Year 4 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2021-June 30, 2022

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. Please ONLY report on activities between July 1, 2021 and June 30, 2022 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Town of Marion

EPA NPDES Permit Number: MAR041127

Primary MS4 Program Manager Contact Information

Name: Nathaniel Munafo Title: DPW Director

Street Address Line 1: 50 Benson Brook Road

Street Address Line 2:

City: Marion State: MA Zip Code: 02738

Email: nmunafo@marionma.gov Phone Number: (508) 748-3540

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.marionma.gov/public-works-department/pages/stormwater-management-information-town-and-public-npdes-ms4-permit

Date SWMP was Last Updated: June 30, 2022

If the SWMP is not available on the web please provide the physical address:

A hard copy of the SWMP is available at 50 Benson Brook Road in the Public Works Department office.

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state

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 4 Requirements

☐ Developed a report assessing current street design and parking lot guidelines and other local requirements within the municipality that affect the creation of impervious cover, made it available as part of the SWMP, and:

- ◉ No updates were recommended
- ○ Updates were recommended. The anticipated date or date of completion for updates is/was:

☐ Developed a report assessing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist, made it available as part of the SWMP, and:

- ◉ No updates were recommended
- ○ Updates were recommended. The anticipated date or date of completion for updates is/was:

☐ Identified a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious cover

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide an update on previous incomplete milestones, or provide any additional details, please use the box below:

The DPW in coordination with other town boards is developing their Stormwater Bylaw and Stormwater Regulations. The Stormwater Bylaw is scheduled for submission to Town Meeting in the Spring of 2023. Once adopted, the DPW will be in a position to adopt the Stormwater Regulations. The Town currently has standards in place which allow for reduced pavement widths for low traffic roadways. Being a small

community, the Town does not own many properties and therefore has identified only 1-2 which have potential for reduction in impervious surfaces or BMP retrofits. The island wharf and silvershell beach parking lots have been upgraded with respect to stormwater runoff in the past and are being maintained to ensure proper function. In certain areas the use of gravel roads and parking is avoided to prevent transport of sediment to adjacent wetlands. Once the Bylaw and Regulations have been accepted the Town will be in a better position to steer future development toward LID practices and the adoption of appropriate site specific BMP's.

Annual Requirements

- ☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- ☒ Kept records relating to the permit available for 5 years and made available to the public
- ☒ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
  - ○ This is not applicable because we do not have sanitary sewer
  - ○ This is not applicable because we did not find any new SSOs
  - ○ The updated SSO inventory is attached to the email submission
  - ◉ The updated SSO inventory can be found at the following website:

    https://www.marionma.gov/public-works-department/pages/stormwater-management-information-town-and-public-npdes-ms4-permit
- ☒ Updated system map due in year 2 as necessary
- ☒ Provided training to employees involved in IDDE program within the reporting period
- ☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- ☒ All curbed roadways were swept at least once within the reporting period
- ☐ Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- ☒ Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- ☒ Updated inventory of all permittee owned facilities as necessary
- ☒ O&M programs for all permittee owned facilities have been completed and updated as necessary
- ☒ Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs
- ☐ Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- ☐ Inspected all permittee owned treatment structures (excluding catch basins)

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The Town voted approval for a new DPW facility at the Spring 2022 Town Meeting to be located at the end of Benson Brook Road in 2-3 years. This facility will be equipped with a salt storage shed which will eliminate the need to cover the existing pile with tarps.

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

Annual Requirements

*Public Education and Outreach**

☒ Annual message was distributed encouraging the proper management of pet waste, including noting any existing ordinances where appropriate

☒ Permittee or its agents disseminated educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time

☒ Provided 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)*

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

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

Annual Requirements

*Public Education and Outreach**

☒ Distributed 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 fertilizers

☒ Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate

☒ Distributed 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

☐ Increased 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)

Nitrogen Source Identification Report

☐ Completed the Nitrogen Source Identification Report

- ○ The Nitrogen Source Identification Report is attached to the email submission
- ○ The Nitrogen Source Identification Report can be found at the following website:

Potential structural BMPs

☒ Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents was tracked and the nitrogen removal by the BMP was estimated consistent with Attachment 1 to Appendix H. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP were documented.

- (●) The BMP information is attached to the email submission
- ( ) The BMP information can be found at the following website:

https://www.marionma.gov/public-works-department/pages/stormwater-management-information-town-and-public-npdes-ms4-permit

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The Town of Marion is a community with very few Town owned stormwater management systems. In year four storage volume and nitrogen removal calculations were performed for the bioretention systems at Island wharf, the constructed wetland at Silvershell Beach, and the retention basins at Brook Haven Lane.

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:

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 this reporting period**: 10

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

BMP: Low Impact Development

Message Description and Distribution Method:

The pamphlet describes the different ways to reduce impervious surfaces and decentralize stormwater management systems to reduce potential stormwater impacts from property development. The document is available for viewing and downloading on the stormwater webpage.

Targeted Audience: Developers

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The stormwater webpage tracks the number of visitors to the site.

Message Date(s): Ongoing

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:

BMP: Stormwater Pollution Prevention for Small Construction Sites

Message Description and Distribution Method:

List ten steps for pollution prevention during construction of small developments. The document is available for viewing and downloading on the stormwater webpage.

Targeted Audience: Developers

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The stormwater website tracks the number of visitors to the site.

Message Date(s): Ongoing

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:

BMP: Dumpster Management

Message Description and Distribution Method:

Provides guidance on limiting leaks and spills from commercial dumpsters. The document is available for viewing and downloading on the stormwater webpage.

Targeted Audience: Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The stormwater website tracks the number of visitors to the site.

Message Date(s): Ongoing

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:

BMP: Stormwater Pollution Prevention for Industrial Sites

Message Description and Distribution Method:

Provides guidance on preventing pollution from developed industrial sites. The document is available for viewing and downloading on the stormwater webpage.

Targeted Audience: Industrial property owners.

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The stormwater website tracks the number of visitors to the site.

Message Date(s): Ongoing

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:

BMP: Preventing Stormwater Pollution and You

Message Description and Distribution Method:

Provides basic information for homeowners on how to reduce the amount of pullutants in runoff from their properties for a number of potential sources. The document is available for viewing and downloading on the stormwater webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The stormwater website tracks the number of visitors to the site.

Message Date(s): Ongoing

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:

BMP: Scoop the Poop: Why is it a problem?

Message Description and Distribution Method:

Informs pet owners of the hazards associated with leaving pet waste outside rather than bagging and disposing in a trash receptacle. The notice is given out to dog owners when they receive their annual license. It is also available to view and download on the stormwater webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations, Town Clerk

Measurable Goal(s):

The number of licenses purchased each year as well as the number of visitors on the stormwater webpage.

Message Date(s): Email notification sent to residents annually in June/July and ongoing on the webpage.

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:

BMP: Grass Clippings and Fertilizers

Message Description and Distribution Method:

Encourages homeowners to reduce fertilization and promotes the proper disposal of grass clippings. The document is available for viewing and downloading on the stormwater webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The stormwater website tracks the number of visitors to the site.

Message Date(s): Email notification sent to residents annually in April/May and ongoing on the webpage.

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:

BMP: Managing Leaf Litter

Message Description and Distribution Method:

Encourages residents to rake and dispose of leaves to minimize the amount entering drainage systems. The document is available to view and download on the stormwater webpage.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The stormwater website tracks the number of visitors to the site.

Message Date(s): Email notification sent to residents annually in Aug/Sept/Oct and ongoing on the webpage.

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:

BMP: A Homeowners Guide to Septic Systems

Message Description and Distribution Method:

Educates homeowners on the importance of proper septic system maintenance. Document is available for viewing and downloading on the stormwater webpage

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations and Board of Health

Measurable Goal(s):

The number of homes and frequency of septic tank pump out is tracked by the waste haulers and provided to the Board of Health.

Message Date(s): Ongoing on the webpage and as distributed with permits through the Board of Health.

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:

BMP: Stormwater Management for the Proactive Business Owner

Message Description and Distribution Method:

Lists basic maintenance tasks for business owners to properly dispose of potential pollutants.

Targeted Audience: Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The stormwater website tracks the number of visitors to the site.

Message Date(s): Ongoing on the stormwater webpage.

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 this reporting period**:

Town residents who attended the Spring Town meeting were asked to support the construction of a new DPW facility by voting to authorize funds for the architectural design and construction of the facility. The new facility will include a salt storage shed and vehicle washing area compliant with the MS4 requirements. The warrant article passed at Town meeting and was subsequently placed on the annual town election ballot for an up or down vote. The vote passed allowing the project to move forward.
The stormwater webpage is set up as a link within the DPW site on the Town's website. Residents are encouraged to contact the DPW Engineer with any questions or concerns.

Was this opportunity different than what was proposed in your NOI? Yes ◉ No ○

Describe any other public involvement or participation opportunities conducted **during this reporting period**:

The public is encouraged to report any problems with drainage or spills to the DPW and Board of Health. The DPW conducts a hazardous waste collection day each year.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

☐ This SSO section is NOT applicable because we DO NOT have sanitary sewer

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

Number of SSOs identified: 1

Number of SSOs removed: 1

MS4 System Mapping

Optional: Provide additional status information regarding your map:

The Town of Marion MS4 Permit Stormdrain Map is updated as needed by the Buzzards Bay National Estuaries Program.

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. Please also include the updated inventory and ranking of outfalls/interconnections based on monitoring results.

- ○ No outfalls were inspected
- ◉ The outfall screening data is attached to the email submission
- ○ The outfall screening data can be found at the following website:

https://www.marionma.gov/public-works-department/pages/stormwater-management-information-town-and-public-npdes-ms4-permit

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

Number of outfalls screened: 21

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

Percent of outfalls screened: 95

Optional: Provide additional information regarding your outfall/interconnection screening:

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.

- ○ No catchment investigations were conducted
- ◉ The catchment investigation data is attached to the email submission
- ○ The catchment investigation data can be found at the following website:

https://www.marionma.gov/public-works-department/pages/stormwater-management-information-town-and-public-npdes-ms4-permit

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

Number of catchment investigations completed this reporting period: 48

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

Percent of total catchments investigated: 100

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

All catchment investigations were performed by the Massachusetts Maritime Academy through the Buzzards Bay Stormwater Collaborative on behalf of the Town of Marion.

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.

- (●) No illicit discharges were found
- ( ) The illicit discharge removal report is attached to the email submission
- ( ) The illicit discharge removal report can be found at the following website:

*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: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

*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 (July 1, 2018)**.*

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

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

Employee Training

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

2 DPW personnel were trained for IDDE by the Buzzards Bay National Estuary Program on March 10, 2022
2 DPW personnel were trained for IDDE by the Buzzards Bay National Estuary Program on April 19, 2022
1 DPW personnel were trained for IDDE by the Buzzards Bay National Estuary Program on May 5, 2022

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: 0

Number of inspections completed: 0

Number of enforcement actions taken: 0

Optional: Enter any additional information relevant to construction site plan reviews, inspections, and enforcement actions:

Currently large projects or developments not covered by the Subdivision Control Laws fall under Controlled Construction where the design engineer is responsible for construction inspection and certification of as-builts. The contractor also has responsibilities regarding erosion/sedimentation control under the NPDES SWPPP program. The site inspection responsibilities will be updated once the Stormwater Bylaw is accepted at the Fall Town meeting.

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

Ordinance or Regulatory Mechanism

Date update was completed (due in year 3): Scheduled for year 5

As-built Drawings

Below, report on the number of as-built drawings received ***during this reporting period****.*

Number of as-built drawings received: 0

Optional: Enter any additional information relevant to the submission of as-built drawings:

Retrofit Properties Inventory

Below, list the permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas (at least 5):

Fire Station #1 - 50 Spring Street
Sippican School - 16 Spring Street
VFW Building - Mill Street
DPW Maintenance Garage - 631 Mill Street

MCM6: Good Housekeeping

Catch Basin Cleaning

*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: 28

Number of catch basins cleaned: 28

Total volume or mass of material removed from all catch basins: 161 cubic yards

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

Total number of catch basins: 732

If applicable:

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

The area contributing runoff to the catch basin is inspected to determine the source of sediment and evaluate if stabilization of the road shoulder is required. The portion of the road or parking lot may also be flagged as requiring more frequent sweeping.

