2016 - 2017
MS4 ANNUAL REPORT

NPDES PERMIT #CT0030279

FOR

CONNECTICUT DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION

PREPARED FOR

CITY OF STAMFORD
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INTRODUCTION

The City of Stamford (the City) was issued its current NPDES Permit (No. CT0030279) for discharge of stormwater from its municipal separate storm sewer system (MS4) on June 4, 2013. This permit requires many actions in order to reduce pollution from stormwater runoff.

This Annual Report (Report) covers the period from July 1, 2016 through June 30, 2017 (Reporting Period). It summarizes the activities conducted and measures taken to comply with the previous and current NPDES Permit during this Reporting Period. This Annual Report was prepared in accordance with the terms and conditions of the NPDES Permit, as well as the *Stormwater Management Plan, City of Stamford, Stamford, Connecticut, September 2, 2014* (the SMP).

The 2015–16 MS4 final Annual Report was submitted to the Connecticut Department of Energy and Environmental Protection (CTDEEP) on September 29, 2016.

On January 2, 2016, the City submitted an application for modification of the its NPDES Permit. The City, in conjunction with the CTDEEP, completed many efforts to work through the requested permit modification items during the 2016-17 fiscal year. Many meetings, phone calls, emails, and letters related to the process were conducted over a period of two (2) years to complete the permit modification process which took a considerable amount effort. CTDEEP worked with the City and the Environmental Protection Agency (EPA) in efforts to complete the process. A NPDES Permit Modification for the City of Stamford was issued by the EPA on August 14, 2017. A copy of the issued permit modification is provided in ***Appendix B***.

The City has begun efforts to complete a permit renewal application for the newly modified NPDES Permit, which is set to expire on June 3, 2018.

1.0 CONTACTS LIST

The following individuals are members of the City's Stormwater Pollution Prevention Team and have a role in the implementation of the City's stormwater management program and are in positions that have the potential to impact and improve stormwater quality. All of these individuals are involved in the development of the Stormwater Management Plan (SMP) and/or this Annual Report.

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2.0 PROGRAM EVALUATION

2.1 Stormwater Management Plan (SMP) Objectives

The City of Stamford (the City) was issued a NPDES Permit for discharge of stormwater from its municipal separate storm sewer system (MS4) on June 4, 2013. The City developed and is implementing a Stormwater Management Plan (SMP) based on the requirements of the NPDES Permit.

The SMP provides the framework for compliance with the terms and conditions of the NPDES Permit with the overall objective of improving the quality of stormwater runoff and protecting the surface waters of the State. The SMP seeks to achieve this objective through:

- Establishment of a Pollution Prevention Team
- Development of Stormwater Mapping
- Establishment and Implementation of Control Measures, including:
    - Public Education and Involvement
    - Source Controls for Pollution Prevention
    - Future Land Disturbance and Development Management
    - Infrastructure Operations and Maintenance
- Establishment and Implementation of an Illicit Discharge Detection and Elimination (IDDE) Program
- Establishment and Implementation of a Water Quality Monitoring Program
- Establishment and Implementation of Legal Authority to Control Discharges
- Establishment and Implementation of Procedures to Coordinate Stormwater Activities between various Departments and Agencies
- Maintaining Consistency with Other Plans and Permits

Additional details on each of these of these methods to achieve the objectives of the SMP are presented in the Summary Table of SMP Components (***Section 3.0***) and the Narrative Report (***Section 4.0***).

2.2 Major Findings

The objective of the SMP is to improve stormwater runoff quality and protect the surface waters of the State. This discussion of major findings should provide an overall evaluation as to whether stormwater and surface water quality in the City and from the City's MS4 is improving or degrading in the City.

The major findings during this Reporting Period of the new NPDES Permit are the steps that the City has taken to implement the permit requirements, including but not limited to:

- Continued development of an understanding of the permit requirements and the resources necessary to achieve compliance
- Continued allocation of additional resources (personnel, equipment, and budget) to/within the Traffic and Road Maintenance Division to specifically address stormwater management and stormwater runoff quality improvement issues
- Continued coordination of the Stormwater Pollution Prevention Team with City Departments for stormwater-related issues

- Implementation of the SMP and associated public outreach activities
- Continuation of city-wide geographic information system (GIS) mapping related to stormwater infrastructure and management
- Continued development of legal authority and zoning regulations to address stormwater discharges and quality
- Continued coordination of public outreach with local environmental and business groups
- Continued coordination with consultants to assist in the implementation of the SMP and to perform surface water, stormwater, and outfall monitoring

2.3 SMP Strengths and Weaknesses

2.3.1 EPA Review of the Status of the NPDES Permit

Representatives from the US Environmental Protection Agency (EPA) and the CTDEEP visited with members of the City's Stormwater Pollution Prevention Team on June 15 and 16, 2015 to conduct a compliance audit of the City's NPDES Permit. The compliance audit included a "five-year look-back" period. After the compliance audit, the EPA indicated that several areas of the permit needed improvement which are outlined in Section 2.3.1 of the 2014 & 2015 Annual Report.

The EPA issued an Administrative Order and Request for Information, regarding the compliance audit, to the City of Stamford on October 1, 2015. The City of Stamford has been working with the EPA of this Reporting Period to address items identified during the compliance audit.

2.4 Future Direction of the SMP

The SMP will continue to be evaluated in greater detail as part of the 2017–18 Reporting Period. A component of that evaluation will be a review of goals, schedules, and procedures referenced in the SMP as "to be established" and a detailed analysis of the status of these items.

The City considers the SMP to be a dynamic document and will continue to work towards updating and revising it as conditions and regulations change in an effort to maximize its ability to be utilized as a tool to manage and improve stormwater runoff quality. Because this SMP was recently established, the City's focus will be on implementing it to the best of their ability over the course of the next several years. For this reason, no significant changes to the SMP are anticipated at this time.

Now that the Traffic and Road Maintenance Division has had time to become acclimated to the permit requirements and develop and begin implementing the SMP, the City will continue to focus more of its resources in the coming years to achieving compliance with the SMP, particularly in the areas of:

- Public education and involvement
- Stormwater mapping
- Illicit discharge detection and elimination
- Control measures
- Infrastructure operations and maintenance
- Legal authority and regulatory changes

- Water quality monitoring

Specific goals or requirements are discussed in the Narrative Report, ***Section 4.0***, of this Annual Report.

The Team Coordinator and Regulatory Compliance and Administrative Officer will continue to be responsible for closely tracking individual activities and events in each of these areas.

2.5 NPDES Permit Modification SMP Updates

On August 14, 2017, a permit modification was issued for the City's NPDES Permit. During the 2017-18 Reporting Period, the City will be reviewing the permit modification for any new requirements and will be updating the SMP accordingly.

3.0 SUMMARY TABLE OF SMP COMPONENTS

The summary table of SMP components is presented in ***Appendix C.*** This table concisely presents the stormwater management activities completed within the time period for this Annual Report and documents the City's compliance with key permit and SMP requirements.

Administrative issues, such as planning activities, program development, and pilot studies, are not discussed in the summary table of SMP components.

4.0 NARRATIVE REPORT

4.1 Pollution Prevention Team

The Pollution Prevention Team (Team), ***Section 1.0***, was established to implement the SMP, to keep it up-to-date as conditions and/or regulations change, to maintain the control measures to improve stormwater quality, and to take corrective actions, as necessary. With the issuance of the new NPDES Permit in 2013, the City decided to transfer the majority of the responsibility for compliance with the permit from the SWPCA to the Traffic and Road Maintenance Division.

Much of the first year of the new permit was utilized by the Traffic and Road Maintenance Division becoming familiar with the permit requirements and establishing the necessary schedules, procedures, personnel, equipment, financing, and other resources necessary to successfully implement the permit requirements and the SMP.

This third permit year was utilized to get the in-stream sampling up-to-date, commence discharge sampling, get the infrastructure and IDDE evaluations up-to-speed with the new tracking software and CCTV capabilities, jump-start the outfall identification and mapping process, establish the MS4 stormwater ordinance, and drafting modifications to the Zoning Regulations.

The Team that has been established under the current SMP (see Appendix B of the SMP and ***Section 1.0*** of this report) consists of personnel from many City departments whose operations may affect the current and future stormwater quality. Team members supply the City with a wide-range of experience and expertise in managing and controlling stormwater runoff quality.

Since 2013, the Team has continued improving their understanding of the new NPDES Permit requirements, communicating these requirements amongst themselves, establishing areas of responsibility and cooperation, brainstorming on public education and control measure ideas, and working with the appropriate legal counsel to establish legal authority and new regulations.

The Team's activities are coordinated by the Traffic and Road Maintenance Supervisor. Many of the day-to-day stormwater permit compliance activities are managed by the Regulatory Compliance and Administrative Officer; this position was created in early 2014 specifically as a result of the issuance of the current NPDES Permit.

The City has also created and filled five positions under the direction of the Regulatory Compliance and Administrative Officer; the positions include five heavy equipment operators to help operate the vacuum trucks and camera truck for IDDE screening and catch basin and manhole inspections and cleaning.

It is anticipated that the Team will continue these activities during the next year of the discharge permit as well as develop and coordinate additional specific goals with the objective of improving the overall quality of stormwater runoff in the City of Stamford.

4.2 Mapping

The City maintains a strong GIS department that can coordinate city-specific, as well as environmental data, available from the DEEP and other sources. Information that has been mapped includes: city roadways, city properties, aerial photography, topography, zoning map, surface water bodies, watershed areas, surface water quality classifications, impaired waters, mapped inland wetlands, mapped tidal wetlands, the coastal boundary, and the ten approved in-stream sampling locations.

The City has hired a consultant that is in the process of mapping sanitary sewer lines, stormwater lines, and stormwater outfalls. Mapping efforts have focused on the more developed sections of the City, closest to Long Island Sound, with the most stormwater outfalls mapped south of Interstate 95 and many more mapped between I-95 and the Merritt Parkway (Connecticut Route 15). Initially, 154 stormwater outfalls were mapped. Several of the initially mapped outfall locations were determined to be inaccurate and 90 MS4 outfalls have been confirmed/identified/mapped. Two of the previous 92 MS4 outfalls were eliminated from the list, outfalls number SON-0021 and SON-0060. These outfalls were removed from the monitoring list because one was identified as the SWPCA's Facility discharge location and the other was a structure inlet.

The City continued to identify and map new MS4 outfalls in the City throughout the Reporting Period. To date, the City has mapped 944 outfalls. Efforts were completed to canvas the entire City for identifying outfalls and believes that 95% of the City has been mapped. The City understands that there is continual maintenance being conducted on the stormwater system throughout the city and that the outfall mapping will require constant updating. Current updated outfall mapping is provided in ***Appendix D***.

The City is currently in the process of confirming the accuracy of the outfall locations and whether they are part of the City's MS4 stormwater system or another entity's responsibility. Several of the potential new outfalls have been identified as duplicates and others have been noted as inlets or discharges under state DOT control. The City continues communication with the DEEP to identify more specific criteria for the outfalls that will be required for monitoring as part of the IDDE program and the wet weather monitoring. See ***Section 4.4*** and ***Section 4.5.2*** for additional details on the IDDE program and the wet weather monitoring program. A new Interconnected MS4 plan was prepared in June 2016 and is further discussed in ***Section 4.3.5.10***.

This component of the SMP is to be expanded to include the following GIS mapping:

- Storm line material and size data
- Responsibility, if part of another MS4 stormwater system (such as DOT's)
- Completed and proposed cleaning and repair activities
- Outfall discharge monitoring data
- IDDE screening and investigation results
- Proposed IDDE investigations
- Completed and proposed capital projects
- Connections to any other public or private storm drainage systems
- Drainage areas for each MS4 outfall

- Areas served by on-site subsurface disposal areas
- Storm drains that do or may receive discharges form underdrain systems

For an update on the impervious cover and directly impervious cover area (DCIA) see ***Section 4.3.4.1***.

4.3 Control Measures

4.3.1 Public Education and Involvement

City residents can contribute to the pollution transported via stormwater by misapplying lawn pesticides, herbicides and fertilizers, littering, dumping pollutants into storm drains, failing to dispose of pet waste properly, and other actions which can be detrimental to the quality of stormwater discharging into water bodies. Many people are unaware that they are polluting when engaged in these activities. Therefore, public education and outreach and public involvement and participation will help minimize the amount of pollution contributed to the City's water bodies by local residents. Also, public education and outreach coupled with public involvement and participation allows city residents to have a voice with regard to stormwater.

During this Reporting Period, the following public education and involvement activities have been completed:

- The City has continued to maintain and update the stormwater section that was previously added to the City of Stamford's website at http://www.stamfordct.gov/stormwater-management. The website provides basic information about stormwater as well as key contacts within the City of Stamford. Additionally, it provides links to:
    - The NPDES Permit
    - The SMP
    - The MS4 Stormwater Ordinance
    - The 2012, 2013-2014, 2014-2015, and 2016-17 Annual Reports
    - The household hazardous waste collection events schedule and information on the materials managed
    - Dog waste management practices
    - Best management plans for pesticides
    - Information on preventing stormwater pollution honored
    - Fall leaf pick up schedule
    - Christmas tree pick up schedule
    - How to report a stormwater issue, violation, or complaint

  The City has also added a Frequently Asked Questions section that includes 25 questions and answers that city residents may view. To date, there have been approximately 1,300 hits on the website.
- The Regulatory Compliance and Administrative Officer for the City of Stamford, in an effort to aid in the public participation of stormwater management added a link to Stormwater Management Website for the RiverSmart CT project at: https://www.stamfordct.gov/stormwater-management.

- In 2014, the department adjusted internal operations to receive and respond to citizen questions and complaints regarding stormwater related issues. The City's stormwater management department responded to numerous citizen inquiries regarding snow storage, sweeping, catch basin cleaning, and IDDE program during the Reporting Period.
- A public meeting was held on July 27, 2017 at 6:00pm for the review of the SMP and the draft 2016-2017 Annual Report. The Notice of Meeting was published in the Stamford Advocate on July 19 and 25, 2017 and was posted on the City's stormwater management website. The Notice of Meeting was filed with the Town Clerk, forwarded to the Board of Representatives, and posted throughout Government Center. The leadership/directors of two local environmental groups, SoundWaters and the Mill River Collaborative, were provided with notice of the meeting. There were five (5) attendees at the meeting. Questions and comments were submitted by one citizen and the meeting lasted nearly two hours. Many questions were answered during the course of the meeting and subsequent discussions.
- An informational pamphlet on dog waste management was provided to all dog owners at license renewal time. 3,000 pamphlets were provided to the Town Clerk for distribution on June 24, 2016 and an additional 3,000 copies are in stock at the Traffic and Road Maintenance office for future distribution.
- Since 2013, the City has installed 60 dog waste dispensers and signs informing park patrons of the need to pick up after their dogs in key parks. These signs refer to the existing municipal dog waste ordinance in the City Charter (Section 111). Twelve (12) more dog waste dispensers will be built in the next year for park spaces, public right of ways, and dog walking areas. Approximately $10,000 was spent on dog waste disposal bags (96,000 bags) during the Reporting Period and City staff have observed used bags disposed of in the trash containers throughout the areas with dispensers. Additionally, pet waste stations were installed at Mill River Park this year.
- The SWPCA provides tours of the City's wastewater treatment facilities to school children and adults. During the Reporting Period, 924 people attended these tours. As part of the presentation, they discuss stormwater impacts and typically distribute a brochure entitled "What is Your Storm Drain IQ?"
- The Mill River Collaborative performs annual clean ups, improvements, and provides educational programming within the City. Approximately 2,505 volunteer hours were provided from over 789 individual volunteers during this Reporting Period. These hours included everything from stuffing envelopes, to removing invasive plant species from the meadows, to creating erosion barriers in the river. A specific list of volunteer activities includes:
    - reinforcing river banks using organic biologs
    - invasive species removal by hand (mugwort, queen anne's lace, loosestrife, wild lettuce, white clover, ailanthus, burdock, bindweed)
    - planting pollinator-attracting flowers
    - cleaning up litter in and near the river
    - building rock veins to funnel water away from banks to reduce undercutting
    - mulching
    - harvesting native seeds
    - removing silt around drainage areas
    - cutting overgrown shrubs and trees
    - weeding paths, lawns, flower beds, gardens

  - spreading organic fertilizers (sparingly)
- Two shoreline cleanups were conducted, at the Czescik Marina Park and the Cummings Beach, on the weekend of 3/23/17.
- SoundWaters is the leading environmental education organization on Long Island Sound. Over 25,000 students learn and explore with SoundWaters, through education and action, every year. The City and SoundWaters are in the process of coordinating a vacuum truck demonstration for kids in order to strengthen the relationship with the community.
- The Regulatory Compliance and Administrative Officer for the City has written letters expressing commitment to partner with SoundWaters in its proposed projects: Long Island Sound Oyster Research for Long Island Sound Futures Fund 2017 Grant.
- A Riverbank Stabilization Project was conducted during October 2016 and July 2017 by Hardened Access Planting project.
- The Mianus Chapter of Trout Unlimited continued their restoration of the Mianus Riverbank by pinning more Christmas trees and adding a hardened access. The effort, spearheaded by the Mianus Chapter, took place over the weekend of July 15, 2017. The Friends of Mianus River Park and the City of Stamford were also contributors.
- The Friends of Mianus River Park, a volunteer group and non-profit corporation, conducted 3 riverbank stabilization projects in the 2016-17 Reporting Period.
- The City has scheduled trail work at the Mianus River Park in 2017. The mission is to maintain or re-route the existing trails in order to protect the sensitive areas of the Park and to harden the trails to resist erosion. On the 1st Saturday of each month, volunteers will meet at the bridge on Merriebrook Lane at 9:00am and work until 12:00pm .
- The City conducted an educational outreach program event at the Dolan Middle School on May 10, 2017. Four classes, including 170 students of sixth graders were introduced to the concepts of stormwater quality management using a PowerPoint presentation, a newly acquired Enviroscape interactive model of a typical stormwater management system and were given the opportunity to see the vacuum trucks used to clean out catch basins and manholes. The City is in the process of collaborating with other middle schools throughout the City to expand this outreach program.
- In the spring of 2018 the city intends to utilize Sleep Hollow Park as a site for stormwater education and vacuum truck demonstrations.
- During this Reporting Period, the City installed approximately 2,000 catch basin medallions throughout the City. These medallions were installed both English and Spanish to help raise public awareness for stormwater quality issues. These medallions are being installed by City staff members or by seasonal employees and volunteers and are primarily installed on curb-backed catch basins throughout three areas targeted in the southern part of the City, and in parks, and downtown areas with the most pedestrian traffic. Currently, the City has install medallions on approximately 18% of the City-maintained catch basins. The City has recognizes that the medallions are a useful and effective tool and has been great for assisting in educating the public.
- Harbor Watch, a division of Earthplace, a not-for-profit organization, was retained by the City, to conduct the dry weather outfall sampling as part of the IDDE program (see ***Section 4.4***). During this Reporting Period, Harbor Watch conducted dry weather outfall screening at 47 of the known outfalls on public property and additional sampling at other outfalls (pre-permit, unknown outfalls).

- The Regulatory Compliance and Administrative Officer for the City gave a presentation 5/9/17 to the Connecticut Building Congress. The presentation consisted of 32 attendees ranging from Architecture, Engineering, and Construction industries. The presentation including addressing the issues concerned with stormwater management.
- The Regulatory Compliance and Administrative Officer for the City coordinated with the Aquarion Water company to reinforce that vehicles being washed outside is not permitted under the MS4 permit after the water ban was lifted in the spring.
- The Regulatory Compliance and Administrative Officer for the City has made a concerted effort to engage the pubic in stromwater related education. One such effort are the signs placed along the Stamford Museum and Nature Center nature trains. The City reports foot traffic above 5,000 person that have use the trails were the signs are displayed during this Reporting Period.
- The Regulatory Compliance and Administrative Officer for the City has made strides in developing and implementing a program for the future that will allow where residents have access to limited GIS data and be allowed to adopt a catch basin and begin to understand how it is connected to the rivers and streams in the area.
- The City has collaborated with a marketing and public relations firm (Catalyst) to develop a new stormwater management mailer/pamphlet to be sent out during the 2017–18 Reporting Period to provide a guide for regulatory compliance. 5,520 pamphlets were ordered in English and Spanish. 2,820 pamphlets have been distributed and 2,700 are anticipated to be distributed through December 2017 to commercial and industrial town business, including CTDEEP Industrial Stormwater General Permit permittees and others.
- The City celebrated Earth Day on April 21, 2017 in the lobby of the Government Center. In attendance was the Mayor of the City, along with over 200 local residents, who were provided with multiple table presentations, including concepts of stormwater quality management using the storm drain medallions and an Enviroscape interactive model.
- The efforts conducted by the Stormwater Management Department were recognized in the City of Stamford Annual Report – Fiscal Year 2016-17. This report is distributed annually by the office of the mayor and is available on the City's website. The report summarized the efforts that are presented in this annual report.
- On April 29, 2017, the Stamford Police Department hosted a National Rx Drug Take-Back event. Fliers for the event were handed out during the Earth Day event previously discussed. As part of the event, the police department provided services for residents to drop off their unused or expired medications.
- Approximately 40,000 Stormwater Management fliers were distributed throughout the City with the December 2016 tax bills. The fliers were provided to each resident receiving a tax bill, which includes all registered automobile owners in the City.
- Several residences were noted with piles of leaves in the street during the 2016 leaf collection period. One-thousand doubled sided color flyers were printed and distributed. 19,500 postcard mailers were sent to single family homes, a full-page ad was placed in the Stamford Advocate and on the City's website, flyers were placed throughout the City and 30 lawn signs were installed to remind the citizens that leaves collected were not to be placed in the roadways. The Stamford Advocate ran 400,000 impressions online at on their website, www. the stamfordadvocate.com, which ran from October 14, 2016 through November 13, 2016. Two (2) half-page full color ads

were posted on October 14 and October 28, 2016. Additionally, 1,000 door hangers were used for reminders for any violators of the City's policies.

4.3.2 Industrial Dischargers

During the 2015 NDPES Permit compliance audit, the EPA indicated that the City is required to educate owners and operators of commercial, industrial, and institutional facilities as to their responsibility to control pollutants in stormwater discharges from their properties into the City's MS4.

The City's Stormwater Management Department has obtained a CTDEEP list of stormwater discharge General Permit sites for commercial or industrial activity and has prepare informational outreach materials to target these businesses. The City intends to distribute the materials during the 2017-18 Reporting Period.

4.3.3 Source Controls and Pollution Prevention

4.3.3.1 Motor Oil Collection

The City collects used motor oil and cooking oil at the Katrina Mygatt Recycling Center so that residents will have a place to properly dispose of these materials and to limit the potential for them to be improperly disposed and adversely affect stormwater quality. During the Reporting Period, approximately 2,960-gallons of used motor oil and 2,158-gallons of used cooking oil were collected. The City intends to continue its used motor oil collection activities.

4.3.3.2 Household Hazardous Waste (HHW) and Electronic Waste Collection Programs

The City holds at least one HHW collection day within the City limits each year so that residents will have a place to properly dispose of these materials and to limit the potential for them to be improperly disposed of and potentially affecting stormwater quality. In 2016 and 2017, the City hosted a HHW collection day on July 16th and July 15th, respectively at the Rippowan School on High Ridge Road. During this Reporting Period 277 households and, 189 half-households participated. In addition, Stamford residents are able to utilize HHW collection days in Darien, Greenwich, New Canaan, Norwalk, Westport, Weston, or Wilton approximately seven other days per year (throughout the spring and fall). The City intends to continue its involvement in these collection events.

The City collects used consumer electronics at the Katrina Mygatt Recycling Center during normal operating hours. Acceptable materials include computers, monitors, televisions, VCRs, DVDs, cell phones, copiers, fax machines, printers, radios, stereos, and small electronics. In addition, inks and toners, rechargeable batteries, lithium ion batteries, vehicle batteries, compact fluorescent light bulbs, and linear lamps are also accepted at the Recycling Center. During the Reporting Period, approximately 234 tons of consumer electronics and universal wastes were collected. The City intends to continue its waste electronics collection activities.

4.3.3.3 Spills and Leak

In June 2016, a city-wide Spill Prevention and Response Plan (SPRP) was completed to prevent, contain and clean up spills of oils, petroleum products, and other potentially hazardous materials to minimize stormwater impacts and protect surface waters.

The department responded to 6 spills in excess of five gallons of petroleum products on the City's roadways and coordinated with first responders (Police, Fire, DEEP) to limit impacts to the City's MS4. A list of recent spills during the Reporting Period, of five gallons or more, is presented in ***Appendix E***.

For additional information on training for spill prevention and response see ***Section 4.3.5.1***.

4.3.3.4 Pesticide, Herbicide and Fertilizer Use Limitations

The City is required to limit the use of pesticides, herbicides and fertilizers (PHF) in City-owned or operated areas. The City has developed the Best Management Practices (BMPs), found in Appendix G of the SMP, for PHF application in city-owned or operated areas. Further development of standard operating procedures (SOPs) for the use of PHFs is ongoing. It is anticipated that they will be modeled based on the CTDEEP Integrated Pest Management (IPM) Plans. Completion of the PHF SOPs is anticipated during the 2017–18 Reporting Period.

Fertilizers and herbicides are used on the municipal athletic fields, as described in the SMP. Every year, in April, Dimension (18-0-40) is applied to the fields and contains both fertilizer and herbicides. In May, ProPendi (13-0-4) is applied to the fields and contains both herbicides and fertilizer. In September, just fertilizer (25-0-5) is applied to the fields. The City applied a total of 1,530 pounds of nitrogen to the ball parks during the 2016-17 Reporting Period. See ***Appendix F*** for a table of the total nitrogen used at the City-owned ball parks.

As required by the NPDES Permit, the City is in the process of establishing reduction goals, including consideration of alternatives, for PHFs being used at City-owned or operated areas, specifically at the municipal athletic fields.

No PHFs are used on city park green spaces.

The Mill River Park/Mill River Collaborative completely avoids the use of synthetic fertilizers. They employ a "feed the soil ecology" program where the soil is infused with sixteen or more species of bacteria and fed with a fish emulsion/kelp/yucca blend as a substitute for traditional fertilizers. Additionally, the Mill River Collaborative maintains its lawns at four inches to build deeper, more drought tolerant root systems. All grass clippings are returned to the lawns and they use organic products, such as soy bean meal, to add nitrogen to the soil. The Mill River Collaborative uses minimal herbicides on invasive plant species per DEEP guidelines. They have found that as they continue this program, they require less herbicide use each year.

With respect to the City-owned golf courses, the NPDES Permit requires that the City implement practices which achieve a ten percent (10%) reduction in total nitrogen by June 3, 2018. The reduction

will be determined by the average annual usage, by weight, of the three years preceding the current NPDES Permit. The current SMP has established the application rates of fertilizers used at the golf courses, which can be found in Appendix G of the SMP.

During the Reporting Period, the Sterling Farms Golf Course used a total of 2,766 pounds of nitrogen and the E. Gaynor Brennan Municipal Golf Course used a total of 3,637 pounds of nitrogen. The total 6,403 pounds of nitrogen, used in 2016 represents a 21.4 percent reduction from the total nitrogen that was used in 2016 (8,145 pounds). See ***Appendix F*** for a table of the total nitrogen used at the City-owned golf courses.

The Pollution Prevention Team will work with the golf course staff to help reduce the total amount of nitrogen used at these facilities. It is the City's intention to establish goals for reducing the amount of PHFs used at all city-owned or operated areas.

4.3.3.5 Salt Storage and Usage

The City stores road salt at the Highway Department (90 Magee Avenue), the Town Yard (106 Haig Avenue), and the Scofieldtown Transfer Station (612 Scofieldtown Road). At each facility, salt is stored on an impervious pad and under a salt shed in accordance with the requirements of the DEEP's *General Permit for the Discharge of Stormwater Associated with Industrial Activities*.

The City used approximately 13,592 tons of salt during 10 storms for a combined total of 45 inches of snow during the winter of 2016-17. Salt usage quantities will continue to be tracked and the City's goal is to reduce the amount of salt and salt-sand mixture utilized on its roadways by increasing efficiencies and investigating alternate methods. However, salt usage will continue to vary based on storm frequency and intensity.

The City continues to expand its use of brine trucks for pre-treatment, which helps reduce road salt usage. The City received two (2) new brine trucks in the spring of 2017. More trucks are being equipped with brine and the truck drivers are now receiving tanker endorsements on their licenses in order to be able to use the brine trucks. As of July 30th, 2017, the City of Stamford can have up to four trucks available that are outfitted with brine tanks for use during the 2017-18 winter. See ***Section 4.3.5.6***, Snow Removal, for additional discussion on salt usage.

4.3.4 Land Disturbance and Development

Construction site runoff and post-construction site runoff should be reduced so that water bodies are not receiving additional pollutants or sediment. Sediment causes water bodies to become physically and biologically altered. Decreases in habitat quality can result from significant amounts of sediment covering these habitat areas.

Under the terms of the NPDES Permit, the City of Stamford is required to implement and enforce a program to address construction and post-construction stormwater discharges from land disturbing activities and after site stabilization has been achieved. This program needs to be based on the *Connecticut*

Guidelines for Soil Erosion and Sediment Control (latest edition) and the *Connecticut Stormwater Quality Manual* (as amended). The City continues working towards developing this program; both of these documents will be incorporated into the draft changes to the Zoning Regulations.

The City has a well-developed process for ensuring that applicants for building permits have received all appropriate City approvals prior to issuance of a building permit. A copy of the checklist utilized by the Building Official is presented in Appendix J of the SMP. As part of this review and approval process, the Engineering Department reviews stormwater and drainage for proposed developments and site plan revisions.

The site plan review process will continue in the future, but the site-specific stormwater requirements will be better defined once the draft Zoning Regulation changes have been approved and implemented. The NPDES Permit requires the City of Stamford to develop and enforce a program to control stormwater discharges from development and redevelopment activities with one-half acre (21,780 sf) or more of soil disturbance. The one-half acre threshold applies both individually and collectively as part of a larger common plan. Modifications to the Zoning Regulations will include provisions to encourage low impact development (LID) practices to maximize infiltration and minimize stormwater runoff. The regulations will also limit barriers to LID design and construction.

The NPDES Permit requires the City to conduct site-plan review and pre-construction review meetings that incorporate consideration of stormwater controls or management practices to prevent or minimize impacts to water quality. The City currently conducts such meetings internally as part of staff review of many projects. Meetings with developers occur when the project has significant potential for environmental impact.

As part of the application review process, the City is now providing applicant's with information on the DEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities*. Applicants are being told about stormwater management issues at the time building permits Environmental Planning Board and Planning & Zoning sign-offs are being obtained. Applicants have been made aware of their responsibility to obtain DEEP Construction Stormwater General Permits. This notification of responsibility has been met with some resistance from the builder / developer community. Therefore, the City is currently exploring alternative ways for providing notification to the builder / developer community.

The City's building permit process is facilitated electronically through a software package called "View Permit". The plan is to attach standard text to all applications notifying the applicants of their responsibility, if applicable, to obtain DEEP permits.

