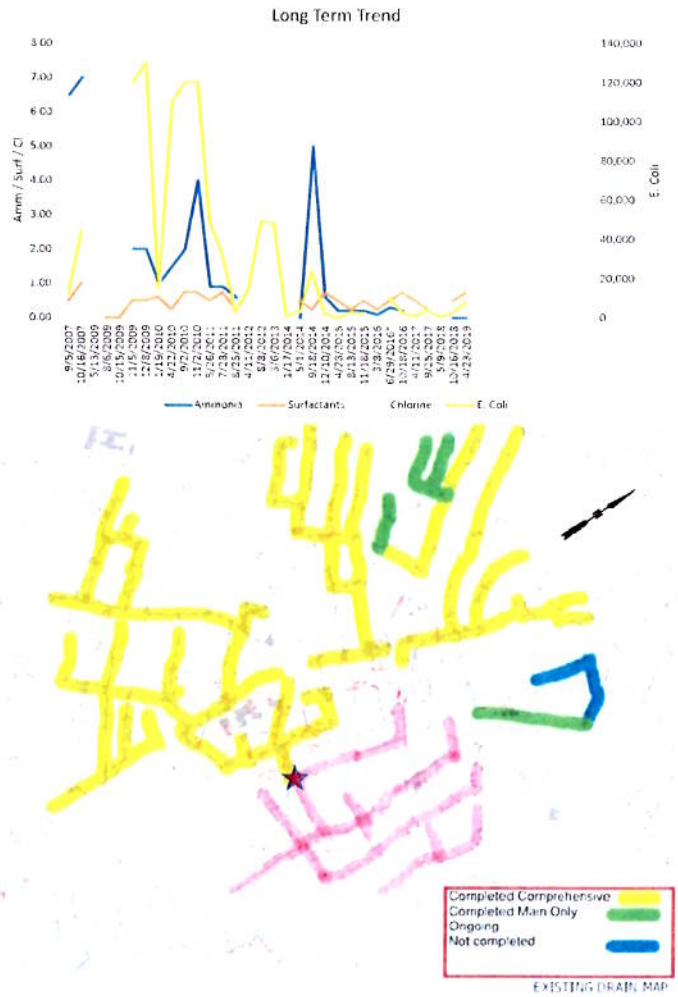
Site 7: Broadway north of Guild					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007	1.50	0.25		7,000	
10/16/2007	1.50	0.50		22,000	
5/13/2009	0.30	0.75		110	
8/6/2009					H2S Alarm
10/15/2009		-			
11/5/2009	0.30	0.30		590	
12/8/2009	0.40	0.30		7,600	
1/19/2010	0.10	0.50		190	
4/22/2010	0.40	0.40		520	
9/2/2010	1.50	0.50		12,000	
11/2/2010	4.00	0.50		24,000	
5/26/2011	0.60	0.25		2,000	
7/28/2011	1.00	0.50		77,000	
8/25/2011	1.00	0.25		24,200	
4/11/2012				29,000	
8/8/2012	0.90	0.40		160	
3/6/2013	0.20			7	
1/17/2014	0.90			5,800	
5/1/2014	0.60	0.75		330	
9/18/2014	1.00	0.25		19,000	
12/10/2014	T	0.50		77	
4/28/2015	0.20	0.75		51	
8/13/2015	T	0.50		78	
11/18/2015	0.40	0.75		3,100	
3/8/2016	0.30	0.50		<2	
6/29/2016*	0.60	0.25	0.00	35	
10/18/2016	0.20	0.75	0.00	26	
4/11/2017		0.50	0.00	46	
9/25/2017	0.00	0.50	0.00	8	
5/9/2018				20	
10/16/2018	0.00	0.75		52	
4/23/2019	0.00	0.50		10	

Notes:
Independent Site - no upstream influence.
10/18 Solid performance, can be removed from testing.



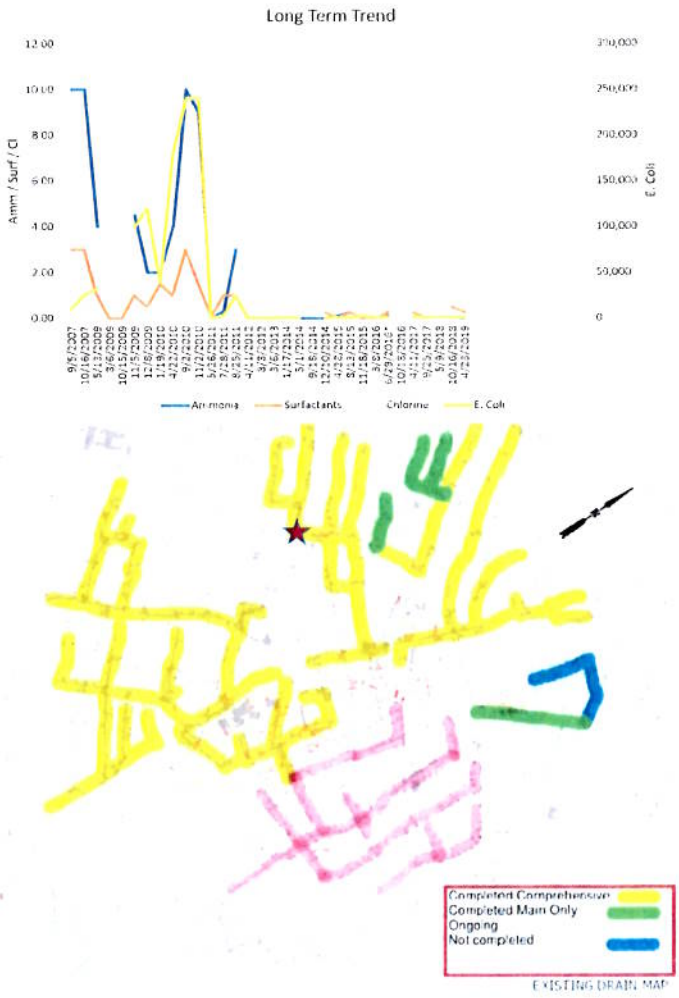
Site 8: Plimpton @ Lennox					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007	6.50	0.50		12,000	
10/16/2007	7.00	1.00		44,000	
5/13/2009					No flow
8/6/2009		-			
10/15/2009					
11/5/2009	2.00	0.50		120,000	
12/8/2009	2.00	0.50		130,000	
1/19/2010	1.00	0.60		15,000	
4/22/2010	1.50	0.25		110,000	
9/2/2010	2.00	0.75		120,000	
11/2/2010	4.00	0.75		120,000	
5/26/2011	0.90	0.50		49,000	
7/28/2011	0.90	0.75		32,000	
8/25/2011	0.60	0.25		2,900	
4/11/2012				14,000	
8/8/2012	1.00	0.40		49,000	
3/6/2013				48,000	
1/17/2014				870	
5/1/2014	T	0.50		3,200	
9/18/2014	5.00	0.25		24,000	
12/10/2014	0.60	0.75		2,100	
4/28/2015	0.20	0.50		19	
8/13/2015	0.20	0.25		2,900	
11/18/2015	0.20	0.50		1,700	
3/8/2016	0.10	0.25			lost sample / spilled
6/29/2016*	0.30	0.50	0.00	10,000	
10/18/2016	0.20	0.75	0.00	2,400	
4/11/2017		0.50	0.00	870	
9/25/2017	0.25	0.25	0.00	3,900	
5/9/2018				440	
10/16/2018	0.00	0.50		2,672	
4/23/2019	0.00	0.75		7,900	