Street Sweeping

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

- ○ Number of miles cleaned:
- ◉ Volume of material removed: 243 cubic yards
- ○ Weight of material removed: [Select Units]

Stormwater Pollution Prevention Plan (SWPPP)

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

Number of site inspections completed: 0

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

N/A

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:

The Island Wharf drainage system consisting of bioretention areas was cleaned out and replanted to restore the health and effectiveness of the vegetation for nitrogen removal.

COVID-19 Impacts

Optional: If any of the above year 4 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

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 5 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

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
- 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 curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)
- Identify additional permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas so that the permittee maintains a minimum of 5 sites in their inventory, until such a time when the permittee has less than 5 sites remaining

Provide any additional details on activities planned for permit year 5 below:

Part V: Certification of Small MS4 Annual Report 2021

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: Rebecca Tilden

Title: Interim DPW Director

Signature: Rebecca Tilden

Date: 09/19/22

[Signatory may be a duly authorized representative]

Marion – as of 30 June 2022

Category	Task	Status	Results
IDDE	Rank outfalls/interconnections	Needs review based on new mapping	155 total outfalls including road cuts and simple culverts
Mapping	Outfalls and rough catchment	Mostly complete	21 outfalls inventoried this year
Mapping	Identify interconnections	Mostly complete	1 Marion to MassDOT
Mapping	Receiving waters and pollutants association with outfalls	Complete	See GIS and AGOL
Mapping	Identify treatment systems (BMPs)	16 identified	12 Town owned 4 Private owned
Mapping	Catchbasins, Manholes and Pipes	Mostly complete	updated with investigations
Dry weather inventory	Inspect Outfalls/Interconnections for dry weather flows	Complete	95 / 95 complete
Wet weather sampling	Sample stormwater at high and low priority outfalls	Needs work	43 / 81 complete
Catchment Investigation	Catchment investigation for all MS4 outfalls	Complete, some follow-up needed	95 / 95 complete
Mapping	Update catchments based on mapping	To be started this year	

MS4 Outfalls: 155 total in urbanized area that are town owned

83 outfall pipes, 49 road cuts, 11 simple culverts, 10 stormwater culverts, 2 treatment outlets

74 excluded, 48 high priority, 33 low priority

MS4 Year 2022 (July 2021 – June 2022)

69 no flow observations; 17 stormwater samples

ArcGIS Online Map:

https://massmaritime.maps.arcgis.com/apps/webappviewer/index.html?id=ee16aa4641cf490dba88636dc7809f61

The Buzzards Bay Stormwater Collaborative

Illicit Discharge Investigation Trailer

Town of Marion Report

August 2022

MassDEP MS4 Municipal Assistance Grant Program 2020-2021

MassDEP MS4 Municipal Assistance Grant Program 2021-2022

Marion Town Contract with Massachusetts Maritime Academy FY2022

Collaborative Partners: Massachusetts Maritime Academy, Buzzards Bay National Estuary Program and the municipalities of Bourne, Wareham, Marion, Mattapoisett, Fairhaven, Acushnet, Dartmouth, and Westport.

Report Prepared by: Kevin Bartsch, Buzzards Bay National Estuary Program and Maura Flaherty, Massachusetts Maritime Academy

Marion IDDE Report

Illicit Discharge Detection and Elimination Field Work during April 12th through April 15th of 2021, July 5th through July 8th of 20221, and June of 2022.

This report summarizes the findings from the Buzzards Bay Stormwater Collaborative discharge investigation under the 2021 MassDEP Stormwater Investigation Trailer grant. A total of 99 storm drain networks were examined for illicit connections. Each storm drain network is a collection of connected structures that discharge to one point and is referred to by the facility ID of the outfall pipe. Each network is a reflection of the stormwater catchment in which the structures collect stormwater and runoff. The purpose of an IDDE is to detect illicit connections that do not comply with the MS4 permit for stormwater discharges. There were no illicit connections detected in the observed storm drain networks. The stormdrain issues found are minor and itemized in this report with recommendations of possible actions to address.

Within the networks surveyed, each structure was opened by the DPW and inspected for evidence of illicit connections. Any indications of odors, unusual colors, excessive trash or debris, sheens, suds, or structural issues were recorded. Each pipe entering the structure was recorded for size, type, and invert from the rim. Dry weather flow and standing water in the structure were also recorded. Direction to adjacent structures were verified and pipes with no apparent connection were checked with a camera or other method to best determine the situation. In areas with potential for a sewer cross connection the camera was used to inspect the pipe. Additionally, a few water samples were collected and analyzed for various parameters.

Some general observations for all the catchments visited: catchbasins are well maintained but a few had some composted debris accumulation; roadways and sidewalks had excessive pet waste in some areas; there were some sump pump and yard drain connections to catchbasins, and the public that stopped by to chat were generally interested in the environment. Another factor for the Town is the integration of the Tabor Academy drainage system with the Town systems. This makes the Town ultimately responsible for the stormwater drainage coming from the private school.

Of these observations, the most significant during the first round of investigations, was the pet waste and the composted debris. The most effective action to address the pet waste is an outreach effort to educate individuals about the negative impacts. This could be done with a newspaper editorial as a cost effect approach to appeal to individuals willing to correct their own behavior. The debris in the catchbasins is a challenging issue because the Town of Marion is already dedicating substantial resources to catchbasin cleaning. A review of procedures and equipment for possible improvements is recommended.

The most significant feature observed during the second round of the investigation process were multiple sump pump connections found in several catchbasins. Sump pumps and yard drains are acceptable under the MS4 permit and local policy provided that only groundwater is pumped into the storm drain network. Any sump pump connections were not running so no samples could be collected. An outreach effort on proper use of sump pumps is recommended. This could be done with a newspaper editorial as a cost effect approach to appeal to individuals willing to correct their own illicit connections. Other sump pump issues would need to be addressed on a case-by-case basis when discovered.

The data collected was used to update the Buzzards Bay National Estuary Program stormwater GIS. Despite the extensive mapping of the Marion drain network that the team started with before the investigation, there were opportunities for many corrections and additions while going through the investigation process. Updated maps depicting the inspected networks are included below. Red stars indicate outfall pipes, light blue squares show catchbasins, brown circles show drain manholes, and blue lines show connecting pipes. Issues found within the network are annotated. Issues and recommendations are included in the text below each map.

The area inspected was the drain networks located in the watershed on the West side of Sippican Harbor. Below are the observations made for each of the 99 storm drain systems. Each drain system is referenced by the facility ID of the outfall pipe.

NSH1070PI – Front Street: no issues found, note that the Cumberland Farms drainage system does not connect to this network.

NSH1064PI and NSH1063PI – Front Street: no issues found. The NSH1064PI network use to traverse the ball field but has been re-routed around the field. At location A the catchbasin is covered with a silt fence.

NSH1066PI Part 1 – Front Street and Ryders Lane: no issues found. This system was installed in 2013 to re-route the stream North of Ryders Lane from traversing the ball field and directs it to a treatment system at Old Landing Wharf.

NSH1066PI Part 2 – Ryders Lane and Spring Street: no issues found.

NSH1124PI, NSH1062PI, and NSH1061PI – Front Street: no issues found but some questions remain. NSH1124PI is a newly identified outfall and probably drains the Taber parking area to the East. NSH1062PI has a couple of undetermined pipes entering from the soccer field at location A. The catchbasins at the sailing center do not appear to connect to the network. These networks require further investigation.

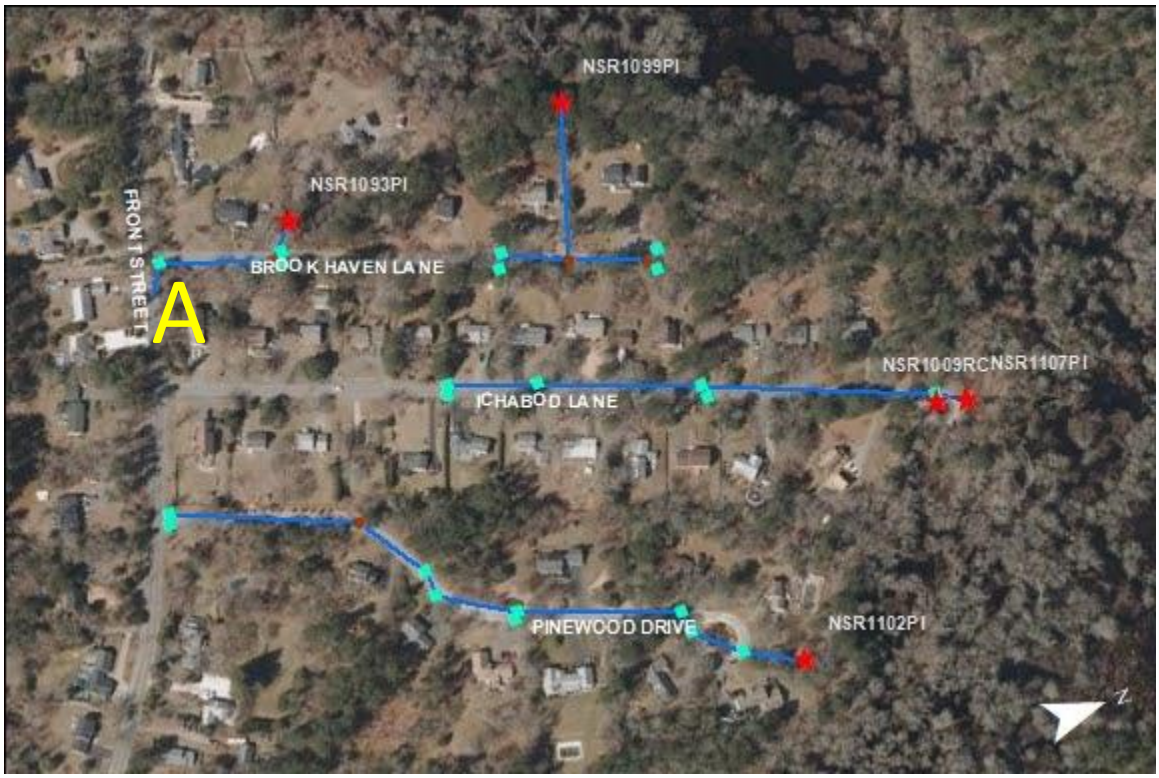
NSH1060PI – Front Street: no issues found. The catchbasins in the dining hall parking lot do not connect to this network. They appear to connect to the grease trap which drains to the sewer system causing inflow.

NSH1054PI, NSH1052PI, NSH1055PI, NSH1056PI, and NSH1058PI – Front Street: no issues found. NSH1052PI enters an artificial wetland with a manifold and then is discharges to NSH1055PI. NSH1056PI was previously determined to be an abandoned outfall servicing no structures.

NSH1045PI – Main Street: no issues found. NSH1044PI – South Street: no issues found; this system was constructed in 2013 and includes a treatment system at the intersection of Water Street and South Street.

NSH1036PI – Vine Street and Water Street: no issues found. NSH1035PI – Water Street: no issues found; this culvert drains a stream from Front Street where a network drains into the channel. NSH1125PI – no structures found connected to this outfall, it may be a seep drain for the wall. NSH1126PI – is located below NSH1135PI and appears to drain the adjacent catchbasin on Water Street. This area needs further investigation.

NSH1123PI – Holmes Street: no issues found; newly documented outfall; this is a very old network with various structures poorly added; excessive pet waste in area. NSH1027PI – Allen Street: no issues found; this is also an old network with excessive pet waste in area.