The NPDES Permit also requires site inspection and enforcement to assess the adequacy of the installation, maintenance, operation, and repair of construction and post-construction control measures. The City's staff performs site visits when the project is in close proximity to a wetland or other water body. Current staffing levels limit the opportunities for site inspections to only those projects with the greatest potential for impact to stormwater quality. Site visits frequently occur prior to the issuance of a Certificate of Occupancy.

The City of Stamford's Environmental Protection Board conducted permit and technical reviews, enforcement and inspections and other land development services. A summary table of the services that they provided during the Reporting Period is included in ***Appendix G***.

The City has requested an extension for addressing the change in zoning regulations. The proposed changes will require more staff from the Engineering Department and the Environmental Protection Board and additional time is required to implement the changes.

The City is in the process of acquiring assistance from Fuss & O'Neill for compiling a Stormwater Drainage Manual. This manual will address the LID and other pertinent requirements provided in the modified NPDES Permit. The contract is anticipated to be executed in October 2017 and a kick off meeting will also be conducted in October 2017.

Additional information on the proposed stormwater ordinance and changes to the Zoning Regulations are presented in ***Section 4.6***, Legal Authority.

4.3.4.1 Impervious Cover

The NPDES Permit calls for completion of DCIA (directly connected impervious area) mapping associated with each MS4 outfall within four years. The City is in the process of estimating the DCIA throughout the City. During this Reporting Period, sub-meter aerial photogrammetry of the City was generated that will be used in determining the DCIA. The initial estimate will be based on the total area of impervious cover, including roadways, drive ways, sidewalks, parking lots, and building footprints, that discharge to the MS4. Allocating the amount of the DCIA to each MS4 outfall and evaluating each drainage area to determine if the roof tops are connected to the DCIA will be performed in the next couple of years. Estimates will be revised in the future as development, re-development, or retrofit projects or new information effectively add or remove DCIA to or from the MS4.

The Mayor of the City of Stamford has requested that the Western Connecticut Council of Governments (WestCOG) complete the DCIA mapping. The City's GIS Department has conducted a pilot study for the Shippan Area, which is currently being evaluated by the WestCog. WestCOG and the City of Stamford maintains an ongoing its partnership and continues to develop an innovative demonstration project to create a new semi-automated GIS workflow to determine DCIA within suburban and urban watersheds within Stamford, and understand better the effort and technologies involved. This work is in support of the mapping requirements of the NPDES Permit. Five outfalls and corresponding watersheds were selected with different land use mixtures. Impervious cover and DCIA were estimated utilizing previously acquired and very high-resolution planimetric GIS. In addition, an automated watershed delineation method was tested for urban areas. Results show the importance of very detailed field confirmation of the proposed methods and the importance of selecting the proper input data set with accompanying attribute information.

4.3.5 Infrastructure Operations and Maintenance

Pollution prevention and good housekeeping are critical minimum control measures because they concentrate on municipal operations including the maintenance of other control measures. These activities can make an immediate difference with local water body pollutant levels. Street sweeping and other maintenance activities reduce the amount of sediment, salt and pollutants entering the drainage system thereby minimizing pollutant loads to local water bodies.

4.3.5.1 Employee Training

Employee training is essential for maintaining and increasing the awareness of water quality related issues in the management of any MS4. Training also enables facility staff to have an improved understanding of the stormwater system and how to minimize the impact the facility has on the MS4.

All employees working at City-owned facilities participate in annual training to meet the requirements of the DEEP's *General Permit for the Discharge of Stormwater Associated with Industrial Activity*. This annual training includes:

- Overview of the NPDES MS4 Permit
- Review of the goals and objectives of the SMP
- Review of facility Stormwater Pollution Prevention Plan
- Review of good housekeeping
- Identifying and reporting illicit discharges
- Review of spill prevention and response procedures

Training was conducted on June 13 and 14, 2017 for Universal Waste Management, Spill Prevention Control and Countermeasures Plan, and Stormwater Pollution Prevention Plan training. Approximately 40 employees were in attendance from City-owned facilities at this training event.

Members, or departmental designees, of the Pollution Prevention Team attended additional MS4 SMP training on March 30, 2017. This MS4 training highlighted the importance of stormwater quality, what impacts stormwater quality and how stormwater quality can be controlled.

The City is dedicated to ensuring that its employees continue to gain the necessary knowledge needed for understanding and implementing the SMP in order to increase the quality of the stormwater in the City's MS4. The City will continue to update and implement its training programs for all employees working at City-owned facilities. A copy of the sign-in sheets for each of the training events is provided in ***Appendix H***.

4.3.5.2 Infrastructure Repair and Rehabilitation

It is important that the City make timely repairs to the infrastructure of its MS4 in order to help reduce the discharge of pollutants from the MS4 to the receiving waters. The City is dedicated to giving priority to those projects discharging pollutants to impaired waters or that have other concerns related to the mapping and IDDE process. A schedule for implementation of repairs is developed and updated once the need for the repairs are established.

The SWCPA performs routine maintenance and any necessary repairs on the three stormwater pump stations on an annual basis. In excess of $350,000 per year is back charged to SWCPA from the Stormwater Management Department for this maintenance.

As of January 1, 2016, the Traffic and Road Maintenance Division is now responsible for tracking the catch basins and stormwater manholes that require repairs. Previous lists of required repairs were maintained by the Engineering Department. The Traffic and Road Maintenance Division will maintain the list of catch basins and stormwater manholes that require repair and will assign that work internally or to independent contractors, as needed. During the Reporting Period, 1,769 catch basins were inspected and pumped/cleaned out, as necessary. 319 catch basins and/or manholes were repaired during the Reporting Period. In addition, a significant amount of storm piping was repaired or replaced, including several hundreds of lineal feet of storm piping which was broken, collapsed, pipe was sagging, or not previously connected. See ***Section 4.3.5.7*** for additional details on catch basin cleaning. A list of 2016-17 catch basin/manhole repairs is presented in ***Appendix I***.

During this Reporting Period, the Engineering Bureau repaired eight stormwater pipes during the reporting year. One headwall was constructed and two outfalls were stabilized with rip-rap by the Engineering Bureau. The City's paving contractor repaired several dozens of stormwater pipes and drainage structures in advance of paving operations, which occurred on approximately 12 centerline miles of roads during the Reporting Period. Pipe inspections are performed by the Traffic and Road Maintenance Division using the camera truck.

The City also understands that the refinement of the standard operating procedures and good housekeeping practices for the management of the MS4 is essential to improving stormwater quality.

In 2014, the City purchased a camera truck which is used for implementing the IDDE program and for inspecting catch basins, manholes and stormwater piping. The truck was deployed in October 2014 after employees completed the necessary one-week training on the truck and equipment. Initially, the camera truck is being used to inspect areas identified as needing maintenance within the MS4 and has proved to be a valuable asset for mapping/GIS work required by the permit.

The City has hired a private contractor (OneVac) to conduct CCTV work on storm mains and lateral pipes prior to paving operations during the Reporting Period. During this Reporting Period, the City conducted 136 CCTV reports, which totaled approximately 10,130.linear feet of piping that was videoed, including storm mains and lateral piping. The City has prioritized the areas that it inspects with the camera truck based on flooding issues, complaints about collapsing areas and complaints about illicit discharges. See ***Section 4.4*** for further discussion on the progress of identifying illegal connections in the IDDE program.

Catch basin inspections also include inspecting the condition of catch basin "bells." Some City catch basins have bells (metal 90-degree bends covering catch basin outlets) to control floatables. Bells are hung on pins set in the side of catch basins. The City has purchased $25,000 worth of bells, most are for 12"-pipes. The City is planning to install bells on additional catch basins in parts of its MS4 where trash and floatables are a problem. The City has also procured two (2) hydraulic cranes for the installation of bells

and maintenance to the catch basins. During this Reporting Period, the City installed 158 bell taps, including 50 new catch basin bell traps in existing catch basins. Going forward, the City plans to put a bell in every catch basin. The City is anticipating on installing several more catch basin bells during the 2017–18 Reporting Period.

The Traffic and Road Maintenance Division has acquired funding in an Environmental Compliance Capital account to make improvements to MS4 piping when property owners cannot, or will not, make repairs in the timeframe provided in the permit.

4.3.5.3 Roadway Maintenance

Roadway maintenance activities can directly affect water quality. An important task of roadway maintenance is keeping the highway drainage system functioning. The City is dedicated to ensuring that routine road maintenance is conducted frequently and that roadside ditches are cleaned and inspected periodically to verify that flow is not being restricted.

During the Reporting Period, the City repaved approximately 12 miles of roadway as part of its road maintenance program.

4.3.5.4 Sweeping

Properly swept streets are a key element to limiting stormwater impacts as sediment and debris can transport other pollutants into the stormwater system and because copious quantities of these materials can inhibit the proper function of MS4 components. By June 30, 2017 the City swept 8,094 miles of roadway and collected 1578 tons of street material during the Reporting Period. Supporting documentation regarding the street sweeping activities for the Reporting Period can be provided upon request.

Sidewalk and curbside sweeping is performed weekly in the Downtown Special Services District (DSSD), along 9.5 miles of sidewalk and curbside during this Reporting Period. This work is coordinated and paid for by the DSSD. An estimated 23 tons of materials was removed during this Reporting Period as a part of the sidewalk and curbside sweeping activities.

The NPDES Permit prescribes very specific sweeping schedules for main lines, arteries, main roads and sidewalks in business and commercial districts, residential streets, other streets, and municipal parking lots between March and November of each year. The City has requested relief from the sweeping requirements as per the permit modification. The permit modification language is modeled after the DEEP MS4 general permit, which allows cities the ability to focus sweeping efforts on targeted areas. One goal is to compress the spring sweeping schedule between March 1st and June 30th to maximize the quantity of material collected at the end of the winter season.

The City has been implementing a "Post & Tow" policy where they will be posting sweeping dates and times and subsequently towing away any cars that are parked in the areas posted for sweeping events. This system helps the City to effectively sweep in the areas posted instead of having to sweep around parked cars, missing large areas of the road.

During this Reporting Period, the City also conducted post-event sweeping activities after several Wednesday and Thursday concert series. The amount of materials collected during these events is included in the total tons of street material noted above.

4.3.5.5 Leaf Collection

In 2016, the City's leaf pickup program was completed by December 9th. Every street in the City is swept clean as a part of this program. A total of 11,694 tons of leaves were collected.

According to the NPDES Permit, the City shall conduct City-wide leaf pickup program annually to be completed by December 15th. The City has established a procedure that breaks the City of Stamford down into three areas (see Appendix L of the SMP for a map of the leaf collection areas):

- Area #1 - north of the Merritt Parkway
- Area #2 - between Merritt Parkway and I-95
- Area #3 - south of I-95

Leaf pick-up typically begins in mid-November and completed by December 15th. The exact completion date depends on weather conditions and competing demands (snow removal and road salting for staff and equipment). It is important to note that the City finishes leaf pick-up even after snow fall. This process takes approximately four weeks of full time work for all available road maintenance crews.

The current leaf disposal policy is that the leaves will be piled at the curb prior to pick-up and off the streets. Several residences were noted with piles of leaves in the street during the 2016 leaf collection period. One-thousand doubled sided color flyers were printed and distributed. 19,500 postcard mailers were sent to single family homes, a full-page ad was placed in the Stamford Advocate and on the City's website, flyers were placed throughout the City and 30 lawn signs were installed to remind the citizens that leaves collected were not to be placed in the roadways. The Stamford Advocate ran 400,000 impressions online at on their website, www. the stamfordadvocate.com, which ran from October 14, 2016 through November 13, 2016. Two (2) half-page full color ads were posted on October 14 and October 28, 2016. Additionally, 1,000 door hangers were used for remainders for any violators of the City's policies.

4.3.5.6 Snow Removal

Timely snow removal and the appropriate application of de-icing materials is another key element to a successful SMP. The City follows the DEEP's *Best Management Practices (BMPs) for Disposal of Snow Accumulation from Roadways and Parking Lot.* A copy of this BMP is presented in Appendix L of the SMP. The purpose of the BMPs are to prevent accumulation of sand, other solids, and pollutants in the MS4 and in sensitive areas, such as streams and wetlands.

The NPDES Permit requires that the City implement and refine its SOPs, regarding its snow and ice control operations, to minimize the discharge of pollutants. Goals must be established for the optimization of chemical application rates through the use of automated equipment including zero

velocity spreaders, anti-icing and pre-wetting techniques, implementation of pavement management systems and alternate chemicals.

The City is already well on its way to meeting these goals. The Highway Crew continues to perform anti-icing using liquid calcium chloride (brine) to pre-treat bridges and elevated roadways, the most susceptible for freezing, as well as city streets with the highest traffic volume. Once the storm begins, patrols are sent throughout the City to monitor road conditions. Hills and intersections are spot-treated to minimize chemical usage. The City tracks chemical usage; however, given the variability in the amount of snow and ice that needs to be treated each year, it is difficult to set goals for chemical optimization. As noted in ***Section 4.3.3.5***, the City intends to expand its use of brine trucks for pre-treatment in the future, which will help reduce the road salt usage.

The City continues to minimize its use of de-icing materials. This goal is being pursued in part to respond to shortages of de-icing materials in recent years. Salt is applied only twice for each storm – once at the beginning to prevent ice from binding and once at the end of prevent re-freezing. City representatives have proactively been pursuing discharges of private basement sump pumps into the right-of-way, rather than simply treating these areas with additional deicing materials.

During this Reporting Period, the West Beach parking lot was prepared from November through April with haybales, double catch basin filters, and etc. in the event that additional snow stockpiling was necessary. This space was not utilized during this Reporting Period.

4.3.5.7 Catch Basin Cleaning

Clogged or overloaded catch basins can lead to unwanted stormwater quality impacts. Catch basin sumps provide a first line of defense in improving stormwater quality. Maintenance and cleaning activities are important to the proper operation of each catch basin.

For the 2016-17 Reporting Period, 1,769 catch basins throughout the city were inspected, and cleaned on an as needed basis. Approximately 2,934-tons of materials were removed from the basins during the Reporting Period. This equates to 5,868,240 pounds of waste that was captured and processed and did not enter the City's waterways, streams, rivers, or Long Island Sound.

The City continues to maintain a catch basin inspection, cleaning, and repair program. This program helps to identify and map each MS4 catch basin and determine flow direction, inspect its condition, determine the amount of sediment in each, clean catch basins with less than 50% of their sump capacity available, gather information over time on sediment accumulation rates, and develop a routine maintenance and cleaning schedule as prescribed by the NPDES Permit.

To support this program, the City has obtained or purchased the following equipment:

- (3) Vactor vacuum trucks purchased between 2014 and 2015
- (2) Vac-Con vacuum trucks – purchased in 2008 – not currently in service but could be used in emergency
- (4) Elgin Pelican sweepers purchased between 2008 and 2015

- (1) Rapid View CCTV truck w/ Pipe Logix software – purchased in 2015. CCTV truck has three cameras and a manhole/ stick camera
- (2) One-ton dump trucks on with Stetco hydraulic cranes – purchased in 2016
- (1) Caterpillar mini-excavator – purchased in 2014 and used for culvert cleaning work
- (1) Caterpillar loader / backhoe – purchased around 2010 and used for culvert cleaning work
- (~10) One-ton dump trucks used for typical highway department work
- (~25) Large dump trucks – used as necessary for haul away of sediment per culvert cleaning work
- (1) Utility truck with a hydraulic lift will be used for carrying grates, covers, catch basins – purchased in 2017

The City also hired five new heavy equipment operators for this program, as well, to generally support its stormwater management and compliance activities (see ***Section 6.0***).

The City's Engineering Department has also retained the services of a contractor that cleans and videos all associated catch basins and storm drains prior to completing roadway paving projects.

Additionally, the City continues implementing a software tracking program using field tablets for tracking catch basin inspection, cleaning and repair progress. The MS4 Front software was brought on-line in October 2014.

The approximate depth of sediment is measured before each catch basin cleaning. The City does not have records of previous catch basin cleanings, but in the future will use the depth of sediment observed and the time between catch basin cleanings to optimize the cleaning schedule.

4.3.5.8 Culvert Cleaning

During the Reporting Period, the City performed maintenance activities at 23 culverts over approximately 32 days. Various maintenance activities were conducted at the culverts including, but not limited to: stabilizing inlet and outlet areas, cleaning out culvert, removing debris and vegetation from around the culvert, CCTV inspections, excavating culvert discharge area, and wetlands delineation. During the Reporting Period, over 267 cubic yards of soil was removed from the culverts and discharge areas. A list of 2016-17 culverts cleaned is presented in ***Appendix I***.

4.3.5.9 Detention and Retention Ponds

Detention and retention ponds that become overloaded with sediment deposition can negatively impact stormwater quality in the City's MS4. MS4 Ponds are required to be cleaned out when solids levels reach 50% of design capacity.

A list of detention and retention basins was developed and the City is maintaining an inspection schedule. To date, 77 basins were identified and the City continues its efforts to inspect the basins identified. The detention and retention basins were added to the GIS mapping. Stormwater Management began inspections and maintenance work on these basins during this Reporting Period and is anticipating conducting the remainder of the inspections at each pond during the next Reporting Period.

4.3.5.10 Interconnected MS4s

Connections of other MS4s to the City's MS4 can affect the performance of the City's stormwater system and the quality of its discharges. There are no known interagency agreements between any other municipalities, institutions, or agencies and the City of Stamford. However, it appears that the following municipalities and agencies may be contributing stormwater to the City of Stamford's MS4:

- State of Connecticut (ConnDOT)
- Town of New Canaan, CT
- Town of Darien, CT
- Town of Greenwich, CT
- Town of Pound Ridge, NY

The Connecticut Department of Transportation ("ConnDOT") operates several roadways within the City, including: Interstate 95; the Merritt Parkway (Route 15); Long Ridge Road (Route 137); High Ridge Road (Route 104); and Route 1. The City's MS4 flows into ConnDOT's MS4 in some locations and ConnDOT's MS4 flows into the City's MS4 at other locations. The City communicates with ConnDOT, as needed, primarily when the City receives complaints of clogged ConnDOT storm drains. ConnDOT does not perform sweeping as frequently as the City does.

The City has mapped out most of the interconnected MS4 areas during the development of the new SPRP. A map of the interconnected MS4 areas is provided in Appendix C of the Spill Prevention Response Plan, found in ***Appendix H*** of this report. Currently, there are no interagency agreements established. The City of Stamford will be working with each of the interconnected MS4 municipalities to develop detailed responsibilities for the City of Stamford and for each of the interconnected MS4 municipalities.

4.3.5.11 Referrals

During the Reporting Period, the Stormwater Management Department provided referrals to other departments throughout the City for maintenance and repairs. These referrals are outlined below:

<u>Sweeping Referrals Provided to Various Entities</u>

- 13 referrals were provided for post and tow activities. The post and tow procedure is to remove all vehicles from street (towed if necessary), then sweep and pump and clean all catch basins.
- Approximately 10-15 sweeping referrals were provided to Traffic and Road Maintenance/Highway Department sweepers as a part of City wide spill plan, where spills have occurred.
- Two sweeping referrals were provided to Traffic and Road Maintenance/Highway Department sweepers for targeted sweeping (i.e. observed large amount of debris on roadway).

<u>Stormwater Referrals Provided to the Environmental Planning Board (EPB)</u>

- Five referrals were provided to the EPB during the Reporting Period for items including, but not limited to: stormwater runoff, illegal dumping in catch basin, erosion and sediment controls missing, improper drainage, water quality impacts, possible wetland impacts, etc.

Referrals Provided to the CTDOT

- Three referrals were provided regarding catch basins on State roads which were packed full and not taking water

Curbing Referrals

- During the Reporting Period, the Stormwater Management Department made 5 referral requests to add or rebuild curbing to appropriately direct stormflows on city roadways.

Other Referrals

- Referrals made to Eversource: one referrals made regarding piles of soil along roadway after new utility pole installation
- Referrals made to WPCA: 13 referrals made regarding loose WPCA manhole covers, request to pump & clean catch basins and sinkholes proximate to sanitary piping requests
- Referrals from WPCA: 17 referrals were received regarding catch basin repairs, fat-oil-grease issues, stormwater connections to sanitary, and sewage spills and three referrals were made regarding permit exceedance spills
- Referrals made to Parks Department: 14 referrals made regarding tree cutting/pruning to facilitate access to catch basins, culverts, leak-offs, etc.
- Referrals made to City of Stamford Building/Zoning Departments: one referral was made regarding an unknown plumbing connection from illegal living units.
- Referrals made to Engineering Bureau: 19 referrals were made regarding storm piping repair

4.4 Illicit Discharge Detection and Elimination (IDDE) Program

IDDE will lessen the amount of pollutants discharging to local water bodies. Some people unknowingly dump pollutants into the storm drain or have illegal connections to the drainage system. The permit requires inspection of outfalls during dry weather conditions to determine whether illicit discharges are suspected and then to conduct extensive evaluation and follow-up to eliminate the illicit discharges that are found.

Additionally, City personnel continue to follow-up on known or suspected illicit discharges as well as any complaints associated with potential illicit discharges through calls to Traffic and Road Maintenance Division or reported via the City's stormwater management website.

The City has retained the services of Harbor Watch, a division of Earthplace, a not-for-profit organization for the collection of dry weather outfall samples as part of the IDDE screening requirements. Harbor Watch screened 39 of the original 92 outfalls during this Reporting Period for dry weather events. A flow was observed and samples were collected at 28 of the locations (all of which were private). An additional 48 new Pubic locations were also screened during this Reporting Period for dry weather events. A flow was observed and samples were collected at 14 of these new locations. Harbor Watch

submitted a total of 42 samples for analysis and 87 locations were screened for dry weather events during this Reporting Period. Harbor Watch also produced a Fairfield County River Report which also provided valuable information about the water quality data for the Mianus and Noroton rivers during both wet and dry sampling events which occurred between September 2016 and May 2017. Summary tables of the analytical data for the dry weather outfall screening and sampling efforts are presented in ***Appendix K***.

Additional, the City, in conjunction with the EPA, conducted IDDE sampling efforts at fourteen locations throughout the City, as determined by the EPA. The City split sample with the EPA during these events and a description and summary tables of the analytical data for the IDDE investigation events are presented in ***Appendix J***.

Through the City's efforts using the camera truck completed during the Reporting Period, they have identified multiple areas of concern that will receive priority for further IDDE investigations. An updated map identifying the areas of concern is presented in ***Appendix L***. IDDE investigations will be focused in the same areas as previously identified during the 2015-16 Reporting Period.

4.4.1 Illegal Connections

As a result of the inspections conducted by the camera truck crews, discussed in ***Section 4.3.5.2***, the City has identified multiple areas of concern, which will receive further investigation. The City continues to track and identify illegal connections and is currently working with its Legal Department to identify the best course of action for having any confirmed illegal connections removed from its MS4.

4.5 Monitoring Program

In addition to the screening and monitoring activities associated with the IDDE Program (see ***Section 4.4***), the NPDES Permit calls for in-stream and stormwater outfall monitoring throughout the life of the permit.

4.5.1 In-Stream Surface Water Quality Monitoring

Under the terms of the NPDES Permit, ten (10) in-stream surface water monitoring locations were established. Each in-stream monitoring location was sampled three times per year during rain events in the spring, summer, and fall, and once during a dry weather event in the summer, in accordance with the permit requirements. During the past Reporting Period, the following in-stream surface water samples were collected:

- Spring 2016 Wet Weather Event – 11/29/16
- Summer 2016 Wet Weather Event – 7/29/16
- Summer 2016 Dry Weather Event – 8/30/16
- Fall 2016 Wet Weather Event – 10/27/16
- Spring 2017 Wet Weather Event – 4/4/17
- Summer 2017 Dry Weather Event – 6/30/17

In-stream samples are to be collected during a rain event more than 0.25-inch of rain is predicted, when there has not been more than 0.1-inch of rain during the preceding 48 hours. The samples are to be collected as composites with even aliquots obtained at 15-minute intervals over a one hour period each. A predicted storm duration of at least three to four hours is necessary to collect as sample, so several of the short, intense rain storms that have occurred in the past five months have not been sampleable. In addition, the in-stream samples need to be tested for bacteria, which has a short (6 hour) hold time. In order to collect the samples and have the laboratory be able to prepare them for analysis, there are certain times of the day when the samples cannot be collected. Samples cannot be collected between 7:00 PM and 3:00 AM or on Saturdays, Sundays, or Monday holidays.

Analytical data is submitted to the DEEP via the NetDMR system as the laboratory data is received. Summary tables of the analytical data for the in-stream sampling events are presented in ***Appendix M***. A copy of the SMRs for these samples will be provided upon request.

As prescribed in the modified NPDES Permit, the City is no longer required to conduct in-stream samples. This section will be removed from future Annual Reports.

4.5.2 Wet Weather Outfall Monitoring

The NPDES Permit requires the City to sample all known MS4 outfalls within the first two years and again during the second two years of the permit term. Twenty-three (23) wet weather outfalls were sampled during the Reporting Period. To date, 86 of the wet weather outfalls that were known at the time of the NPDES permit issuance have been sampled. There are six of the original 92 outfalls that remain to be sampled. Four of the remaining six locations are tidally influenced and have been underwater every sampling event. One of the locations has historically been dry and one location cannot be accessed. The City is in the process of locating upstream structures from the outfalls that may be sampled. It is anticipated that the remaining four known outfall locations will be sampled during the next Reporting Period.

Analytical data is submitted to the DEEP via the NetDMR system as the laboratory data is received. Summary tables of the analytical data for the wet weather outfall monitoring are presented in ***Appendix N***. A copy of the SMRs for these samples will be provided upon request.

4.6 Legal Authority

The City has finalized an MS4 Ordinance addressing stormwater management issues that affect NPDES Permit compliance and Zoning Regulations regarding stormwater management. The legal authorities that were established include:

- The authority to administer the stormwater management program and all elements of the SMP.
- The authority to control the contribution of pollutants to the MS4 by permittees registered under the DEEP's *General Permit for the Discharge of Stormwater Associated with Industrial Activity*; by other commercial, industrial, municipal, institutional, or other facilities; and from any site that may affect water quality to the MS4.

- The authority to establish ordinances, bylaws, regulations, or other mechanisms to require developers and construction site operators to maintain consistency with the *Guidelines for Soil Erosion and Sedimentation Control*, the *Connecticut Stormwater Quality Manual*, and all DEEP stormwater discharge permits issued with the City of Stamford.
- The authority to identify existing regulations that may represent barriers to low impact development (LID) practices to minimize the quantity of impervious cover.
- The authority to perform inspections, surveillance, and monitoring related to the MS4.
- The authority to establish ordinances, bylaws, regulations, or other mechanisms to ensure a developer's or construction site operator's proposed use of LID practices by right or exception.
- The authority to revise regulations to eliminate or reduce potential barriers to LID.
- The authority to perform adequate inspection and maintenance activities to optimize the performance and pollutant removal efficiency of privately-owned retention or detention ponds that discharge to or receive discharge from the City's MS4.
- The authority to control through interagency or inter-jurisdictional agreement, the contribution of pollutants between the City's MS4 and MS4 owned or operated by others.
- The authority to prohibit by statute, ordinance, rules and regulations, permit, easement, contract, or any other means, illicit discharges to its MS4; to require the removal of these discharges; and to assess fines, penalties or cost recoupment for violations.
- The authority to control by statute, ordinance, rules and regulations, permit, easement, contract, or any other means, the discharge of spills into its MS4; to prohibit the dumping and disposal of materials into its MS4; and to assess fines, penalties or cost recoupment for violations.

The schedule for establishment of these legal authorities is documented in the NPDES Permit. On March 20, 2015, a final MS4 Ordinance, Ordinance 1153, adding Chapter 201 to the City Charter, became effective**.** Draft changes to the Zoning Regulations have been prepared and are included in Appendix I of the SMP. These documents have been developed to establish the necessary legal authorities. The public must be provided adequate notice and an appropriate amount of time to participate in the establishment in this legal authority. It is the City's intention to establish these legal authorities as soon as possible.

To comply with the NPDES Permit, the City is required to have these revisions approved by the Zoning Board and formally incorporated into the Zoning Regulations. The Modifications to Sections 3 and 15 of the Zoning Regulations of the City of Stamford is underway and the modifications were sent out to referral to various agencies for comment in the spring of 2015.

The City has requested an extension for addressing the change in zoning regulations. The proposed changes will require more staff from the Engineering Department and the Environmental Protection Board and additional time is required to implement the changes.

Several citations and written and verbal warnings were issued during this Reporting Period as part of the implementation of the City's new stormwater ordinance. The citations and warnings are listed below:

4.6.1 Citations

Citations Issued:	6
Violation:	Discharge of grease to catch basin from shard storage bin.
Abatement:	Attempt to pump and steal grease resulted in spill.
Note:	Investigation ongoing in the location of suspect

4.6.2 Written Warnings

Written Warnings Issued:	50
Notes:	Doorhanger written warning during leaf pick up program: Approx. 50 doorhangers placed. City of Stamford placed and documented 35, other Operations Foreman placed about 15.

4.6.3 Verbal Warnings

Verbal Warnings Issued:	5
Notes:	Verbal warnings during Leaf Pick Up program: hundreds of warnings were communicated to residents to keep leaves off the streets.

The City has started submitting notifications of intent to conduct stormwater monitoring and sampling at privately-owned outfalls throughout the City.

5.0 SUMMARY OF PROPOSED SMP MODIFICATIONS

The SMP was updated and submitted to the DEEP on September 2, 2014. No modifications to the submitted SMP are proposed at this time.

On August 14, 2017, a permit modification was issued for the City's NPDES Permit. During the 2017-18 Reporting Period, the City will be reviewing the permit modification for any new requirements and will be updating the SMP accordingly.

6.0 PROGRAM RESOURCES ANALYSIS

6.1 Fiscal Analysis

During this Reporting Period, the City continued to make efforts to secure budget, staffing, and resources necessary to develop and implement the SMP, to comply with the NPDES Permit requirements, and to improve the overall quality of stormwater discharging from its MS4. The City is committed to identifying these details and adequately funding them to achieve compliance with the NPDES Permit as soon as possible.

Some line items in the City's Capital and Operating Budgets are obviously related to MS4 stormwater compliance, such as the "Environmental Compliance" and "Stormwater Management". However, there are other line items for infrastructure and other public improvement projects (drainage, catch basin, storm lines, etc.), special projects, and operating expenses that will result in direct improvements to stormwater runoff quality and the quality of discharge from the City's MS4. For example, the closure of the old Scofieldtown Road Landfill is being performed for specific reasons, but should have the added benefit of improving stormwater quality in these areas of the City.

There are also budget line items for vehicle, equipment, and information technology upgrades throughout the City which include Departments with responsibility for stormwater quality improvements and implementation of the SMP.