Notes:
Impacted by upstream hospital area Sites 1-7



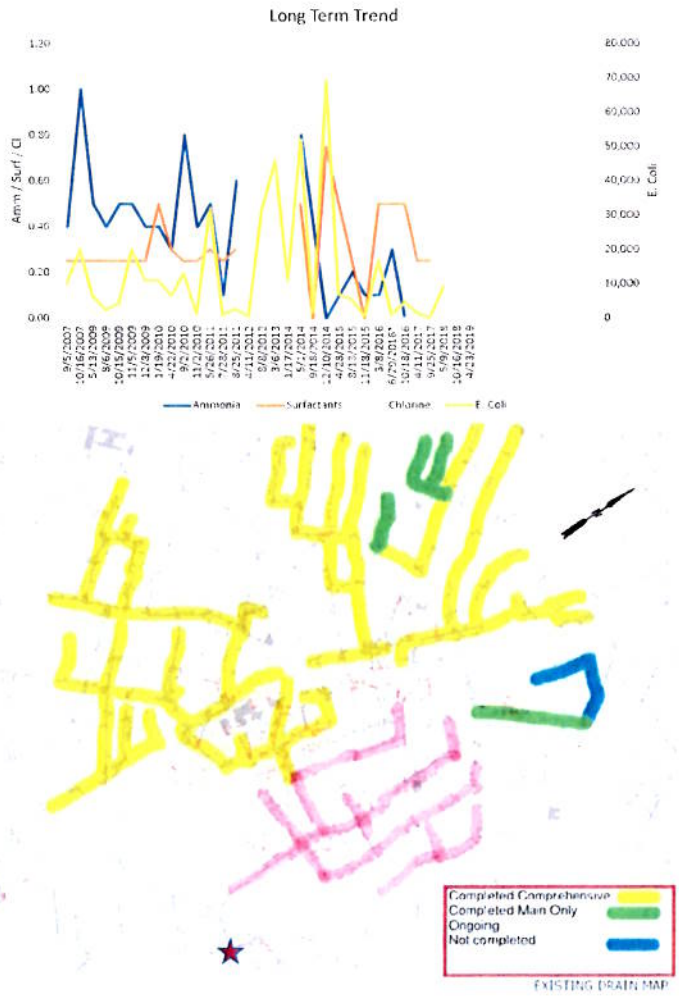
Site 9: Florence at Nichols					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007	10.00	3.00		10,000	
10/16/2007	10.00	3.00		25,000	
5/13/2009	4.00	1.00		33,000	
8/6/2009		-			
10/15/2009		-			
11/5/2009	4.50	1.00		100,000	
12/8/2009	2.00	0.50		120,000	
1/19/2010	2.00	1.50		40,000	
4/22/2010	4.00	1.00		180,000	
9/2/2010	10.00	3.00		240,000	
11/2/2010	9.00	1.50		240,000	
5/26/2011	0.00	0.10		120	
7/28/2011	0.30	1.00		2,800	
8/25/2011	3.00	1.00		24,200	
4/11/2012				85	
8/8/2012	0.10	0.25		180	
3/6/2013				58	
1/17/2014				440	
5/1/2014	0.00	T		160	
9/18/2014	no flow				
12/10/2014	0.00	0.25		200	
4/28/2015	0.10	T		400	
8/13/2015	0.25	0.25		91	
11/18/2015	T	T		2,400	
3/8/2016	T	T		480	
6/29/2016*	0.10	0.25	0.00	1,200	
10/18/2016					Town hydrant flushing
4/11/2017		0.25	.1 (T)	1,300	
9/25/2017	0.00	T	0.00	360	
5/9/2018				1,000	
10/16/2018	0.00	0.50		437	
4/23/2019	0.00	0.25		770	

Notes:
Independent Site - no upstream influence.
Ultimate discharge at East Hoyle Headwall (Site 12).
10/18 Approaching compliance