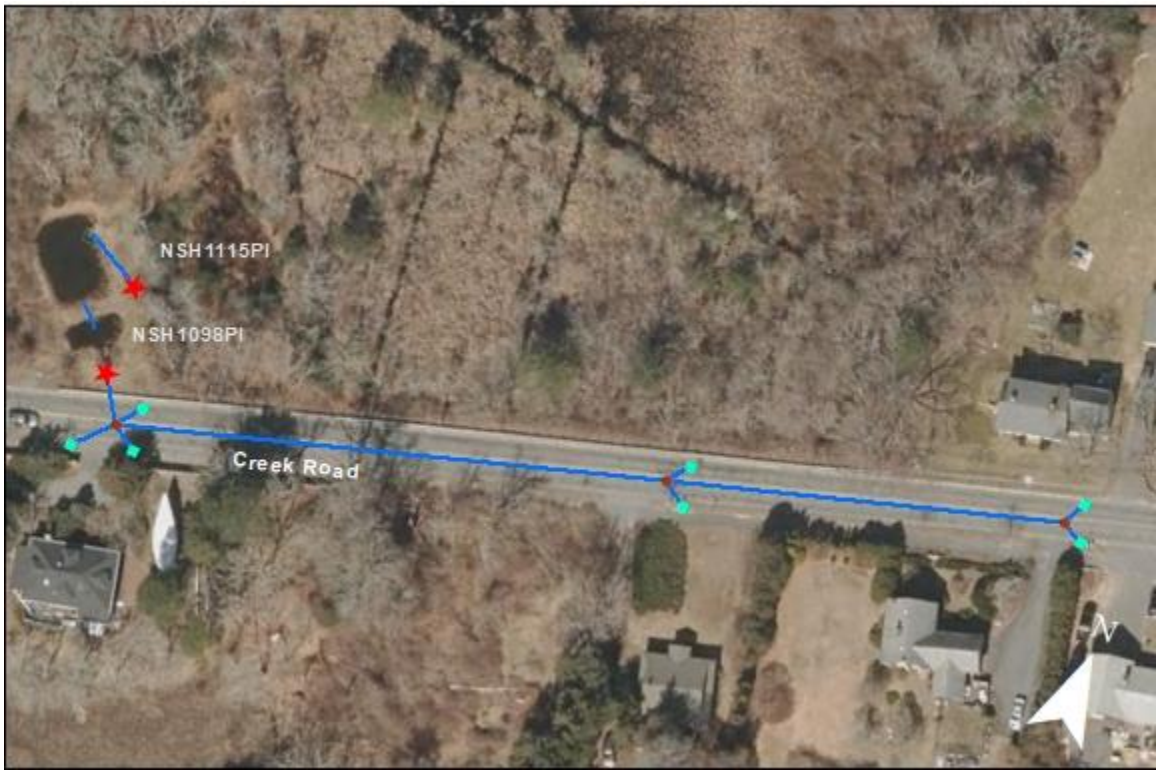


NSR1099PI and NSR1093PI- Brook haven Lane: No issues found. At point A pipe enters the catch basin from the direction of Front Street. Origin is unknown. Further inspection is suggested.
NSR1107PI and NSR1009RC- Ichabod Lane: No issues found.
NSR1102PI- Pinewood Drive: No issues found.

NSH1095PI and NSH1087PI- Parkway Lane: No Issues found.

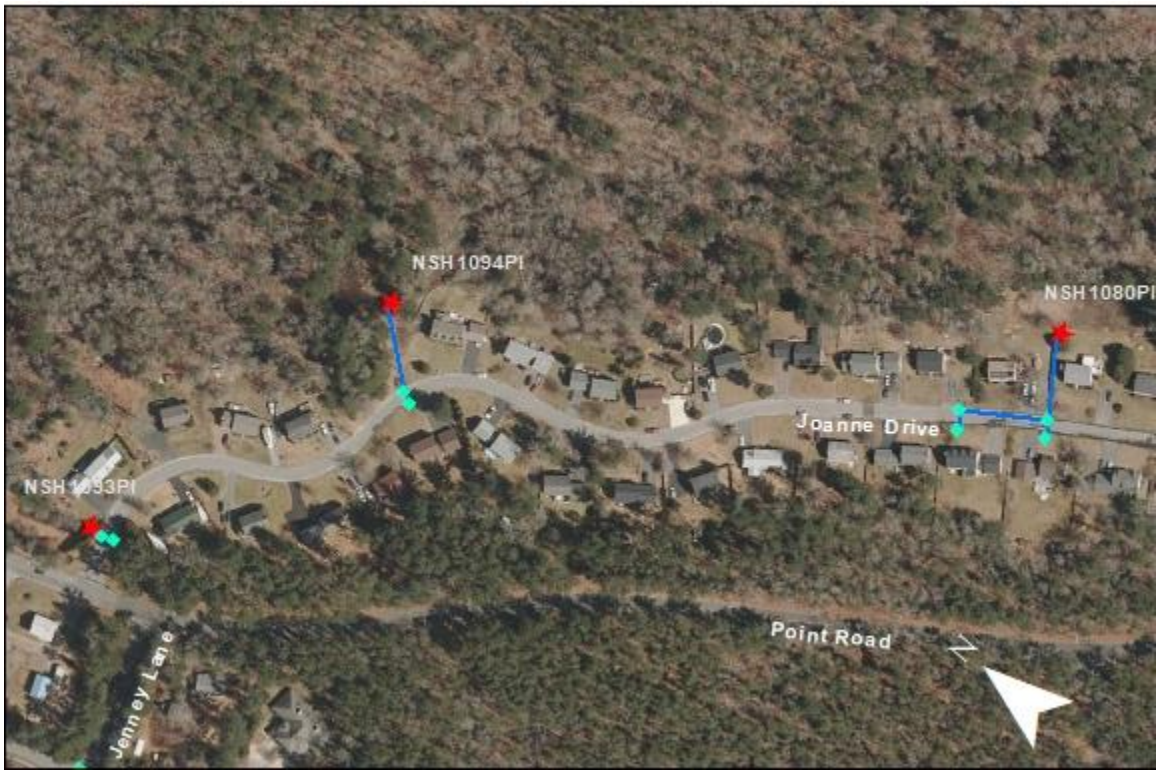
NSH1089PI- Coves End Road: No Issues found. Outfall is buried or submerged. Still in working order.

NSH1113PI, NSH1122PI, and NSH1096PI- Creek Road: No issues found.



NSH1115PI and NSH1098PI- Creek Road: No issues found.

NSH1128PI-Point Road and Creek Road: No issues found. At point A 12” pipe enters the catch basin from the direction behind house #868. Origin is unknown. Further inspection suggested. At point B a 12” pipe enter the catchbasin. Its origin is unknown. Further inspection is suggested.



NSH1093PI, NSH1094PI, and NSH1080PI- Joanne Drive: No issues found.

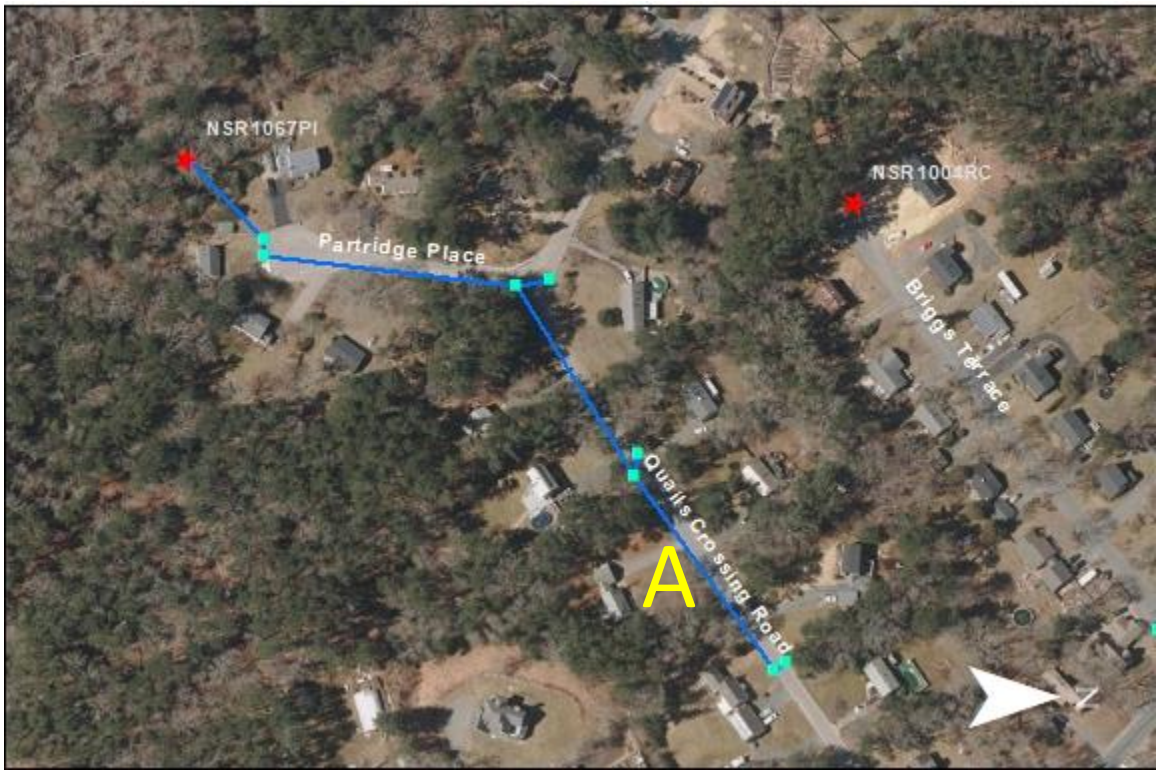
NSH1079PI and NSH1077PI- Joanne Drive and Jenna Drive- No issues found.

NSR1117PI and NSR1122PI- River Road: No issues found. At point A, a pipe exits catchbasin in direction of manhole. Manhole was inspected, no pipe enters from that direction. Likely the pipe enters the main line, with no access structure. Needs to be confirmed.

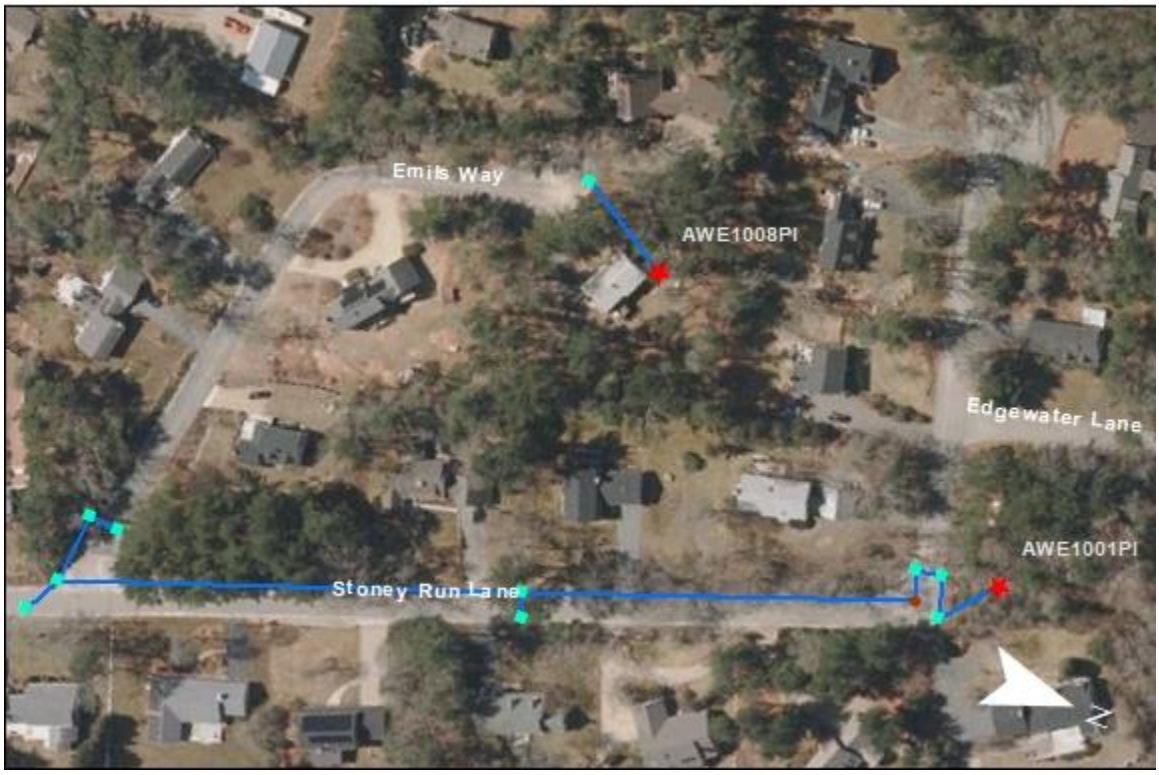
NSH1127PI- Green Street- No issues found. Catch basins on Green Street are all infiltration basins except for the one shown connected to the outfall.

NSH1076PI and NSH1075PI- Sarah Sherman Lane: No issues found.
NSH1078PI- Oakdale Avenue: Pipe may be collapsed or buried. Unable to locate outfall. At point A, a clay pipe enters catchbasin. Evidence pipe is broken in yard just South of basin.

NSR1091PI- Cranberry Way: No issues found.



NSR1067PI- Partridge Place: No issues found. At point A groundwater is penetrating catchment at pipe seam.



AWE1008PI- Emils Way: No issues found.
AWE1001PI- Stoney Run Lane: Structures near outfall are completely full of sand. Difficult to inspect due to debris.