The Traffic and Road Maintenance Division has a total operating budget of $7,835,169 for 2017-2018, including $1,385,129 (increase of $84,831) specifically for MS4 stormwater management, $246,405 (decrease of $18,175) for leaf collection, $1,566,642 (increase of $680,304) for snow removal, and $4,636,993 (decrease of $60,179) for traffic and road maintenance, including street sweeping, pothole repairs, debris removal and infrastructure improvements. This Traffic and Road Maintenance Division budget represents a 9% increase compared to the budget for 2016-2017.

In addition, other Departments, such as Engineering (catch basin and manhole improvements and replacement program), Land Use (environmental reviews), Solid Waste (motor oil recycling and HHW events), SWPCA (stormwater pump operation), and Administration provide services through their capital and operating budgets.

The City's Annual Capital and Operating Budgets for 2017-2018 are available on the City's website at http://www.stamfordct.gov/.

It is anticipated that additional funding will be required for the following monitoring activities:

- Wet weather sampling of each identified MS4 outfall
- IDDE screening and investigations

An increase in funding associated with additional staffing discussed in the next section of this Annual Report, will also be required in coming fiscal years.

6.2 Staff and Resources

The City transferred responsibility for many of the stormwater management tasks and MS4 permit compliance from the SWPCA to the Traffic and Road Maintenance Department with the issuance of the NPDES Permit in June 2013. While evaluating the permit requirements, the Traffic and Road Maintenance Supervisor and Pollution Prevention Team Coordinator, Thomas Turk, began to assess the staff and resources necessary to achieve and maintain compliance. Since Traffic and Road Maintenance Department took over responsibilities for implementing the MS4 permit, several new staff members have been hired, including:

- Four heavy equipment operators to complete field work including catch basin identification, investigation, cleaning, and maintenance. These operators are also responsible for assisting with sweeping, snow removal, leaf pickup and other activities designed to improve the quality of stormwater runoff.
- One laborer to assist the equipment operators, as needed.

Over the course of the Reporting Period, the Stormwater Department assessed these new staffing levels as the SMP was being implemented and additional schedules and goals are continuously being generated to meet the demands of the City's MS4.

In addition to these individuals, the Traffic and Road Maintenance Division maintains a work force of skilled operators, laborers, administrative, support, and management personnel that provide many of the direct services outlined in this report, such as: catch basin maintenance, roadway sweeping, leaf pickup, snow removal, and infrastructure improvements and maintenance. They are also available to assist on other stormwater management projects, as directed.

Several other City Departments provide personnel to support compliance with the NPDES Permit and implementation of the SMP, including Engineering, Land Use, Planning, Zoning, Environmental Protection, Information Technology (GIS), SWPCA, Solid Waste, Recreation and Leisure Services, Parks, Parking & Transportation, Fleet Maintenance, Legal, and the Fire Department.

During the next year of implementation of the SMP and the new municipal stormwater ordinance and the changes to the Zoning Regulations, City Departments will be better able to assess the adequacies of their staffing levels with the added MS4 permit compliance requirements. As discussed during the compliance audit conducted by the EPA (see ***Section 2.3.1***) and the City's own assessments, it is anticipated that additional staffing may be necessary in the following areas:

- Information Technology – There is a substantial amount of stormwater mapping and information management to be set up and managed, particularly during the first several years of the permit. The City needs to finalize the outfall identification mapping, and confirmation process and begin the DCIA analysis.
- Engineering and Land Use Offices – Additional staff is required to perform technical review of land use permits due to volume and complexity of work. Performing site inspections before permit issuance, during construction, and prior to Certificate of Occupancy are a critical component for compliance.

- Stormwater Management Department – Additional staff is required (Heavy Equipment Operators) to operate vacuum trucks, the camera truck, and equipment to maintain storm drainage piping. The addition of an Office Support Specialist (OSS) is required in the Stormwater Management Department to assist with data collection, record keeping, and correspondence requirements. New types of data are being generated in the field and it must be properly managed so that it can be put into effective use.

Once the revised Zoning Regulations have been enacted, there will be a need for additional construction site inspections, retention and detention basin inspections and maintenance, stormwater infrastructure (swales, ditches, storm drain lines, etc.) inspections and maintenance, post-construction inspections and maintenance, and illicit discharge detection and elimination program implementation. Additional staffing will be necessary to complete these tasks; the City's ability to complete these activities in the past has been hampered due to limited staff resources.

The City has procured new equipment to assist in the implementation of the MS4 Permit and its SMP. One utility truck with a hydraulic crane was procured by the Traffic and Road Maintenance Division during the Reporting Period to facilitate catch basin inspection, maintenance and cleaning operations and roadway maintenance operations.

As mentioned in ***Section 4.3.5.7***, the City recently started implementing a software tracking program using field tablets for tracking catch basin inspection, cleaning and repair progress. The MS4 Front software was brought on-line in October 2014.

Additional software and equipment needs will be assessed during the coming year and requested in the City's next fiscal year budget.

APPENDIX A

DEFINITIONS

DEFINITIONS

"BMPs" or "Best Management Practices" means either structural or engineered control devices and systems (e.g. retention ponds) to treat polluted stormwater, as well as operational or procedural practices (e.g. minimizing use of chemical fertilizers and pesticides).

"Commissioner" means the commissioner as defined by section 22a-2(b) of the Connecticut General Statutes.

"CTDEEP" or "DEEP" means the Connecticut Department of Energy and Environmental Protection, whose mission is to conserve, improve and protect the air, water and other natural resources and environment of the State of Connecticut while fostering sustainable development.

"DCIA" or "Directly Connected Impervious Area" means that part of the total impervious area that is hydraulically connected to the City of Stamford's MS4. DCIA typically includes streets, sidewalks, driveways, parking lots, and roof tops. DCIA typically does not include isolated impervious areas that are not hydraulically connected to the MS4 or otherwise drain to a pervious area.

"EPA" means the United States Environmental Protection Agency, whose mission is to protect human health and the environment.

"EPB" means the City of Stamford's Environmental Protection Board.

"GIS" or "Geographic Information System" is a system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data.

"HHW" or "Household Hazardous Waste" means post-consumer waste which qualifies as hazardous waste when discarded. It includes household chemicals and other substances for which the owner no longer has a use, such as consumer products sold for home care, personal care, automotive care, pest control and other purposes.

"IDDE" or "Illicit Discharge Detection and Elimination" means a program to detect and eliminate existing illicit discharges and to prevent future illicit discharges.

"IDDP" or "Illicit Discharge Detection Protocol" means a protocol established to identify, prioritize and investigate separate storm sewer catchments for suspected illicit discharges of pollutants.

"Illicit Discharge" means any discharge to the MS4 that is not composed entirely of stormwater, with the exception of discharges authorized by another NPDES Permit, or discharges described in the "Non-Stormwater Discharges" section (Section 4(A)(3)) of the permit.

"Impaired Waters" means those surface waters of the state designated by the Commissioner as impaired pursuant to Section 303(d) of the Clean Water Act and as identified in the most recent State of Connecticut Integrated Water Quality Report.

"LID" or "Low Impact Development" means land planning and engineering design approach to manage stormwater runoff. LID emphasizes conservation and use of on-site natural features to protect water quality.

"MS4"' or "Municipal Separate Storm Sewer System" means a conveyance, or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains, which is or are (i) owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as sewer districts, flood control districts or drainage districts, or similar districts, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the state; (ii) designed or used for collecting or conveying stormwater; (iii) which is not a combined sewer; and (iv) which is not part of a POTW.

"NOV" or "Notice of Violation" means a notice provided by the CTDEEP informing the permittee that a violation of law has occurred.

"NPDES Permit" or "National Pollutant Discharge Elimination System Permit" means the program authorized by the Clean Water Act which controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

"Outfall" means the discharge point of a waste stream into a body of water.

"PHFs" means pesticides, herbicides and fertilizers.

"Point Source" means any discernible, confined and discrete conveyance (including, but not limited to any pipe, ditch, channel, tunnel, conduit, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft) from which pollutants are or may be discharged.

"POTW" or *"Publicly Owned Treatment Works"* means sewage treatment plants.

"Reporting Period" refers to the period of time that the Annual Report is based on. In this report it pertains to July 1, 2015 through June 30, 2016.

"SMP" or "Stormwater Management Plan" sets forth a program to provide for the implementation of specific control measures, stormwater monitoring, illicit discharge detection and elimination, and other appropriate means to control the quality of the authorized discharge.

"SPRP", "SP&R Plan" or "Spill Prevention and Response Plan" means a plan to prevent, contain and respond to spills entering the MS4.

"Stormwater" means waters consisting of rainfall runoff, including snow or ice melt during a rain event, and drainage of such runoff.

"SWPCA" or "Stamford Water Pollution Control Authority" controls the City of Stamford Water Pollution Control Facility, which processes wastewater from the City and the neighboring Town of Darien, and discharges clean water into the East Branch of Stamford Harbor.

APPENDIX B

NPDES PERMIT MODIFICATION

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

NPDES PERMIT MODIFICATION

issued to

City of Stamford
888 Washington Blvd.
Stamford, CT 06901

Location Address:
Municipal Storm Sewer System

Permit ID: CT0030279

Receiving Stream: Long Island Sound, Cove Harbor, Westcott Cove, Stamford Harbor, Holly Pond, Rippowam River, Noroton River and Mianus River and their tributaries

Permit Expires: June 3, 2018

SECTION 1: GENERAL PROVISIONS

(A) This permit is issued in accordance with section 22a-430 of Chapter 446k, Connecticut General Statutes ("CGS"), and Regulations of Connecticut State Agencies ("RCSA") adopted thereunder, as amended, and section 402(b) of the Clean Water Act, as amended, 33 USC 1251, et. seq., and pursuant to an approval dated September 26, 1973, by the Administrator of the United States Environmental Protection Agency for the State of Connecticut to administer an N.P.D.E.S. permit program.

(B) **The City of Stamford,** ("Permittee"), shall comply with all conditions of this permit including the following sections of the RCSA which have been adopted pursuant to section 22a-430 of the CGS and are hereby incorporated into this permit. Your attention is especially drawn to the notification requirements of subsection (i)(2), (i)(3), (j)(1), (j)(6), (j)(8), (j)(9)(C), (j)(10)(C), (j)(11)(C), (D), (E), and (F), (k)(3) and (4) and (l)(2) of section 22a-430-3.

Section 22a-430-3 General Conditions

(a) Definitions
(b) General
(c) Inspection and Entry
(d) Effect of a Permit
(e) Duty

CERTIFIED TO BE A TRUE COPY
Connecticut Department of
Environmental Protection
NAME: Luis Munoz
TITLE: Processing Tech

(f) Proper Operation and Maintenance
(g) Sludge Disposal
(h) Duty to Mitigate
(i) Facility Modifications; Notification
(j) Monitoring, Records and Reporting Requirements
(k) Bypass
(l) Conditions Applicable to POTWs
(m) Effluent Limitation Violations (Upsets)
(n) Enforcement
(o) Resource Conservation
(p) Spill Prevention and Control
(q) Instrumentation, Alarms, Flow Recorders
(r) Equalization

Section 22a-430-4 Procedures and Criteria

(a) Duty to Apply
(b) Duty to Reapply
(c) Application Requirements
(d) Preliminary Review
(e) Tentative Determination
(f) Draft Permits, Fact Sheets
(g) Public Notice, Notice of Hearing
(h) Public Comments
(i) Final Determination
(j) Public Hearings
(k) Submission of Plans and Specifications. Approval.
(l) Establishing Effluent Limitations and Conditions
(m) Case by Case Determinations
(n) Permit issuance or renewal
(o) Permit Transfer
(p) Permit revocation, denial or modification
(q) Variances
(r) Secondary Treatment Requirements
(s) Treatment Requirements for Metals and Cyanide
(t) Discharges to POTWs - Prohibitions

(C) Violations of any of the terms, conditions, or limitations contained in this permit may subject the Permittee to enforcement action including, but not limited to, seeking penalties, injunctions and/or forfeitures pursuant to applicable sections of the CGS and RCSA.

(D) Any false statement in any information submitted pursuant to this permit may be punishable as a criminal offense under section 22a-438 or 22a-131a of the CGS or in accordance with section

22a-6, under section 53a-157b of the CGS.

(E) The authorization to discharge under this permit may not be transferred without prior written approval of the Commissioner of Energy and Environmental Protection ("commissioner"). To request such approval, the Permittee and proposed transferee shall register such proposed transfer with the commissioner, at least 30 days prior to the transferee becoming legally responsible for creating or maintaining any discharge which is the subject of the permit transfer. Failure, by the transferee, to obtain the commissioner's approval prior to commencing such discharge(s) may subject the transferee to enforcement action for discharging without a permit pursuant to applicable sections of the CGS and RCSA.

(F) No provision of this permit and no action or inaction by the commissioner shall be construed to constitute an assurance by the commissioner that the actions taken by the Permittee pursuant to this permit will result in compliance or prevent or abate pollution.

(G) Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.

(H) An annual fee shall be paid for each year this permit is in effect as set forth in section 22a-430-7 of the Regulations of Connecticut State Agencies.

(I) This permitted discharge is consistent with the applicable goals and policies of the Connecticut Coastal Management Act (section 22a-92 of the Connecticut General Statutes).

(J) Any activity prescribed by this permit, if it is located within an aquifer protection area as mapped under section 22a-354b of the Connecticut General Statutes, must comply with regulations adopted pursuant to section 22a-354i of the Connecticut General Statutes.

SECTION 2: DEFINITIONS

(A) The definitions of the terms used in this permit shall be the same as the definitions contained in section 22a-423 of the CGS and section 22a-430-3(a) and 22a-430-6 of the RCSA.

(B) In addition to the above, the following definitions shall apply to this permit:

"Alignment" in the context of sanitary and storm sewer systems means the system of pipes and structures within the catchment area of the given system.

"Annual" in the context of a sampling frequency means that the sample must be collected at least once during each calendar year.

"Coastal area" shall be the same as the definition contained in section 22a-94 of the Connecticut General Statutes.

"Coastal waters" shall be the same as the definition contained in section 22a-93(5) of the Connecticut General Statutes.

"Commercial activity" means the discharge from any point source conveying stormwater runoff from any activity or facility under SIC codes 50-59, 60-69 or 70-79.

"Commissioner" means the commissioner as defined by section 22a-2(b) of the Connecticut General Statutes.

"Construction activity" means activity including but not limited to clearing and grubbing, grading, excavation and dewatering.

"Department" means the Department of Energy and Environmental Protection.

"Directly Connected Impervious Area" or *"DCIA"* means that part of the total impervious area that is hydraulically connected to the Permittee's MS4. DCIA typically includes streets, sidewalks, driveways, parking lots, and roof tops. DCIA typically does not include isolated impervious areas that are not hydraulically connected to the MS4 or otherwise drain to a pervious area.

"DMR" means Discharge Monitoring Report.

"Fresh-tidal wetland" means a tidal wetland with an average salinity level of less than 0.5 parts per thousand.

"Guidelines" means the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, established pursuant to section 22a-328 of the Connecticut General Statutes.

"High Quality Waters" means surface waters where the water quality is better than necessary to meet the criteria established in the Connecticut Water Quality Standards Manual, as amended, for the applicable classification or which may sustain a sensitive use designated for a higher classification. This definition may be superseded by future amendments to the Water Quality Standards Manual.

"Illicit Discharge" means any discharge to the Permittee's MS4 that is not composed entirely of stormwater, with the exception of discharges authorized by another N.P.D.E.S. permit, or discharges described in the "Non-Stormwater Discharges" section (Section 4(A)(3)) of this permit.

"Impaired waters" means those surface waters of the state designated by the commissioner as impaired pursuant to Section 303(d) of the Clean Water Act and as identified in the most recent State of Connecticut Integrated Water Quality Report.

"Industrial Activity" refers to the definition of industrial activity in Section 2 of the General Permit for the Discharge of Stormwater Associated with Industrial Activity issued by the Department, as amended.

"Medium MS4", as it relates to the City of Stamford, means all municipal separate storm sewers that are located in an incorporated place (city) with a population greater than 100,000 and less than 250,000 as determined by the latest Decennial Census by the Bureau of Census.

"MS4" or *"Municipal separate storm sewer system"* means a conveyance, or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains, which is or are (i) owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as sewer districts, flood control districts or drainage districts, or similar districts, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the state; (ii) designed or used for collecting or conveying stormwater; (iii) which is not a combined sewer; and (iv) which is not part of a POTW.

"LC50" means the concentration of a substance, mixture of substances, or discharge which causes mortality to fifty percent of the test organisms in an acute toxicity test.

"NA" as a Monitoring Table abbreviation means "not applicable".

"NR" as a Monitoring Table abbreviation means "not required".

"Point Source" means any discernible, confined and discrete conveyance (including, but not limited to any pipe, ditch, channel, tunnel, conduit, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft) from which pollutants are or may be discharged.

"Quarterly", in the context of a sampling frequency, means that a representative sample of the discharge shall be collected during each of the following periods: January - March, inclusive; April - June, inclusive; July - September, inclusive, and October - December, inclusive.

"Retain" means to hold runoff on-site with no subsequent point source release to surface waters from a storm event defined in this permit or as approved by the commissioner.

"Runoff reduction practices" means those post-construction stormwater management practices used to reduce post-development runoff volume delivered to the receiving water, as defined by retaining the runoff from a storm up to the first half inch or one inch of rainfall in accordance

with Section 6(A)(3)(a)(iii) of this permit. Runoff reduction is quantified as the total annual post-development runoff volume reduced through canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, extended filtration or evapo-transpiration.

"SIC Code" means Standard Industrial Classification (SIC) codes as identified by "Standard Industrial Classification Manual, Executive Office of the President, Office of Management and Budget 1987".

"Stamford MS4" means the medium MS4 owned or operated by the City of Stamford.

"Stamford MS4 Discharge(s)" means the point source discharge(s) of stormwater from the MS4 owned or operated by the City of Stamford.

"Stormwater" means waters consisting of rainfall runoff, including snow or ice melt during a rain event, and drainage of such runoff.

"Semi-Annual" in the context of a sampling frequency, means that a representative sample of the discharge shall be collected during each of the following periods: January - June, inclusive, and July – December, inclusive.

"Stormwater Quality Manual" means the Department's 2004 Connecticut Stormwater Quality Manual published, as may be amended.

"Tidal wetland" means a wetland as that term is defined in section 22a-29(2) of the Connecticut General Statutes.

"Total Maximum Daily Load" or *"TMDL"* means the maximum capacity of a surface water to assimilate a pollutant as established by the commissioner, including pollutants contributed by point and non-point sources and a margin of safety.

"ug/l" means micrograms per liter.

"Water Quality Standards or Classifications" means those water quality standards or classifications contained in the Connecticut Water Quality Standards published by the Department, as may be amended.

"Water Quality Volume" or *"WQV"* means the volume of runoff generated by one inch of rainfall on a site as defined in the 2004 Connecticut Stormwater Quality Manual, as amended.

SECTION 3: COMMISSIONER'S DECISION

(A) The commissioner has issued a final determination on this permit modification and found that the discharges will not cause pollution of any of the waters of the state. The commissioner's decision is based on **Application No. 20161056** for permit modification received on January 4, 2016 and the administrative record established in the processing of that application.

(B) (1) From the issuance of this permit modification through and including August 31, 2017, the commissioner hereby authorizes the Permittee to discharge in accordance with the terms and conditions of Permit No. CT0030279, issued by the commissioner to the Permittee on June 4, 2013, the previous application submitted by the Permittee on February 23, 2010, and all modifications and approvals issued by the commissioner or the commissioner's authorized agent for the discharge and/or activities authorized by, or associated with, Permit No. CT0030279, issued by the commissioner to the Permittee on June 4, 2013.

(2) From September 1, 2017 until this permit expires or is modified or revoked, the commissioner hereby authorizes the Permittee to discharge in accordance with the terms and conditions of Permit No. CT0030279, issued by the commissioner to the Permittee on August 4, 2017, Application No. 20161056 received by the Department on January 4, 2016, and all modifications and approvals issued by the commissioner or the commissioner's authorized agent for the discharge and/or activities authorized by, or associated with, Permit No.CT0030279, issued by the commissioner to the Permittee on August 4, 2017.

(C) The commissioner reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the Federal Clean Water Act or the CGS or regulations adopted thereunder, as amended. The permit as modified or renewed under this paragraph may also contain any other requirements of the Federal Clean Water Act or CGS or regulations adopted thereunder which are then applicable.

SECTION 4: DISCHARGES AUTHORIZED UNDER THIS PERMIT

(A) This permit authorizes:

(1) **Existing** stormwater discharges to the surface waters of the state from all existing outfalls from areas, within the corporate boundary of the City of Stamford and served by, or otherwise contributing to, discharges from the existing MS4 owned and operated by the City of Stamford.

(2) **New** storm water discharges to the surface waters of the state, subject to the "New or Increased Discharges to High Quality Waters" and "New and Improved discharges to Impaired Waters" sections (subsections 4(A)(4) and 4(A)(5) below) of this permit.

(3) The following non-stormwater discharges provided they do not contribute to a violation of water quality standards and are not significant contributors of pollutants to the MS4:

- landscape irrigation, provided all pesticides, herbicides, and fertilizers have been applied in accordance with approved labeling;
- uncontaminated ground water discharges such as pumped ground water, foundation drains, water from crawl space pumps and footing drains;
- discharges of uncontaminated air conditioner or refrigeration condensate;
- for street sweeping activities conducted by the MS4, residual street wash waters that do not contain detergents and where no non-remediated spills or leaks of toxic or hazardous materials have occurred;
- lawn watering runoff, provided all pesticides, herbicides and fertilizers have been applied in accordance with approved labeling; and
- naturally occurring discharges such as rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), springs, diverted stream flows and flows from riparian habitats and wetlands.
- Discharges or flows from firefighting activities.

(4) New or Increased Discharges to High Quality Waters

On or before thirty (30) days prior to the commencement of a new or increased discharge to High Quality Waters (as defined in Section 2(B)) from its MS4, the Permittee must provide to the commissioner a description of the discharge and information demonstrating that the discharge will satisfy the Connecticut Anti-Degradation Implementation Policy in the Water Quality Standards, as amended. Such discharge will become authorized thirty (30) days after the Permittee's notification to the commissioner unless the commissioner notifies the Permittee that it has failed to demonstrate satisfaction with the retention standards of the anti-degradation provisions. Before commencing any new or increased discharge, the Permittee shall identify in its Stormwater Management Plan ("SMP"), the best management practices ("BMPs") it will implement to ensure compliance with antidegradation provisions and the terms of this Permit.

(5) New or Increased Discharges to Impaired Waters

Any new or increased discharge to an impaired water will become authorized only if the Permittee demonstrates to the commissioner, before commencement of the discharge, that through the implementation of BMPs or other measures, the discharge is not expected to cause or contribute to an exceedance of a water quality standard for the pollutant(s) of concern. This provision does not apply to routine maintenance and repair of the storm sewer system provided such work does not significantly increase the discharge from a given storm sewer catchment area. The Permittee shall provide data and other technical information to the commissioner sufficient to demonstrate one or more of the following:

(a) the indicator pollutant(s) identified as causing the impairment will not be present in the discharge; or

(b) the discharge is not expected to cause or contribute to an exceedance of a water quality standard. To do this, the Permittee must provide data and other technical information to the commissioner sufficient to demonstrate:

(i) For discharges to waters without an established TMDL, that the discharge of the pollutant identified as an indicator of the impairment will meet in-stream water quality criteria at the point of discharge to the waterbody; or

(ii) For discharges to waters with an established TMDL, that there are sufficient remaining Waste Load Allocations in the TMDL to allow the discharge and that existing dischargers to the waterbody are subject to compliance schedules designed to bring the waterbody into attainment with water quality standards.

SECTION 5: GENERAL LIMITATIONS

(A) The stormwater discharges shall not contain, or cause in the receiving stream, a visible oil sheen, floating solids, visible discoloration or foaming. Excluded from this are naturally occurring substances such as leaves and twigs provided no person has placed such substances in or near the discharge.

(B) The stormwater discharges shall not cause acute or chronic toxicity in its receiving water bodies.

(C) A new Stamford MS4 discharge to a tidal wetland (that is not fresh-tidal) where such discharge is within 500 feet of the tidal wetland shall discharge through a system designed to retain the volume of stormwater runoff generated by 1 inch of rainfall from the MS4 within the discharge's drainage area. If there are site constraints that would prevent retention of this volume on-site (e.g., soil contamination, elevated ground-water, potential groundwater drinking supply area, etc.), documentation must be submitted, for the commissioner's review and written approval, which explains the site limitations and offers an alternative retention volume and/or additional stormwater treatment. In such cases, the portion of 1 inch that cannot be retained

must be provided with additional stormwater treatment so as to protect water quality. Any such treatment shall be designed, installed and maintained in accordance with the Stormwater Quality Manual.

(D) A Stamford MS4 discharge below the high tide line into coastal, tidal, or navigable waters for which a permit is required under the Structures and Dredging Act in accordance with section 22a-361(a) of the Connecticut General Statutes or into tidal wetlands for which a permit is required under the Tidal Wetlands Act in accordance with section 22a-32 of the Connecticut General Statutes, shall obtain such permit(s) from the commissioner.

SECTION 6: CONDITIONS OF THIS PERMIT

(A) CONTROL MEASURES

The Permittee must implement the following Control Measures to reduce the discharge of pollutants from Stamford's MS4 to the maximum extent practicable using management practices, control techniques and system, design and engineering methods, and such other provisions which are appropriate. These controls may be imposed on a system-wide basis, a watershed basis, a jurisdiction basis, or on individual outfalls.

(1) Public Education and Involvement

The Permittee shall continue to implement a public education and involvement program, assess the overall success of the program, and document both direct and indirect measurements of program effectiveness. The program shall include elements that:

(a) increase the public awareness about stormwater pollution, its causes and effects, and actions that citizens, and commercial, industrial, and institutional entities can take to reduce the impact of stormwater pollution on water quality;

(b) promote, publicize and facilitate the various elements of its Stormwater Management Plan ("SMP") through varied public education and involvement methods and make information available for non-English speaking residents;

(c) disseminate information to residents regarding the proper handling and disposal of used motor vehicle fluids, household hazardous waste, electronic waste, food preparation waste, grass clippings, car wash waters, proper use of fertilizers, pesticides, and herbicides and educational material emphasizing nitrogen and phosphorus control as it relates to lawn care to residents;

(d) educate dog owners about the proper disposal of pet waste and by providing written information at the time of dog license renewal. The Permittee shall install signage, pet waste baggies, and disposal receptacles in recreational areas where dog walking is

allowed. In order to measure the effectiveness of education measures, the Permittee shall document in its annual report, information regarding the enforcement of the dog waste management ordinance (Section 11-7 of City Charter) including the number of violations and fines levied;

(e) educate owners and operators of commercial, industrial, and institutional facilities as to their responsibility to control pollutants in stormwater discharges from their property to the Permittee's MS4; and

(f) provide opportunities for the public to participate in the review, modification, and implementation of its SMP, and sustain partnerships with environmental groups and civic organizations interested in water quality related issues. The Permittee shall host an annual public informational meeting within sixty (60) days of the date of anniversary of this permit to discuss and provide information in each annual report required under Section 8(A) of this permit. The meeting notice shall comply with state public notice requirements, pursuant to CT Statute 7-3, and provide a forum for the education and involvement of interested public.

(2) Pollution Prevention (Source Controls)

Upon issuance of this permit, unless otherwise noted, the Permittee shall continue to implement, review and enhance its current pollution prevention practices and develop new source control procedures to include the elements listed below:

(a) Legal Authority

The Permittee shall, within eighteen months from the start of the Permittee's first fiscal year that begins after the effective date of this permit, ensure legal authority to:

(i) control the contribution of pollutants to the Stamford MS4 by permittees of the General Permit for the Discharge of Stormwater Associated with Industrial Activity and the General Permit for the Discharge of Stormwater Associated with Commercial Activity ("general permits"), issued pursuant to sections 22a-430b of the Connecticut General Statutes, by ensuring the City's stormwater rules and regulations contain requirements consistent with those of the general permits;

(ii) control the contribution of pollutants to the Stamford MS4 by commercial, industrial, municipal, institutional or other facilities, not otherwise authorized by permit issued pursuant to Sections 22a-430 or 22a-430b of the Connecticut General Statutes;

(iii) regulate the discharge of pollutants from any site that may affect water quality to the Stamford MS4.

(b) The Permittee shall provide and actively promote the use of used motor oil collection capabilities at the city-owned recycling facility(ies) to facilitate the proper management, disposal, reuse and recycling of used motor vehicle fluids.

(c) The Permittee shall continue to promote and offer at least annually its municipal Household Hazardous Waste (HHW) Collection and Electronic Waste Programs for the reuse, recycling, and proper disposal of such waste. The Permittee shall establish as a goal, increasing the frequency of the collection days hosted. The Permittee shall report progress made towards reaching the goals of the program in each annual report.

(d) Spills and Leaks

The Permittee shall develop and implement a Spill Prevention and Response Plan to prevent, contain, and respond to spills entering its MS4. The Permittee shall maintain, for a period of three years past the term of this permit, a list of spills and leaks of five gallons or more of petroleum products, or of toxic or hazardous substances which could affect stormwater, as listed in section 22a-430-4 (Appendix B Tables II, III and V, and Appendix D) of the Regulations of Connecticut State Agencies, and 40 CFR 116.4, that have been reported to the City or occurred as a result of an activity conducted by a city employee.

(e) The Permittee shall limit the application of pesticides, herbicides and fertilizers ("PHFs") in city owned or operated areas. The Permittee shall develop and implement standard operating practices for the handling, storage, application, and disposal of PHFs in compliance with applicable state and federal laws, and maintain consistency with model Integrated Pest Management Plans ("IPMs") developed by the Department. The Permittee shall establish reduction goals in its SMP, including consideration of alternatives, for PHFs being used at city owned or operated areas. With respect to city-owned or -operated golf courses (such as Sterling Farms Golf Course and E. G. Brennan Golf Course), the Permittee shall implement practices that achieve a 10 percent reduction in total nitrogen by the expiration date of this permit. Such reduction shall be determined by the average annual usage, by weight, of the three years preceding this permit. Additionally, the MS4 shall identify BMPs to maximize reduction in total nitrogen and phosphorus.

(f) The Permittee must enclose or cover by a rigid or flexible roof, or other structural means all storage piles of de-icing materials (including pure salt, salt alternatives or either of these mixed with other materials) at city owned or operated sites, which are not otherwise regulated by the General Permit for the Discharge of Stormwater Associated with Industrial Activity. Such structure shall not allow for the migration or release of material outside of the structure through its sidewalls. In areas with a groundwater classification of GA or GAA, an impervious liner shall be utilized under

any de-icing material pile to prevent infiltration to groundwater. As a temporary measure (not to exceed two years from the effective date of this permit), a waterproof cover may be used to prevent exposure to precipitation (except for exposure necessary to add or remove materials from the pile) until a structure can be provided. For temporary storage piles of de-icing materials in place for less than 180 days per year, a waterproof cover may be used to prevent exposure to precipitation (except for exposure necessary to add or remove materials from the pile).