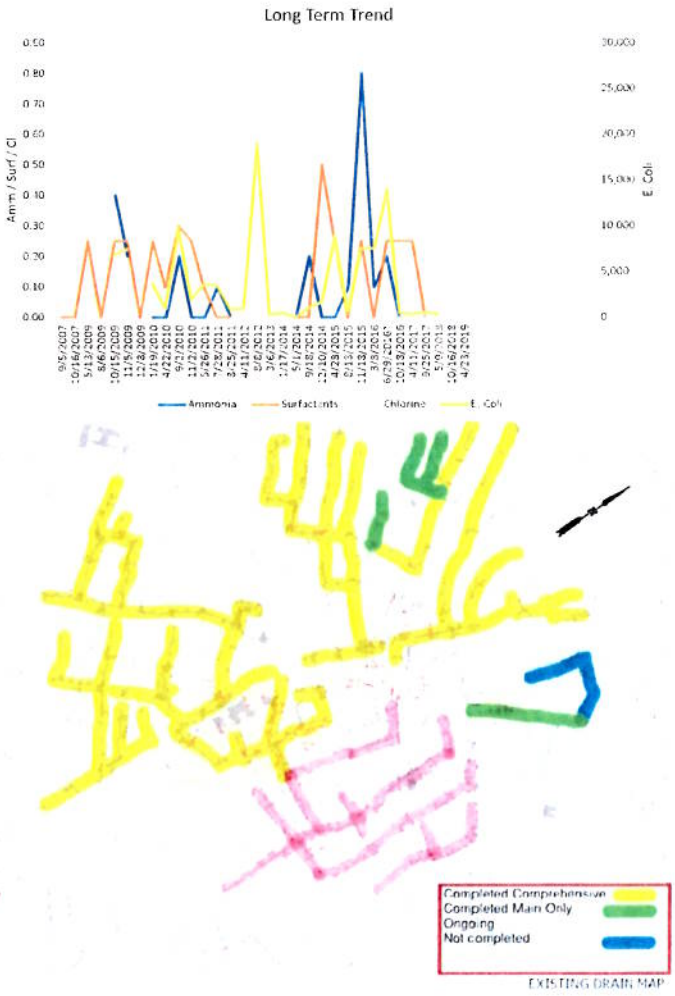
Site 10: Meadowbrook Headwall					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007	0.40	0.25		10,000	
10/16/2007	1.00	0.25		20,000	
5/13/2009	0.50	0.25		6,500	
8/6/2009	0.40	0.25		2,400	
10/15/2009	0.50	0.25		4,100	
11/5/2009	0.50	0.25		20,000	
12/8/2009	0.40	0.25		11,000	
1/19/2010	0.40	0.50		11,000	
4/22/2010	0.30	0.30		6,500	
9/2/2010	0.80	0.25		13,000	
11/2/2010	0.40	0.25		1,300	
5/26/2011	0.50	0.30		32,000	
7/28/2011	0.10	0.25		1,000	
8/25/2011	0.60	0.30		2,700	
4/11/2012				520	
8/8/2012	0.50	0.40		32,000	
3/6/2013				46,000	
1/17/2014				11,000	
5/1/2014	0.80	0.50		52,000	
9/18/2014	0.40	T		1,600	
12/10/2014	0.00	0.75		69,000	
4/28/2015	0.10	0.50		6,800	
8/13/2015	0.20	0.25		5,400	
11/18/2015	0.10	T		610	
3/8/2016	0.10	0.50		17,000	
6/29/2016*	0.30	0.50	T	980	
10/18/2016	0.00	0.50	0.00	4,700	
4/11/2017		0.25	0.2 (T)	1,400	
9/25/2017	0.25	0.25	0.4 (T)	173	
5/9/2018				9,200	
10/16/2018					
4/23/2019	0.00	0.25		7,678	

Notes:
Downstream of the majority of the Underdrain System
Discharge to surface water



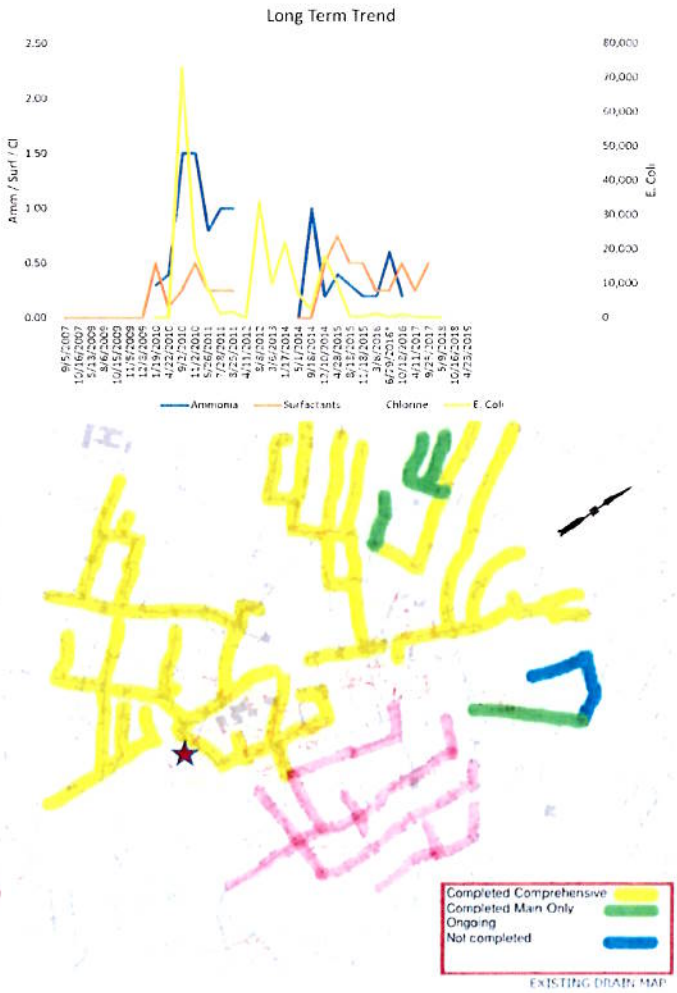
Site 11: Plantingfield Brook					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007		-			
10/16/2007		-			
5/13/2009	0.20	0.25		27,000	
8/6/2009		-			
10/15/2009	0.40	0.25		6,800	
11/5/2009	0.20	0.25		7,500	
12/8/2009		-			
1/19/2010	0.00	0.25		3,700	
4/22/2010	0.00	0.10		1,000	
9/2/2010	0.20	0.30		9,800	
11/?/2010	0.00	0.25		2,000	
5/26/2011	0.00	0.10		3,600	
7/28/2011	0.10	T		3,500	
8/25/2011	T	T		820	
4/11/2012				980	
8/8/2012	T	0.25		19,000	
3/6/2013				290	
1/17/2014				490	
5/1/2014	T	T		690*	
9/18/2014	0.20	T		980	
12/10/2014	0.00	0.50		1,700	
4/28/2015	0.00	0.25		8,900	
8/13/2015	0.10	T		610	
11/18/2015	0.80	0.25		7,600	
3/8/2016	0.10	T		7,500	
6/29/2016*	0.20	0.25	0.00	14,000	
10/18/2016	0.00	0.25	0.00	460	
4/11/2017		0.25	0.00	320	
9/25/2017	T	T	0.1 (T)	550	
5/9/2018				280	
10/16/2018					
4/23/2019	0.25	0.50		1,300	