AWE1003PI- Edgewater Lane: No issues found.

NSH1103PI- Point Road: No issues found. Pipe enters catchbasin at point A. Origin of pipe unknown. Further investigation suggested.

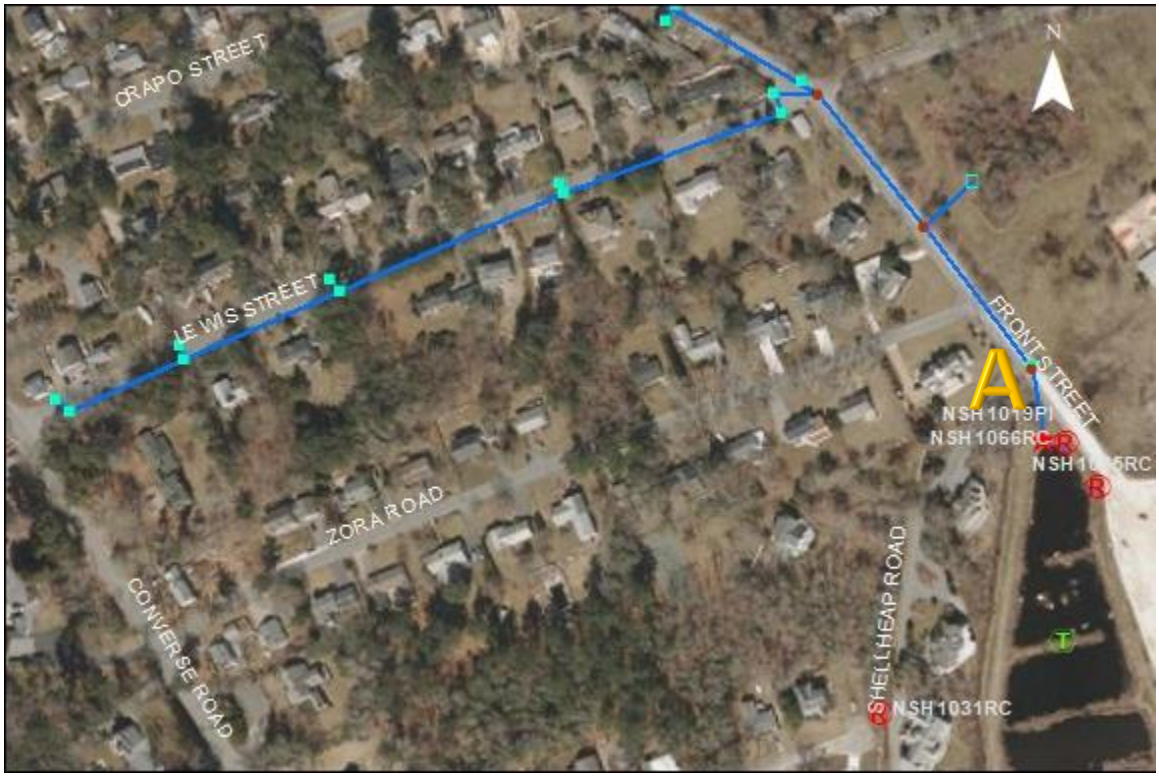
NSH1130PI- Point Road: No issues found.

AWE1007PI- Ridgewood Lane: No issues found.

AWE1000PI- Cross neck Road: No issues found.

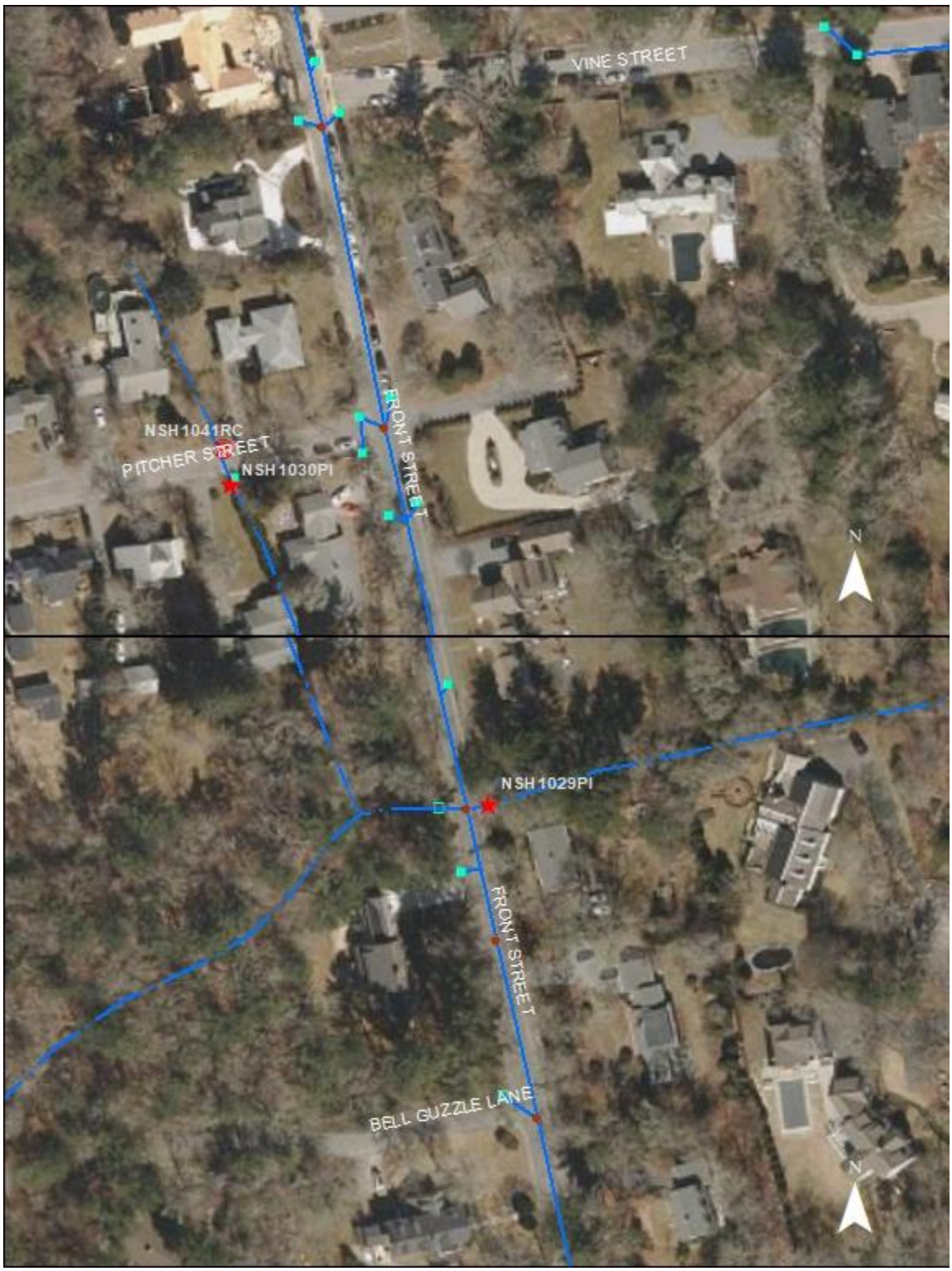
AWE1002PI- Delano Road: No issues found.

NSH1107PI, NSH1118PI, and NSH1117PI- Point Road: No issues found.

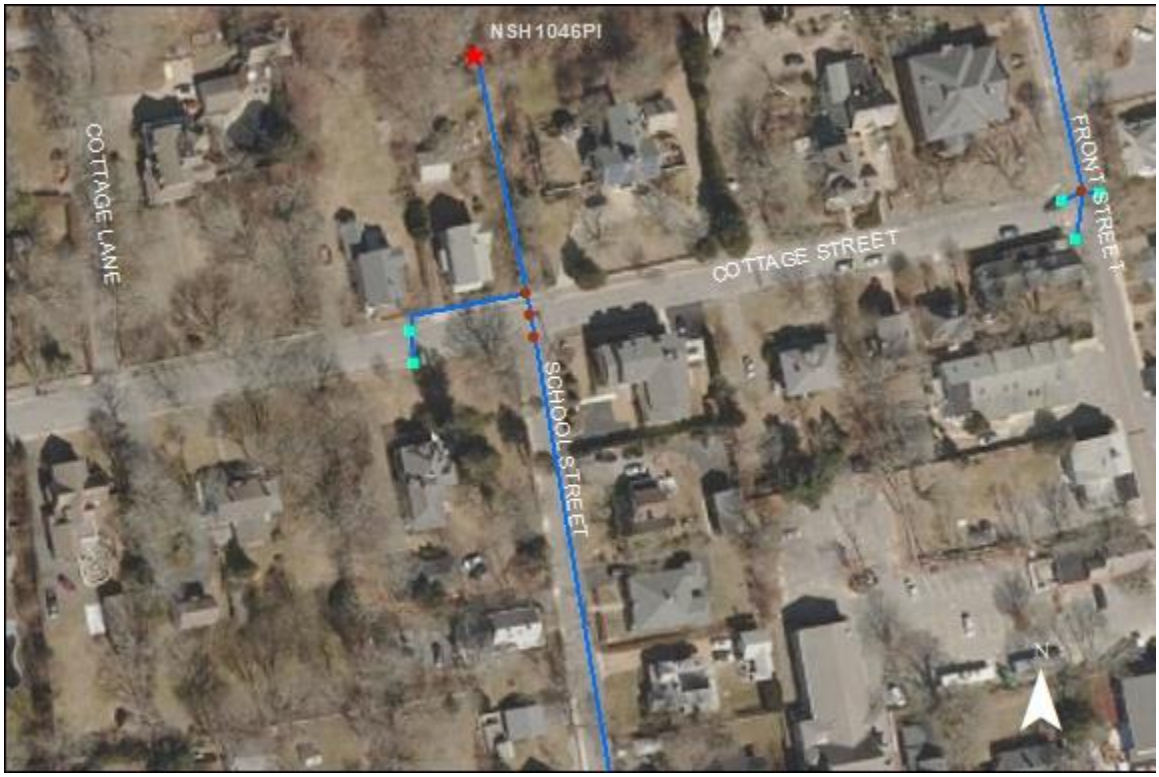


NSH1019PI (1/3)- Front Street and Lewis Street: No significant issues found. Two 12-inch concrete pipes enter the manhole at point A. Their origins are unknown. Further investigation is suggested. Also, several basins on Lewis Street had large amount of sand and leaf debris. Further maintenance is suggested.

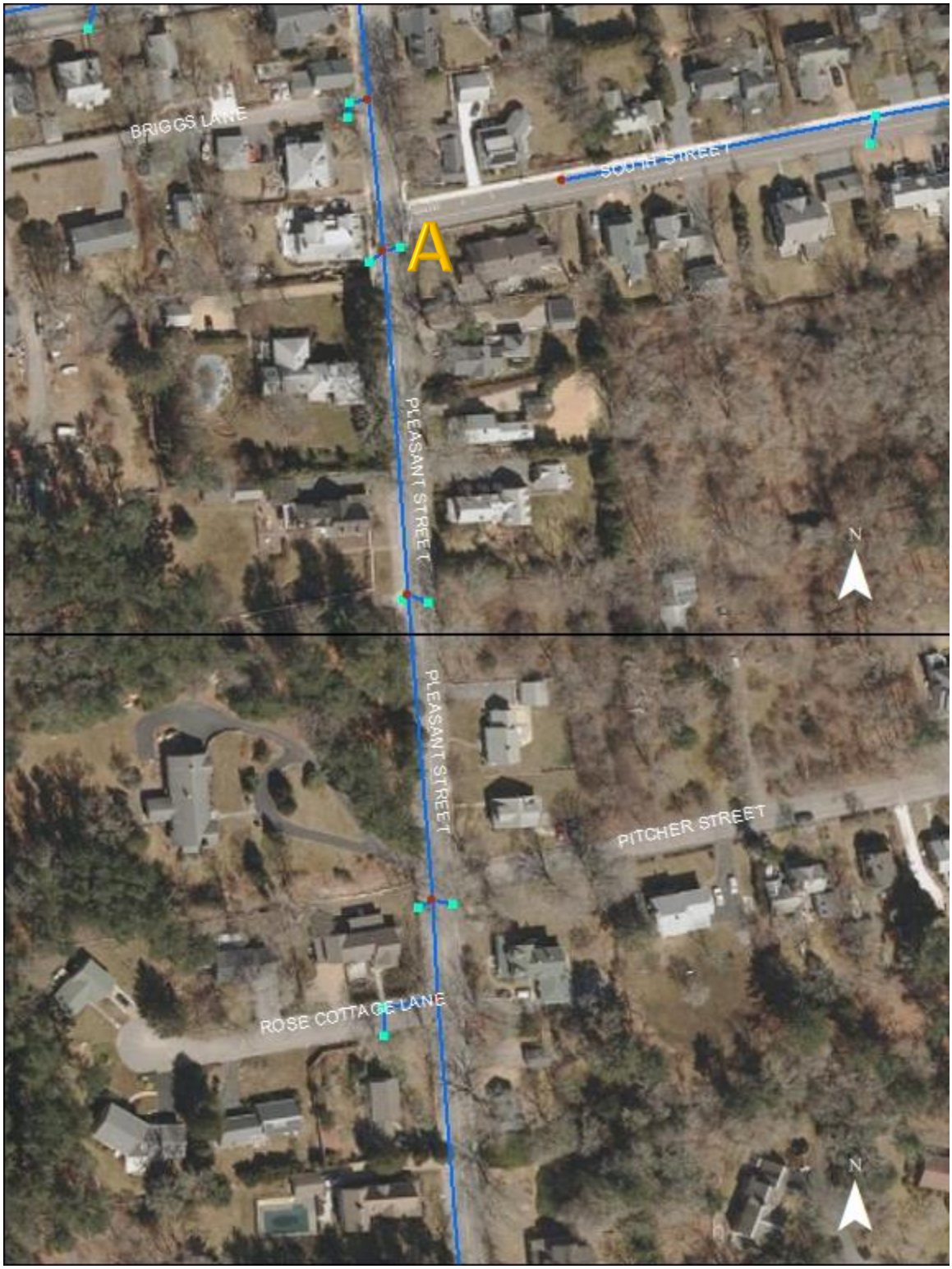
NSH1019PI (2/3)- Front Street: At point A and B the catchbasins have begun to sink. Both are in need of repair. Preventative maintenance is recommended.