In addition, no new road salt or de-icing materials storage facilities shall be located within a 100-year floodplain as defined and mapped for each municipality under 44 CFR 59 et seq. or within 250 feet of a well utilized for potable drinking water supply or within a Level A aquifer protection area as defined by mapping pursuant to section 22a-354c of the Connecticut General Statutes.

(g) If the Permittee determines that a stormwater discharge, from commercial, industrial, municipal, institutional or other facilities, not otherwise authorized by a permit issued pursuant to Sections 22a-430 or 22a-430b of the Connecticut General Statutes, is contributing a substantial pollutant loading to the MS4, it shall develop, implement, and enforce a program to control pollutants. The Permittee shall report progress made towards reaching the goals of the program in each annual report. The program shall include:

(i) an inventory, mapping, and prioritization of all facilities determined by the Permittee to be contributing a substantial pollutant loading to its MS4 through inspections, monitoring, or other methods conducted by the Permittee, facility operator, or others; and

(ii) an education program that informs these facility operators of their obligation to comply with the City's stormwater rules and regulations, encourages pollution prevention, and promotes facility-specific stormwater management practices, including appropriate operation and maintenance practices.

(3) Land Disturbance and Development

(a) Upon issuance of this permit, unless otherwise noted, the Permittee shall implement and enforce a program to control stormwater discharges to its MS4 associated with land disturbance or development (including re-development) activities from areas with one half acre or more of soil disturbance, whether considered individually or collectively as part of a larger common plan. Such program shall include the following elements:

(i) Legal Authority

The Permittee shall, on or before December 3, 2017, ensure legal authority to:

- establish an ordinance, bylaw, regulation, or other appropriate legal authority that requires developers and construction site operators to maintain consistency with the 2002 Guidelines for Soil Erosion and Sedimentation Control, as amended, the 2004 Connecticut Stormwater Quality Manual, as amended, and all stormwater discharge permits issued by the DEEP within the City of Stamford pursuant to CGS 22a-430 and 22a-430b. Such ordinance, bylaw, regulation, or other appropriate legal authority may include the implementation of measures in addition to the Guidelines;

- identify existing municipal zoning, site planning, or street design regulations that address minimal dimensional criteria for the creation of roadways, parking lots, and other impervious cover that may represent barriers to implementing LID practices that involve minimization of impervious cover;

- carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with City regulations related to the management of the MS4;

- establish an ordinance, bylaw, regulation, or other appropriate legal authority to ensure that a developer's or construction site operator's proposed use of low impact development ("LID") practices are allowable by right or exception (e.g., special permit or variance) under its regulations;

- revise regulations necessary to eliminate or reduce potential barriers, or otherwise provide in its Annual Report(s) required by Section 8, a justification for why this schedule cannot be met and a revised schedule for implementation;

- optimize the performance and pollutant removal efficiency of privately-owned retention or detention ponds that discharge to or receive discharge from its MS4, by ensuring the performance of adequate inspection and maintenance activities;

- control through interagency or inter-jurisdictional agreements, the contribution of pollutants between the Permittee's MS4 and MS4s owned or operated by others.

(ii) Interdepartmental Coordination

A plan to coordinate all municipal departments and boards with jurisdiction over

the review, permitting, or approval of land disturbance and development projects within the City of Stamford.

(iii) Low Impact Development ("LID") Measures

The Permittee shall, on or before December 3, 2017, incorporate the use of runoff reduction and low impact development ("LID") practices into their land use regulations to meet a goal of maintaining post-development runoff conditions similar to pre-development runoff conditions. These regulations shall require the following, at a minimum, of applicants for land development and redevelopment:

- For sites that are currently developed with an effective impervious cover of forty percent or more and for which the applicant is proposing redevelopment, the applicant shall design the site in such a manner as to retain on-site half the water quality volume for the site. In cases where the applicant is not able to retain this entire amount, the applicant shall design the redevelopment to retain runoff volume to the maximum extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice. In such cases, the applicant shall provide additional stormwater treatment for sediment, floatables and nutrients to the maximum extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice for the volume above that which can be retained up to the water quality volume. In cases where the runoff retention requirement cannot be met, the applicant shall submit, for the Permittee's review, a report detailing factors limiting the capability of achieving this goal. The report shall include: the measures taken to maximize runoff reduction practices on the site; the reasons why those practices constitute the maximum extent achievable; the alternative retention volume; and a description of the measures used to provide additional stormwater treatment above the alternate volume up to the water quality volume. In the case of linear redevelopment projects (e.g. roadway reconstruction or widening) for the developed portion of the right of way: (1) for projects that may be unable to comply with the full retention standard, the alternate retention and treatment provisions may also be applied as specified above, or (2) for projects that will not increase the effective impervious cover within a given watershed, the Permittee shall implement the additional stormwater treatment measures referenced above, but will not be required to retain half of the water quality volume.

- For all new development and for redevelopment of sites with a currently developed effective impervious cover of less than forty percent, the applicant shall design the site to retain the water quality volume for the site.

If there are site constraints that would prevent retention of this volume on-site (e.g., brownfields, capped landfills, bedrock, elevated groundwater, etc.), documentation must be submitted, for the City's review and written approval, which: explains the site limitations; provides a description of the runoff reduction practices implemented; provides an explanation of why this constitutes the maximum extent achievable; offers an alternative retention volume; and provides a description of the measures used to provide additional stormwater treatment for sediment, floatables and nutrients above the alternate volume up to the water quality volume. Any such treatment shall be designed, installed and maintained in accordance with the Stormwater Quality Manual. In the case of linear projects that do not involve impervious surfaces (e.g. electrical transmission rights-of-way or natural gas pipelines), retention of the water quality volume is not required as long as the post-development runoff characteristics do not differ significantly from pre-development conditions.

- limit turf areas to areas of land disturbance,

- limit land disturbance to areas necessary to construct buildings, utilities, stormwater management measures, parking, access ways, reasonable lawn and landscape areas and contouring necessary to prevent future site erosion,

- maintain consistency with the Connecticut Stormwater Quality Manual (as amended), or if inconsistent, provide and explanation of why consistency is not feasible or practicable and information that the proposed plan of development is adequately protective.

(iv) Stormwater Management Implementation

On or before December 3, 2017, the Permittee shall implement, upgrade (if necessary) and enforce a program that shall address construction and post-construction stormwater discharges from land disturbing activities (construction phase) and after site stabilization has been achieved (post-construction or operational phase). At a minimum, the City's land use regulations shall be consistent with the Connecticut Guidelines for Soil Erosion and Sedimentation Control (as amended) for construction activities and the Connecticut Stormwater Quality Manual (as amended) for post-construction stormwater management.

(v) Site Review and Inspection

- Conduct site plan review and pre-construction review meetings that incorporate consideration of stormwater controls or management practices to prevent or minimize impacts to water quality; and

- Site inspection and enforcement to assess the adequacy of the installation, maintenance, operation, and repair of construction and post construction control measures.

(vi) Public Involvement

A procedure for receipt and consideration of information submitted by the public concerning proposed and ongoing land disturbance and development activities.

(vii) State Permit Notification

A procedure for notifying developers of their potential obligation to obtain authorization under the DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities ("construction general permit") if their development or redevelopment project disturbs one or more acres of land, either individually or collectively, as part of a larger common plan, and results in a point source discharge to the surface waters of the state directly or through the Permittee's MS4. The notification shall include a provision informing the project applicant of their obligation to provide a copy of the Storm Water Pollution Control Plan to the Permittee upon request pursuant to the construction general permit.

(viii)Impervious Cover

Within four (4) years of the date of issuance of this permit, the Permittee shall complete, and include in its SMP, an estimate of the DCIA that contributes stormwater to each of its MS4 outfalls. In its initial annual report, the Permittee shall describe the methodology and assumptions used to estimate the DCIA. Each annual report shall document the progress of this task until its completion in the fourth year. The Permittee shall revise its DCIA estimate as development, redevelopment, or retrofit projects effectively add or remove DCIA to its MS4.

(4) Illicit Discharges

The Permittee shall continue to implement their illicit discharge detection and elimination program and update such program in accordance with the Illicit Discharge Detection and Elimination (IDDE) Program section (Section 6(D)).

(5) Infrastructure Operations and Maintenance

(a) Employee Training

The Permittee shall continue a formal employee training program to increase awareness of water quality related issues in management of its MS4. In addition to providing key staff with topical training regarding standard operating procedures and other activities necessary to comply with the provisions of this permit, the training program shall include establishing an awareness of the general goals and objectives of the SMP; identification and reporting of illicit discharges, and improper disposal; and spill response protocols and respective responsibilities of involved personnel.

(b) Infrastructure Repair and Rehabilitation

The Permittee shall repair and rehabilitate its MS4 infrastructure in a timely manner in order to reduce or eliminate the discharge of pollutants from its MS4 to receiving waters. Priority for repair and rehabilitation shall be based on existing information on outfalls discharging pollutants, impaired waters, inspection observations or observations made during outfall mapping pursuant to Section 6(D)(4)(c) of this permit. This shall include refinement of the Permittee's standard operating procedures and good housekeeping practices for management of its MS4.

(c) Roadway Maintenance

City-owned public streets, roads and highway rights-of-way shall be maintained by the Permittee in such a manner as to minimize the discharge of pollutants to its MS4.

(d) Sweeping

(i) The Permittee shall implement a street sweeping program to remove sand, sediment, and debris from all permittee-owned or maintained streets and parking lots. All Permittee-owned streets and parking lots shall be inspected, swept and/or cleaned with a minimum frequency of once per year in the spring following the cessation of winter maintenance activities (i.e. sanding, deicing, etc.). As a goal, the Permittee shall compress its spring residential sweeping schedule to maximize the quantity of material collected at the end of the winter season, but in no case later than June 30. In the case of special events sponsored in whole or in part by the Permittee (concerts, parades, etc.), the gathering area shall be swept prior to the event and again upon conclusion of the event and in no case later than 24 hours after the end of the event. The event gathering area shall be defined as the path of parade route, boundaries of the concert event area within Permittee-owned parks and adjacent roadways, and other geographic boundaries (streets, etc.) as deemed reasonable and appropriate by the Permittee. The street sweeping program shall also include regular roadway surface inspections by the Permittee and cleaning and/or sweeping of targeted areas as determined by the Permittee to have increased pollutant potential based on the presence of active construction activity or other potential pollutant sources. The permittee shall

identify such potential pollutant sources based upon surface inspections, catch basin cleaning or inspection results, land use, winter road deicing and/or sand application, impaired or TMDL waters or other relevant factors as determined by the permittee. Additionally, the permittee shall conduct a visual assessment in the fall, each year until the conclusion of the permit term, to assess and identify areas to receive targeted sweeping. If wet dust suppression is conducted, the use of water should be minimized such that a discharge of excess water to surface waters and/ or the storm sewer system does not occur.

(ii) The Permittee shall sweep all Permittee-owned or -operated parking lots at least quarterly.

(iii) The Permittee shall sweep sidewalks in the central business district at least weekly.

(e) Leaf Collection

The Permittee shall conduct a city wide leaf pickup program annually to be completed by December 15.

(f) Snow Removal

(i) The Permittee shall implement and refine its standard operating practices regarding its snow and ice control operations to minimize the discharge of pollutants. The Permittee shall establish goals for the optimization of chemical application rates through the use of automated application equipment (e.g. zero-velocity spreaders), anti-icing and pre-wetting techniques, implementation of pavement management systems, and alternate chemicals. The Permittee shall maintain records of the application of anti-icing and/ or de-icing chemicals to document the reduction of chemicals to meet established goals.

(ii) The Permittee shall maintain consistency with the DEEP's Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots, as amended, for the stockpiling or disposal of post-plowing snow.

(g) Catch Basin Cleaning

The Permittee shall conduct routine cleaning of all catch basins. The Permittee shall track catch basin inspection observations. Utilizing information compiled through its inventory of catch basins, operational staff and public complaints, the Permittee shall optimize routine cleaning frequencies for particular structures or catchment areas as follows to maintain acceptable sediment removal efficiencies:

(i) On or before December 3, 2017, those catch basins serving catchment areas tributary to a receiving water identified as impaired shall be inspected and cleaned, if necessary, in order to establish a routine frequency cleaning schedule to ensure that no catch basin sump will be more than fifty percent (50%) full. Once this frequency has been determined, it shall be included in the SMP and noted in the Permittee's Annual Reports.

(ii) For all other catch basins, during the first four years of this permit, the Permittee shall inspect and, if necessary, clean these catch basins at least twice to establish a cleaning frequency determined such that no catch basin sump is found to be more than fifty percent (50%) full during routine cleaning events. If any of these catch basins are found to be more than fifty percent (50%) full, such basins shall be cleaned and reinspected within a year to determine the appropriate cleaning frequency. Once this frequency has been determined, it shall be included in the SMP and noted in the Permittee's Annual Reports.

(iii) Following the establishment of appropriate cleaning frequencies pursuant to subparagraphs (i) and (ii) above, and notwithstanding extenuating circumstances (such as excessive erosion from an active construction site), if a catch basin sump is found to be more than fifty percent (50%) full during each of two consecutive routine cleaning events, the Permittee shall investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practical, abate contributing sources through appropriate measures. Appropriate measures may include stabilization practices, drainage modifications, and increased frequencies of catch basin cleaning and street sweeping, and structural controls suitable for controlling the excessive loading. The Permittee shall describe in its annual report actions taken or its plans to abate areas of persistent sedimentation (including a timeframe for the implementation of such actions), including stabilization practices, structural improvements or operational modifications. After implementation of these measures, if subsequent inspections continue to find the sump more than fifty percent (50%) full, cleaning frequency shall be increased as appropriate to maintain levels below fifty percent (50%). Such changes in frequency shall be included in the SMP and noted in the Permittee's Annual Report.

(h) Detention and Retention Ponds

The Permittee shall ensure the performance of retention or detention ponds which discharge to, or receive stormwater from, its MS4. This shall include ponds that are owned by the Permittee and all privately-owned ponds where the Permittee maintains an easement or other legal authority pursuant to Section 6(A)(3)(a)(i) of this permit. At a minimum, the Permittee shall annually inspect all such retention or detention

ponds and remove accumulated solids to restore full solids capture design capacity where found to be in excess of 50% design capacity.

(i) Interconnected MS4s

As part of interagency agreements established pursuant to Section 6(B)(4)(h) of this permit, the Permittee shall coordinate with operators of interconnected MS4s (such as neighboring municipalities and DOT) regarding the contribution of potential pollutants from the storm sewer systems, contributing land use areas and stormwater control measures in the respective MS4s. This same coordination shall be conducted regarding operation and maintenance procedures utilized in the respective systems.

(j) Infrastructure Retrofit Program

The goal of the retrofit program is to "disconnect" existing Directly Connected Impervious Areas (DCIA). An area of DCIA is considered disconnected when the appropriate portion of the Water Quality Volume has been retained in accordance with the requirements of Section 6(A)(3)(a)(iii) of this Permit. This may be accomplished through retrofits or redevelopment projects (public or private) that utilize Low Impact Development (LID) and runoff reduction measures or any other means by which stormwater is infiltrated into the ground or reused for other purposes without a surface or storm sewer discharge. A redevelopment project, as that term is used here and in Section 6(A)(3)(a)(iii), is one that modifies an existing developed site for the purpose of enhancing, expanding or otherwise modifying its function or purpose. A retrofit project is one that modifies an existing developed site for the primary purpose of disconnecting DCIA. The DCIA calculation performed pursuant to Section 6(A)(3)(a)(viii) shall serve as the baseline for the retrofit program required in this section.

(i) DCIA Disconnection Tracking

Beginning on the effective date of this Permit as modified, the Permittee shall track, on an annual basis, the total acreage of DCIA that is disconnected as a result of redevelopment or retrofit projects within the MS4. Tracking the disconnection of DCIA means documenting within a given redevelopment or retrofit project, the amount of existing DCIA that is modified such that it is disconnected. This tracking may include disconnections of DCIA from redevelopment or retrofit projects implemented as early as five (5) years prior to the effective date of this Permit. Any redevelopment or retrofit of an existing developed site, whether public (municipal, state or federal) or private (residential, commercial or industrial) shall be included in this tracking.

Tracking the disconnection of DCIA does not apply for sites that were previously

undeveloped as there were no existing impervious surfaces on those sites. The total amount of DCIA that has been disconnected during a given year shall be reported in that year's Annual Report.

(ii) Retrofit Planning

On or before January 1, 2018, the Permittee shall develop a plan to implement retrofit projects to meet the goals of this section. The Permittee shall identify and prioritize sites that may be suitable for retrofit. Considerations for prioritizing retrofit projects may include outfall catchment areas that discharge to impaired waters, areas within the Urbanized Area of the MS4 or catchment areas with greater than eleven percent (11%) impervious cover. The Permittee shall select from the list of prioritized projects those that it will implement to meet the goals in subparagraph (iii) below. In the Annual Report for the fifth year of this permit, the Permittee shall report on its identification and prioritization process, the selection of the projects to be implemented, the rationale for the selection of those projects, and the total DCIA to be disconnected upon implementation of the projects.

(iii) Retrofit Schedule

By the end of this Permit term, the Permittee shall commence the implementation of the retrofit projects identified in subparagraph (ii), above, with a goal of disconnecting one percent (1%) of the Permittee's DCIA by the end of the Permit term, to the maximum extent practicable. The one percent (1%) goal may be achieved by compiling the total disconnected DCIA tracked pursuant to subparagraph (i), above, or the retrofit planning projects designated in subparagraph (ii), above, or a combination of the two.

If the one percent (1%) goal will not be met, the Permittee shall include in the Annual Report a discussion of what percentage of DCIA will actually be disconnected and why the remainder of the one percent (1%) goal could not be achieved based on the maximum extent practicable defined in Section 2(B). The Permittee shall also provide in the Annual Report for the fifth year of this permit a plan for continuation of the retrofit program and continue such program with a goal to disconnect one percent (1%) of DCIA in each year thereafter.

(B) STORMWATER MANAGEMENT PLAN

(1) The Permittee shall, within one year from the start of the Permittee's first fiscal year that begins after the date of issuance of this permit, submit to the commissioner for his/her review and approval a Stormwater Management Plan ("SMP"). The SMP shall set forth a program to provide for the implementation of specific control measures, stormwater monitoring, illicit

discharge detection and elimination, and other appropriate means to control the quality of the authorized discharge. Notwithstanding the date of approval by the commissioner, the Permittee shall follow the timelines prescribed for these elements in this permit based on the effective date of the permit. Additionally, the Permittee must implement actions required to protect the surface waters of the state and to meet permit requirements.

(2) If the commissioner disapproves the SMP or any portion thereof, the Permittee shall revise and resubmit a revised SMP within a timeframe determined by the commissioner. The Permittee shall submit an approvable revised SMP, that addresses the requirements of this permit and any deficiencies identified by the commissioner, no later than two years from the date of issuance of this permit.

(3) Once the commissioner approves the SMP or any portion thereof, the Permittee shall implement it, and such SMP shall be deemed a condition of this permit and shall be enforceable as such.

(4) Contents of the SMP

The SMP must reflect current conditions and provide, at a minimum, the following components:

(a) Pollution Prevention Team

The Permittee shall identify a team of individuals for the City who shall serve as members of a Stormwater Pollution Prevention Team ("team"). The team shall be responsible for implementing the SMP and assisting in the implementation, maintenance, and development of revisions to the SMP as well as maintaining control measures and taking corrective actions where required. The SMP shall clearly identify the responsibilities of each team member. One individual shall function as the Team Coordinator and shall coordinate the functions and responsibilities of the team members. The Team Coordinator shall be responsible for oversight of the SMP and compliance with this permit. The activities and responsibilities of the team shall address all aspects of the SMP. Each member of the team must have ready access to either an electronic or paper copy of applicable portions of this permit and the SMP.

(b) Mapping

Through a geographic information system or other methods, on or before December 3, 2017, the Permittee shall provide a general city-wide map with enough detail to identify the location of stormwater outfalls, the location of all sampling points pursuant to the Monitoring and Analyses section (Section 7), City-owned roadways, the location of city designated business, commercial, and special event areas, all receiving waters where Stamford MS4 discharges occur, and the watersheds of these

receiving waters, including identification of those waters identified as impaired as defined in Section 2 of this permit. The Permittee shall also comply with any mapping requirements pursuant the Illicit Discharge Detection and Elimination (IDDE) Program section (Section 6(D)(4)(c)). The Permittee may include any other mapping such as zoning, economic development, impervious cover, drainage areas, stormwater treatment facilities or other criteria that serve to clarify elements of the SMP or verify compliance with the permit. Where additional mapping is provided, the Permittee shall include a description of its purpose.

(c) Control Measures

The SMP shall include a description of the location and type of control measures installed and/or implemented in accordance with the "Control Measures" section (Section 6(A)). The Permittee shall discuss the appropriateness and priorities of control measures in the SMP and how they address potential sources of pollutants to receiving waters. The SMP shall include a schedule for implementing the control measures as well as maintaining them where appropriate.

(d) Illicit Discharge Detection and Elimination (IDDE) Program

The SMP shall include a program to detect and eliminate existing illicit discharges and to prevent future illicit discharges. The IDDE program shall include inspections, detection protocols, dry- and wet-weather monitoring, discharge removal protocols, and any other measures as required by Section 6(D) of this permit.

(e) Monitoring Program

The SMP shall include a description of the monitoring program and sampling data in accordance with the Monitoring and Analyses section (Section 7). The SMP shall also include a description of and sampling data from any monitoring necessary to implement the IDDE Program in Section 6(D). The Permittee shall include in the SMP any additional monitoring that may be conducted to clarify or comply with any other elements of this permit along with a description of its purpose.

(f) Schedules and Procedures

The Permittee shall document in the SMP the schedules and procedures for implementation of mapping, control measures, monitoring, inspections, IDDE, reporting and any other elements of this permit that require scheduling. These include, but are not limited to: sweeping, catch basin cleaning, waste management practices and other good housekeeping measures; regular inspection, maintenance, and repair/rehabilitation of stormwater infrastructure; procedures for preventing and responding to spills and leaks; maintenance practices for city-owned properties and

buildings; employee training; all inspection programs; and any monitoring conducted pursuant to this permit.

(g) Legal Authority

The Permittee shall document in the SMP and in the Annual Reports the provisions implemented to ensure legal authority to control discharges to and from the Stamford MS4 as required in the various Legal Authority subsections of this permit. This legal authority may be a combination of ordinance, lawful delegation of authority from another agency, permit, or agreements with other entities.

(h) Coordination

Where a portion of the separate storm sewer system within a municipality is owned or otherwise the responsibility of another municipality, or a state or federal agency, the Permittee and entities shall coordinate the development and implementation of their respective Stormwater Management Plans to address all the elements of Section 6(B). A description of the respective responsibilities for these elements shall be included in the Stormwater Management Plan for each municipality and/ or agency.

(i) Consistency with Other Plans and Permits

Where applicable, the SMP may reference requirements contained in a Spill Prevention Control and Countermeasure (SPCC) plan or a plan prepared or approved under the Resource Conservation and Recovery Act (RCRA) and other plans required by state, federal or local law. A copy of the pertinent sections of any referenced plan must be kept with the SMP. The SMP shall identify all general and individual permits issued by the DEEP for which the Permittee is authorized.

(5) Stormwater Management Program Resources

The Permittee shall provide adequate finances, staff, equipment, and support capabilities necessary to implement all elements of the SMP. A summary of dedicated resources and support capabilities shall be documented in the SMP and the Annual Reports.

(6) Stormwater Management Plan Review and Modification

(a) SMP Review

The Permittee shall undertake an annual review of its current SMP in conjunction with preparation of the annual report required under Section 8(A) of this permit.

(b) SMP Modification by Permittee

The Permittee may modify the SMP during the term of this permit in accordance with the following procedures:

(i) The approved SMP shall not be modified by the Permittee without the prior written approval of the commissioner, unless in accordance with subparagraph (ii) below.

(ii) Modifications adding (but not subtracting or replacing) components, activities, controls, or requirements to the approved Stormwater Management Plan may be made by the Permittee at any time upon written notification to the commissioner summarizing the modifications.

(iii) Modifications replacing an ineffective or impracticable BMP specifically identified in the Stormwater Management Plan with an alternate BMP shall be documented in the Annual Report, with a justification for the modification.

(c) Modifications required by the commissioner

The commissioner may require modification of the SMP as needed to:

(i) Assess impacts and/or correct adverse impacts that are causing or have the potential to cause pollution to surface waters receiving discharges from the Stamford MS4;

(ii) Include more stringent requirements necessary to comply with new State or Federal statutory or regulatory requirements; or

(iii) Include such other conditions deemed necessary by the commissioner to comply with the goals and requirements of the RCSA and the Clean Water Act, or

(iv) the actions required by the Plan fail to ensure or adequately protect against pollution of the surface waters of the state; or

(v) the Permittee is notified that a TMDL to which the Permittee is subject has been established for the stormwater receiving water; or

(vi) actions are necessary to address any significant sources or potential sources of pollution identified as a result of any inspection or visual monitoring.

Modifications required by the commissioner pursuant to this subsection shall be made in writing, set forth the time schedule for the Permittee to develop the modification(s), and offer the Permittee the opportunity to propose alternative SMP modifications to meet the

objective of the required modification. All required modifications must be made in accordance with the required time schedule.

(7) Plan Certification

The SMP shall contain the following certification, signed by a professional engineer licensed to practice in the State of Connecticut:

"I certify that I have thoroughly and completely reviewed the Stormwater Management Plan prepared for the City of Stamford. I further certify, based on such review and site visit by myself or my agent, and on my professional judgment, that the Stormwater Management Plan meets the criteria set forth in this permit. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements."

(C) MONITORING

The Permittee shall implement a monitoring program to monitor Stamford MS4 discharge and existing water quality, wet-weather impacts to water quality, possible illicit discharges to the MS4 or waters of the state, track compliance with this permit, and track progress in reducing negative impacts to surface waters of the state. Monitoring shall be conducted in accordance with Section 7 of this permit. Monitoring for the detection of illicit discharges shall be conducted in accordance with Section 6(D) of this permit.

(D) ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

The Permittee shall develop an Illicit Discharge Detection and Elimination (IDDE) program designed to: provide the legal authority to prohibit and eliminate illicit discharges to the MS4; find the source of any illicit discharges; eliminate those illicit discharges; and ensure ongoing screening and tracking to prevent and/or eliminate future illicit discharges.

(1) IDDE Program Elements

(a) Illicit discharges to the MS4 are prohibited, and any such discharges are a violation of this permit and remain a violation until they are eliminated. The Permittee shall prohibit all illicit discharges from entering its MS4. Upon detection, the Permittee shall eliminate illicit discharges as soon as possible and require the immediate cessation of such discharges upon confirmation of responsible parties in accordance with its enforceable legal authorities established pursuant to subsection (b) below. Where elimination of an illicit discharge within thirty (30) days of its confirmation is not possible, the Permittee shall establish a schedule for its elimination; such schedule not to exceed six (6) months. No later than six (6) months after confirmation, such discharges shall be eliminated or the Permittee shall initiate appropriate enforcement

actions. In the interim, the Permittee shall take all reasonable and prudent measures to minimize the discharge of pollutants to its MS4.

(b) The Permittee shall implement outfall screening and an illicit discharge detection protocol pursuant to subsections (3) and (4) below to identify, prioritize, and investigate separate storm sewer catchments for suspected illicit discharges of pollutants.

(c) The Permittee shall maintain a record of illicit discharge abatement activities including, at a minimum: location, description, method of discovery, date(s) of inspection, sampling data (if applicable), action(s) taken, date of removal or repair, responsible party(ies), costs associated with removal or repair, and estimated daily flow or total volume removed. This information shall be included in the Permittee's annual reporting pursuant to the "Annual Report" section (Section 8) of this permit.

(2) Legal Authority

Within one (1) year of the effective date of this permit, the Permittee shall ensure that it obtains or maintains the necessary and enforceable legal authority established by statute, ordinance, rules and regulations, permit, easement, contract, order and any other means, to:

(a) prohibit illicit discharges to its MS4 and require removal of such discharges consistent with subsection (1)(a), above, of this permit; and

(b) control the discharge of spills and prohibit the dumping or disposal of materials including, but not limited to, industrial and commercial wastes, trash, used motor vehicle fluids, food preparation waste, leaf litter, grass clippings, and animal wastes into its MS4; and

(c) assess fines or penalties and/or recoup costs incurred by the City from anyone creating an illicit discharge or spilling or dumping as specified in subsections (2)(a) and (2)(b), above.

(3) Outfall Screening for Illicit Discharges

The Permittee shall screen its MS4 outfalls during dry weather conditions for physical, chemical, and biological indicators of the presence of illicit discharges.

(a) Known Illicit Discharges

Whether documented by the commissioner, the Permittee, or others, outfalls from drainage areas with known or highly suspected contributions of illicit discharges may have already been identified. Screening of outfalls serving such portions of the MS4

is not required for the purpose of prioritization as required in subsection (c) below, and the Permittee shall continue or initiate identification and removal procedures for illicit discharges in these areas based on the Permittee's priority ranking established pursuant to subsection (c) below. Within one hundred eighty (180) days of the effective date of this permit the Permittee shall submit to the commissioner an inventory of all MS4 outfalls for which the Permittee deems screening is not required pursuant to this subsection. For each such drainage area, the Permittee shall provide:

(i) all available documented evidence, including monitoring results, of illicit discharges;

(ii) completed, ongoing or planned corrective measures addressing the documented illicit discharges; and

(iii) a schedule for completing and verifying measures correcting the documented illicit discharges.

(b) Priority Ranking of Outfall Screening

The Permittee shall develop a priority ranking for the purpose of scheduling its outfall screening activities required by this part. The commissioner recommends that the Permittee consider the current or intended designated uses of receiving waters, existence of impaired waters, and the relative likelihood of the presence of illicit discharges in the development of its priority ranking.

(c) Priority Ranking for IDDE Investigation

Screening of outfalls (in the priority ranking developed in subsection (b) above) shall be completed to facilitate the priority ranking of individual separate storm sewer drainage areas for investigation using the Permittee's Illicit Discharge Detection Protocol ("IDDP") described in subsection (4) below. Analysis of screening results, including comparisons with benchmark values for parameters in Table 1 and Figure 1 in subsection (4)(d)(iv) below, shall support such prioritization. Screening of outfalls after implementation of the Permittee's IDDP shall serve to verify that the correction of all illicit discharges has been completed.

(d) Schedule

Except where excluded by subsection (3)(a) above, MS4 outfalls shall be screened at a rate of twenty five (25) percent of the outfalls known at the time of permit issuance during each of the first four years of the permit in order to permit timely execution of the Permittee's IDDP as described in subsection (4) below. For MS4 outfalls first identified after the date of issuance of this permit, the Permittee shall submit to the

commissioner a schedule for screening these outfalls. As described in subsection (4)(d)(viii) below, an additional round of screening is required as a verification of the completion of the IDDP within the drainage area of the outfall. Such verification screening shall be completed no more than sixty (60) days after the Permittee has verified removal of all such discharges contributing to the outfall's drainage area in accordance with subsection (4)(d)(vii) below.