Notes:
Not in Underdrain Area - IDDE Location



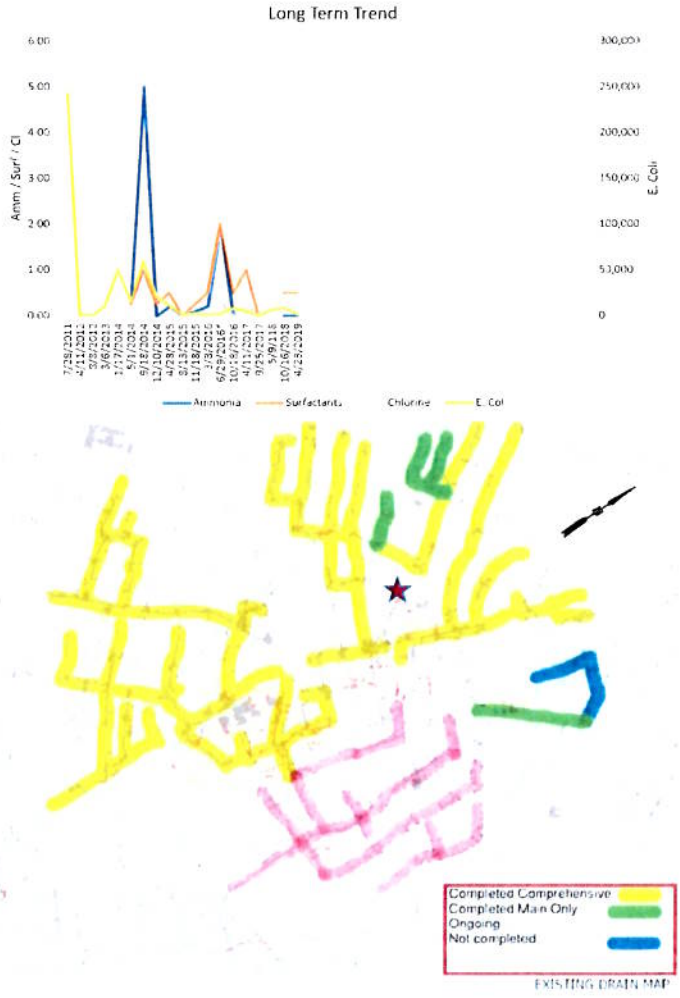
Site 12: East Hoyle Headwall					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
9/5/2007		-			
10/16/2007		-			
5/13/2009		-			
8/6/2009		-			
10/15/2009		-			
11/5/2009		-			
12/8/2009		-			
1/19/2010	0.30	0.50		2	
4/22/2010	0.40	0.10		0	
9/2/2010	1.50	0.25		73,000	
11/2/2010	1.50	0.50		20,000	
5/26/2011	0.80	0.25		8,800	Florence Lined
7/28/2011	1.00	0.25		1,300	
8/25/2011	1.00	0.25		1,700	
4/11/2012				28	
8/8/2012	2.00	0.40		34,000	
3/6/2013				9,900	
1/17/2014				22,000	
5/1/2014	0.00	T		7,100	
9/18/2014	1.00	T		2,400	
12/10/2014	0.20	0.50		18,000	
4/28/2015	0.40	0.75		10,000	
8/13/2015	0.30	0.50		460	
11/18/2015	0.20	0.50		290	
3/8/2016	0.20	0.25		1,200	
6/29/2016*	0.60	0.25	T	240	
10/18/2016	0.20	0.50	0.00	870	
4/11/2017		0.25	0.00	210	
9/25/2017	0.00	0.50	0.3 (T)	86	
5/9/2018				20	
10/16/2018					
4/23/2019	0.00	0.25		1,553	

Notes:
Underdrains from Area 3 (Walpole St) and Florence St included in discharge
Re-enters culverted system tributary to Site 10 - Meadowbrook at Sunnyside



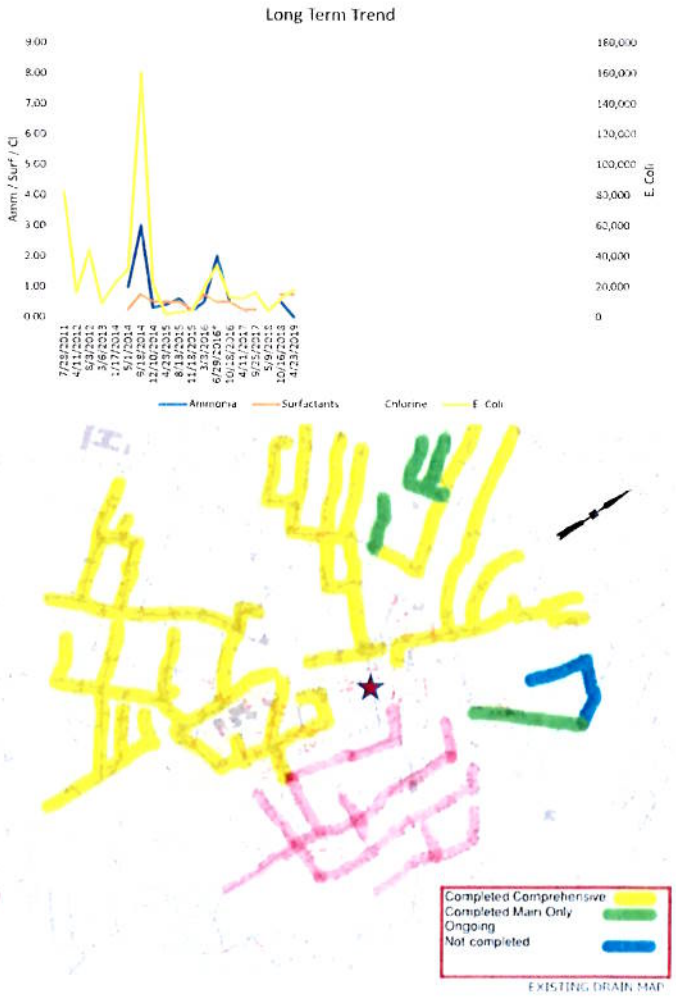
Site 13: #10 Maple Street					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
7/28/2011	10+	0.75		242,000	
4/11/2012				<1*	
8/8/2012	0.20	T		<1*	
3/6/2013				9,900	
1/17/2014				50,000	
5/1/2014	0.40	0.25		16,000	
9/18/2014	5.00	1.00		60,000	
12/10/2014	0.00	0.25		21,000	
4/28/2015	0.20	0.50		11,000	
8/13/2015	T	T		610	
11/18/2015	0.10	0.25		2,400	
3/8/2016	0.20	0.50		770	
6/29/2016*	2.00	2.00	0.30	1,800	
10/18/2016	0.00	0.50	0.00	8,400	
4/11/2017		1.00	0.20	4,700	
9/25/2017	2.00	T	0.4 (T)	<1	
5/9/118				6,100	
10/16/2018	0.00	0.50		8,642	
4/23/2019	0.00	0.50		1,958	