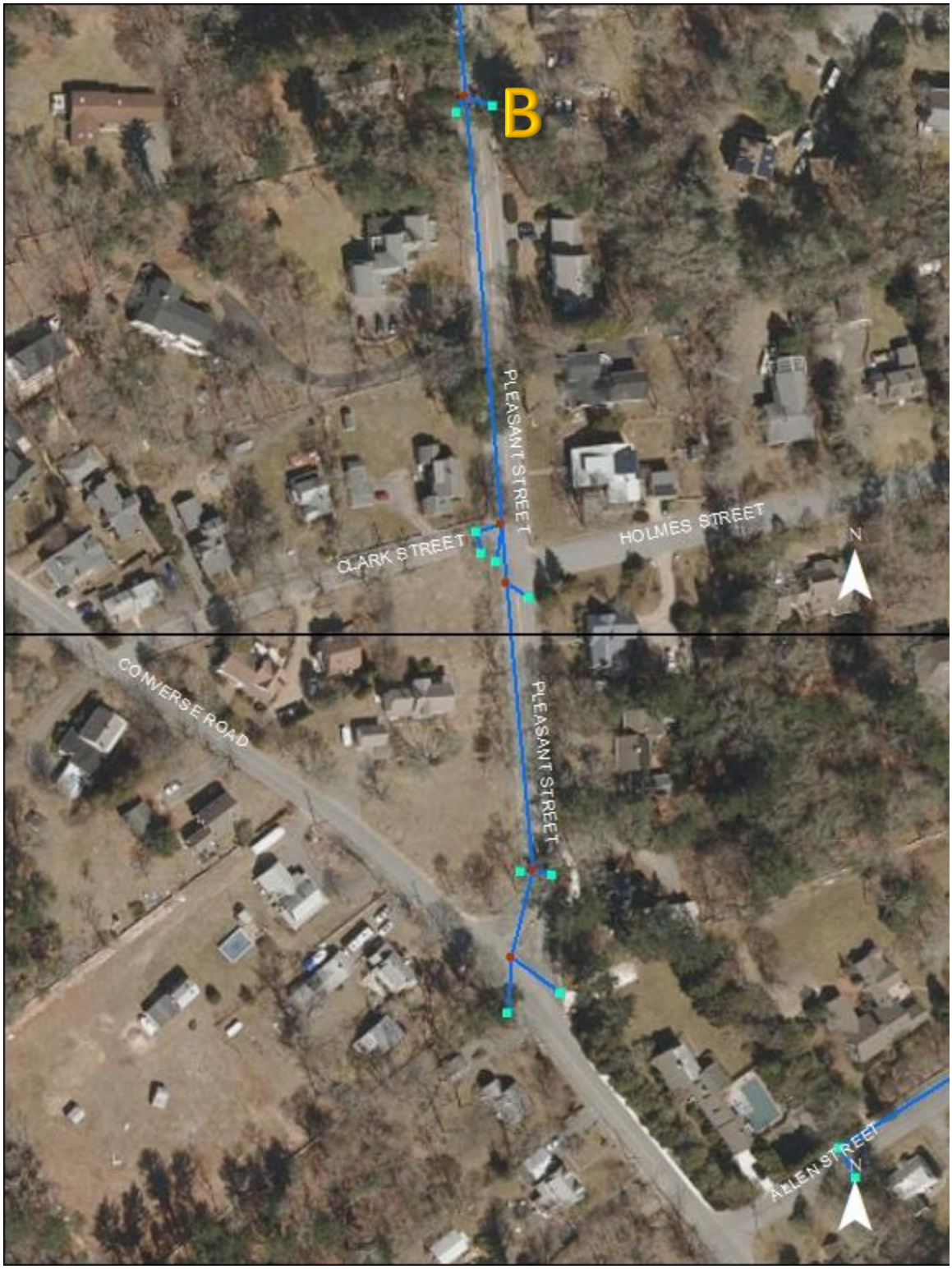


NSH1019PI (3/3)- Front Street: No issues found.

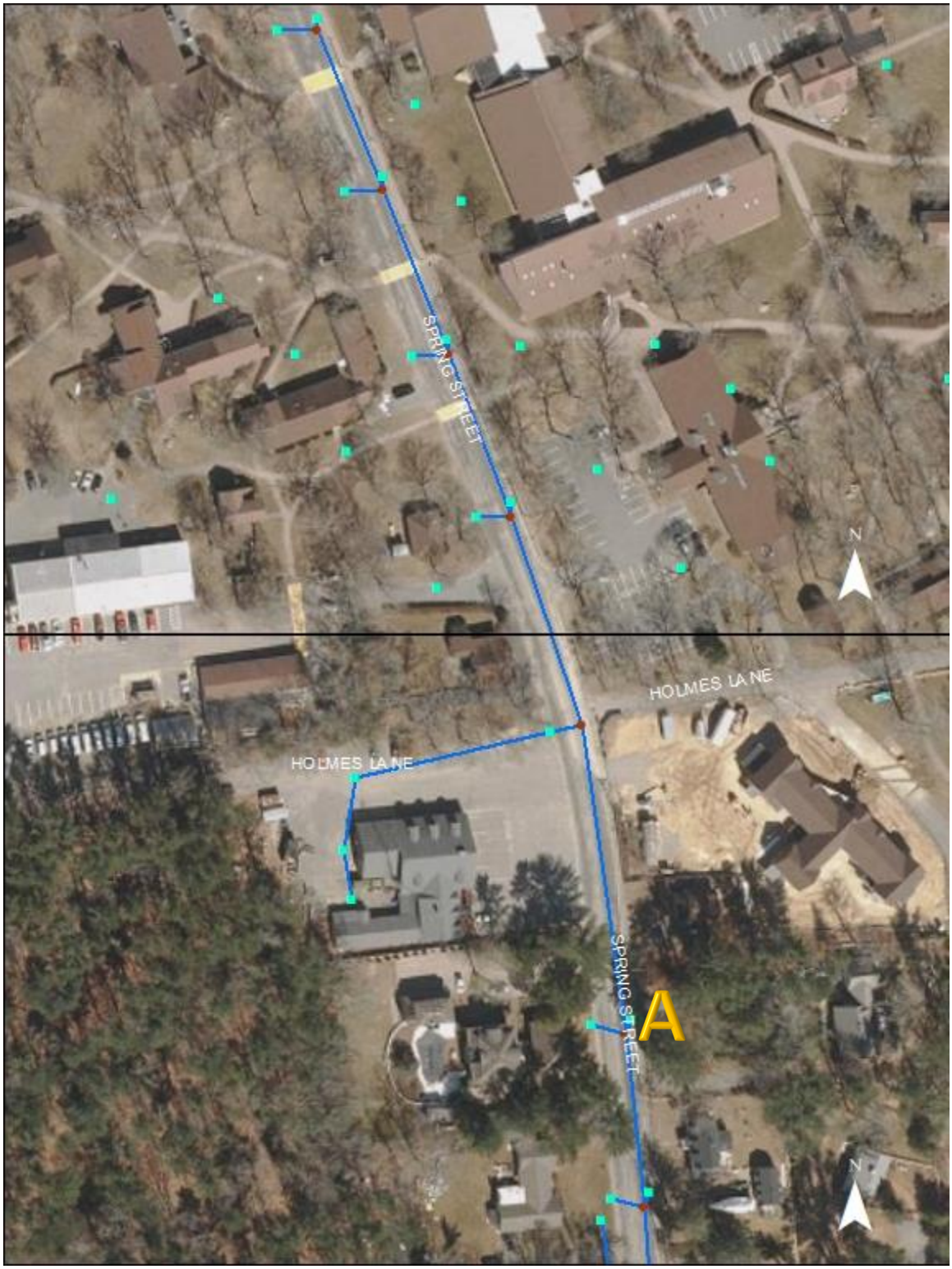


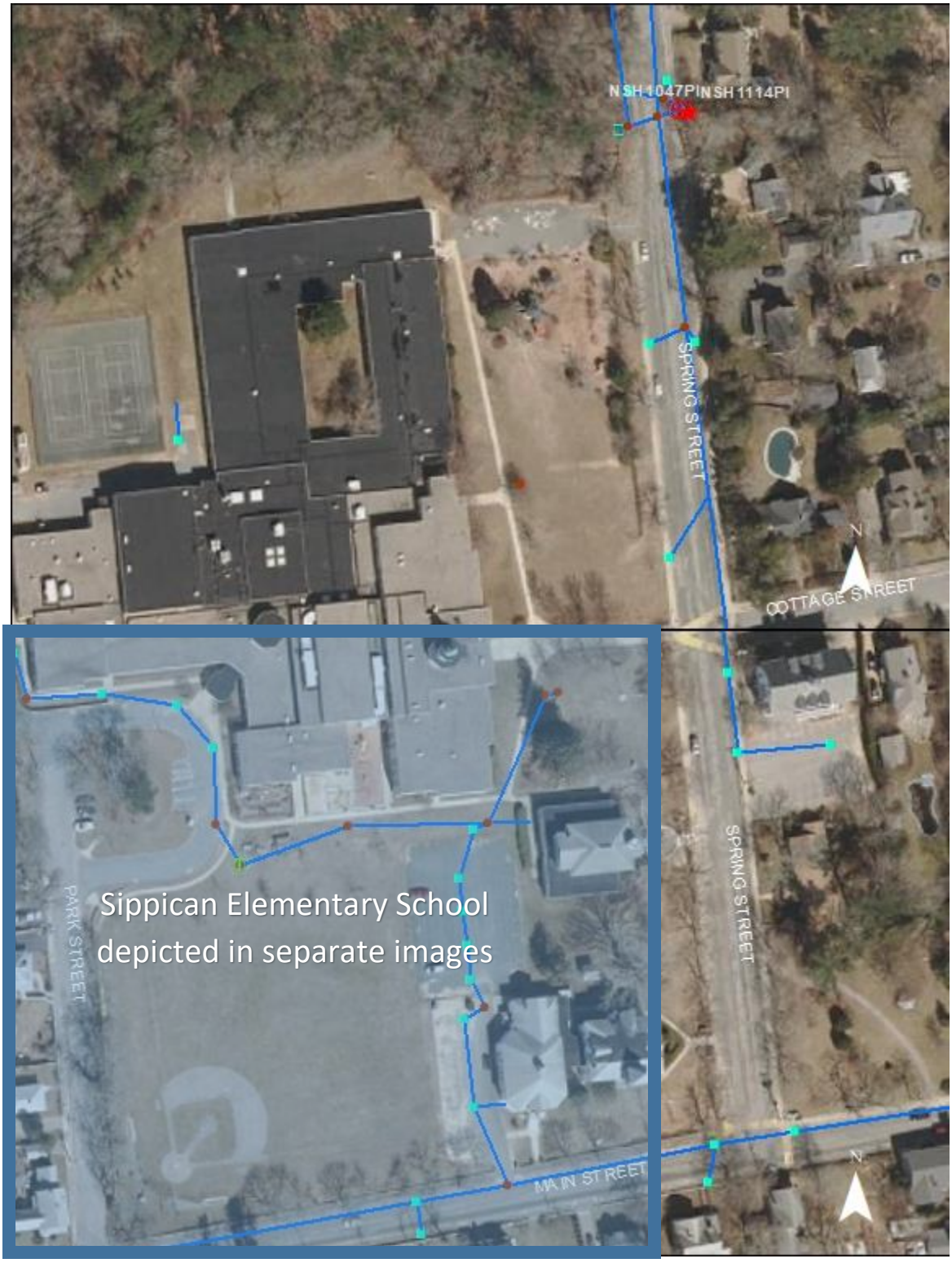
NSH1046PI- School Street and Cottage Street: No issues found.