(e) Methodology

Outfall screening shall proceed only during dry weather when no more than 0.1 inches of rainfall has occurred in the previous 48-hour period. The duration of the antecedent period may be shortened or lengthened by the Permittee as necessary or appropriate dependent upon rainfall depth or the relative extent, slope, storage, and other influences to assure that any stormwater runoff has ceased from the particular drainage area served by the outfall. Screening shall be performed according to the following procedures:

(i) Locate the outfall, and take a photograph. At outfalls where photographs were previously taken, new photographs shall be taken from the same approximate orientation to facilitate comparison and determination of any changes.

(ii) Collect data on physical condition of the outfall, including evidence of collapse and structural defects, and evidence of erosion or deposition in the vicinity of the outfall.

(iii) Record any indicators of illicit discharges such as odors, oil sheen, discoloration, foaming, soap suds, slimes, or presence of sanitary floatables or solids.

(iv) If the outfall is inaccessible or submerged, proceed to the first accessible upstream manhole or structure.

(v) Outfall observation

Observe the outfall for evidence of illicit discharge and proceed as follows:

- If no flow is observed and there is no evidence of an illicit discharge (e.g. a residue unrelated to a stormwater discharge), this outfall will be assigned a lower priority ranking and the screening shall proceed to the next outfall.

- If flow is observed, estimate flow using the product of flow area and velocity or the quotient of volume discharged over time, perform the field analyses described in subparagraph (vi) below, and collect a grab sample for enumeration of *E.coli* indicator bacteria in the laboratory.

- If the outfall is not flowing, but shows evidence of an illicit discharge, return in 4 to 24 hours and screen again, completing flow estimation, field analyses, and grab sampling for indicator bacteria analysis if flow is subsequently observed. If no flow is observed initially and upon return, make note of the outfall to prioritize for future investigation and proceed to the next outfall.

(vi) Field analyses of dry weather flow samples shall include measurement of the following parameters:

Conductivity
Turbidity
Dissolved Oxygen
pH
Chlorine
Temperature
Surfactants as (MBAS)
Potassium
Ammonia

Based on these field analyses, evidence of the degree and severity of an illicit discharge shall be taken into account in prioritizing outfalls for illicit discharge investigation pursuant to subsection (4)(b) below.

(4) Illicit Discharge Detection Protocol ("IDDP")

(a) Implementation

The Permittee shall implement an IDDP according to the priorities developed pursuant to subparagraph (b) below, and consistent with the methodology described in subparagraph (d) below. The Permittee shall complete implementation of its IDDP for twenty (20) percent of the MS4 outfall drainage areas no later than **five (5) years** from the effective date of this permit. The drainage areas investigated shall include the highest 20 percent of the priority areas as determined by subparagraph (b) below. The IDDP shall be completed in minimum increments of twenty-five percent (25%) of these drainage areas no later than **2, 3, 4, and 5 years**, respectively, from the effective date of this permit. The Permittee shall eliminate all identified illicit discharges pursuant to the "IDDE Program Elements" section (Section 6(D)(1)(a)).

(i) Impaired Waters

If more than twenty (20) percent of the outfall drainage areas in the MS4 discharge to impaired waters, the Permittee shall include in their SMP a discussion of the criteria by which those areas in the highest 20 percent of prioritized drainage areas were chosen. The remaining drainage areas to impaired waters that are not included in the highest 20 percent of prioritized areas shall receive highest priority for future investigation. If the Permittee completes the initial 20 percent of highest priority areas ahead of the schedule in subsection (4)(a) above, the IDDP investigations shall proceed immediately to these remaining high priority areas discharging to impaired waters.

(b) Prioritization

The Permittee shall use the results from its dry weather outfall screening required by Section 6(D)(3) to develop a priority ranking of outfall drainage areas for the purpose of scheduling its IDDP implementation. The commissioner recommends that the Permittee consider the perceived severity of the pollution, the current or intended uses of receiving waters, impairment status, and any planned infrastructure improvements, in the development of its priority ranking. Drainage areas discharging to impaired waters will receive primary consideration when prioritizing.

(c) Mapping

Through a geographic information system or other methods, the Permittee shall, by December 3, 2017, prepare mapping to facilitate implementation of its IDDP. Mapping shall provide a comprehensive depiction of key infrastructure and factors influencing proper system operation and the potential for illicit discharges. Mapping themes shall include: key storm sewer infrastructure, investigation and study findings, monitoring data, cleaning and repair activities, capital projects, and water resource and topographic features. The required number, scale and detail of the maps shall be appropriate to facilitate a rapid understanding of the system by the Permittee and the commissioner. In addition, the mapping shall serve as a planning tool for the implementation and phasing of the IDDP, a demonstration of the extent of complete and planned investigations and corrections, and other related capital projects. Mapping shall proceed at a rate that will not impede implementation of the IDDP. To ensure legible mapping, information shall be grouped appropriately and represented thematically (e.g. by color) with legends or schedules where possible. Mapping shall be updated as necessary to reflect new information, corrections or modifications, and progress made. The following information and features, where currently available, shall be included in the mapping:

(i) Infrastructure

- Municipal separate storm sewer system (including inter-municipal and private connections where available)
- Thematic representation of sewer material, size, and age
- Storm sewer flow direction
- Select rim and invert elevations
- Aerial delineations of MS4 outfall drainage areas
- Areas served by on-site subsurface disposal systems
- Storm sewer alignments to which known or suspected underdrain systems may discharge

(ii) Water Resources and Topographic Features

- Water bodies and watercourses identified by name and water quality classification
- Impaired waters (including type of impairment)
- Inland wetlands
- Tidal wetlands
- Topography
- Orthophotography

(iii) O&M, Investigations, Remediation, and Capital Projects

- Alignments, dates, and thematic representation of work completed (with legend) of past illicit discharge investigations (e.g. flow isolation, dye testing, closed-circuit television (CCTV))
- Locations of suspected, confirmed, and corrected illicit discharges (with dates and flow estimates)
- Water quality monitoring locations with representation of water quality indicator concentrations

- Recent and planned storm sewer infrastructure cleaning and repair projects
- Planned capital projects relative to utility and roadway rehabilitation or replacement
- Proposed phasing of future illicit discharge investigations

(d) IDDP Methodology

The IDDP shall utilize methodologies described in this subsection to perform a thorough investigation of MS4 outfall drainage areas that relies on results from visual observation, field test kits, and portable instrumentation during dry weather conditions to isolate areas or alignments with likely illicit discharges. Internal plumbing inspections, dye or smoke testing, CCTV inspections, or other methods consistent with the Permittee's established procedures shall then be employed to confirm the illicit and non-stormwater flow sources.

(i) Notification

Prior to beginning an IDDP investigation that may involve smoke testing in a given drainage area, the Permittee shall notify all residents, businesses and all other property owners or occupants within that drainage area of the impending testing.

(ii) Infrastructure Verification and Preparation

Infrastructure mapping and drainage area delineations shall be verified in the field and corrected, as necessary, prior to investigations. MS4 infrastructure shall be evaluated for the need to be cleaned to remove debris or blockages that could compromise investigations. Such material shall be removed prior to investigation, where possible. However, some cleaning may occur concurrently.

(iii) Dry Weather Criteria

In order to prevent or limit the influence of stormwater runoff during the investigations, inspections and field monitoring shall not begin for at least 24 hours after any previous storm event greater than 0.1 inches. The duration of this dry weather period may be shortened or lengthened by the Permittee as necessary or appropriate dependent upon rainfall depth or the relative extent, slope, storage, and other influences on the particular drainage area under investigation.

(iv) Storm Sewer Inspection Methodology

Visually inspect outfalls in dry weather conditions to determine the possible presence of dry weather flows. Depending on the findings, conduct one of the

procedures below. Table 1 indicates which analytes will be used for the determination of illicit discharges.

- **No Dry Weather Flow**: If no dry weather flow is observed at an outfall and there is no evidence of one (color, algae, etc.), no further inspection of the outfall or its contributing drainage alignment is required during the term of this permit.

  If there is no dry weather flow but there is evidence of one (color, algae, etc.), proceed as follows:

  - Partially dam the outfall when no rain is forecast for at least 48 hours;

  - Re-inspect the outfall within 24 to 48 hours of damming (prior to any precipitation or snow melt) for evidence of the capture of periodic or intermittent flows behind the inlet dam. If, upon reinspection, there is no evidence of dry weather flows, re-inspect within six months. If, upon re-inspection, there is evidence of dry weather flows, visual observations and field testing pursuant to the procedures below shall be completed on any captured flow to identify alignments for additional inspections.

- **Groundwater Dry Weather Flow** – If a dry weather flow is observed, test the flow for the analytes in Table 1 (pursuant to subsection (iv) below) and inspect the flow for evidence of an illicit discharge (color, odor, sheen, etc). If discharge is determined to be groundwater:

  - Inspect upstream stormwater structures to determine the source of the groundwater infiltration. For all inlets to upstream structures, follow the procedures of this subsection for determination of dry weather flows. Take samples at the most upstream structure which has flows to ensure the flow is only groundwater;

  - Go to the next upstream structures including those on tributary lines. Ensure that there is no evidence of dry weather flow, including discoloration or other indications that there may have been a dry weather flow at one time. Once the next upstream structure exhibits no dry weather flow or evidence of one, no further upstream inspection of that alignment is required.

  - Document all observations, take photographs and include test results as part of the documentation. Indicate on a map which structures have been inspected. The map will also be part of the permanent documentation.

- Re-inspect within six months.

- **Contaminated Dry Weather Flow**: If a dry weather flow is observed and testing or visual inspection indicates that the discharge is other than groundwater:

  - Inspect next upstream stormwater structure(s) to determine which ones show signs of dry weather flow. There may be several structures depending on the tributaries;

  - For any tributary that shows signs of dry weather flow, continue to follow that upstream using the procedures of this subsection, inspecting every structure including sub-tributaries until no structures show any indication of dry weather flow;

  - Repeat for all tributaries that show signs of dry weather flow.

  - Take samples whenever possible. Document all observations, take photographs and include test results as part of the documentation. Indicate on a map which structures have been inspected. The map will also be part of the permanent documentation.

  - For alignments that indicate an illicit discharge, the next step is to smoke test the area to determine the source of the discharge following the notification procedures.

  - If the location is identified, appropriate corrections will be made to stop the illicit discharge.

  - If no location is determined, dye testing of potential upstream sources shall be conducted and then the violation corrected.

  - If no location is still identified, the area will be monitored twice per month to establish the cause of this illicit discharge.

(v) Field Monitoring

Where flow is observed that does not demonstrate obvious physical or olfactory evidence of the type and source of an illicit discharge, a sample shall be collected and analyzed with the field kits and instrumentation as identified in Table 1. The Permittee shall compare the measured values with benchmark values using the flow chart in Figure 1 to determine the likely source of the flow. Where surfactant concentrations are measured in the flow above the benchmark,

ammonia and potassium shall be measured and results used in a ratio analysis to determine if the flow is likely to be governed by a sanitary or wash water component. Where surfactants are not detected above the benchmark concentration, a flow sample shall be analyzed for chlorine in an attempt to determine if the likely source is natural surface water or groundwater, or possibly a potable water source, a swimming pool, or an industrial discharge. However, the results of this analysis may not always prove conclusive as the chlorine demand found in the storm sewer may diminish or eliminate any chlorine present. The Permittee may need to adjust benchmark values found in Table 1 during the course of investigations after a comparison and calibration of data with actual incidences of observed flow sources.

If the results of field monitoring are not conclusive or additional data is needed to confirm that the source of an illicit discharge is human-generated, alternate parameters for Pharmaceutical and Personal Care Products (PPCP) may be monitored as indicated in Table 2. Any or all of these parameters may be analyzed. These samples must be analyzed by a laboratory with the appropriate capability. Advance notice to the lab may be required. Levels of these parameters above the Reporting Limit indicate the presence of human-generated contamination.

Table 1 - Field Measurements, Benchmarks, and Instrumentation

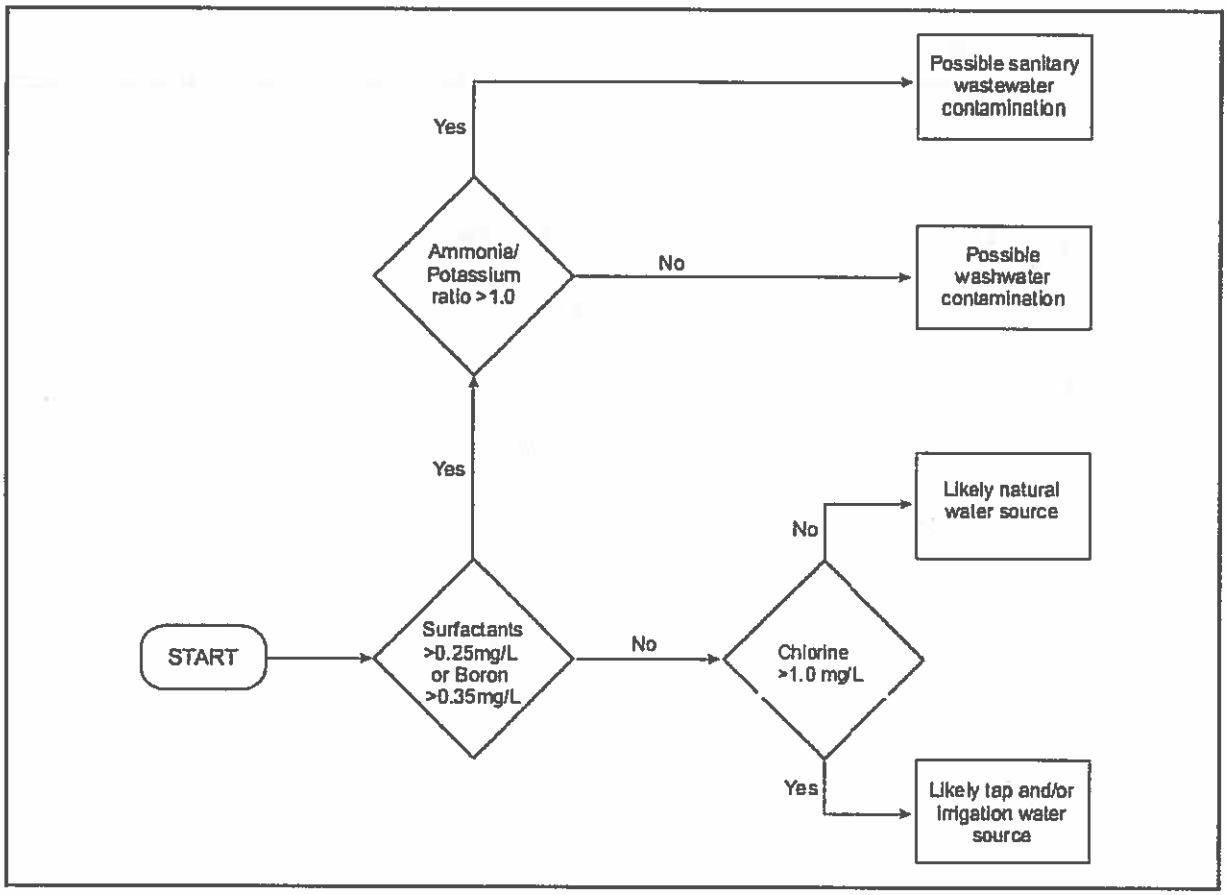
Analyte	Benchmark	Instrumentation[1]
Surfactants (as MBAS)	>0.25 mg/L	MBAS Test Kit (e.g. CHEMetrics K-9400)
Potassium (K)	(ratio below)	Portable Ion Meter (e.g. Horiba Cardy C131)
Ammonia (NH3)	NH3/K > 1.0	Portable Colorimeter or Photometer (e.g. Hach DR/890, CHEMetrics V-2000)
Chlorine	>0.1 mg/L	Portable Colorimeter or Photometer (e.g. Hach DR/890, CHEMetrics V-2000)
Temperature	Abnormal	Thermometer
pH	Abnormal	pH Meter

[1] Instrumentation manufacturers and models provided for informational purposes only. Mention of specific products does not constitute or imply DEEP endorsement of same.

Table 2 – Compounds for Pharmaceutical and Personal Care Products Analysis

Compound	Major Use	Reporting Limit (ng/L)
Caffeine	Natural Stimulant	5.0
1,7 DMX	Metabolite of caffeine	2.5
Acetaminophen	Pain reliever	2.5
Carbamazepine	Anti-depressant, Anti-convulsant	0.5
Primidone	Anti-epilepsy drug	5.0
Atenolol	Beta blocker, high blood pressure medicine	2.5
Cotinine	Metabolite of nicotine	0.5
Urobilin	By-product of hemoglobin breakdown	5.0
Azithromycin	Antibiotic	1.6

Figure 1. Flow Chart - Determining Likely Source of Discharge (Adapted from Pitt, 2004)



(vi) Isolation and Confirmation of Illicit Discharges

Where physical evidence or field monitoring has identified storm sewer alignments influenced by illicit discharges, the Permittee shall isolate the tributary area for implementation of more detailed investigations. Additional manholes and/or catch basins along the alignment shall be inspected to refine the location of potential contamination sources (e.g., an individual home or block of homes). Targeted internal plumbing inspections, dye or smoke testing, CCTV inspections, or other methods consistent with the Permittee's established procedures shall then be employed to confirm the flow source(s).

(vii) Removal of Illicit Discharges

Where an illicit discharge is verified, the Permittee shall exercise its authority as necessary to require its removal pursuant to Sections 6(D)(1)(a) and 6(D)(2) of this permit, including prompt notification and any appropriate cost-sharing arrangements.

(viii)Verification of Illicit Discharge Removals

After completing the removal of all illicit discharges from a particular alignment or portion of an MS4 outfall drainage area, the Permittee shall verify that no illicit discharges remain. Depending on the extent and timing of corrections made, verification monitoring may be accomplished at the original junction structure or the closest downstream MS4 structure to each correction. Verification shall be accomplished by using the same visual inspection, field monitoring, and/or damming techniques as described in subparagraphs (iii) through (v) above. Investigation of those portions of any other alignments confounded by the identified illicit discharge(s) shall not proceed until removal or elimination has been verified.

(ix)Verification of IDDP Completion in MS4 Drainage Areas

A completed verification at the outfall (or the first accessible upstream structure from an inaccessible MS4 outfall) of an MS4 outfall drainage area shall serve to demonstrate that the IDDP has been fully implemented for that entire drainage area. This drainage area verification shall include both the techniques described in subparagraphs (iii) through (v) above, as well as completion of the dry weather screening methodology described in Section 6(D)(3)(e).

(x) Work Progression & Schedule

Since the IDDP requires verification of illicit discharge removals prior to progressing to affected portions of interconnected MS4 drainage areas, the Permittee shall maintain capacity to mobilize investigations to other drainage areas or unaffected lateral alignments within the same drainage area, to facilitate suitable progress while awaiting correction of illicit discharges confounding investigations within the same outfall drainage area. Since work progress may be further constrained by the persistence of precipitation and snow melt events, the Permittee shall provide for adequate staffing and equipment resources to perform concurrent investigations in multiple areas as necessary to complete all investigations, as specified in subsection (4)(a) above, within **five (5) years** from the effective date of this permit.

(xi) Reporting and Evaluation

The Permittee shall document in its Annual Reports required by Section 8 its progress implementing the provisions of Section 6(D)(4), including the results and status of its outfall screening and monitoring, mapping, and IDDP implementation. The Permittee shall evaluate its progress by tracking, at a minimum, the percentage of MS4 outfall drainage areas or outfalls screened and/or monitored, percentage of structures inspected, and the footage or percentage of MS4 cleaned and inspected by CCTV.

(xii) Modifications

Though the IDDP is applicable to most storm sewers, modifications to methods and materials may be required to address situations where groundwater or backwater conditions or other issues preclude adequate implementation as described herein. In such instances, the Permittee shall make necessary modifications to the IDDP in accordance with Section 6(B)(6)(b) of this permit.

SECTION 7: MONITORING REQUIREMENTS

(A) Legal Authority

The Permittee shall, within eighteen months from the start of the first fiscal year that begins after the effective date of this permit, ensure legal authority to:

(1) carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with this permit;

(B) Monitoring and analysis activities shall include wet weather outfall monitoring for discharges to

impaired waters; dry and wet weather outfall screening for illicit discharges; and implementation of an illicit discharge detection protocol.

(C) Upon the effective date of this permit, the Permittee shall begin implementation of activities described in this part. Within one year from the start of the Permittee's first fiscal year that begins after the effective date of this permit the Permittee shall submit as part of its SMP submission pursuant to Section 6(B)(1) of this permit, a description of the means, methods, quality assurance and control protocols, and schedule for successfully implementing the required screening, field monitoring, laboratory analysis, investigations, and analysis and evaluation of data collected. The submission shall include a description of meteorological resources the Permittee intends to utilize to facilitate the required activities.

(D) Dry Weather Outfall Screening for Illicit Discharges

Outfall screening shall be conducted during dry weather conditions as described in the Illicit Discharge, Detection and Elimination (IDDE) Program section (Section 6(D)).

(E) Impaired Waters Outfall Investigation and Monitoring

The permittee shall create an inventory of all outfalls that discharge to impaired waters, utilizing the list and mapping prepared pursuant to Sections 6(B)(4)(b) and 6(D)(4)(c)(ii). The permittee shall then screen these outfalls for the pollutant identified as the pollutant of concern for the impairment in accordance with the following procedures. If the permittee has wet weather sampling data for an outfall pursuant to their sampling conducted under their previous MS4 permit or other appropriate wet weather sampling, they may use that data for their outfall screening and will not be required to screen that outfall under this permit.

(1) Outfall Screening for Phosphorus and Nitrogen

The permittee shall screen outfalls from the MS4 identified in Section 7(E), above, that discharge to impaired waters for which phosphorus or nitrogen is the pollutant of concern. The permittee may take a sample at the outfall during any rain event that results in a discharge from the outfall in accordance with Section 7(F), below. This screening shall be conducted for all such outfalls at least once during the term of this permit in accordance with subparagraphs (a) and (b) below.

(a) Nitrogen Screening

The permittee may use a portable nitrogen meter to take a field reading during the wet weather discharge. If the nitrogen reading exceeds the following threshold, the outfall shall be identified for follow-up investigation pursuant to subsection (4), below.

Total Nitrogen > 2.5 mg/l

(b) Phosphorus Screening

The permittee may use a portable phosphorus meter to take a field reading during the wet weather discharge. If the phosphorus reading exceeds the following threshold, the outfall shall be identified for follow-up investigation pursuant to subsection (4), below.

Total Phosphorus > 0.3 mg/l

(2) Outfall Screening for Bacteria

The permittee shall screen outfalls from the MS4 that discharge to impaired waters for which bacteria is the pollutant of concern. The permittee may take a sample at the outfall during any rain event that results in a discharge from the outfall in accordance with Section 6(F), below. The sample shall be analyzed for the following:

- E. coli and Total Coliform (col/100ml) (for discharges to Class AA, A and B surface waters)
- Fecal coliform and Enterococci (col/100ml) (for discharges to Class SA and SB surface waters)

The outfall shall be identified for follow-up investigation pursuant to subsection (4) below if any of the following conditions apply:

- E. coli >235 col/100ml for swimming areas and >410 col/100ml for all others, or
- Total Coliform >500 col/100ml, or
- Fecal coliform >31 col/100ml for Class SA and >260 col/100ml for Class SB, or
- Enterococci >104 col/100ml for swimming areas and >500 col/100ml for all others.

If the permittee can document that bacteria levels at an outfall that exceed these levels are solely the result of natural sources of bacteria, they are not required to conduct a follow-up investigation for that outfall. Natural sources may include wildlife or runoff from undeveloped wooded areas but do not include pet waste or waterfowl congregating at parks, ponds or other attractive nuisance areas.

(3) Outfall Screening for Other Pollutants of Concern

The permittee shall screen outfalls from the MS4 identified in Section 7(E) that discharge to impaired waters for which pollutants other than phosphorus, nitrogen or bacteria are listed as the pollutant of concern. The permittee shall take a sample at the outfall and in-stream immediately upstream or otherwise outside the influence of the outfall. The sample may be taken during any rain event that results in a discharge from the outfall in accordance with Section 7(F), below. These samples shall be analyzed for turbidity. The permittee may use a field turbidity meter for these analyses. If the outfall sample is more than 5 NTU greater than the in-stream sample, the outfall shall be identified for follow-up investigation pursuant to subsection (4) below.

(4) Follow-up Investigations

The permittee shall conduct follow-up investigations for the drainage areas associated with the outfalls identified as potentially contributing to an impairment as a result of the analyses conducted pursuant to Sections 7(E)(1) – (3), above.

(a) Drainage Area Investigation

The permittee shall investigate activities within the drainage area contributing to each outfall identified for follow-up investigation pursuant to Sections 7(E)(1) – (3), above. This investigation shall include factors potentially associated with the cause of the related stream impairment. Such factors may include: land use or development patterns; business or commercial activities; industrial activities; DCIA; natural contributors; potential MS4 maintenance issues; residential activities; and any other activities identified by the permittee as potentially contributing to the related impairment.

(b) Control Measure Implementation

In each outfall drainage area identified for follow-up investigation pursuant to Sections 7(E)(1) – (3), above, the permittee shall implement a BMP program focusing on the potential cause of the impairment utilizing Control Measures in Section 6(A) or other appropriate measures and on the findings of the drainage area investigation in subparagraph (a), above.

(c) Prioritized Outfall Monitoring

Once outfall screening has been completed for at least half of the outfalls identified pursuant to this section, the permittee shall utilize the screening results to select six (6) of the highest contributors of any of the pollutants of concern. These six outfalls shall

be sampled annually for the appropriate pollutant of concern in accordance with the schedule in subsection (5), below. If more than one pollutant of concern is identified for any monitored outfall (i.e. more than one impairment), all of these pollutants shall be monitored. If fewer than six outfalls were identified for follow-up investigation, all of these outfalls shall be monitored, but no more than six.

(5) Schedule

(a) Impaired Waters Discharge Mapping

Inventory and mapping of discharges to impaired waters prepared pursuant to this section shall be completed within four (4) years from the effective date of this permit.

(b) Outfall Screening

Outfall screening pursuant to Sections 7(E)(1) – (3) shall begin within four (4) years of the effective date of this permit. At least twenty-five percent (25%) of these outfalls shall be screened no later than the end of the permit term. All such outfalls shall be screened within ten (10) years of the effective date of this permit.

(c) Follow-up Investigations

The permittee shall commence follow-up investigations identified pursuant to subsection (4), above, no later than four (4) years following the effective date of this permit.

(d) Prioritized Outfall Monitoring

The permittee shall commence annual monitoring of the six outfalls for each watershed for which outfall screening has been completed no later than one (1) year following completion of outfall screening for that watershed.

(6) Reporting

The permittee shall report on the progress of their impaired waters investigation and monitoring program in their Annual Report beginning in the fourth year following the effective date of this permit. The report shall include a listing of the outfalls screened during the year, the number of outfalls identified for follow-up investigation, the progress of drainage area investigations, a description of the control measure implementation for the different impairments, identification of the six outfalls to be monitored, and the results of the prioritized outfall monitoring.

(F) Stormwater Monitoring Procedures

(1) Wet Weather Outfall Monitoring

Samples shall be collected from discharges resulting from any rain storm that produces a discharge from the outfall(s) being monitored and that occurs at least 48 hours after any previous rain storm that produced a discharge from the outfall. Runoff events resulting from snow or ice melt alone cannot be used to meet these monitoring requirements. However, monitoring may be conducted during a rain event that may include insignificant amounts of snow or ice melt. Monitoring shall consist of a single grab sample taken within the first six (6) hours of discharge from the outfall.

(2) Rain Event Information

The following information shall be collected for the rain events during which monitoring is conducted:

(a) The date, temperature, time of the start of the discharge, time of sampling, and magnitude (in inches) of the rain event sampled.

(b) The duration between the rain event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) rain event.

(3) Test Procedures

Unless otherwise specified in this permit, all pollutant parameters shall be tested according to methods prescribed in Title 40, CFR, Part 136 (1990). Laboratory analyses shall be consistent with Connecticut Reasonable Confidence Protocols.

(G) Monitoring Waiver

If the Permittee is unable to collect a sample required by Sections 7(D) or 7(E) due to adverse climatic conditions, the Permittee shall submit in lieu of sampling data a description of why samples could not be collected, including available documentation of the storm event. Adverse climatic conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample dangerous or physically impossible. However, if more than one (1) sample is missed, the missed outfalls shall be resampled as soon as possible or an alternate outfall designated and sampled as soon as possible.

SECTION 8: REPORTING AND RECORD KEEPING REQUIREMENTS

(A) Annual Report

The Permittee shall prepare an annual report each year summarizing the activities conducted and measures taken to comply with this permit in the previous year.

(1) Schedule

The first Annual Report shall be submitted no later than one (1) year plus ninety (90) days from the effective date of this permit. Subsequent Annual Reports shall be submitted no later than ninety (90) days after the anniversary of the effective date of this permit.

(2) Public Availability

The Annual Report shall be made available to the public for review and comment thirty (30) days after the anniversary of the effective date of this permit. The Permittee shall make the Annual Report available to the public electronically (i.e. city website) and in "hard copy" for at least thirty (30) days at a minimum of one City office and one public library branch. Notice of availability of the Annual Report shall be published in at least one newspaper with circulation throughout the City of Stamford and also posted on the City website. A summary of any public comments, the Permittee's response to such comments, and any proposed modifications to the SMP as a result of comment shall be included in the Annual Report submitted to the commissioner.

(3) Contents of the Annual Report

The Annual Report shall include the following sections: Contacts List; Program Evaluation; Summary Table; Narrative Report; Summary of Proposed Program Modifications; Resource Analysis; and Appendices. The following paragraphs describe in more detail the specific requirements for the Annual Report.

(a) Contacts List

Provide a list of all those, with their names, employers, addresses and phone numbers, who had input to or responsibility for the preparation of the Annual Report.

(b) Program Evaluation

Describe the objective of the SMP, major findings (water quality improvements or degradation), overall SMP strengths and weaknesses, and the future direction of the Stormwater Management Program.

(c) Summary Table of SMP Components

The Permittee shall submit a summary table of the SMP's yearly activities. The purpose of the Table is to document in a concise form the program activities and Permittee's compliance with specific program requirements. Program elements that are administrative (e.g. planning procedures, program development and pilot studies) are inappropriate for the Summary Table and shall be reported on in the Narrative section of the Annual Report. The summary table shall indicate the Permittee's SMP's activities and accomplishments. The table shall include all major elements of the SMP including control measure BMPs, monitoring, legal authority, IDDE and other appropriate additional program items. Items that shall be reported for each program activity are:

(i) Activity Description.

(ii) Number of actions (with frequency) that were *scheduled* for implementation and/or accomplishment in the SMP (e.g. once/6 months, 20% of the activity completed/year, 10 sites monitored 4 times/year, etc.). Enter "not applicable" if no specific schedule was presented in the SMP.

(iii) Status of schedule for the reporting year (yes-schedule was adhered to, or no-schedule was not adhered to).