Notes:
Likley impacted from upstream areas.
Continue to monitor



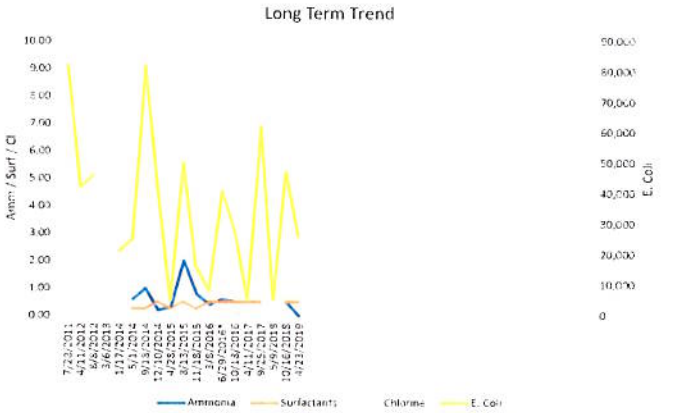
Site 14: Cottage Street					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
7/28/2011	8.00	3.00		82,000	
4/11/2012				16,000	
8/8/2012	3.00	0.50		44,000	
3/6/2013				9,100	
1/17/2014				22,000	
5/1/2014	1.00	0.25		31,000	
9/18/2014	3.00	0.75		160,000	
12/10/2014	0.30	0.50		22,000	
4/28/2015	0.40	0.50		1,700	
8/13/2015	0.60	0.50		2,800	
11/18/2015	0.20	0.25		4,000	
3/8/2016	0.50	0.75		19,000	
6/29/2016*	2.00	0.50	0.10	34,000	
10/18/2016	0.50	0.50	0.00	13,000	
4/11/2017		0.25	0.20	12,000	
9/25/2017	0.50	0.25	0.3 (T)	16,000	
5/9/2018				3,900	
10/16/2018	0.50	0.75		12,030	
4/23/2019	0.00	0.75		17,718	

Notes:
Uncertain tributary area.



Site 15A: Nahatan Street Right (A)					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
7/28/2011	9.00	0.75		82,000	
4/11/2012				42,000	
8/8/2012	4.00			46,000	
3/6/2013					
1/17/2014				21,000	
5/1/2014	0.60	0.25		25,000	
9/18/2014	1.00	0.25		82,000	
12/10/2014	0.20	0.50		41,000	
4/28/2015	0.30	0.25		5,200	
8/13/2015	2.00	0.50		50,000	
11/18/2015	0.80	0.25		16,000	
3/8/2016	0.40	0.50		8,300	
6/29/2016*	0.60	0.50	0.00	41,000	
10/18/2016	0.50	0.50	0.00	28,000	
4/11/2017		0.50	0.20	5,800	
9/25/2017	1.50	0.50	0.00	62,000	
5/9/2018				5,200	
10/16/2018	0.50	0.50		47,186	
4/23/2019	0.00	0.50		25,812	

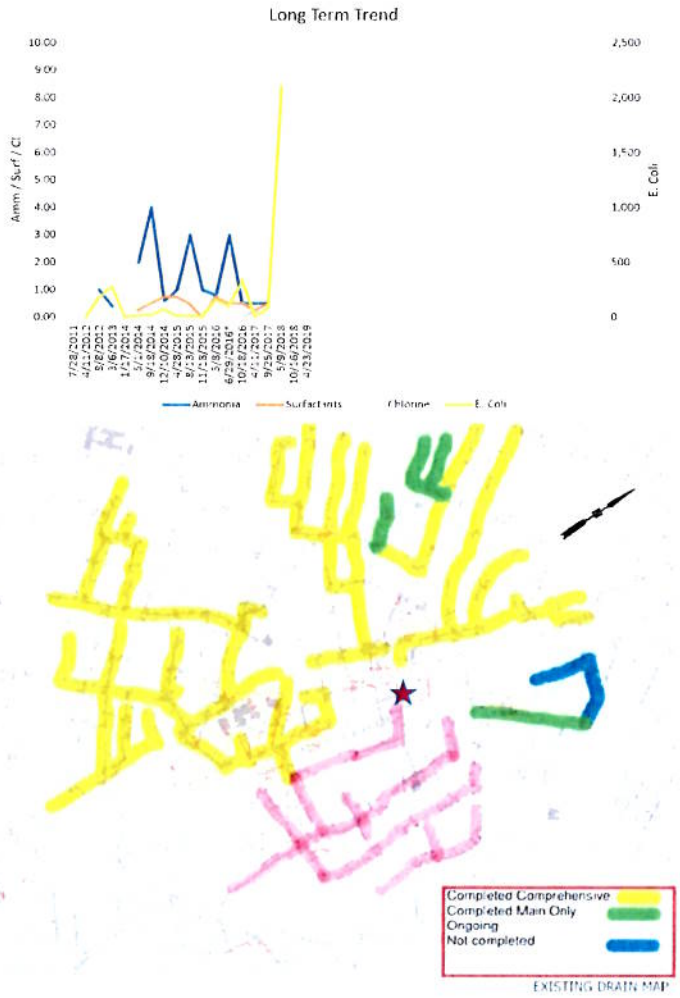
Notes:
Impacted by Cottage, Washington, Railroad areas
10/18 Further investigation needed.



EXISTING DRAIN MAP

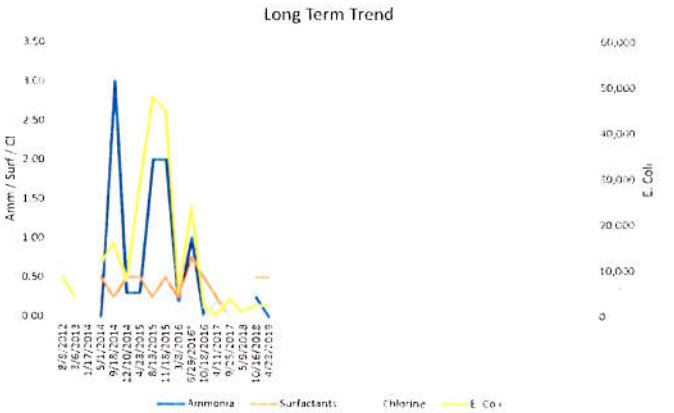
Site 15B: Nahatan Street Right (B)					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
7/28/2011	9.00	0.75			
4/11/2012				<1	
8/8/2012	1.00			180	
3/6/2013	0.40			280	
1/17/2014				1	
5/1/2014	2.00	0.25		12	
9/18/2014	4.00	0.50		16	
12/10/2014	0.60	0.75		70	
4/28/2015	1.00	0.75		11	
8/13/2015	3.00	0.50		12	
11/18/2015	1.00	0.00		6	
3/8/2016	0.80	0.75		160	
6/29/2016*	3.00	0.50	0.00	100	
10/18/2016	0.50	0.50	0.00	340	
4/11/2017	0.50	0.25	0.20	7	
9/25/2017	0.50	0.50	0.00	79	
5/9/2018				2,100	
10/16/2018					
4/23/2019					

Notes:
5/9/19 sample an outlier.