BRIGGS LANE
SOUTH STREET
A
PLEASANT STREET
N
PLEASANT STREET
PITCHER STREET
ROSE COTTAGE LANE
N

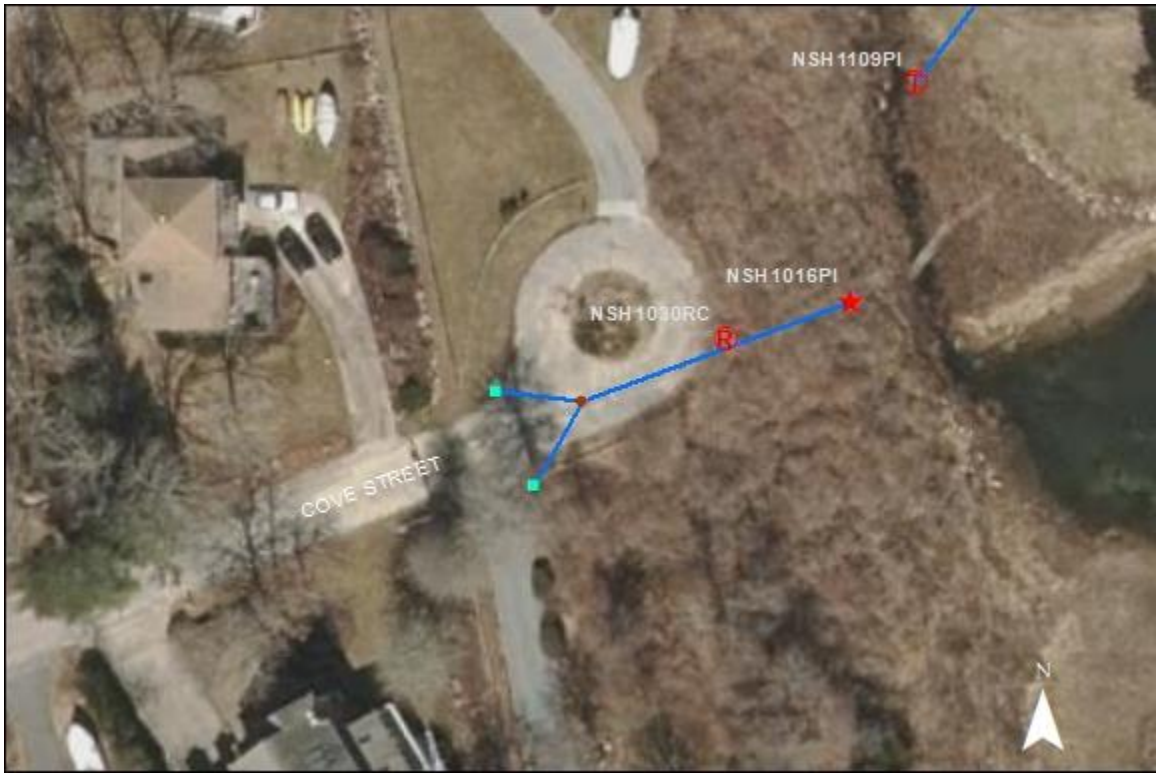


NSH1046PI- Pleasant Street: At point A the bricks on the inside of the catchbasin are beginning to crumble. Catchbasin is in need of repair. At point B the catchbasin is full of dirt and not draining properly. The structure is in need of cleaning.

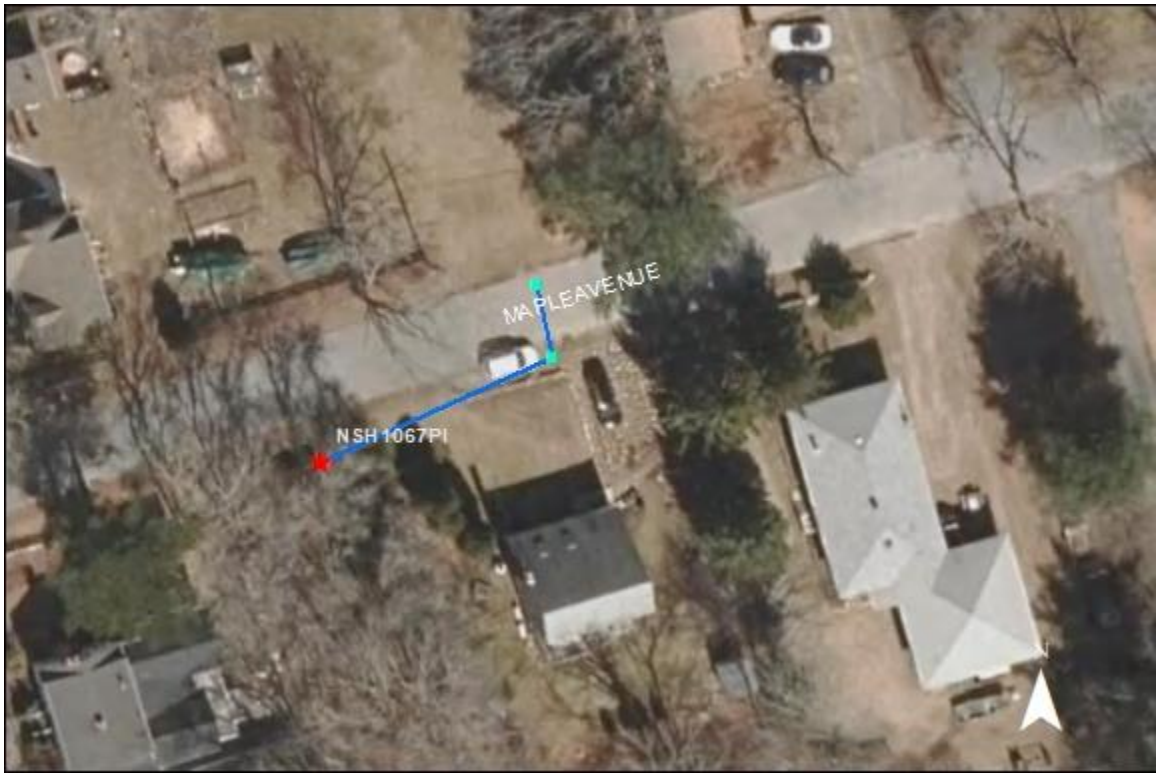

SPRING STREET
HOLMES LANE
HOLMES LANE
SPRING STREET
A
N
N



NSH1114PI and NSH1047PI- School Street: At point A there is a large construction sandbag inside the catchbasin. Its removal is recommended.



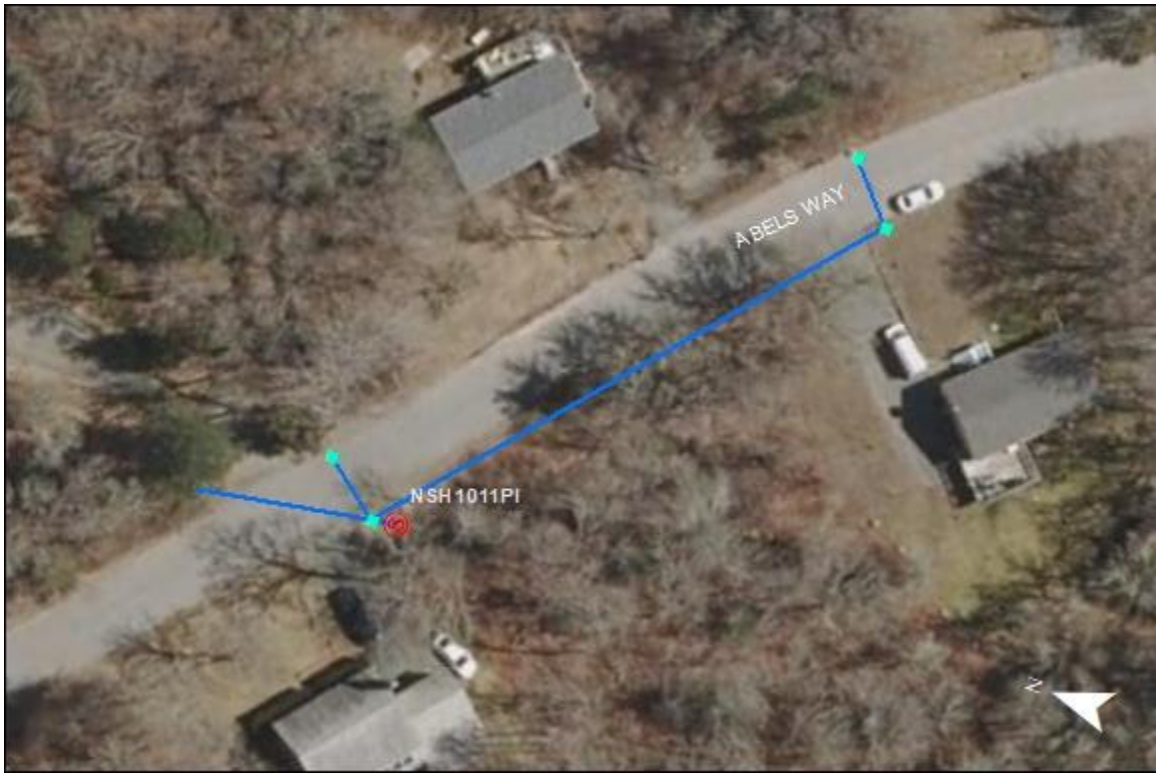
NSH1030RC and NSH1016PI- Cove Street: Catchbasins and the manhole on Cove Street are full of sand. Further maintenance is recommended.



NSH1067PI- Maple Avenue: No issues found.

NSH1065PI- Spring Street: No issues found.

Holly Lane: No issues found. Catchbasin is a standalone infiltration basin.



NSH1011PI- Abels Way: No issues found.