(iv) Number of activities that *were* accomplished.

(v) Permittee's comments on the activity.

(vi) Public comments on the activity and Permittee's response.

(d) Narrative Report

The narrative report provides an opportunity for the Permittee to discuss in further detail any of the elements of the SMP that may require clarification beyond that of the summary table. It may include a discussion of such items as scheduling issues, climate conditions as they might affect monitoring or IDDE, unforeseen circumstances, legal authority issues, or public input. A discussion of issues resulting in modifications to the SMP should be included in subsection (5) below.

(e) Summary of Proposed SMP Modifications

The Permittee shall report on any SMP modifications proposed and/or implemented by the Permittee either at the Permittee's discretion or as a modification required by the commissioner pursuant to Sections 6(B)(6)(b) or (c), respectively. This narrative

shall discuss the reasons for the modification, the nature of the modification, any approvals or requirements by the commissioner, the progress of implementing the modification, and the results of implementation.

(f) Program Resource Analysis

The Permittee shall report on the status of obtaining or developing the resources necessary to fully implement the SMP.

(i) Fiscal Analysis

The Permittee shall provide a complete fiscal analysis for the Permittee's SMP implementation, both for the past calendar year and the next. The analysis shall indicate budgets and funding sources for implementation of the Stormwater Management Program and the requirements of this permit.

(ii) Staff and Resources

The Permittee shall also provide annually updated information on the staff, equipment and support capabilities used to implement the Permittee's SMP, demonstrating that all items are adequate to ensure full permit compliance.

(iii) Legal Authority

Provide documentation supporting the Permittee's legal authority to administer this program and all elements of the Stormwater Management Plan.

(g) Appendices

The following information shall be included as Appendices to the Annual Report:

(i) Progress of outfall mapping.

(ii) Results of impaired waters outfall monitoring.

(iii) Results of dry weather outfall screening.

(iv) Results of illicit discharge monitoring.

(v) Any ordinances, permits, contracts, orders or other legal authority used by the Permittee to regulate discharges to the MS4.

(vi) Any other data required to substantiate statements and conclusions reached in the Annual Report.

(4) Report Submission

The Annual Report shall be submitted to:

Stormwater MS4 Permit Coordinator
Bureau of Materials Management & Compliance Assurance
Connecticut Department of Energy and Environmental Protection
79 Elm St.
Hartford, CT 06106-5127

In addition, the Annual Report shall be submitted to NetDMR following the procedures in Section 8(B)(1)(c), below.

(B) Monitoring

(1) Outfall Monitoring

(a) The results of chemical analyses and/or screening required by Section 7 of this permit shall be entered on the Discharge Monitoring Report (DMR), provided by this office, and reported to the Bureau of Materials Management and Compliance Assurance (Attn: DMR Processing) at the address below. Any additional monitoring conducted in accordance with 40 CFR 136 or other methods approved by the commissioner shall also be included on the DMR, or as an attachment, if necessary. The DMR shall be received at this address by the last day of the month following the month in which samples are collected.

Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division (Attn: DMR Processing)
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

(b) Where this permit requires monitoring of a discharge on a calendar basis (e.g. seasonally), but a discharge has not occurred within the frequency of sampling specified in the permit, the Permittee must submit the DMR, as scheduled, indicating "NO DISCHARGE".

(c) NetDMR Reporting Requirements

(i) Prior to one-hundred and eighty (180) days after the issuance of this permit, the

Permittee may either submit monitoring data and other reports to the Department in hard copy form or electronically using NetDMR, a web-based tool that allows Permittees to electronically submit discharge monitoring reports (DMRs) through a secure internet connection. Unless otherwise approved in writing by the commissioner, no later than one-hundred and eighty (180) days after the issuance of this permit the Permittee shall begin reporting electronically using NetDMR. Specific requirements regarding subscription to NetDMR and submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

- Submittal of NetDMR Subscriber Agreement

  On or before fifteen (15) days after the issuance of this permit, the Permittee and/or the person authorized to sign the Permittee's discharge monitoring reports ("Signatory Authority") as described in RCSA Section 22a-430-3(b)(2) shall contact the Department at deep.netdmr@ct.gov and initiate the NetDMR subscription process for electronic submission of Discharge Monitoring Report (DMR) information. Information on NetDMR is available on the Department's website at www.ct.gov/deep/netdmr. On or before ninety (90) days after issuance of this permit the Permittee shall submit a signed and notarized copy of the ***Connecticut DEEP NetDMR Subscriber Agreement*** to the Department.

- Submittal of Reports Using NetDMR

  Unless otherwise approved by the commissioner, on or before one-hundred and eighty (180) days after issuance of this permit, the Permittee and/or the Signatory Authority shall electronically submit DMRs required under this permit to the Department using NetDMR in satisfaction of the DMR submission requirements of Sections 8(B)(1)(a) of this permit.

  DMRs shall be submitted electronically to the Department no later than the 30th day of the month following the completed reporting period. Any additional monitoring conducted in accordance with 40 CFR 136 shall be submitted to the Department as an electronic attachment to the DMR in NetDMR. Once a Permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs to the Department. The Permittee shall also electronically file any written report of non-compliance described in Section 6 of this permit as an attachment in NetDMR. NetDMR is accessed from: http://www.epa.gov/netdmr.

- Submittal of NetDMR Opt-Out Requests

If the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for electronically submitting DMRs, the commissioner may approve the submission of DMRs in hard copy form ("opt-out request"). Opt-out requests shall be submitted in writing to the Department for written approval on or before fifteen (15) days prior to the date a Permittee would be required under this permit to begin filing DMRs using NetDMR. This demonstration shall be valid for twelve (12) months from the date of the Department's approval and shall thereupon expire. At such time, DMRs shall be submitted electronically to the Department using NetDMR unless the Permittee submits a renewed opt-out request and such request is approved by the Department.

All opt-out requests and requests for the NetDMR subscriber form should be sent to the following address or by email at deep.netdmr@ct.gov:

Attn: NetDMR Coordinator
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

(2) IDDE Monitoring

Any monitoring conducted pursuant to the IDDE section (Section 6(D)) of this permit shall be recorded on IDDE monitoring forms. This recording shall include the results of laboratory testing and any field testing conducted. These forms shall be included in the Annual Report appendices pursuant to subsection (A)(3)(g) above and submitted as part of the Annual Report.

(C) Records Retention

The Permittee shall keep records required by this permit for at least 5 years following its expiration or longer if requested by the commissioner in writing. Such records, including the Stormwater Management Plan, shall be available to the public at reasonable times during regular business hours.

SECTION 9: COMPLIANCE SCHEDULE AND ADDITIONAL REQUIREMENTS

(A) The Permittee shall perform the actions in the approved Stormwater Management Plan in accordance with the schedules in Sections 6 and 7 of this permit.

(B) The Permittee shall use best efforts to submit to the commissioner all documents required by Sections 6, 7 and 8 of the permit in a complete and approvable form. If the commissioner

notifies the Permittee that any document or other action is deficient, and does not approve it with conditions or modifications, it is deemed disapproved, and the Permittee shall correct the deficiencies and resubmit it within the time specified by the commissioner or, if no time is specified by the commissioner, within thirty days of the commissioner's notice of deficiencies. In approving any document or other action, the commissioner may approve the document or other action as submitted or performed or with such conditions or modifications as the commissioner deems necessary to carry out the purposes of this section of the permit. Nothing in this paragraph shall excuse noncompliance or delay.

(C) Dates. The date of submission to the commissioner of any document required by the permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under the permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" as used in this section of the permit means calendar day. Any document or action which is required by the permit to be submitted or performed by a date which falls on, Saturday, Sunday, or a Connecticut or federal holiday shall be submitted or performed on or before the next day which is not a Saturday, Sunday, or Connecticut or federal holiday.

(D) Notification of noncompliance. In the event that the Permittee becomes aware that it did not or may not comply, or did not or may not comply on time, with any requirement of this section of the permit or of any document required hereunder, the Permittee shall immediately notify the commissioner and shall take all reasonable steps to ensure that any noncompliance or delay is avoided or, if unavoidable, is minimized to the greatest extent possible. In so notifying the commissioner, the Permittee shall state in writing the reasons for the noncompliance or delay and propose, for the review and written approval of the commissioner, dates by which compliance will be achieved, and the Permittee shall comply with any dates which may be approved in writing by the commissioner. Notification by the Permittee shall not excuse noncompliance or delay, and the commissioner's approval of any compliance dates proposed shall not excuse noncompliance or delay unless specifically so stated by the commissioner in writing.

(E) Notice to commissioner of changes. Within fifteen days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under the permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.

(F) Submission of documents. Any document, other than a DMR or ATMR, required to be submitted to the commissioner under the permit shall, unless otherwise specified in writing by the commissioner, be directed to:

Stormwater MS4 Permit Coordinator
Bureau of Materials Management & Compliance Assurance
Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

This permit is hereby issued on the 14th day of August, 2017.

Robert Kaliszewski
Deputy Commissioner

WASTEWATER DISCHARGE PERMIT: DATA TRACKING AND TECHNICAL FACT SHEET

Permittee: CITY OF STAMFORD

PERMIT, ADDRESS, AND FACILITY DATA

PERMIT #: CT0030279 APPLICATION #: 20161056

Mailing Address:						Location Address:					
Street:	888 Washington Blvd					Street:	Same				
City:	Stamford	ST:	CT	Zip:	06901	City:	Same	ST:	CT	Zip:	
Contact Name:	Tyler Theder, Regulatory Compliance					*DMR Contact*	SAME				
Phone No.:	203-977-5281					Phone No.:					
Contact E-mail:	ttheder@stamfordct.gov					DMR Contact E-mail:					

PERMIT INFORMATION

DURATION 5 YEAR X 10 YEAR ___ 30 YEAR ___

TYPE New _ Reissuance __ Modification X

CATEGORIZATION POINT (X) NON-POINT ( ) GIS #

NPDES (X) PRETREAT () GROUND WATER(UIC) ( ) GROUND WATER (OTHER) ( )

NPDES MAJOR(**MA**) ___
NPDES SIGNIFICANT MINOR or PRETREAT SIU (**SI**) ___
NPDES or PRETREATMENT MINOR (**MI**) X

PRETREAT SIGNIFICANT INDUS USER(**SIU**) ___
PRETREAT CATEGORICAL (**CIU**) __
Note: If it=s a CIU then check off SIU

POLLUTION PREVENTION MANDATE _ ENVIRONMENTAL EQUITY ISSUE

SIC CODE: n/a

COMPLIANCE SCHEDULE YES X NO __

POLLUTION PREVENTION __ TREATMENT REQUIREMENT__ WATER CONSERVATION__

WATER QUALITY REQUIREMENT __ REMEDIATION __ OTHER **X (Implementation of elements of the Stormwater Management Plan)**

RECENT ENFORCEMENT HISTORY
Is the Permittee subject to a pending enforcement action? Yes X No __

The City is currently complying with an EPA (not DEEP) Administrative Order.

OWNERSHIP CODE

Private __ Federal __ State __ Municipal (town only) X Other public __

DEEP STAFF ENGINEER Christopher Stone

PERMIT FEES

Discharge Code	DSN Number	Annual Fee
1080000	various	1456.25

FOR NPDES DISCHARGES

Drainage basin Code: 7000, 7403, 7404, 7405, 7406, 7407 Water Quality Standard: A, AA, B, SA, SB

NATURE OF BUSINESS GENERATING DISCHARGE

With a population of between 100,000 and 250,000 discharging to its storm sewer system, the City of Stamford qualifies as a Medium Municipal Separate Storm Sewer System (Medium MS4) under Phase 1 of EPA's stormwater regulations. This permit covers the entire storm sewer system for the City and includes all drainage areas that contribute to the storm sewer system. It also requires the implementation of measures by permittee for certain private activities that may have an impact on the quality of stormwater conveyed through the City's drainage system.

PROCESS AND TREATMENT DESCRIPTION (by DSN)

The treatment of stormwater discharges from the City's system will vary among the several hundred discharges. The treatment may range from simple catch basin sumps to advanced sediment removal structures to multi-stage sediment, nutrient and bacteria treatment systems. The Stormwater Management Plan for the City will specify which discharges will have treatment and of what kind.

RESOURCES USED TO DRAFT PERMIT

__ Federal Effluent Limitation Guideline_____
name of category

__ Performance Standards

X Federal Development Document EPA's MS4 Permit Improvement Guide
name of category

__ Treatability Manual

_X_ Department File Information

_X_ Connecticut Water Quality Standards

_X_ Anti-degradation Policy

__ Coastal Management Consistency Review Form

_X_ Other - Explain
Recently reissued DEEP Small MS4 general permit

BASIS FOR LIMITATIONS, STANDARDS OR CONDITIONS

__ Best Practicable Technology (BPT)

_X_ Best Professional Judgement (See Other Comments)

_X_ Case by Case Determination (See Other Comments)

_X_ In order to meet in-stream water quality (See General Comments)

_X_ Anti-degradation policy

GENERAL COMMENTS

Consistent with EPA's requirements for the MS4 permitting program, this permit does not include numeric effluent limits but rather requires non-numeric effluent limits instituted in the form of control measures implemented to the Maximum Extent Practicable. Pursuant to EPA permitting criteria, these measures are developed using Best Professional Judgment. There are also measures in the permit that address discharges to High Quality Waters and Impaired Waters to meet the requirements of the Anti-degradation Implementation Policy in the CT Water Quality Standards and the TMDL programs, respectively. There is extensive monitoring included in the permit that may be used to evaluate water quality, measure control measure effectiveness, and address potential impacts to water bodies in the City as the program progresses.

EXISTING PERMIT

Stamford's MS4 permit requires the City to develop a Stormwater Management Plan (Plan). The Plan includes requirements regarding how the City operates and maintains its stormwater infrastructure. A particular focus is addressing discharges to waters listed by DEEP as impaired, waters for which Total Maximum Daily Load (TMDL) analyses have been developed, and those waters designated by DEEP as high quality waters. The Plan also requires the City to demonstrate legal authority to implement certain elements of the permit. The Plan addresses these issues through the use of "control measures" within one of five categories. These categories include: public education and involvement, which includes measures for public involvement and outreach; pollution prevention, including spill prevention, pesticide/herbicide/fertilizer (PHF) practices, salt storage practices and evaluating discharges to the MS4; land disturbance and development, including E&S control guidance and references to the DEEP Stormwater Quality Manual and E&S Guidelines as well as measures addressing impervious cover and encouraging Low Impact

Development (LID); illicit discharge detection and elimination (IDDE), including a specific protocol for conducting these activities; and infrastructure operations and maintenance, including detailed requirements for scheduling, tracking and inspections for these measures.

The current permit includes a monitoring program requiring the sampling of 10 stream locations four times per year. Sampling also includes in-stream dry- and wet-weather sampling as well as wet weather sampling of all City-owned outfalls twice during the permit term. The purpose of the monitoring program is to determine where and when additional control measures may be required to address impacts to water quality with particular priority to impaired or high quality waters.

Additionally, the City is required to submit an annual report summarizing their progress with the various requirements of the permit from year to year. A detailed list of requirements for these reports is included in the permit.

PROPOSED MODIFICATION

The modifications proposed by the City include: changes to the timelines for implementing certain elements of the permit; the addition of "flows from firefighting activities" as authorized non-stormwater discharges; modification of the schedule and protocol for the City's street sweeping program; a stormwater infrastructure retrofit program; and elimination of in-stream monitoring in favor of outfall monitoring that focuses on impaired waters and identifying outfalls that may be contributing to those impairments. The complete text of these modifications is included in the proposed permit modification available at www.ct.gov/deep/stormwater.

These modifications are being requested by the City to provide a closer parity with the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (Small MS4 permit) that covers 121 towns in the state, including the cities of Hartford, New Haven and Bridgeport. The modifications for the timelines, authorized non-stormwater discharges, street sweeping and monitoring are alterations of existing requirements in Stamford's MS4 permit. The Commissioner agrees that it is appropriate to change these to be more consistent with the Small MS4 permit and the requirements for cities with stormwater infrastructure of similar size and scope to Stamford. The Commissioner also believes the modifications are justified since the conditions under which the permit was originally reissued have changed substantially since reissuance. The basis of this rationale is included in the response to comments below. The retrofit program is a new addition to Stamford's MS4 permit that is also included in the Small MS4 permit. The Commissioner believes that this program is vital to Department's efforts to reduce impervious cover throughout the state and helps address the reduction of pollutants contributing to impaired waters in the state. While Stamford is a Phase 1 Medium MS4 rather than a Phase 2 Small MS4, the permit modifications still meet, and actually exceed, the requirements of the EPA Phase 1 Rule while providing parity with the MS4 programs of Small MS4s in the state.

REPONSE TO COMMENTS RECEIVED FROM NOTICE OF TENTATIVE DECISION

The following eight comments were received from EPA Region 1 during the comment period for the Notice of Tentative Decision to Approve Modification of an NPDES permit. These were the only comments received during the comment period. The Department response to each comment is included.

1. Comment: Section 6(A)(3)(a)(i): The proposed modification would extend the deadline requiring adequate legal authority for the City's construction and development program by approximately 35 months. It is not appropriate to modify deadlines in a final permit after the requirement was to be completed.

   Response: Stamford submitted draft language for the legal authority requirements in the permit's Land Disturbance and Development program with their first Annual Report under the current permit. During the development of this language the City discovered that nowhere in the Stamford's land use ordinances and regulations was there a stormwater construction design manual. In drafting the permit DEEP assumed that the

legal authorities required for the permit would be accomplished in-house (i.e. by City personnel) and that the current regulatory framework was adequate to implement these additional authorities. The determination that a drainage manual would be required to properly implement this program was only discovered after the permit was issued. As this is beyond the in-house staff's abilities, it requires the City to bid and hire a consultant to develop a manual and incorporate language into the City's land use regulations. It also entails an addition of approximately $100,000 to Stamford's MS4 budget. In recognition that the circumstances under which this section of the permit was drafted had changed significantly, and in the interest of ensuring that the City's land use regulations meet an acceptable standard, we believe the extension of the timeline for developing these standards is justified and meets the criteria for modification under 22a-430-4(l)(4)(A)(xxiii).

2. Comment: Section 6(A)(3)(a)(iv): The proposed modification would extend the deadline requiring implementation of the City's construction and development program by approximately 17 months. It is not appropriate to modify deadlines in a final permit after the requirement was to be completed.

   Response: The implementation of the Land Disturbance and Development program measures developed pursuant to the legal authorities required in subsection (a)(i), as outlined above, is not possible until those legal authorities are actually enacted. Consequently, by the same rationale as the previous comment, the Department maintains that it is reasonable and allowable to also extend the timeline for implementation of the measures for which these legal authorities were developed.

3. Comment: Section 6(A)(5)(d)(i): The proposed modification would significantly decrease the amount and frequency of street sweeping conducted by the City. This modification could result in an increased pollutant load in stormwater. It is not appropriate to modify the requirements of a final permit that would allow for an increased pollutant load to receiving waterbodies.

   Response: We do not believe the reduction in the frequency of the City's street sweeping program is "backsliding" for two reasons. First, studies have indicated that changes in the frequency of street sweeping do not result in consistently demonstrable improvements in water quality (e.g. USGS Scientific Investigations Report, 2007-5156 – W. R. Selbig, R. T. Bannerman). Second, we believe that the more targeted approach included in the proposed modification will be more effective than prescriptive street sweeping schedules. The approach outlined in the proposed modification requires the City to conduct sweeping beyond the basic requirement based on regular street inspections to determine areas that may benefit from a targeted increase in sweeping frequency "based upon surface inspections, catch basin cleaning or inspection results, land use, winter road deicing and/or sand application, impaired or TMDL waters or other relevant factors as determined by the permittee". This approach allows a more efficient use of City resources to accomplish equivalent environmental results.

4. Comment: Section 6(A)(5)(d)(ii): The proposed modification would significantly decrease the amount and frequency of parking lot sweeping conducted by the City. This modification could result in an increased pollutant load in stormwater. It is not appropriate to modify the requirements of a final permit that would allow for an increased pollutant load to receiving waterbodies.

   Response: As stated in the response to the previous comment, studies do not support the contention that monthly sweeping schedules will be any more protective of water quality than quarterly. For this reason, we do not consider this provision to be backsliding.

5. Comment: Section 6(B)(4)(b): The proposed modification would extend the deadline for mapping requirements by approximately 30 months. It is not appropriate to modify deadlines in a final permit after the requirement was to be completed. In addition, the mapping task should have been completed with City's permit application and additional time to complete this task is not warranted.

   Response: As outlined in the opening paragraphs of our response, above, the RCSA allows a permit to be

modified to include standards and conditions that are less stringent than the previous permit if "the circumstances on which the previous permit was based have changed…". In the case of outfall mapping, the previous permit issued in 2005 required the City to map all outfalls of 15-inch diameter and greater. This resulted in an inventory of approximately ninety-two (92) outfalls located by the City. The permit reissued in 2013 removed the size limitation and required mapping all outfalls. While DEEP and the City anticipated an increase in the number of outfalls to be mapped, we did not anticipate the eventual magnitude of this increase. The City has not yet completed identifying all outfalls, but the inventory currently numbers approximately 850 outfalls. We believe this constitutes a significant change in the circumstances on which the permit was based and warrants an increase in the allowance for the time to map these outfalls.

6. Comment: Section 6(D)(4)(c): The proposed modification would extend the mapping requirements to facilitate the City's Illicit Discharge Detection and Elimination Program (IDDP) program by approximately 17 months. It is not appropriate to modify deadlines in a final permit after the requirement was to be completed.

   Response: For the same reasons as the previous response, we believe the modification is warranted because the significant increase in the number of mapped outfalls constitutes a significant change in circumstances on which the permit was based.

7. Comment: Section 7(D): The proposed modification would remove all monitoring requirements used to assess stormwater management program implementation. Phase I MS4 permits must be consistent with all applicable regulations, including the requirement for the permittee to have a monitoring program.

   Response: This section of the permit addresses in-stream dry- and wet-weather monitoring as opposed to outfall monitoring. While the data potentially generated by this program could possibly present us with an approximation of the stream health of the waterbodies monitored, it would not be valid as a measure of the City's stormwater effluent quality or its potential impact on the water quality of the stream. There are too many other potential sources of stormwater pollution to these waterbodies to assess what portion may be attributable to the City's MS4. For this same reason, it would also not serve as a valid assessment of Stamford's stormwater management program implementation. We therefore believe that the elimination of this program has no impact on the ability of the City to measure the effectiveness of their stormwater management program and, in fact, allows them to better focus their monitoring resources on outfall monitoring as a better measure of the effectiveness of that program.

8. Comment: Section 7(E): The proposed modification would greatly reduce the wet weather outfall monitoring conducted by the City. This would potentially undermine the City's IDDE program, increasing the pollutant load delivered to receiving waterbodies. It is not appropriate to modify the requirements of a final permit that would allow for an increased pollutant load to receiving waterbodies.

   Response: To address EPA's concerns about the reduction of wet weather sampling in the proposed modification, a new impaired waters outfall investigation and monitoring program is now proposed that is nearly identical to the outfall monitoring program in the Small MS4 General Permit. This will provide the parity with the Small MS4 General Permit that the City seeks while still meeting Phase I MS4 monitoring requirements. It is also a more achievable means of addressing the issue of the greatly expanded scope of sampling identified in the response to comments 5 and 6 in a manner that helps the City to better address the potential water quality impacts of its MS4.

APPENDIX C

STORMWATER MANAGEMENT PLAN SUMMARY TABLE

Annual SMP Summary Table

July 1, 2016 - June 30, 2017

Activity Description	# Actions Scheduled	Status Complete / Incomplete as of June 30th	# Actions Completed	Comments on Activities
1. Education				
1.1 City and Government				
1.1.1 Training	As needed	Complete	2	Training was conducted on 6/13/17 and 6/14/17 for Universal Waste Management, Spill Prevention Control and Countermeasures Plan, and Stormwater Pollution Prevention Plan training. Additional MS4 stormwater training was preformed performed on 3/30/2017. See Appendix H for a copy of the sign-in sheets for each training event.
1.2 Public				
1.2.1 Annual Information Meeting	Annually	Complete	1	2017 meeting was held on 7/26/2017.
1.2.2 Annual SMP Review and Comments	Annually	On-Going	As needed	A permit modification was issued on 8/14/17 for the City's NPDES Permit. During the 2017-18 Reporting Period, the City will be reviewing the permit modification for any new requirements and will be updating the SMP accordingly.
1.2.3 HHW Collection	At least Annually	Complete	1	HHW Collection held on 7/16/2016 & 7/15/2017 at the Rippowam Middle School. Stamford citizens may also use HHW collection days in seven neighboring towns each year.
1.2.4 Pet Waste Control	As needed	On-Going	As needed	3,000 pamphlets were provided to the Town Clerk for distribution on June 24, 2016 and an additional 3,000 copies are in stock at the Traffic and Road Maintenance office for future distribution. Since 2013, the City has installed 60 dog waste dispensers and signs. Approximately $10,000 was spent on dog waste disposal bags during the Reporting Period and City staff have observed used bags disposed of in the trash containers throughout the areas with dispensers. Additionally, pet waste stations were installed at Mill River Park this year.
1.2.5 Distribution of Educational Information	As needed	Complete	On-going	The City developed a new stormwater management mailer/pamphlet to be sent out during the 2016–17 Reporting Period to provide a guide for regulatory compliance. 5,520 pamphlets were ordered in English and Spanish. 2,820 pamphlets are anticipated to be distributed through December 2017. Approximately 40,000 Stormwater Management fliers were distributed throughout the City with the December 2016 tax bills. The fliers were provided to each resident receiving a tax bill, which includes all registered automobile owners in the City. The City has continued to maintain and update the stormwater section of the City's website.

Annual SMP Summary Table

July 1, 2016 - June 30, 2017

Activity Description	# Actions Scheduled	Status Complete / Incomplete as of June 30th	# Actions Completed	Comments on Activities
1.2.6 Catch Basin Medallions	As needed	In-Progress	-	Currently, approximately 2,000 medallions (1,000 in English and 1,000 in Spanish) have been installed on curb-backed catch basins throughout three areas targeted in the southern part of the City, and in parks, and downtown areas with the most pedestrian traffic.
2. Public Involvement				
2.1 Mill River Collaborative (MRC)	On-going	Complete	2,505 volunteer hours	Making improvements to the Mill River Park through joint efforts the MRC.
2.2 SoundWaters in Cove Park	On-going	On-Going	-	Over 25,000 students learn and explore with SoundWaters, through education and action, every year.
2.3 Educational Outreach	On-going	On-Going	1	An educational outreach program event was conducted at the Dolan Middle School for four classes on 5/10/17, including 170 students. The City is in the process of collaborating with other middle schools throughout the City to expand this outreach program.
2.4 Harbor Watch	On-Going	On-Going	-	Harbor Watch, a division of Earthplace, a not-for-profit organization, was retained by the City, to conduct the dry weather outfall sampling as part of the IDDE program.
3. Mapping				
3.1 Initial Outfall, Sampling, Roadway, Receiving Waters, Watersheds	On-going until all are identified	On-Going	-	Stormwater mapping is approximately 95% complete. The City is currently in the process of confirming the accuracy of the outfall locations. Several of the potential new outfalls were identified as duplicates and others were noted as inlets or discharges under state DOT control. The city will continue to update mapping as needed to reflect current field conditions.
3.2 IDDE Mapping - Infrastructure, Findings, Data, Activities, Projects	On-going until all are identified	On-Going	-	The City continues to try to identify more specific criteria for the outfalls that will be required for monitoring as part of the IDDE program and the wet weather monitoring.
3.3 Establish DC IA	25% of total area per year	On-Going	-	
4. Infrastructure Operations & Maintenance				
4.1 Infrastructure Repair & Rehab	On-going	On-going	As needed	A schedule for implementation of repairs is maintained by the Engineering Dept. and updated as needed / as items are completed.
4.2 Roadway Maintenance	On-going	On-going	As needed	The City is dedicated to ensuring that routine road maintenance is conducted frequently and that roadside ditches are cleaned and inspected periodically to verify that flow is not being restricted. During the Reporting Period, the City repaved approximately 12 miles of roadway as part of its road maintenance program.

Annual SMP Summary Table

July 1, 2016 - June 30, 2017

Activity Description	# Actions Scheduled	Status Complete / Incomplete as of June 30th	# Actions Completed	Comments on Activities
4.3 Street Sweeping	On-going	On-going	8,094	During 2016-2017, the City swept over 8,094 miles of streets and collected over 1,578 tons of non-leaf materials.
4.4 Sidewalk Sweeping	See Appendix K of the SMP	On-going	-	Sidewalk sweeping occurs in the downtown area, as described in the SMP and is coordinated and paid for by the DSSD (downtown special services district). An estimated 23 tons of materials are removed on an annual basis.
4.5 Leaf Collection	At least Annually	Complete		Leaf collection was completed for 2016 by December 9 and approximately 11,694 tons of leaves and debris were collected.
4.6 Snow Removal	As needed	Complete	-	Snow removal completed as necessary for 2016 and 2017.
4.7 Catch Basin Cleaning	On-going	On-going	1,769	In 2016-2017, the City cleaned 1,769 of it's ~11,000 catch basins and removed approximately 2,934 tons of material.
4.8 City Owned Detention & Retention Pond Inspections	Annually	On-going	-	The City continues its efforts to inspect the basins identified.
4.9 Interconnected MS4s	On-going	On-going	-	The City has mapped out most of the interconnected MS4 areas during the development of the new SPRP. A map of the interconnected MS4 areas is provided in Appendix C of the Spill Prevention Response Plan.
4.10 Piping	On-going	On-going	136	During this Reporting Period, the City conducted 136 CCTV reports, which totaled approximately 10,130 linear feet of piping that was videoed, including storm mains and lateral piping.
4.11 Culverts	On-going	On-going	12	The City performed maintenance activities at twelve culverts over approximately 32 days.
5. Stormwater Monitoring				
5.1 Wet Weather In-Stream	On-going	On-going	4	Wet weather in-stream surface water sampling was performed for 4 events (2016 spring, summer, and fall). Summary tables of the results are provided in Appendix M.
5.2 Dry Weather In-Stream	On-going	On-Going	2	Dry weather in-stream surface water sampling was performed for 2 events(2016 and 2017 summer). Summary tables of the results are provided n Appendix M.
5.3 Wet Weather Outfall	All outfalls within first two years	On-going	93% Completed	To date, approx. 6 outfalls of the wet weather outfalls were not sampled; 86 of the 92 identified outfall locations were sampled. It is anticipated that the remaining known outfall locations will be sampled during the next Reporting Period. Summary tables of the results are provided in Appendix N.
5.4 Dry Weather Known Outfalls	See IDDE Outfall Screening	On-going	-	See IDDE Outfall Screening

Annual SMP Summary Table

July 1, 2016 - June 30, 2017

Activity Description	# Actions Scheduled	Status Complete / Incomplete as of June 30th	# Actions Completed	Comments on Activities
5.5 Dry Weather New/Unknown Outfalls	As needed	-	-	The City began conducting screening of newly identified outfalls. 48 new outfalls were screened, of which 14 were noted with discharge at the time of the screening and were sampled.
6. IDDE				
6.1 Outfall Screening (Pre-IDDP)	25% of known MS4 outfalls per year	Incomplete	42% Completed	IDDE conducted at 39 of the original 92 known outfalls. Samples were collected and analyzed at 28 of the 46 locations. A flow was observed and samples were collected at 14 of these new locations. A summary table of the analytical data and an updated map for the IDDE dry weather outfall screening events is presented in Appendix J.
6.2 IDDP	5% of top 20%; starting year 2	Complete	14 of New Locations	The City completed IDDP investigations on 14 of the previously unknown MS4 locations during the Reporting Period.
6.3 Outfall Verification (Post-IDDP)	As needed	-	-	No post-IDDP efforts completed at this time.
7. Legal Authority				
7.1 Permits	As needed	On-Going	As needed	All permits to be signed off by each individual City department, including: Coastal Management, Environmental Protection, Flood Plain, Traffic Dept., Engineering Dept., DOT, and Zoning.
7.1.1 Zoning Department	As needed	On-Going	As needed	The City has requested an extension for addressing the change in zoning regulations. The proposed changes will require more staff from the Engineering Department and the Environmental Protection Board and additional time is required to implement the changes.
7.2 Ordinances				
7.2.1 Stormwater Management	As needed	On-going	As needed	On March 20, 2015, a final MS4 Ordinance, Ordinance 1153, adding Chapter 201 to the City Charter, became effective.
7.2.2 LID	As needed	On-going	As needed	The proposed changes to the zoning regulations will ensure that LID practices are allowable. There are no known zoning, site planning or street design regulations that would be an impediment to using LID practices.
7.3 Site Review, Inspection and Monitoring Activities	As needed	On-going	As needed	The City's staff performs site visits when the project is in close proximity to a wetland or other water body. Current staffing levels limit the opportunities for site inspections to only those projects with the greatest potential for impact to stormwater quality. Site visits frequently occur prior to the issuance of a Certificate of Occupancy (CO). Appendix G provides a table of the services provided by the EPB, including permitting reviews and site inspections.