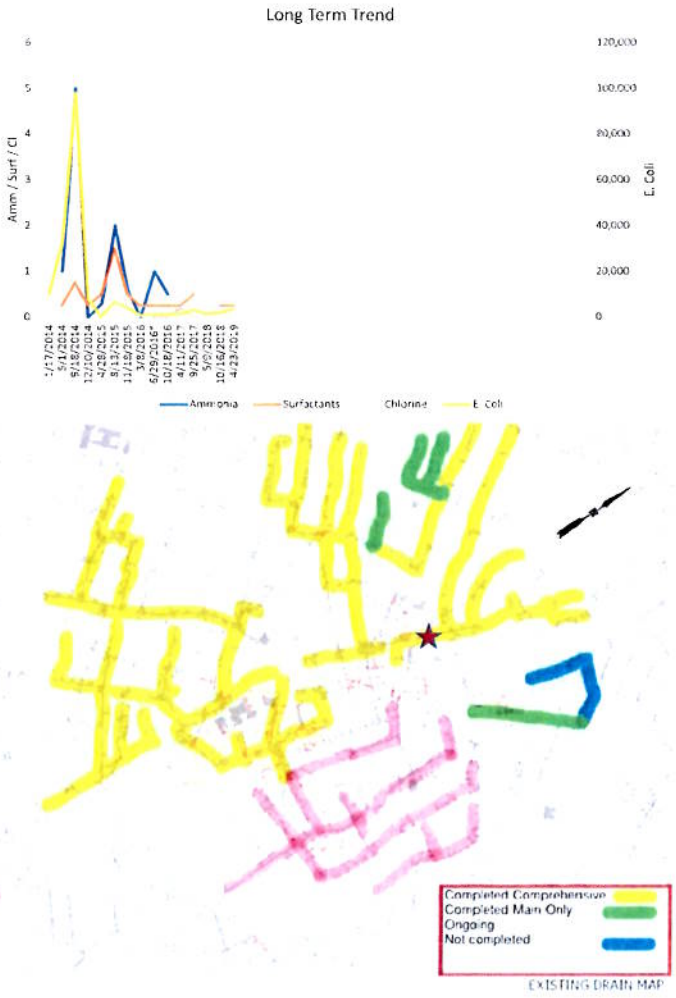
Site 17: Dean Street					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
8/8/2012	1.00	0.50		8,600	
3/6/2013				4,200	
1/17/2014					
5/1/2014	T	0.50		12,000	
9/18/2014	3.00	0.25		16,000	
12/10/2014	0.30	0.50		7,900	
4/28/2015	0.30	0.50		29,000	
8/13/2015	2.00	0.25		48,000	
11/18/2015	2.00	0.50		45,000	
3/8/2016	0.20	0.25		5,200	
6/29/2016*	1.00	0.75	0.00	24,000	
10/18/2016	0.00	0.50	T	2,000	
4/11/2017		0.25	0.20	290	
9/25/2017	0.30	T	0.1 (T)	3,700	
5/9/2018				1,100	
10/16/2018	0.25	0.50		2,422	
4/23/2019	0.00	0.50		2,420	

Notes:
Washington / Walnut area.
Monitor for additional investigation.



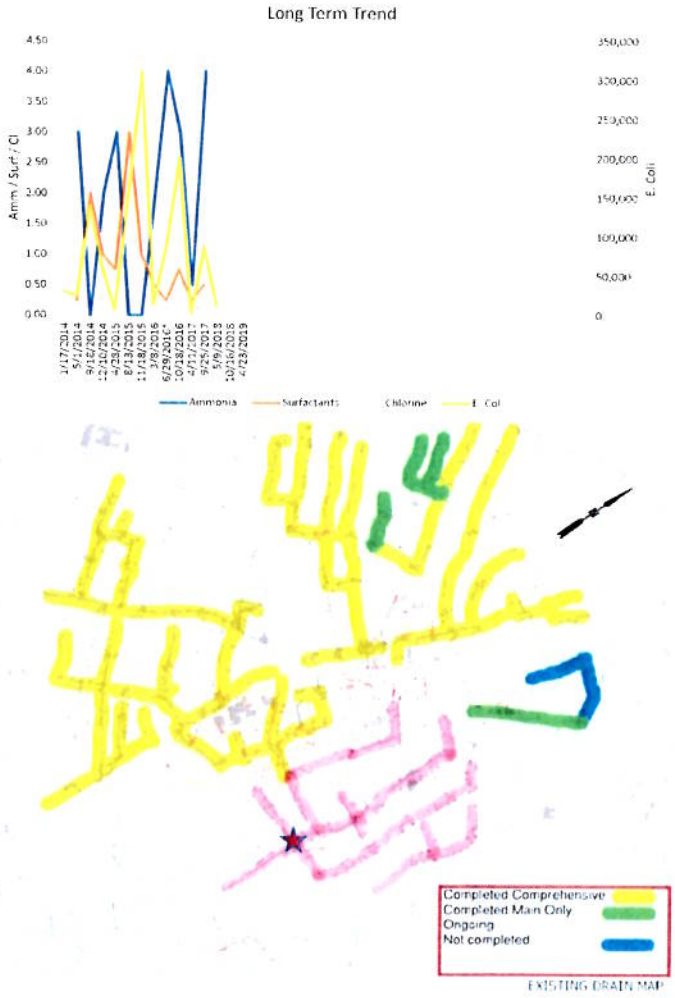
Site 18: Washington Street					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
1/17/2014				10,000	
5/1/2014	1	0.25		32,000	
9/18/2014	5.00	0.75		98,000	
12/10/2014	T	0.25		8,300	
4/28/2015	0.30	0.50		60	
8/13/2015	2.00	1.50		6,600	
11/18/2015	0.60	0.50		4,000	
3/8/2016	T	0.25		630	
6/29/2016*	1.00	0.25	0.00	1,200	
10/18/2016	0.50	0.25	0.00	1,100	
4/11/2017		0.25	0.20	1,400	
9/25/2017	2.00	0.50	0.00	2,800	
5/9/2018				1,400	
10/16/2018	0.25	0.25		1,732	
4/23/2019	0.25	0.25		3,388	

Notes:
Railroad / Wahsington St Area, Potential incomplete work
Improved results, bacteria counts stable.