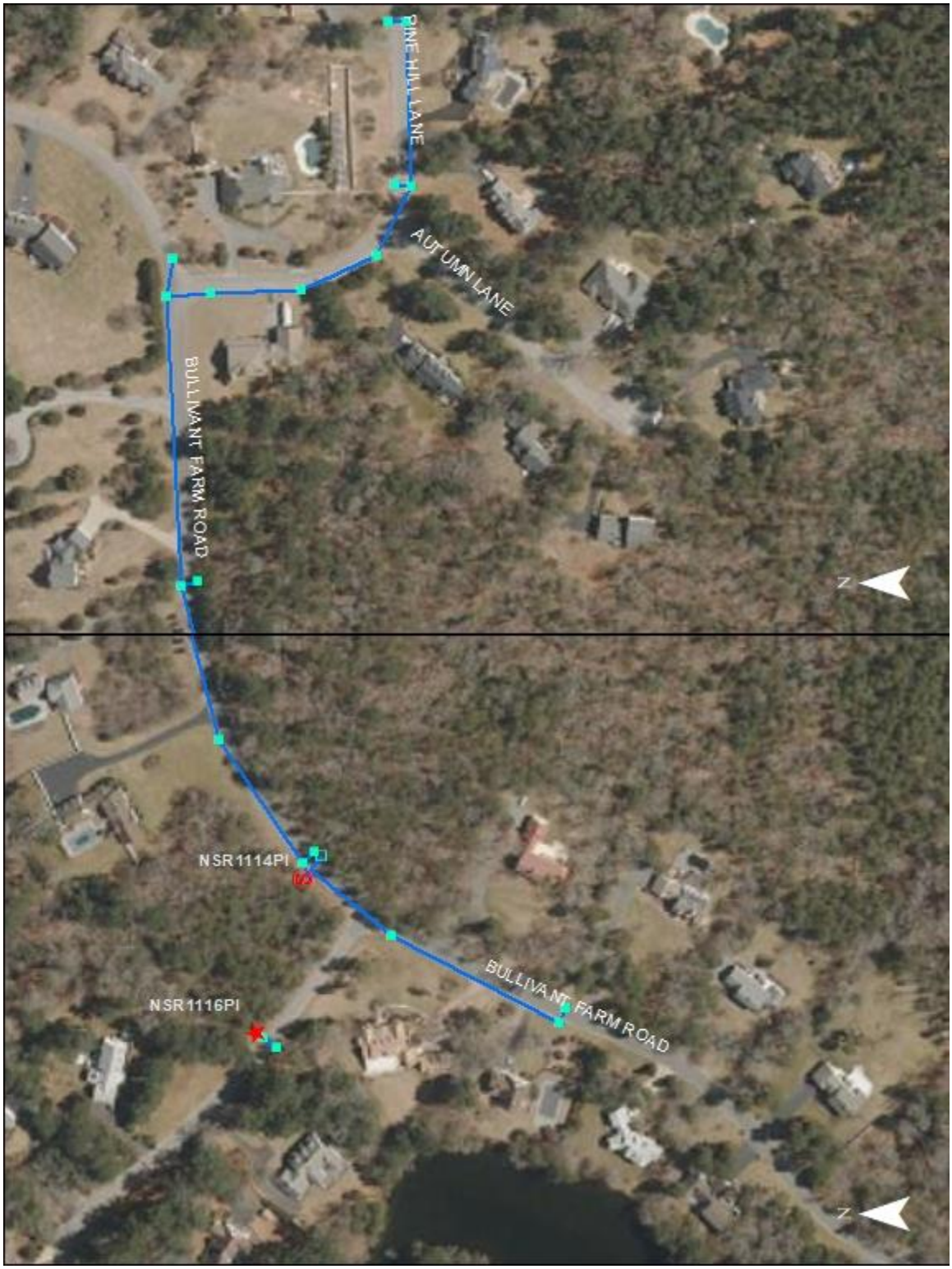
NSH1014PI and NSH1012PI- Giffords Corner Road: No issues found.

NSR1096PI, NSR1123PI, NSR1092PI, and NSR1124PI- County Road at Point Road: No significant issues. Pipe at point A is clogged. Further maintenance is recommended.

NSR1120PI- Tucker Lane: No significant issues found. The swale the two catchbasins enter could use maintenance.

NSR1121PI, NSR1139PI, and NSR1138PI- Tucker lane: Catchbasins at A, B, and C have all begun to sink. Further maintenance is recommended.

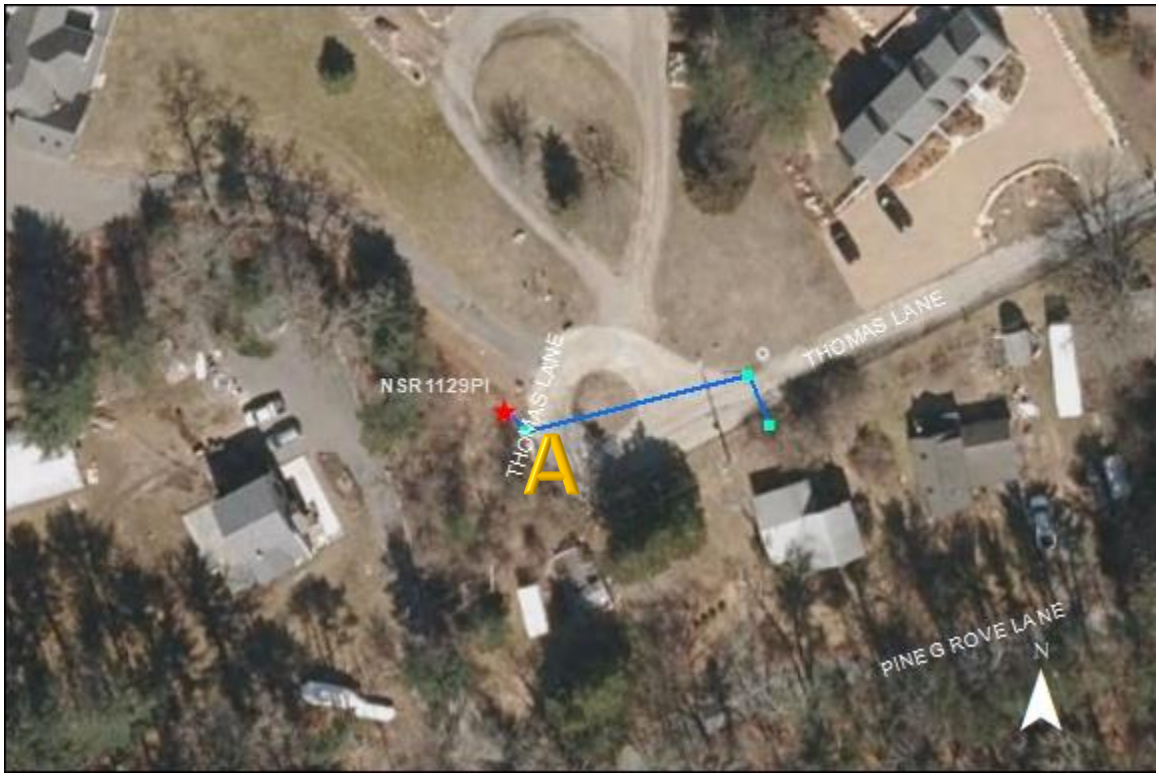
NSR1119PI and NSR1128PI- Bullivant Farm Road: No issues found.



NSR1114PI and NSR1116PI: Bullivant Farm Road and River View Lane: No issues found.

NSH1120PI- Pine Hill Lane: No issues found.

NSR1111PI- Bullivant Farm Road: No issues found.



NSR1129PI- Thomas Lane: The catchbasin at point A had a lot of lumber dumped into it. Catchbasin should be cleared of debris.

NSR1118PI- West River Road: No issues found.

NSR1137PI and NSR1130PI- Village Drive: No issues found.

NSR1133PI, NSR1132PI, and NSR1134PI- Field Stone Lane: No issues found.

NSR1134PI and NSR1135PI- Village Drive: No issues found.

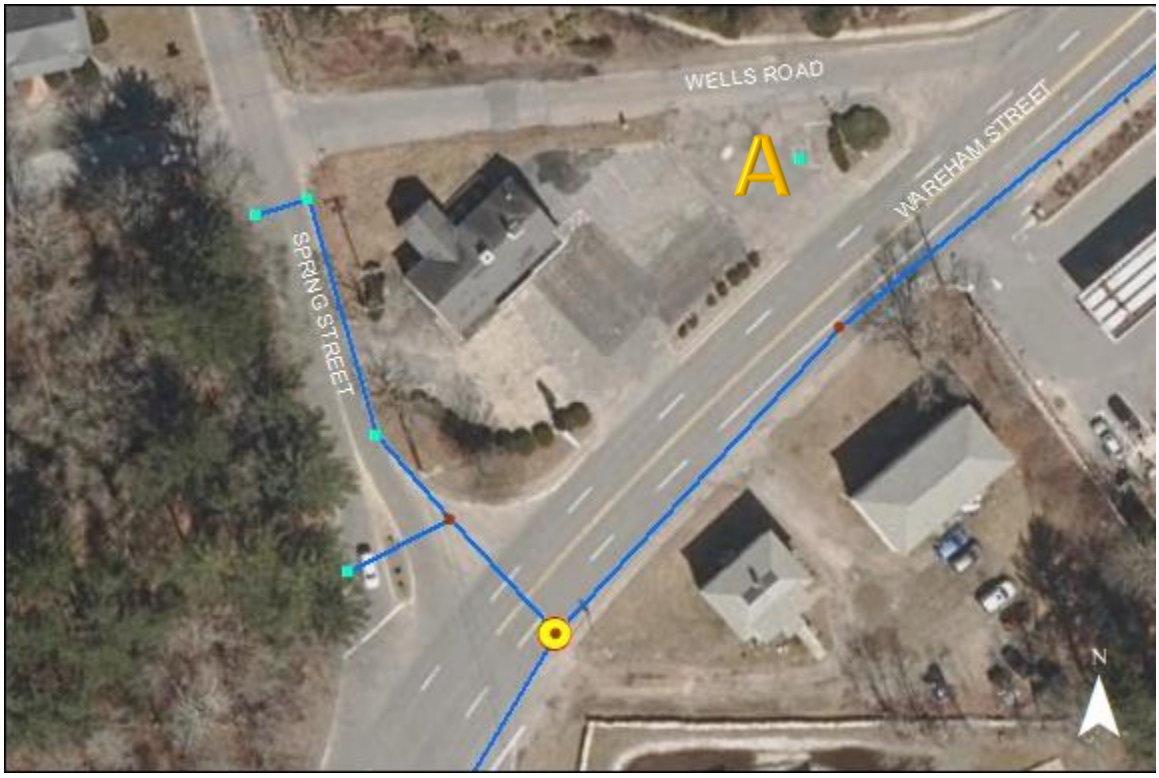
NSH1009PI- Upland Way and Olde Logging Road: At point A, B, and C, the catchbasins are beginning to sink and the frames are beginning to chip. Further maintenance is recommended.

NSH1021PI- Converse Road: No issues found.

Sippican Elementary School- No issues observed. At point A there is a 12” cement pipe running through the structure. It is damaged. Unsure of what that piper carries. Further attention is strongly recommended.

NSR1103PI- Point Road: At Point A, both the manhole and catchbasin are full of dirt. Further maintenance is recommended.

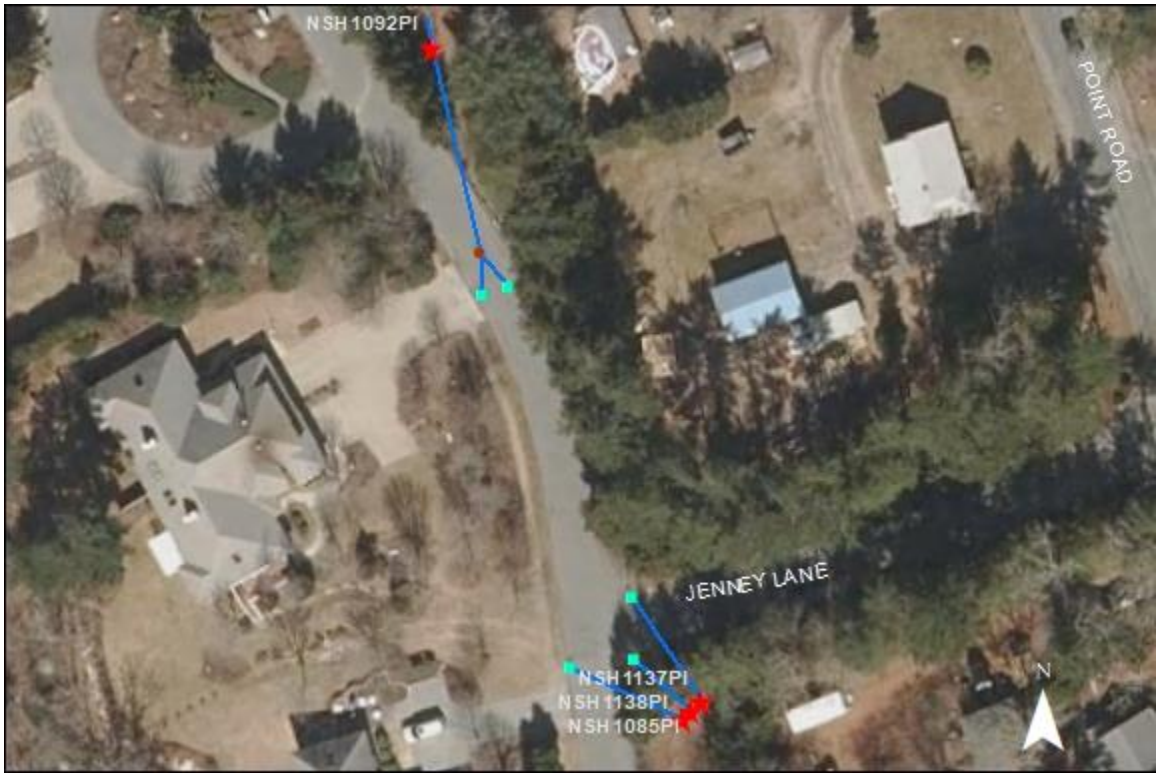
NSR1098PI, NSR1127PI, NSR1126PI, and NSR1097PI- Point Road: No issues found.