Annual SMP Summary Table

July 1, 2016 - June 30, 2017

Activity Description	# Actions Scheduled	Status Complete / Incomplete as of June 30th	# Actions Completed	Comments on Activities
7.4 Eliminate Barriers	On-going	On-going	-	The City has well-established procedures for coordinating municipal departments review and approval of land disturbances and development projects.
7.5 Private Retention/Detention Ponds	On-going	On-going	-	Access to privately-owned detention and retention ponds is addressed in the Stormwater Ordinance.
7.6 Interconnections	On-going	On-going	-	Research by City staff has revealed that no formal interagency stormwater agreements exist at this time. If agreements are deemed necessary, they will be discussed in the next annual report. Historically, ConnDOT maintains all State roads.
8. Monitor PHFs				
8.1 City Parks	On-going	On-Going	-	In 2016-17, the City did not fertilize park green space.
8.2 PHF Use in Ball Fields	On-going	On-Going	-	In 2016-17, the City applied a total of 1,530 pounds of nitrogen to the ball parks.
8.3 Sterling Farms Golf Course Nitrogen Monitoring	On-going	On-Going	-	Total Nitrogen applied in 2016-17: 2,766 tons
8.4 E. Gaynor Brennan Municipal Golf Course Nitrogen Monitoring	On-going	On-Going	-	Total Nitrogen applied in 2016-17: 3,637 tons
9. Other Program Items				
9.1 Establish SPRPs	As needed	On-Going	-	In June 2016, a city-wide SPRP was completed.
9.2 Review & Modify Current SMP	Annually	-	-	The City's SMP was submitted to the DEEP in September 2014. No modifications are proposed at this time.

HHW - Household Hazardous Waste
SMP - Stormwater Management Plan
DCIA - Directly Connected Impervious Area
BMP - Best Management Practices
LID - Low Impact Development
PHF - Pesticides, Herbicides and Fertilizers
SPRP - Spill Prevention and Response Plan

APPENDIX D

UPDATED CITY OUTFALL LOCATIONS MAP

City of Stamford Outfalls as of June 30, 2017

Map Key

- Outfalls (944 points)
- Hydrology
- Parks
- I-95 & Merritt Pkwy
- Major Arterials
- All Other Roads
- Railroads

Notes: Map created by Ciy of Stamford, CT GIS staff for MS4 annual reporting. Questions regarding this map should be directed to the City of Stamford MS4 program.
map created 9/21/2017

APPENDIX E

2016-17 SPILLS OF FIVE GALLONS OR MORE

Stamford Fire Rescue

Hazmat List by Chemical Name

Alarm Date Between {07/01/2016} And {06/30/2017}

Incident	Alm Date	Alm Time	Location	Qty Released	Released Into
Carbon monoxide UN#:1016 CAS#:630-08-0					
17-0003014	04/25/2017	13:21:41	45 Research DR	47 Parts per million	Air
17-0003934	05/28/2017	00:20:16	128 Bedford ST	64 Parts per million	Air
Total Incidents for Chemical Name: 2					
Ethanol UN#:1170 CAS#:64-17-5					
17-0004095	06/02/2017	17:07:12	Glenbrook RD & Scofield AVE	1 Gallons	Ground
Total Incidents for Chemical Name: 1					
Gasoline UN#:1203 CAS#:8006-61-9					
16-0008789	10/15/2016	09:13:23	77 Harvard AVE	5 Gallons	Ground
Total Incidents for Chemical Name: 1					
gasoline UN#:1203					
16-0008839	10/16/2016	20:35:51	431 Glenbrook RD /1/	15 Gallons	Ground
Total Incidents for Chemical Name: 1					
Gasoline UN#:1203 CAS#:8006-61-9					
17-0002943	04/22/2017	19:19:51	51 Schuyler AVE	1 Gallons	
17-0003015	04/25/2017	14:18:02	301 STRAWBERRY HILL AVE	3 Gallons	Ground
Total Incidents for Chemical Name: 2					
Home heating oil					
16-0007502	08/30/2016	15:49:18	44 Morgan ST	10 Gallons	
Total Incidents for Chemical Name: 1					
Methane - Natural Gas UN#:1971 CAS#:74-82-8					
17-0003934	05/28/2017	00:20:16	128 Bedford ST	2350 Parts per million	Air
Total Incidents for Chemical Name: 1					
Motor fuel UN#:1203 CAS#:8006-61-9					

Stamford Fire Rescue

Hazmat List by Chemical Name

Alarm Date Between {07/01/2016} And {06/30/2017}

Incident	Alm Date	Alm Time	Location	Qty Released	Released Into
17-0001291	02/18/2017	09:42:13	805 Bedford ST	1 Gallons	Ground
Total Incidents for Chemical Name:	**1**				
Natural Gas UN#:1971					
16-0009542	11/11/2016	06:02:11	101 Washington BLVD /708	1 Parts per million	Confined, no environmental impact
Total Incidents for Chemical Name:	**1**				
Petroleum Based Unknown					
17-0000457	01/18/2017	11:34:28	Mill River St / W Broad ST	10 Gallons	Water
Total Incidents for Chemical Name:	**1**				
Petroleum solvent UN#:1203 CAS#:8030-30-6					
17-0000941	02/06/2017	19:02:07	W Broad ST & Anderson ST	1 Gallons	Ground
Total Incidents for Chemical Name:	**1**				
Reclaimed waste oil					
17-0004711	06/21/2017	22:24:49	179 Shippan AVE	250 Gallons	Ground
Total Incidents for Chemical Name:	**1**				

City of Stamford - No. CT0030279

Spills and Leaks 7/1/16 - 6/30/2017

Date	Address / Location	Material Spilled	Quantity	Receiving Stream	
6/15/2017	180 Glenbrook Rd.	Hydraulic Fluid (City Garbage Truck)	40 - 50 Gal.	Stamford Harbor / Long Island Sound - East Branch	Hydraulic hose failure on private property owned by condo association. TT contacted CT DEEP spill response. TT contacted Tradebe to provide clean up which included power broom and sweep up sorbent, vac inside of CB, power wash and recover all wash waters. TT verified hyd. oil did not leave the first CB it entered.
2/9/2017	326 Dundee Rd.	Diesel Fuel	Unknown - greater than 5 gal.	Rippowam River	Tractor trailer car carrier attempted to turn around at end of cul de sac, ran over asphalt curbing, front wheel sunk in soft soil, and iron catch basin curb back contacted fuel tank, resulting in a rupture. SFD and CT DEEP responded. CT DEEP on scene until affected area was restored. Downgradient stormwater MH and outfall were inspected for impacts - verified no impacts to downgradient structures.
5/30/2017	Terrace Ave.	Cooking Oil	Unknown	Rippowam River	During routine field work, TT observed a fairly significant spill of what appeared (smell) to be cooking oil. A barrel in the back of a truck may have tipped over during transport and spilled along the roadway while the truck was in motion. TT observed significant amounts of oil were being tracked down the roadway by other cars. TT observed roadway very slippery. TT dispatched sand truck. Roadway swept up following day.

3/1/2017	US RT 1 at Weed Ave.	Diesel Fuel	Unknown	Noroton River	TT observed fuel in river, running into Holly pond. TT called SFD, SFD notified CT DEEP. DEEP on scene and stated that 3 days prior, there was a MVA on I-95 between exits 9 & 10. Haz mat vendor recovered 90 Gal. of diesel fuel. Determined that fuel in river was residual from MVA and moved through stormwater system from recent rainfall. Booms placed in river by SFD, TT notified health dept. re: shell fishing, etc.
9/15/2017	179 W. Broad St.	Motor Oil	Less than 5 Gal.	Rippowam River	TT observed oil spill in roadway. Appeared as though motorist ran over stop sign mounted on concrete filled tire in center of roadway and damaged oil pan. No vehicle on scene when inspected by TT. TT dispatched crew with speedy dry and subsequent sweeper.

APPENDIX F

2016-17 PESTICIDE, FERTILIZER, AND HERBICIDE USE

2016-17 Nitrogen Application from Fertilizer

Sterling Farms Golf Course

Location	Fertilizer Type	lbs N (avg) / 1,000 SF	acres	lbs N
Greens	Granular	1	4	174.2
	Liquid	2	4	348.5
Tees	Granular	1	3.5	152.5
	Liquid	1	3.5	152.5
Fairways	Granular	1	23	1,001.9
	Liquid	0.5	23	500.9
Rough	Granular	1	10	435.6
Total			**40.5**	**2,766.1**

E. Gaynor Brennan Municipal Golf Course

Location	Fertilizer Type	lbs N / 1,000 SF	acres	lbs N
Greens	Granular	1	3	130.7
	Liquid	1.5	3	196.0
Tees	Granular	2.5	2	217.8
	Liquid	0.5	2	43.6
Fairways	Granular	2	20	1,742.4
	Liquid	0.5	20	435.6
Rough	-	2	10	871.2
Total			**35**	**3,637.3**

TOTAL 2016-17	**6,403.3**
Total 2015-2016	8,145.7
Percent Change	**-21.4%**

Athletic Field Fertilizer use only, we do not use any Fertilizers on park Green space

1st application April 2nd Dimension application 18-0-40- 60 bags total used, each bag is 50lbs

2nd application May 2nd Propendi- 60 bags total used, each bag is 50lbs

3rd application Sept Fertilizer- 60 Bags total used, each bag 40lbs

Little League/Softball/Baseball

Troy #1 Field and Troy # Field 2- Cove

Federal #1 Field and Federal #2 Field

Kane Ave Field

Vine Road Field

Scalzi Little League Field/Scazli #1, #2 and #3

Cubeta Stadium

Springdale Little League Field

Kosciusesko LL and Softball Field

Cummings #1 Field #2 Field #4 field and #5

Chestnut Field

Dorthey Heroy Field

Northrop (Stark school) Field

Dimension (18-0-40) - 50lbs/bag x (18/100) = 9lbs/bag x 60 bags = 540lbs N

ProPendi (13-0-4) - 50lbs/bag x (13/100) = 6.5lbs/bag x 60 bags = 390lbs N

Fertilizer (25-0-5) - 40lbs/bag x (25/100) = 10lbs/bag x 60 bags = 600lbs N

Total N Used = 1,530lbs

APPENDIX G

2016-17 ENVIRONMENTAL PROTECTION BOARD SUMMARY TABLE

Performance Summary
Fiscal Years 2009-17

Activity	Service Output by Fiscal Year							
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Customer Service:								
Office Visits:	3354	4483	4783	4798	4900	4832	4912	4568
Building/Septic Permit Reviews:	1222	1342	1642	1584	1505	1462	1540	1355(a)
Administration:								
General Program Administration:	336	364	307	414	373	347	372	416
Referrals:	143	150	158	121	171	159	157	194
Permitting/Technical Review:								
Coastal Site Plan/Zoning Applications:	13	15	20	19	16	26	23	30
Wetland/Watercourse Applications:	27	38	35	41	28	28	34	28
Subdivision Applications:	02	03	03	03	05	09	07	02
ZBA Applications:	68	55	63	71	66	51	66	52
Site Plan Review Applications:	39	46	55	106	99	117	128	119
Enforcement/Inspection:								
Project Monitoring/Compliance:	79	82	87	81	95	93	106	119
General Enforcement Activity:	58	56	59	28	25	30	64	43
Complaints/Citizen Services:	35	34	39	37	46	220	249	280
Special Projects:								
CRS Program Recertification Tasks:	18	18	18	18(b)	18	18	18	18
GIS Updates/Permit Links	00	00	00	01	01	01	01	01
MS4 Regulations/Applications	00	00	00	00	01	01	01	01
Public Outreach	01	01	01	02	03	04	02	02

*The information summarized above is based upon an examination of written correspondence (chronological) files and existing data base entries for the period 7/1/16 to 6/30/17. Omitted from the reporting are telephone entries, electronic mailings, facsimile transmissions, undocumented field inspections, inspections conducted in conjunction with the review of development applications, and other related activities.

(a) Numbers attributed to new **streamlined policies/procedures** that reduced the specific types of building permit applications and follow up reviews conducted by EPB Staff.

(b) Five (5) Year Recertification.

Revised 8/03/17

ENVIRONMENTAL PROTECTION BOARD

The Environmental Protection Board (EPB) is organized by ordinance as a multi-purpose City agency combining the duties and responsibilities of: 1) a local Inland Wetlands and Watercourses Agency, 2) a local Conservation Commission, and 3) a local Flood and Erosion Control Board. The EPB has regulatory responsibilities, including issuing special permits for development activities on properties having inland wetlands and watercourses, buffer/setback areas, and designated flood hazard areas. The EPB also has advisory responsibilities, providing review, technical assistance and comment on the potential impact of subdivisions, coastal site plan reviews, site plan reviews, variances, special exceptions, drainage/erosion control plans, utility installations, and other related matters. Information/comments are disseminated to City Boards, Commissions, Departments, professional consultants and members of the public. Finally, the EPB has stewardship responsibilities, including recommendations for the creation and subsequent monitoring of open space areas and public points of access to Stamford's waterfront and shoreline areas. EPB Staff (Executive Director/Environmental Planner – 1 and Environmental Analyst - 2) in cooperation with other City departments, inspects development projects to ensure conformance with issued permits/approvals and City standards, acts as the designated liaison with State and Federal officials on matters of wetland/floodplain/coastal management, and administers the City's participation in the Federal Emergency Management Agency's Community Rating System (CRS).

In Fiscal Year 2016-17, EPB's full time staff members responded to 4,568 public inquiries during its regular office hours, reviewed 1,355 applications for building and/or septic permit, and evaluated 112 formal applications before the various Land Use Boards. Note that EPB staff participated in the review of numerous public and private projects of value and interest to the City including Carousel/Mill River Corridor Improvements, Riverbank Road Bridge Replacement, University of Connecticut Housing, and Stamford/Davenport Landing. EPB Staff also performed essential functions in the development and application of Stamford's MS4 Program ("Municipal Separate Storm Sewer System"), improved efforts to update pertinent resource layers in the City's Geographic Information System (GIS), secured commitments for the restudy of portions of the Rippowam and Noroton River floodplains, enhanced the EPB website, contributed to the evaluation of the City's on-line building permit system, and maintained Stamford's good standing in FEMA's CRS (Community Rating System) Program.

APPENDIX H

CITY STAFF TRAINING EVENTS SIGN-IN SHEETS

FUSS & O'NEILL

Waste Management

(EPA RCRA CESQG Generator)

Used Oil & Universal Waste Management

Employee Training

Date of Training: June 13 and June 14, 2017

Attendees Sign-In:

	Name Printed	Name Signed	Company / Work Function
1	Joe Hoyt	[signature]	?
2	Wendell Christian	[signature]	Highway
3	Ronnie Girard	[signature]	"
4	Mike Sutherland	[signature]	
5	DENNIS SURMACZEWICZ	[signature]	HIGHWAYS
6	Jim Hart	[signature]	Highways
7	Hamlet Castillo	[signature]	Highway
8	David Plunkett	[signature]	Highways
9	Pedro Leffredo	[signature]	Highways
10	AL TRICHILO	[signature]	HIGHWAYS

Resources:

Power Point Presentation by F&O: Waste Management (Hazardous, Universal, Used Oil, Recyclables)
Miscellaneous Handouts / Review Exercises

Training Facilitated by: Deb Denfeld, P.E., CHMM, CET .

Deb Denfeld, [signature], Fuss & O'Neill, Inc

Printed Name Signature

pg 1 of 3

FUSS & O'NEILL

Waste Management
(EPA RCRA CESQG Generator)
Used Oil & Universal Waste Management
Employee Training

Date of Training: June 13 and June 14, 2017

Attendees Sign-In:

	Name Printed	Name Signed	Company / Work Function
1	John Moore		Highway
2	Ron Vitti		Highway
3	Dom Viggiano		Highways
4	ERIC ADAMS		HIGHWAYS
5	Chris Rivera		Highways
6	Timothy Hinton		Highways
7	Joseph Ceplon		Highways
8	Ken Gode		Veh. Maint.
9	Bob Kaczenski		VMF
10	Paul Kopec		VMF

June 13 ↑
June 14 ↓

Resources:
Power Point Presentation by F&O: Waste Management (Hazardous, Universal, Used Oil, Recyclables)
Miscellaneous Handouts / Review Exercises

Training Facilitated by: Deb Denfeld, P.E., CHMM, CET .

Deb Denfeld, Deb Denfeld, Fuss & O'Neill, Inc
Printed Name Signature

Pg 2 of 3

FUSS & O'NEILL

Waste Management

(EPA RCRA CESQG Generator)

Used Oil & Universal Waste Management

Employee Training

Date of Training: June 13 and June 14, 2017

Attendees Sign-In:

	Name Printed	Name Signed	Company / Work Function
1	Ronnie Caporale III		Highways
2	AARON TURNER		Highways
3	Jose CRUZ		HIGHWAYS
4	Markus Echeverria		Highways
5	Vin Colliluori		Rec / Sanitation
6	TYLER STEDER		Stormwater.
7	Pete Mardi		Highways
8			
9			
10			

June 13 ↑

↓ June 14

Resources:

Power Point Presentation by F&O: Waste Management (Hazardous, Universal, Used Oil, Recyclables)
Miscellaneous Handouts / Review Exercises

Training Facilitated by: Deb Denfeld, P.E., CHMM, CET

Deb Denfeld, Deb Denfeld, Fuss & O'Neill, Inc

Printed Name Signature

3 of 3

MS4 TRAINING 3/30/2017
SIGN IN SHEET

NAME:	
TYLER THEDEN	COS Stormwater.
Jim Federici	Health - Laboratory Director
Ralph Blessing	LUB
CINDY BARBER	GIS / Technology
Leigh DeMarco	EPB
Pam Fausty	EPB
Vineeta Mathur	LUB
Barry Denison Jr	Gas Highways
Rick Talamelli	EPB
Ronald Miller	Health
Susan Kisker	Engineering
Eden Huang	Stormwater
Craig McClellan	Land Use
John Cornelio	~~Hwy~~ - Highways

Annual Environmental Training
City of Stamford - DPW
June 13 & June 14, 2017

90 Magee Ave., City of Stamford - Highway Department
100 Magee Ave., City of Stamford - Fleet Maintenance Division
130 Magee Ave., City of Stamford - Katrina Mygatt Recycling Center

<u>Environmental Topics/Review Exercises</u>:

Stormwater Pollution Prevention Plan

1. Evaluation of Site Stormwater Runoff Quality
2. Visual Water Quality Monitoring Report
3. Spill Release Response Scenario
4. Stormwater Quick Quiz

Oil Pollution Prevention Plan

1. Used Oil vs. Waste Oil
2. Connecticut Regulated Waste
3. Oil Storage Quick Quiz

Universal Waste Management

1. Universal Waste Identification
2. Universal Waste Quick Quiz

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need sign on sheet from Deb Denfeld
6/13/17.

Stormwater Pollution Prevention Plan

DEEP General Permit for Discharge of Stormwater Associated with Industrial Activity

Training Topics:

1. Industrial Stormwater Discharge Regulations
2. Stormwater Conveyance System On-Site
3. Potential Pollutant Sources On-Site
4. Stormwater System Discharge Monitoring
5. Materials Management Practices to Minimize Exposure
6. Good Housekeeping Practices
7. Spill Prevention Methods
8. Spill Response Procedures
9. Routine Inspections and Recordkeeping

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Environmental Topics/Review Exercises:

1. Evaluation of Site Stormwater Runoff Quality
2. Visual Water Quality Monitoring Report
3. Spill Release Response Scenario
4. Stormwater Quick Quiz

Site: _____

Evaluation of Site Stormwater Runoff Quality

Date: _____

Rating - 1- Low potential for pollution of site runoff

5- Highpotential for pollution of site runoff

Potential Polluting Activies at Industrial Sites	Rating (1-5)	Best Management Practices / Suggestions ?
1. Loading and Unloading of Materials & Containers of Miscellaneous Liquids		
2. Outdoor Materials Storage		
3. Liquid Fuel Transfers		
4. Vehicles and Equipment - Exterior Storage		
5. Roof Areas Runoff (Air Handling Units/Materials)		
6. Dust and Particulate Generation and Accumulations		
7. Silt/Sand Surface Erosion		
8. Stormwater Conveyance Structure Maintenance		
9. Liquid and Solid De-Icing Material Storage		
10. Snow Pile Runoff		

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General Permit for Stormwater Discharge from Industrial Activities
Visual Monitoring Report Form

Quarterly Stormwater Sample Collection

Company: _____

Year:_____ Quarter (circle one):

Q1: 10/1 to 12/31 Q2: 1/1 to 3/31 Q3: 4/1 to 6/30 Q4: 7/1 to 9/30

Date:_____Time:_____ Date of Last Rainfall:_____

Sampler: _____Snow or ice on ground surface at site?_____

	Observed Condition
Discharge Location	**DSN-001**
Color	
Odor	
Clarity	
Floating Solids	
Settled Solids	
Suspended Solids	
Foam	
Oil Sheen	
Other Obvious Indicators of Pollution	

Assessment: (Attach additional sheets if necessary)
Based on the conditions observed, is there the potential that the facility's current control measures are inadequate or require maintenance?

_____

_____

Follow-up actions suggested:

_____

_____

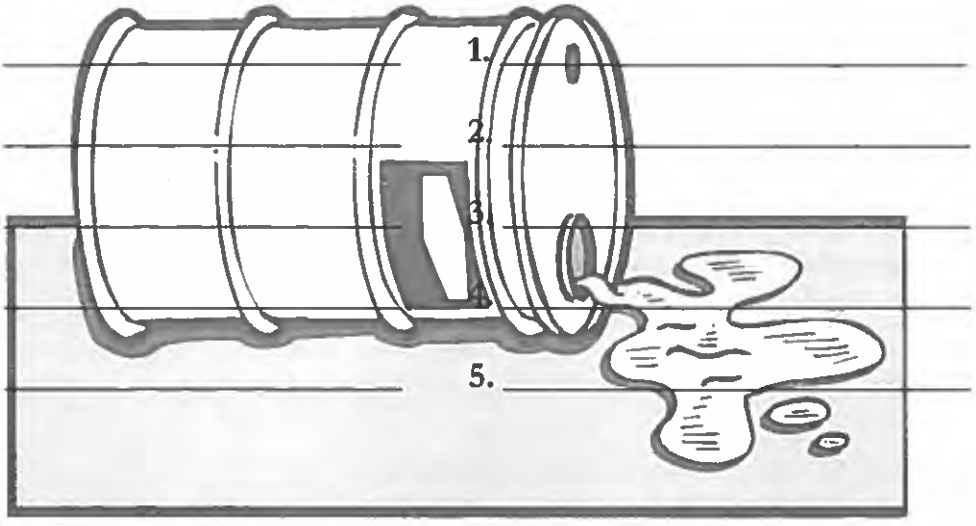
Emergency Preparedness and Planning
Student Workbook Activity # 9

Directions: Read through the spill scenario below and fill in the blanks with facility/company specific information. Once you have read through the scenario complete Column 1 – Emergency Procedures with the first 5 steps that should be taken to respond to the scenario. Then complete Column 2 – Emergency Prevention with a list of tasks that should be taken to prevent this issue from occurring again.

A 55-gallon drum of _____ waste in one of your Satellite Accumulation areas is full. This drum needs to be moved from the Satellite Accumulation area to the 180-day Main Accumulation Area. To complete this task, the employee responsible for generating this waste, removes the filling funnel and replaces the larger application bung. Unfortunately, the employee does not have access to a bung wrench and only hand tightens the bung. This employee then adds the accumulation start date to the Hazardous Waste Marking and asks one of the facilities trained fork lift operators to move the drum to the Main Accumulation Area.

The fork lift operator lines up the barrel grabber with the outside edges of the drum, inches forward, and snuggly tightens the barrel grabber to the 55-gallon drum. As soon as the operator attempts to lift the 55-gallon drum, the larger application bung pops out of place, _____ waste burps out of the drum, and the bung falls to the floor.

Column 1 – Emergency Procedures	Column 2 – Emergency Prevention
1.	1.
2.	2.
3.	3.
4.	
5.	5.



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Stormwater Pollution Prevention Plan (SWPP) – Quick Quiz

Name: _____ **Date:** _____

Think you know all the facts about SWPPP compliance? Take our quiz to find out for sure!

1. Which of the following is not true about SWPPP training requirements?

   - [ ] New employees are to be trained within 90 days
   - [ ] Employees must have refresher training every year
   - [x] If the quality test results are poor, refresher training must be conducted within six months
   - [ ] Employees whose activities are involved with exposure of equipment or material to stormwater must be SWPPP trained

2. True or False: Stormwater samples must be taken every quarter for visual monitoring of quality .

   - [x] True
   - [ ] False

3. Facilities must notify the EPA Regional Administrator National Response Center (NRC) (as well as the DEEP Spill reporting hotline) if they discharge:

   - [ ] More than 500 gallons in a single incident
   - [ ] More than 1,000 gallons in a single incident
   - [ ] More than 42 gallons twice in a 12-month timeframe
   - [x] B and C

4. SWPPP regulations require:

   - [ ] No tracking of materials outside the facility
   - [x] Best management practices to minimize discharge of pollutants from a facility
   - [ ] A sweeper be in operation during all facility operating hours
   - [ ] Written inspections of all catch basins on a daily basis

5. True or False: Every facility must have an SWPPP Response Team.

   - [x] True
   - [ ] False

6. True or False: The best response to a spill is to add a granular absorbent and leave it in place.

   - [ ] True
   - [x] False

7. Which of the following is NOT an effective method of spill response?

   - [ ] Attempting to stop the release at the source
   - [ ] Containing the spill with sorbent booms and pads
   - [x] Diluting the oil with water
   - [ ] Recovering the cleanup material

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Stormwater Pollution Prevention Plan (SWPP) – Quick Quiz

8. Which is not a likely stormwater pollutant source?

- [ ] Waste storage containers
- [x] Interior floor drains
- [ ] Petroleum storage containers
- [ ] Doorways to processing areas

9. How often must the written inspection checklists be completed?

- [ ] Weekly
- [x] Monthly
- [ ] Quarterly
- [ ] Annually

10. Oil/pollution spill response supplies should include all of the following except:

- [ ] Sorbent booms and pads
- [ ] Loose granular sorbents such as speedi-dri
- [ ] Catch basin drain covers
- [x] Bleach

Spill Prevention, Control, and Countermeasures Plan
(Oil Pollution Prevention Plan)

EPA's Title 40, CFR , Part 112
(the Federal Oil Pollution Prevention Regulations)

Training Topics:

1. **Oil pollution control laws, rules, and regulations**
2. **Identification of oil storage areas**
3. **Oil & petroleum storage containers**
4. **Secondary containment structures**
5. **Site drainage flow patterns**
6. **Spill prevention – handling of products**
7. **Spill controls – containment, diversions**
8. **Countermeasures – responding to discharge**
9. **Routine inspections and recordkeeping**
10. **Site Security**

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Training Topics Review Exercises

1. Used Oil vs. Waste Oil
2. Connecticut Regulated Waste
3. Oil Storage Quick Quiz

Used Oil
Student Workbook Activity # 13

Directions: Review the two descriptions below and determine whether or not the contents of the containers are considered Used Oil. For each of the containers that do not qualify as Used Oil, describe why and identify potential corrective actions in the space provided.

1. A 55-gallon drum was generated through vehicle maintenance activities. This drum is filled with equal concentrations of gasoline, engine coolant (water and ethylene glycol mixture), and used motor oil. Do the contents of this container meet the definition of Used Oil?

   ☐ **Yes**
   ☐ **No**

   If you selected no, describe why not and identify potential corrective actions in the space provided below:

2. A 5-gallon pail of lubricating oil was generated by a company when they switched out an oil filter from a machine which uses petroleum based oil as a lubricant. This oil has a flashpoint of 430°F; contains no metals, halogens, or Polychlorinated Halogens (PCBs); and has a neutral pH. Do the contents of this container meet the definition of Used Oil?

   ☐ **Yes**
   ☐ **No**

   If you selected no, describe why not and identify potential corrective actions in the space provided below:

Connecticut Department of Energy & Environmental Protection
Non-RCRA Hazardous Waste (Connecticut Regulated Waste)

These are wastes that are not classified as Hazardous Wastes under Connecticut's Hazardous Waste Management Regulations, but that are still subject to certain management requirements under Connecticut General Statutes Section 22-454. If a hazardous waste determination indicates that a waste is not hazardous, but the waste conforms to one of the waste types listed below, it must be managed in compliance with the requirements of CGS Section 22a-454. These requirements include:

Haulers and Facilities Anyone engaged in the business of collecting, transporting or storing these wastes must have a permit from DEEP. One exception: a permit is not required for persons that are engaged in the business of transporting waste chemical solids (or "CR05" wastes).

Disposal No one may dispose of these wastes without a permit from DEEP.