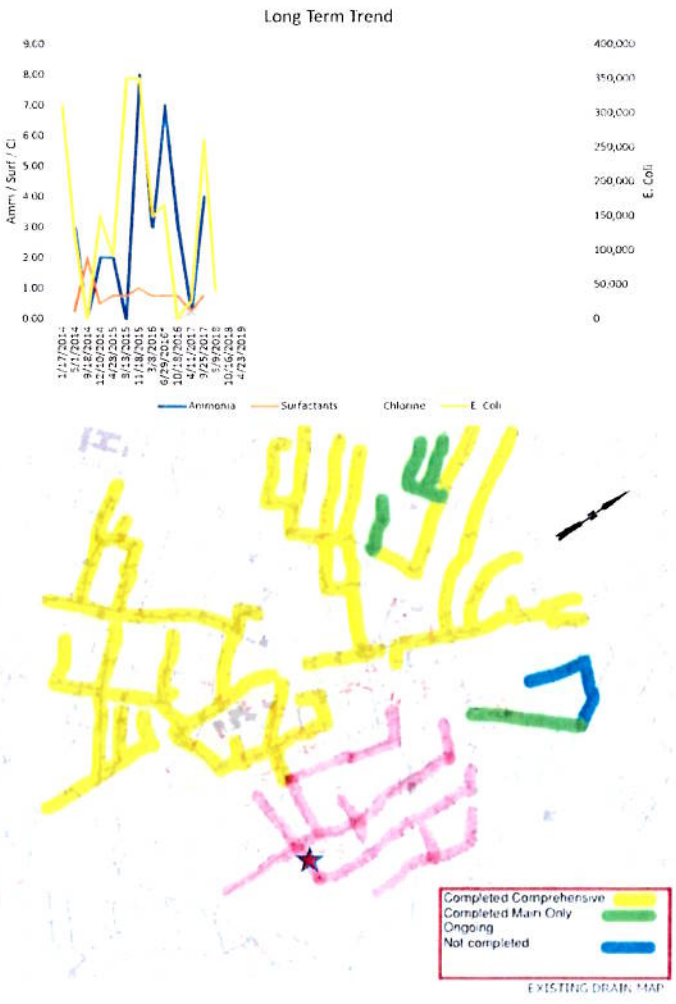
Site 19: Cross Street #52					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
1/17/2014				30,000	
5/1/2014	3.00	0.25		25,000	
9/18/2014	>10	2.00		140,000	
12/10/2014	2.00	1.00		62,000	
4/28/2015	3.00	0.75		7,000	
8/13/2015	>10	3.00		160,000	
11/18/2015	>10	1.00		310,000	
3/8/2016	2.00	0.50		14,000	
6/29/2016*	4.00	0.25	0.00	87,000	
10/18/2016	3.00	0.75	0.00	200,000	
4/11/2017	0.50	0.25	0.20	3,500	
9/25/2017	4.00	0.50	0.00	87,000	
5/9/2018				12,000	
10/16/2018					
4/23/2019	0.50	0.50		31,050	

Notes:
Underdrain currently discharges to sewer
10/18 Area 5 Rehabiliation initiated.



Site 20: Cross Street #48					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
1/17/2014				310,000	
5/1/2014	3.00	0.25		120,000	
9/18/2014	>10	2.00		>480,000	
12/10/2014	2.00	0.50		150,000	
4/28/2015	2.00	0.75		92,000	
8/13/2015	>10	0.75		350,000	
11/18/2015	8.00	1.00		350,000	
3/8/2016	3.00	0.75		150,000	
6/29/2016*	7.00	0.75	T	166,000	
10/18/2016	3.00	0.75	0.00	> 484,000	
4/11/2017	0.25	0.25	0.20	26,000	
9/25/2017	4.00	0.75	0.1 (T)	260,000	
5/9/2018				41,000	
10/16/2018					
4/23/2019	0.75	0.75		49,780	

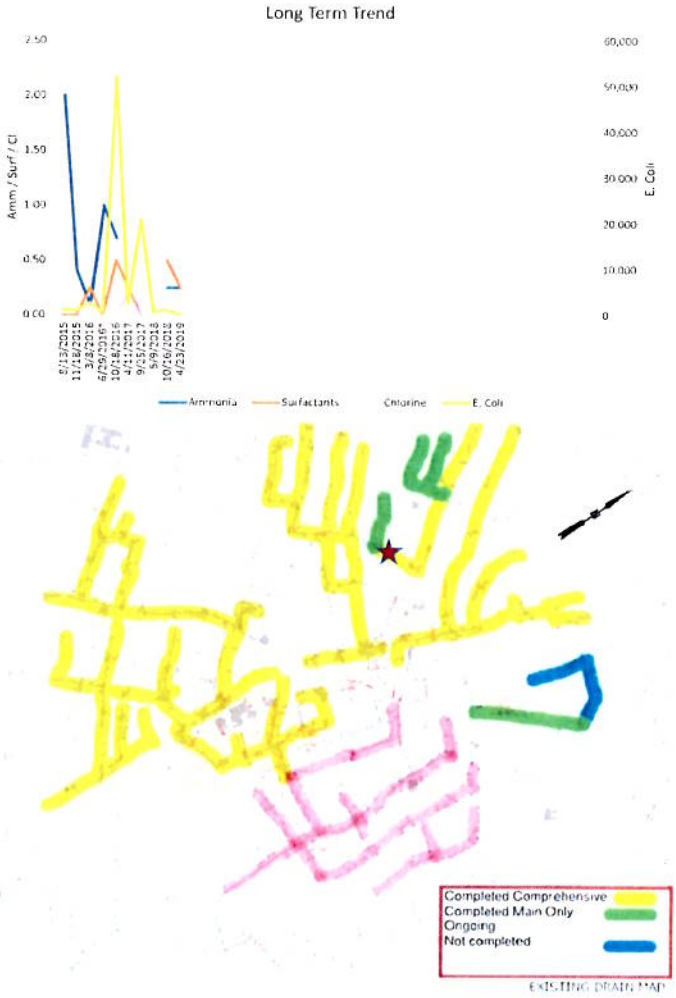
Notes:
Underdrain currently discharges to Sewer
10/18 Area 5 Rehabiliation initiated.