Spring Street: No issues found. Spring Street drains into a state road as shown at the yellow circle above. The catchbasin shown at point A is sinking. Further maintenance is suggested.

Spring Street: No issues found. Front Street North of Route 6 needs a police detail to be completed.

NSH1133PI, NSH1132PI, NSH1136PI, and NSH1135PI- Olde Meadow Road and Olde Sheepfield Road: No issues found.



NSH1092PI, NSH1137PI, NSH1138PI, and NSH1085PI- Jenny Lane: No issues found.

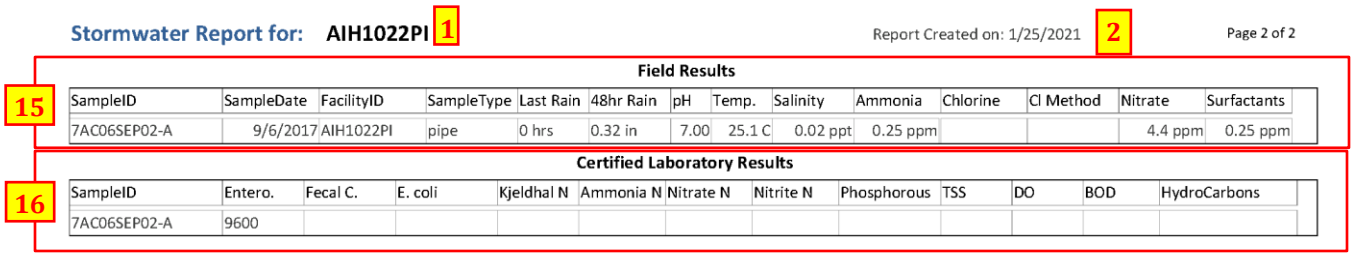
The Buzzards Bay Stormwater Collaborative
Catchment Report Explanation
25 January 2021

Catchment Reports

These individual reports represent an analysis for each discharge studied. These reports include basic information about the outfall, the associated (305(b)/303(d)) listed water, results of water quality analysis, and some interpretation of the results. A sample report is provided below with an explanation of each field. Additional raw data about field conditions, unusual observations, rainfall details, and various notes are all maintained in the water quality database. The information shown on these two page reports can provide insights to causes of stormwater impairments, and help focus resources to address stormwater related impairments. See QAPP for additional details on methods.

Page 1 of 2

Page 2 of 2 (these tables expand as needed to accommodate additional sample results)



Stormwater Report for: AIH1022PI 1 Report Created on: 1/25/2021 2 Page 2 of 2

15 **Field Results**

SampleID	SampleDate	FacilityID	SampleType	Last Rain	48hr Rain	pH	Temp.	Salinity	Ammonia	Chlorine	Cl Method	Nitrate	Surfactants
7AC06SEP02-A	9/6/2017	AIH1022PI	pipe	0 hrs	0.32 in	7.00	25.1 C	0.02 ppt	0.25 ppm			4.4 ppm	0.25 ppm

16 **Certified Laboratory Results**

SampleID	Entero.	Fecal C.	E. coli	Kjeldhal N	Ammonia N	Nitrate N	Nitrite N	Phosphorous	TSS	DO	BOD	HydroCarbons
7AC06SEP02-A	9600											

Key

1. Name of the discharge and associated catchment known as FacilityID (both pages)
2. Date of report (both pages)
3. Town
4. Location of discharge – street name and description
5. General location map of discharge
6. MassDEP 2016 Integrated List of Waters (305(b)/303(d)); discharge connection and name of receiving water body; water body identification designation, category, and classification; pollutants identified as causing impairments and EPA required sampling parameters for that water body.
7. Indication if discharge is: part of the SNEP research project, in a MS4 urbanized area, and if the catchment area has sewer service
8. Number of dry weather visits where no flow was observed and thus no samples taken. Objective rating of discharge based on water quality data for dry weather and wet weather samples.
   - Only freshwater (<6 ppt salinity) and flowing waters used for scoring
   - Maximum of observed sample values used for scoring
   - If parameter above threshold, 1 point each for ammonia, nitrate, and surfactants - These thresholds are > 0.50 ppm for Ammonia (NH_3), > 0.25 ppm for Surfactants, and > = 0.44 ppm for Nitrate (NO_3).
   - Bacteria could be either Fecal coliform or Enterococci
   - Bacteria scored between 0 for > 50 CFU, 1 for 50 to 10,000 CFU, and 2 for >10,000 CFU
   - Total scores range between 0 and 5 with higher numbers indicating worse water quality
   - Separate scores for Dry Weather and Wet Weather (>0.02 inches in 4 hours previous to sample)
9. Photograph of discharge point (if available)
10. Size and description of pipe
11. Map showing area near discharge along with Facility ID numbers for nearby infrastructure; blue squares are catchbasins and yellow dots are manholes; the yellow circle with the x is the discharge
12. BBNEP specific analysis and recommendation
13. MS4 Ranking for discharge based on permit language; possible ranks include:
    - Not Determined
    - Problem Outfall
    - High Priority Outfall
    - Medium Priority Outfall
    - Low Priority Outfall
    - Excluded Outfall

14. BBNEP summary status; possible status suggestions include:
    - Evaluation Not Complete
    - Requires Additional Monitoring
    - No Apparent Issues – Allocate Resources Elsewhere
    - Some Concern Warranted – Continue Monitoring
    - Some Concern Warranted – Consider Corrective Action
    - Requires Immediate Attention
15. Water quality data from Field Results:
    - **SampleID** – sample identification number; shown in blue if it's part of a duplicate sample
    - **SampleDate** - date the water sample was taken
    - **FacilityID** – facility identifier for location of sample; may vary and be different than discharge ID
    - **Sample Type** - type of sample collected: pipe, stream, surface, or sump
    - **Last Rain** – number of hours since last rain and time of sample
    - **48 hr. Rain** – number of inches of rain in previous 48 hours
    - **pH** – sample pH
    - **Temp** – sample temperature in degrees centigrade
    - **Salinity** – sample salinity in parts per thousand; shown in red if salinity is above 6ppt
    - **Ammonia** – sample ammonia concentration in parts per million
    - **Chlorine** - sample chlorine concentration in parts per million or parts per billion
    - **Cl Method** – method used to determine chlorine concentration
    - **Nitrate** – sample nitrate concentration in parts per million
    - **Surfactants** – sample surfactants concentration in parts per million (detergent indicator)
16. Water quality data from Certified Laboratory Results:
    - **SampleID** – sample identification number – same as Field Results Table
    - **Entero.** – laboratory results for Enterococcus bacteria colony forming units per 100 ml
    - **Fecal C.** - laboratory results for Fecal coliform bacteria colony forming units per 100 ml
    - **E. coli** - laboratory results for Escherichia coli bacteria colony forming units per 100 ml
    - **Kjeldhal N** – sample Total Kjeldhal Nitrogen concentration
    - **Ammonia N** – sample ammonia nitrogen concentration
    - **Nitrate N** – sample nitrate nitrogen concentration
    - **Nitrite N** – sample nitrite nitrogen concentration
    - **Phosphorous** – sample total phosphorous concentration
    - **TSS** – sample total suspended solids
    - **DO** – sample dissolved oxygen concentration
    - **BOD** – sample biological oxygen demand
    - **Hydrocarbons** – sample oil and grease results

Marion DPW
EPA MS4 Year 4
Job No. 21-9738

April 11, 2022

STRUCTURAL BMP- ESTIMATED NITROGEN REMOVAL

Receiving Water: Sippican River

BMP Type: Wet Basin – Stormwater Treatment (ST)

Location: Brook Haven Lane Lot 19C

Description: Drainage Basin 1

Total Contributory Area: 0.15 Acres

Impervious Area: 0.15 Acres

Pervious Area: N/A

Annual Nitrogen Load: 2.17 lbs/year

BMP Storage Volume: 2,197 cubic feet

Nitrogen Load Reduction: 24% or 0.52 lbs/year

Marion DPW
EPA MS4 Year 4
Job No. 21-9738

April 11, 2022

STRUCTURAL BMP- ESTIMATED NITROGEN REMOVAL

Receiving Water: Sippican Harbor

BMP Type: Wet Pond – Stormwater Treatment (ST)

Location: Silvershell Beach

Description: Constructed Wetland

Total Contributory Area: 64 Acres

Impervious Area: 16 Acres

Pervious Area: 48 Acres

Annual Nitrogen Load: 339 lbs/year

BMP Storage Volume: 191,250 cubic feet

Nitrogen Load Reduction: 41% or 139 lbs/year

Marion DPW
EPA MS4 Year 4
Job No. 21-9738

April 11, 2022

STRUCTURAL BMP- ESTIMATED NITROGEN REMOVAL

Receiving Water: Sippican Harbor

BMP Type: Bioretention – Runoff Reduction (RR)

Location: Island Wharf

Description: Bioretention Basins 2A-2D

Total Contributory Area: 0.16 Acres

Impervious Area: 0.16 Acres

Pervious Area: N/A

Annual Nitrogen Load: 2.3 lbs/year

BMP Storage Volume: 948 cubic feet

Nitrogen Load Reduction: 65% or 1.5 lbs/year

Marion DPW
EPA MS4 Year 4
Job No. 21-9738

April 11, 2022

STRUCTURAL BMP- ESTIMATED NITROGEN REMOVAL

Receiving Water: Sippican Harbor

BMP Type: Bioretention – Runoff Reduction (RR)

Location: Island Wharf

Description: Bioretention Basin 4A

Total Contributory Area: 0.21 Acres

Impervious Area: 0.21 Acres

Pervious Area: N/A

Annual Nitrogen Load: 2.96 lbs/year

BMP Storage Volume: 1,598 cubic feet

Nitrogen Load Reduction: 69% or 2.0 lbs/year

Marion DPW
EPA MS4 Year 4
Job No. 21-9738

April 11, 2022

STRUCTURAL BMP- ESTIMATED NITROGEN REMOVAL

Receiving Water: Sippican Harbor

BMP Type: Bioretention – Runoff Reduction (RR)

Location: Island Wharf

Description: Bioretention Basin 3B

Total Contributory Area: 0.09 Acres

Impervious Area: 0.09 Acres

Pervious Area: N/A

Annual Nitrogen Load: 1.3 lbs/year

BMP Storage Volume: 614 cubic feet

Nitrogen Load Reduction: 67% or 0.9 lbs/year

Marion DPW
EPA MS4 Year 4
Job No. 21-9738

April 11, 2022

STRUCTURAL BMP- ESTIMATED NITROGEN REMOVAL

Receiving Water: Sippican Harbor

BMP Type: Bioretention – Runoff Reduction (RR)

Location: Island Wharf

Description: Bioretention Basin 3A/4B

Total Contributory Area: 0.32 Acres

Impervious Area: 0.32 Acres

Pervious Area: N/A

Annual Nitrogen Load: 4.6 lbs/year

BMP Storage Volume: 1,968 cubic feet

Nitrogen Load Reduction: 66% or 3.0 lbs/year

Marion DPW
EPA MS4 Year 4
Job No. 21-9738

April 11, 2022

STRUCTURAL BMP- ESTIMATED NITROGEN REMOVAL

Receiving Water: Sippican Harbor

BMP Type: Bioretention – Runoff Reduction (RR)

Location: Island Wharf

Description: Bioretention Basin 1

Total Contributory Area: 2.35 Acres

Impervious Area: 1.65 Acres

Pervious Area: 0.70 Acres

Annual Nitrogen Load: 24.1 lbs/year

BMP Storage Volume: 7,164 cubic feet

Nitrogen Load Reduction: 68% or 16.4 lbs/year

Marion DPW
EPA MS4 Year 4
Job No. 21-9738

April 11, 2022

STRUCTURAL BMP- ESTIMATED NITROGEN REMOVAL

Receiving Water: Sippican River

BMP Type: Wet Basin – Stormwater Treatment (ST)

Location: Brook Haven Lane Lot 19G

Description: Drainage Basin 2

Total Contributory Area: 0.55 Acres

Impervious Area: 0.55 Acres

Pervious Area: N/A

Annual Nitrogen Load: 7.78 lbs/year

BMP Storage Volume: 9,521 cubic feet

Nitrogen Load Reduction: 45% or 3.50 lbs/year