Site 21: Nichols / Prospect					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
8/13/2015	2.00	T		1,100	
11/18/2015	0.40	T		920	
3/8/2016	0.10	0.25		2,600	
6/29/2016*	1.00	T	T	730	
10/18/2016	0.70	0.50	T	52,000	
4/11/2017		0.25	0.20	2,600	
9/25/2017	1.00	T	0.00	21,000	
5/9/2018				660	
10/16/2018	0.25	0.50		1,046	
4/23/2019	0.25	0.25		65	

Notes:

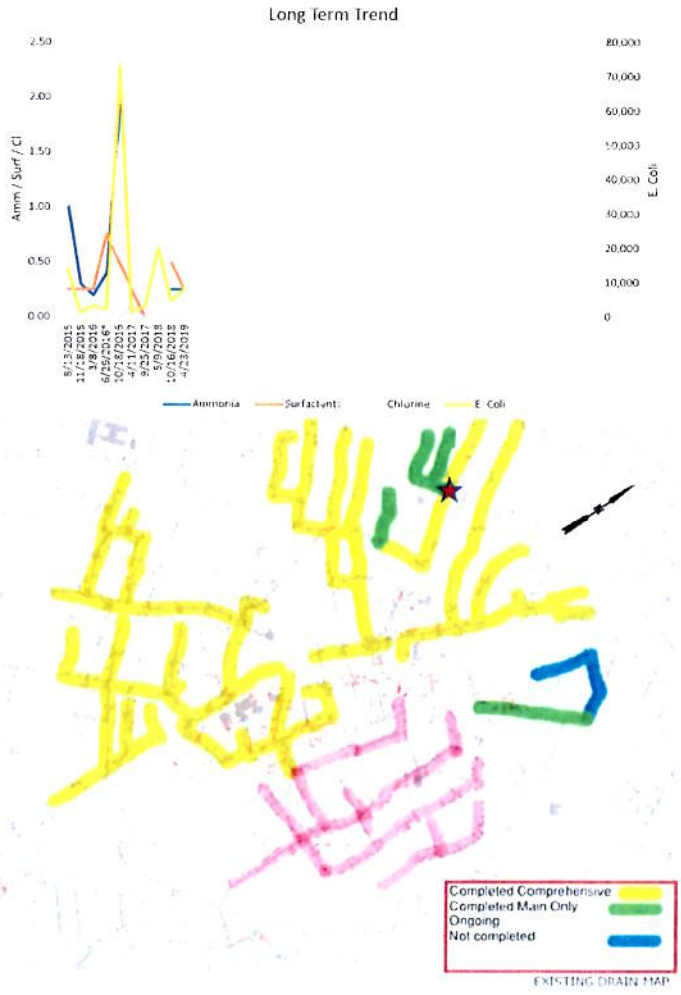
Unlined services in 6-in mains not completed

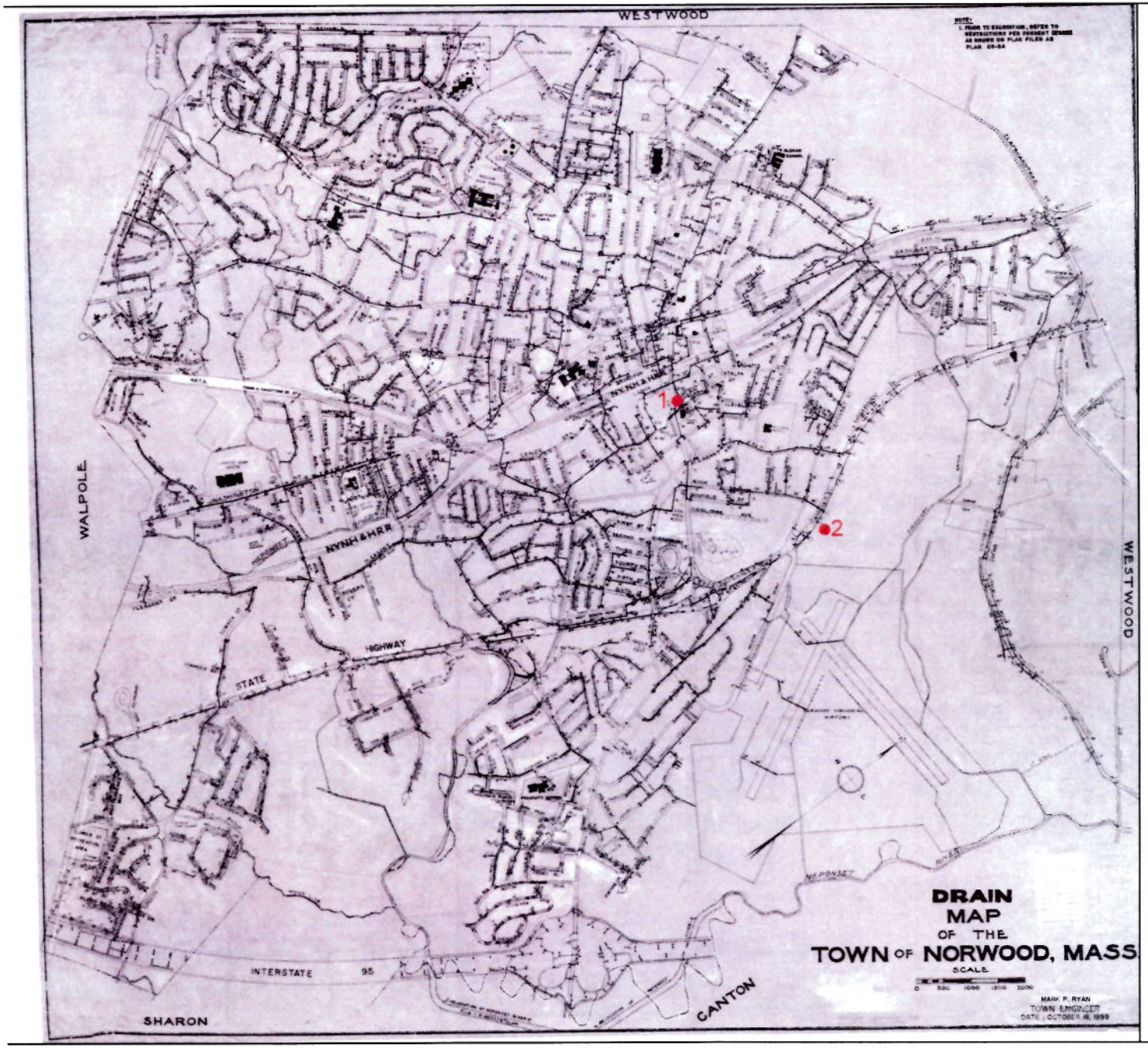


Site 22: Fulton @ Lydon					
Sample Date	Ammonia	Surfactants	Chlorine	E. Coli	Notes
8/13/2015	1.00	0.25		14,000	
11/18/2015	0.30	0.25		1,200	
3/8/2016	0.20	0.25		3,100	
6/29/2016*	0.40	0.75	0.10	2,000	
10/18/2016	2.00	0.50	T	73,000	
4/11/2017		0.25	0.10	1,400	
9/25/2017	1.50	T	T(T)	2,800	
5/9/2018				20,000	
10/16/2018	0.25	0.50		4,614	
4/23/2019	0.25	0.25		8,154	

Notes:

Unlined services in 6-in mains not completed





SSO's since 2015

1	6/16/15	141 Nahatan Street
2	4/27/16	500 Bost-Prov Tpke