Generators Although there are no specific requirements for generators of these wastes, they must be managed properly and stored in an environmentally safe manner. Any mismanagement of these wastes may be a potential source of pollution and subject to enforcement action under Section 22a-432 of the Connecticut General Statutes (CGS). In the event of a spill, the DEEP's Emergency Response and Spill Prevention Division must be contacted at (860) 424-3338, or at 1-866-DEP-SPIL. If a generator hires a commercial hauler to take away these wastes, that hauler must be permitted by DEEP. If the generator sends the waste to a treatment, storage or disposal facility located in Connecticut, that facility must also be permitted by DEEP.

Certain of these wastes may be disposed of at a municipal landfill or resources recovery facility (i.e., a "trash-to-energy" plant), provided the facility has been specifically approved to accept the waste. For more information, contact your solid waste facility, or see the DEEP's Special Waste Disposal Authorization web page.

The most common type of Non-RCRA hazardous wastes generated and suggested disposal methods are as follows:

Waste Oil	Waste oil is a Non-RCRA hazardous waste designated CR02 or CR03 and must be collected and transported to a permitted CGS Section 22a-454 Waste Facility. Certain used oils may be burned on-site in a boiler, industrial furnace, or space heater in accordance with Connecticut's used oil regulations. RCRA Hazardous used or waste oil is regulated according to Section 22a-449(c)-100 through 110 of the Regulations of Connecticut State Agencies (Hazardous Waste Management Regulations).
Antifreeze	This is a non-RCRA hazardous waste in most cases, but a RCRA hazardous waste determination should be made at least one time for verification purposes. It is designated CR04 and must be collected and transported by a licensed hauler to a permitted CGS Section 22a-454 Waste Facility.
Asbestos	Asbestos wastes may be disposed of in a municipal landfill in accordance with the Special Waste (including asbestos) Disposal Authorization process.

Solid Paint Wastes	Dried paint waste may not be RCRA hazardous, but must be verified non-RCRA hazardous through testing. If non-RCRA hazardous, this waste is designated as CR05 and may be disposed of at a 22a-454 facility, at a landfill, or resources recovery facility (i.e., "trash-to-energy" plant) that is authorized by DEEP to accept such waste.
Grinding Dusts	Grinding dusts may not be RCRA hazardous, but must be verified non-RCRA hazardous through testing. Non-RCRA hazardous dusts and residues designated CR05 may be disposed of at a 22a-454 facility, at a landfill, or resources recovery facility (i.e., "trash-to-energy" plant) that is authorized by DEEP to accept such waste.
Spill Residues and Contaminated Soil	Certain non-RCRA hazardous spill residues and contaminated soil designated CR05 may be disposed of in a municipal landfill with Special Waste Authorization. The criteria for approval can be dependent upon the volume of waste, the nature of contamination and Soil the disposal site chosen. Each authorization is site specific. Contact the DEEP Waste Engineering and Enforcement Division (WEED) at (860) 424-3023 for authorization information. A general indication of a contaminated soil's suitability for municipal landfilling is that it contains no listed RCRA hazardous waste, less than 50 ppm toxic organic compounds, and less than 30 times health based standards for inorganics as determined by the Toxicity Characteristic Leaching Procedure.

List of Non-RCRA Hazardous Wastes (Connecticut Regulated Wastes)

Note: These are wastes which are neither characteristically nor listed RCRA Hazardous Wastes as per 40 CFR 261, but a facility permit is required by CGS Section 22a-454 for a person engaged in the business of storage, treating, disposing or transporting* them.

Waste Number	Waste Name	Description
CR01	Waste PCBs	Any waste material containing or contaminated by PCBs (Polychlorinated Biphenyls) in concentrations at or above 50 ppm (parts per million). These include, but are not limited to, PCB oils, items and equipment.
CR02	Waste Oil	Oil or petroleum that is no longer suitable for the services for which it was manufactured due to the presence of impurities or a loss of original properties, and is not *miscible* in water. These include, but are not limited to, crude oil, fuel oil, lubricating oil, kerosene, diesel fuel, motor oil, non-halogenated oil, and oils that are recovered from oil separators, oil spills or tank bottoms.
CR03	Waste Water Soluble Oil	Oil or petroleum that is no longer suitable for the services for which it was manufactured, due to the presence of impurities or a loss of original properties and is *miscible* in water. These include, but are not limited to, cutting oil emulsions or coolants.
CR04	Waste Chemical Liquid	Any wastes that are liquid, free flowing and/or contain free draining liquids and are toxic, hazardous to handle and/or

		may cause contamination of ground and/or surface water if improperly managed. These wastes may include, but are not limited to latex and solvent paint wastes, grinding wastes, waste sludges, antifreeze wastes and glycol solutions.
CR05*	Waste Chemical Solid	Any chemical solid or semi-solid from a commercial, industrial, agricultural or community activity. These wastes may include, but are not limited to, grinding dusts, tumbling sludges, scrap plastic and rubber flash, and other ground or chipped waste solid.

*Connecticut General Statutes do not require the transporter to be licensed to transport CR05 (Waste Chemical Solid).

For further information, please contact the DEEP's toll-free Compliance Assistance (COMPASS) hotline at 1-888-424-4193, or send us an email.

Content Last Updated April 10, 2017

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SPCC (Oil Storage) - Quick Quiz

Name: _____ **Date:** _____

Think you know all the facts about SPCC compliance? Take our quiz to find out for sure! And don't forget to check your answers at the end.

Think you know all the facts about SPCC compliance? Take our quiz to find out for sure! And don't forget to check your answers at the end.

1. SPCC Plans must be amended:

   ☐ Annually
   ☐ Every five years
   ☐ Within 60 days of a change at the facility
   ☐ Bi-annually

2. True or False: Every SPCC Plan must be certified by a Professional Engineer.

   ☐ True ☐ False

3. Facilities must notify the Regional Administrator if they discharge:

   ☐ More than 500 gallons in a single incident
   ☐ More than 1,000 gallons in a single incident
   ☐ More than 42 gallons twice in a 12-month timeframe
   ☐ B and C

4. SPCC regulations apply to:

   ☐ Large oil processing facilities
   ☐ Facilities that have the capability of storing 1,320 gallons of oil above-ground or 42,000 gallons in underground tanks
   ☐ Any facility that a Regional Administrator determines could cause environmental harm
   ☐ All of the above

5. True or False: If a facility has a 3,000 gallon above ground storage tank, but only stores 500 gallons of oil in it, they are not subject to SPCC regulation.

   ☐ True ☐ False

6. True or False: A wooden pallet is a good secondary containment structure for a 55-gallon drum of oil

   ☐ True ☐ False

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SPCC (Oil Storage) - Quick Quiz

7. Which of the following is NOT an effective method of spill response?

- ☐ Attempting to stop the release at the source
- ☐ Containing the spill with sorbent booms and pads
- ☐ Diluting the oil with water
- ☐ Recovering the cleanup material

8. How often must eligible employees take SPCC training?

- ☐ Every year, annually
- ☐ Every two years
- ☐ Every three years
- ☐ Every four years

9. How often must the inspection checklists be completed?

- ☐ Weekly
- ☐ Monthly
- ☐ Quarterly
- ☐ Annually

10. Oil spill response supplies should include all of the following except:

- ☐ Sorbent booms and pads
- ☐ Loose sorbents such as speedi-dri
- ☐ Catch basin drain covers
- ☐ Bleach

Universal Waste Management

Federal EPA Universal Waste Regulations: 40 CFR Part 273

Training Topics

1. Universal Waste laws, rules, and regulations
2. Identification of universal wastes
3. Universal Waste Management
4. Universal Waste Release Response

Training Topics Review Exercises

1. Universal Waste Identification
2. Universal Waste Quick Quiz

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Universal Waste
Student Workbook Activity # 11

Directions: Identify which of the following listed materials are recognized as Universal Waste in the State of Connecticut by placing an "X" in the space provided.

____ 4-Foot Fluorescent Lamps

____ Lead Acid Car Battery

____ Asbestos Tiles

____ Mercury Thermostat

____ Nickel Cadmium Rechargeable Battery

____ Spent Flammable Solvent Blend

____ Used Aerosol Can

____ Computer Monitor

____ Compact Fluorescent Bulb

____ Office Paper

____ Used Motor Oil

____ Lithium Battery

____ LCD Projector

____ Computer Terminal

____ Alkaline Battery

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Universal Waste Training - Quick Quiz

Name: _____ **Date:** _____

1. The following items are considered Universal Waste:

   Batteries, Pesticides, Mercury-containing devices, and lamps.

   ☐ True ☐ False

2. A facility can store Universal Waste for:

   ☐ 5 years ☐ 2 years ☐ 1 year ☐ Indefinitely

3. Green-tipped fluorescent lamps can be tossed into the normal trash.

   ☐ True ☐ False

4. If a fluorescent lamp breaks you should...

   ☐ Call 9-911.
   ☐ Leave the area for a few minutes, then return and carefully clean-up the spill.
   ☐ Leave the area and hope someone else cleans it up.
   ☐ Use a vacuum to clean up the spill.

5. Alkaline batteries can be discarded in the regular trash.

   ☐ True ☐ False

6. The terminals of lithium batteries should be taped to prevent fires.

   ☐ True ☐ False

7. Used lamps should be stored...

   ☐ in an appropriate sized box.
   ☐ with a completed "Universal Waste Label" affixed to the end of the box.
   ☐ in boxes that are taped with packing tape.
   ☐ All of the above.

8. Used batteries, mercury containing devices and pesticides

   ☐ can be discarded with the regular trash.
   ☐ should be accumulated indefinitely in a store room.
   ☐ can be recycled through a local program

Universal Waste Training - Quick Quiz

9. Which of the following is not a universal waste?

- ☐ Lamps
- ☐ Recalled Pesticide
- ☐ PCB lamp ballasts
- ☐ Mercury-containing devices

10. Which of the following are requirements for universal waste?

- ☐ Manage in a way to prevent releases to the environment
- ☐ Containers must be free of defects or damage
- ☐ Immediately contain and clean up releases
- ☐ All of the above

Upon successful completion of this course you will be better prepared to:

- Manage the four classes of universal waste properly.
  - Name the classes of universal waste.
  - List some common members of each class.
- Avoid the hazards of universal wastes.
  - Identify hazardous components in universal wastes.
- Abide by the regulated limits for UW accumulation.
  - State the time and quantity limits for UW accumulation.
- Use the proper containers and labeling for UW storage.
  - Name accepted containers for different types of UW.
  - List the options for terms allowed on labels.
- Exercise caution to prevent accidents when handling UW.
  - State the principle hazard of a UW accident.
- Follow proper procedures in dealing with a UW accident.
  - State the principle action required.
  - Name the personal protection required.
  - Recognize one prohibited clean-up device.
- Follow the rules for shipping UW off-site.
  - Name the allowed destinations.
  - State the labeling requirement.
  - Identify the proper transportation options.
- Identify the special characteristics that allow special handling of UW.
  - List the characteristics that define universal waste.

APPENDIX I

2016–17 CATCH BASIN / MANHOLE REPAIRS LIST

July 1, 2016 - June 30, 2017 Catch Basin & Manhole Repairs

CRS #	Date	Location/Address	Complaint	Status	Date	Repair Date	Status	Repair Completion Date	Contractor	Comments	Costs
W477434-063016	07/01/16	81 West North Street	Basin repair	Sent to Grasso	6/1/2017						
	07/04/16	Corner of Liberty & Stillwater	Basin repair	Sent to Arnow							
	07/05/16	Hope & Fahey	Double basin repair	Sent to Roger Arnow	7/20/2016	7/20/2016	Basin is repaired	7/26/2016	Roger Arnow		
	07/20/16	Ely @ Culloden	Basin repair	Sent to Roger Arnow	7/26/2016	7/26/2016	Basin is repaired	7/26/2016	Roger Arnow		
W476541-060816	09/07/16	58 Boxwood Drive	Basin repair	Sent to Roger Arnow	12/1/2016	12/1/2016	Basin is repaired	12/26/2016	Roger Arnow		
W479161-080916	09/07/16	35 West Broad Street	Basin repair	Sent to Roger Arnow	10/10/2016	10/10/2016	Basin is repaired	10/13/2016	Roger Arnow		
	09/07/16	180 Broad Street	Basin repair	Sent to Roger Arnow	10/10/2016	10/10/2016	Basin is repaired	10/14/2016	Roger Arnow		
W478719-072816	09/07/16	125 Coolidge Ave	Basin repair	Sent to Roger Arnow	12/1/2016	12/1/2016	Basin is repaired	12/28/2016	Roger Arnow		
W478589-072616	09/07/16	87 Pine Hill Ave	Basin repair	Sent to Roger Arnow	12/1/2016	12/1/2016	Basin is repaired	12/28/2016	Roger Arnow		
W479742-082316	09/07/16	16 Dzamba Grove	Basin repair								
W477700-070716	09/07/16	17 - 21 Hidden Brook	Basin repair								
	09/07/016	80 Spruce Street	Basin repair								
	09/07/16	Intersection of Interlaken & Lakeside	Basin repair - replace w/ precast sump and replace storm pipe across st.	TT emailed to Arnow	May-15						
	09/07/16	25 Division Street	Basin repair							Deteriorating masonry in the basin sump	
W479731-082316	09/07/16	311 Janes Lane	Basin repair	Repaired by Grasso	Apr-15						
W479740-082316	09/07/16	48 New England Drive	Basin repair								
W479521-081716	09/07/16	Corner of Van Buskirk	Basin repair								
W479518-081716	09/07/16	Corner of Westcott	Basin repair								
W479519-081716	09/07/16	At Woody Way Beach Club Entrance	Basin repair								
W479526-081716	09/07/16	100 Feet in on R off Hunting Ridge	Manhole sinking								
W479520-081716	09/07/16	Rockledge 150 Feet in on L	Basin repair								
	09/07/16	Haig Ave across from Nyselius	Basin repair	Sent to Grasso	7/17/2017	8/23/2017	repaired by grasso				
W478640-072716	09/07/16	Clearview Ave @ Knickerbocker Ave	Basin repair	Sent to Arnow	5/12/2017	9/6/2017					
W481036-092616	09/29/16	Ocean Drive W & Stamford Avenue	Basin repair	Sent to Roger Arnow	12/29/2016	12/29/2016	Basin is repaired	1/6/2017	Roger Arnow		
W479997-082616	08/26/16	42 Treat Ave @ Corner of Collidge	Basin repair	Sent to Roger Arnow	12/29/2016	12/29/2016	Basin is repaired	12/28/2016	Roger Arnow		
W479743-082316	08/23/16	24 Benstone Street	Basin repair								
	08/24/16	Corner of Vineyard & Hunting Lane	Basin repair	Sent to Roger Arnow	12/1/2016	12/1/2016	Basin is repaired	12/9/2016	Roger Arnow		
	08/24/16	79 Hunting Lane	Manhole sinking								
	08/25/16	71 Vinyard Lane	Manhole sinking								
	08/31/16	95 Hobson St	Basin repair								
W480620-091316	09/13/16	65 Northhill St	Basin repair								
	11/18/16	97 Gary Rd	Manhole sinking	Sent to Roger Arnow	11/18/2016	11/18/2016	Basin is repaired	11/21/2016	Roger Arnow		
W478292-071916	07/21/16	29 Redmont Road	MH Repair - Hole in ring								
W478452-072216	07/25/16	West Broad Street	Basin repair	Sent to Roger Arnow	10/1/2016	10/1/2016	Basin is Repaired	10/14/2016	Roger Arnow		
	07/25/16	Broad & Hanraham	Basin repair						Roger Arnow	Basin needs to be raised 2"	
W478588-072616	07/26/16	Corner ot East Main & Blachley Rd	Basin repair	Sent to Roger Arnow					Roger Arnow		
W478693-072816	07/28/16	Atlantic Street	Manhole sinking	Sent to Roger Arnow	7/29/2016	7/29/2016	Manholes repaired	8/22/2016	Roger Arnow	3 Manholes need to be repaired	
	10/10/16	633 Hope Street	Basin repair	Sent to Roger Arnow	10/10/2016	10/10/2016	Basin is repaired	10/31/2016	Roger Arnow	Raised basin to grade	
	12/01/16	60 Quaker Ridge Rd	Basin repair								
	12/01/16	39 Holocomb	Basin repair								
	12/01/16	181 Thorn Ridge Rd	Basin repair								
	12/01/16	Hobson 150' in from Street	Basin repair	Sent to Roger Arnow	12/29/2016	2/1/2017	Basin repaired, needs curbing, asph, backfill &seed		Roger Arnow	2 Basins to be repaired across from one another	
	12/01/16	Magee Ave (Solid Waste)	Basin repair - Vac truck decant area	Sent to Roger Arnow	10/1/2016	10/1/2016	Basin is repaired	10/7/2016	Roger Arnow		
	12/01/16	Mill River Street	Basin repair	Sent to Roger Arnow	12/1/2016	12/1/2016	Basin is repaired	12/19/2016	Roger Arnow		
W484281-011717	01/30/17	70 Friar Tuck Lane	Basin repair (TT)	Sent to Arnow							
	01/31/17	100 Magee Ave (Recycling Center)	Basin repair (TT)	Sent to Grasso							
	02/01/17	1 Harbor View Ave (Solid Waste)	Basin repair (TT) Near semi scale/ seawall								
	02/01/17	Davenport St at Greenwich Ave	Basin repair (TT) Near WPCA pump station								
	02/01/17	152 Willowbrook Ave	Basin repair (TT) - high priority	Sent to Grasso	6/1/2017						
	02/08/17	300 Soundview Ave	MH repair (TT) - covered by asphalt - Danella hit	Sent to Arnow		2/10/2017	MH repaired-arnow furnished labor				
	02/08/17	369 Rock Rimmon Rd. @ Mill Rd.	Basin repair (TT) - raise frame and add another top & curb								
	02/13/17	51 Orange St	Basin repair (TT) may need new frame / frame adjustments	Sent to Arnow	7/21/2017						
	02/13/17	100 Magee Ave -behind VM	Basin repair (TT) - masonry and reset frame	Sent to Grasso							
	02/13/17	100 Magee Ave - VM by middle bays	Basin repair (TT) hole next to CB	Sent to Grasso							
	02/15/17	128/129 Fieldstone Road	Basin repair (TT) need to reset cast iron frame & top								
W485643-022117	02/21/17	11 Trailing Rock Lane	Manhole sinking (TT) MH masonry needs to be rebuilt	Sent to Arnow			Mahnole is repaired -TT provided frame				
W485598-021717	02/22/17	Hope & Mary Violet Lane	Manhole repair (TT) Cracked ring - verified storm by J.Corn	B. Denison Verified complet	4/28/2017						
	02/23/17	706 Bedford St	Basin repair (TT) reported by Todd Johnson								
	02/24/17	Bedford St. Annex Surface Parking Area	Basin repair (TT) Masonry work required. Double CB repair	Sent to Arnow		3/15/2017	Arnow to return to use hot asphalt to finish job. Job complete 4/13/17.				
	02/27/17	Rocky Rapids Rd at Riverbank -S./&North Side of rd.	Basin repair (TT) Masonry work required - reported by J. Hart / B. Denison								
	02/27/17	1290 Summer St	Basin repair (TT) Masonry work and change out frame top	Repaired by Grasso							
W477785-070916	02/27/17	174/176 Roxbury Rd.	Basin repair (TT) Masonry work reqd - road plate installed 1yr	Sent to Arnow - repaired by grasso		3/29/2017					
	02/27/17	Cummings Park Rd. in P.lot by softball field	Basin repair (TT) Masonry work reqd - road plate installed 1yr	Sent to Grasso	6/1/2017						
	02/27/17	86 Crestwood Drive	Buried stormwater MH - needs to be excavated and raised	Sent to Arnow	2/27/2017	3/13/2017	Manhole is repaired (Verified by TT)				
W487871-041917	02/27/17	1093 Rocky Rapids Road - Mead School	Basin repair (TT) Masonry work req'd - basin top sinking	Sent to Grasso	6/1/2017						
W485902-022417	02/28/17	32 Dagmar Road	Basin repair (TT) Masonry work req'd - hole next to CB	Sent to Arnow	7/21/2017						
	02/28/17	144 Myrtle Ave on Frederick St.	Basin repair (TT) Masonry work req'd - hole next to CB - change hartford style top								
	02/28/17	325 Bedford St @ Latham Park -E. Curb line	Basin repair (TT) Masonry work req'd - hole next to CB -Plated - Priority Repair	Sent to Arnow	3/9/2017	3/22/2017	In progress as of 3/20/17				
	03/02/17	40 Eljays Lane	Basin repair (TT) Masonry work req'd - hole next to CB								
	03/06/17	131 Davenport Ridge Lane	Basin repair (TT) Masonry work req'd - hole next to CB								
	03/06/17	339 Hope St. @ Church St.	Basin repair (TT) PRIORITY - Masonry work req'd - basin sinking	Sent to Arnow		3/28/2017					
	03/06/17	356 Riverbank Rd. -West side of road	Change Basin top, raise to finish grade, install minor curbing to direct flow								
W486191	03/06/17	85 Summit Ridge Road	Buried stormwater MH - needs to be excavated and raised	Sent to Arnow	7/21/2017						
	03/10/17	W. North St @ Rachelle Ave.	Buried stormwater MH - needs to be excavated and raised - men painted MH	Sent to Arnow	7/21/2017						
	03/15/15	Pulaski St. at E. Side of Bridge	Manhole repair (TT) Damaged ring - middle of road	Sent to Arnow	3/15/2017	3/20/2017	Manhole is repaired				
	03/20/17	Richmond Hill Ave @ Rose Park Ave	Basin repair (TT) reported by D. Hoyt - plated - HIGH PRIORITY	Sent to Grasso	6/1/2017						

	03/21/17	Glenbrook Road at Scofield Ave.	Basin repair (TT) reported by J. Cornelio									
	03/21/17	130 Gary Road	MH repair (TT) - cracked ring - dislodged by plow - reported by WPCA	Sent to Grasso (paving)								
	03/29/17	54 Munko Drive	Basin repair (TT) masonry work req'd - hole next to CB	Sent to Arnow	7/21/2017							
	03/29/17	88 Catoona Lane	Basin repair (TT) masonry work req'd - hole next to CB									
	04/05/17	19 Wild Horse Rd	Basin repair (TT) masonry work req'd - hole next to CB - HIGH PRIORITY	Sent to Grasso	6/1/2017	7/27/2017						
	04/03/17	638 Duffy St. at Cove Road	Basin repair (TT) masonry work req'd - cb frame sinking									
	04/07/17	346 Hope St. @ Pine Hill on Corner	Basin repair (TT) masonry work req'd - cb frame sinking	TT phone call to Arnow	4/7/2017	4/19/2017						
	04/07/17	190 Quarry Road	Basin repair (TT) masonry work req'd - hole next to CB 11/30/2016									
	04/07/17	64 Blue Rock Drive	Basin repair (TT) masonry work req'd - hole next to cb									
	04/11/17	179 Palmers Hill Rd - N. side of Street	Basin repair (TT) masonry work req'd - sinking - referral from L. Casolo & Ernie - HIGH PRIORITY	Sent to Grasso	6/1/2017	7/27/2017						
	04/13/17	227 Cedar Heights Road	Basin repair (TT) masonry work req's - reported by B. Denison									
W487700-041217	04/13/17	16 Albert Place	Basin repair (TT) masonry work req'd - cone placed by J. Cornelio									
W487854-041917	04/19/17	In Alley behind 41 Bank St.	Basin repair (TT) masonry work req'd - barrel placed by B. Denison	TT emailed to Arnow	4/28/2017							
	04/19/17	1620 Newfield Ave. at Eden Rd	Basin repair (TT) masonry work req'd - cone placed by B. Denison	Sent to Grasso	6/1/2017							
	04/26/17	Cold Spring at Washington Blvd.	Basin repar (TT) frame loose - reported by R. Frattarolli	TT emailed to Arnow	5/15/2017							
W487873-041917	04/26/17	25 Gurley Rd.	Basin repair (TT) masonry work req'd - as per CSR and per J. Cornelio									
	05/03/17	37 Interlaken Rd.	Basin repair (TT) masonry work req'd - hole next to CB - reported by J. Hoyt									
	05/03/17	44 River Hill Drive	Basin repair (TT) masonry work req'd - hole next to CB - repoted by J. Hart									
	05/08/17	90 Richmond Hill Ave.	Storm MH Repair (TT) cracked ring - requested locking MH -reported by B. Denison	TT emailed to Arnow								
	05/11/17	91 Rolling Wood	Basin repair (TT) masonry work req'd - hole next to CB - reported by J. Hoyt									
	05/16/17	206 Lynam Road	Basin repair (TT) masonry work req'd - hole next to CB - reported by B.Denison - replace 10' of RCP pipe in from CB									
	05/17/17	556 Glenbrook Road @Cowing Place	Basin repair (TT) masonry work req'd - cb frame sinking									
	05/17/17	20 Gregory Street	Basin repair (TT) replace CB top - frame is loose - reported by B. Denison									
	05/17/17	90 Van Buskirk Ave at Sachem Place	Basin repair (TT) masonry work req'd - cb frame sinking									
	05/17/16	3 St. Charles Ave.	Basin repair (TT) masonry work req'd - cb frame sinking									
	05/17/16	86 St. Charles Ave.	Storm Pipe Repair (TT) Jet nozzle became stuck - terminated and abandonded									
	05/18/17	31 Sweet Briar Ct.	Basin Repair (TT) masonry work req'd - reported by B. Denison - E. Orgera - HIGH PRIORITY	Sent to Grasso	6/1/2017	7/27/2017						
	05/22/17	65 Arden Lane	Basin Repair (TT) masonry work req'd - reported by B. Denison									
	05/25/17	24 Mill Spring Lane	Basin Repair (TT) masonry work req'd - reported by B. Denison									
	05/30/17	5 Cricket Lane	Basin Repair (TT) masonry work req'd - reported by J.Cornelio									
	05/30/17	60 Acre View Drive	Basin Repair (TT) masonry work req'd - reported by J.Cornelio									
	05/30/17	60 Acre View Drive	MH Repair - (TT) needs new "standard size" ring and cover - reported by J. Cornelio									
	05/30/17	44 Fenway St. @ H.S. Parking Lot	Basin Repair (TT) masonry work req'd - reported by B. Denison									
	05/30/17	401 Shippan Ave.	Basin Repair (TT) curb back missing - change top to cast iron - reported by B. denison									
	05/30/17	13 Fenway St.	Basin Repair (TT) needs new CB top & masonry failing									
	05/30/17	295 Haig Ave. at Nyselius Ave.	Basin Repair (TT) Masonry Failing - CB at E. curb line @sleepy hollow park	sent to grasso	8/28/2017							
	05/30/17	39 Waterbury Ave.	Remove and replace CB sump - TT to CCTV pipe, add MH at "T" intersection - see photos									
	05/31/17	6 Donata Lane	Basin Repair (TT) masonry work req'd - reported by B. Denison									
	06/02/17	17 Forest St	Basin Repairs (TT) (1) @ ROW entry and double (2) cbs near entry to garage									
W489963-060617	06/07/17	97 Ocean Drive West	Basin Repair (TT) needs new CB top									
W476951-061716	06/07/17	25 Cantwell Ave	Basin Repair (TT) masonry work req'd.W489827-060417									
	06/08/17	880 East Main (E.Main & Crystal)	Basin Repair (TT) masory work req'd - reported by j. hoyt - barrel placed 6/8/17									
	06/08/17	12 Bennett St.	Basin Repair (TT) masonry work req'd - reported by J.Hoyt - Barrel placed 6/8/17									
	06/08/17	115 Ocean Drive East	Basin Repair (TT) masonry work req'd - reported by B. Denison									
	06/08/17	740 Atlantic St	Basin Repair (TT) masonry work req'd - low priority - eng. Dept to realign intersection									
	06/09/17	11 West North St - infront of Cloonan School	Basin Repair (TT) masonry work req'd - reported by J. Hart - barrel place									
	06/09/17	73 Southfield Ave.	Basin Repair (TT) masonry work req'd - change out to flat top - demo sidwalk and slope to drain									
	06/12/17	893 Long Ridge Road	Basin Repair (TT) masonry work req'd - hole next to basin - cone placed									
	06/12/17	67 Hastings Lane	Basin Repair (TT) masonry work req'd - hole next to basin - cone placed									
	06/12/17	100 Research Drive	Basin Repair (TT) masonry work req'd - hole next to basin - cone placed - reported by J. Hoyt									
	06/21/17	502 Fairfield Ave	Basin Repair (TT) masonry work req'd - masonry collapsing - reported by J. Hoyt									
	06/22/17	52 Skyview Drive	Basin Repair (TT) masonry work req'd -masonry work req'd. TT to refer to eng. - need 320 lf of pipe + 3 MH's									
	06/23/17	29 Arthur Place	Basin Repair (TT) and MH repair - cracked ring									

City of Stamford - No. CT0030279

Open Drainage Channel (Culvert Cleaning and Backhoe Work) 7/1/16 - 6/30/2017

Date	Address / Location	Duration	Manpower	Quan. Of Material Removed	Receiving Stream	Notes
7/8/2016	490 June Road	1 Day	2 men, mini excavator	appx. 6 cubic yards	Mianus River	cut damaged corrugated metal pipe, excavated culvert outfall.
7/8/2016	494 June Road	1 Day	2 men, mini excavator	appx. 10 cubic yards	Mianus River	stormwater outfall pipe excavated w/ backhoe. Catch basin now flowing properly.
7/13/2016	502 Riverbank Road	5 Days	5 men, backhoe, dump trucks, Vac truck.	appx. 40 cubic yards	Mianus River	Cleaned out open channel drainage ditch. Accumulated debris - road debris, trash, sand, logs, leaf material, ect. clogged stormwater conveyance channel. Excavated, rip-rapped, and stabilized.
7/15/2016	10 Howard Road	1 Day	2 men, mini excavator	appx. 3 cubic yards	Mianus River	cleared stormwater discharge outfall from accumulated debris.
9/13/2016	88 Erskine Road	2 Days	2 men, backhoe, dump truck	appx. 20 cubic yards	Mianus River	stormwater outfall pipe buried by debris and illegally dumped brush/dirt/logs. Removed material, exposed end of pipe, excavated small swale to inlet, stabilized soils.
9/21/2016	156 Rocky Rapids Road	1 Day	3 men, mini excavator, dump truck	appx. 9 cubic yards	Mianus River	three (3) culverts cleaned out and refreshed
9/21/2016	1 Ralsey Road	1 Day	4 men, mini excavator	0	Rippowam River	cleared rocks and accumulated sand away from outlet of RCP stormwater discharge pipe
10/24/2016	21 Meadowpark Avenue S.	5 Days	4 men, backhoe, dump truck, mini excavator, vac truck	appx. 35 cubic yards	Rippowam River	Uncovered stormwater outfall pipe, buried by 6' of illegally dumped debris. Tree removals and restored stormwater swale.
10/25/2016	7 Brookvale Place	1 Day	4 men, Stetco hydraulic crane and Vac truck	appx. 3 cubic yards	Rippowam River	cleared logs and debris from RCP drainage inlet.
10/25/2016	11 Trailing Rock Lane	1 Day	4 men, Stetco hydraulic crane and Vac truck	appx. 3 cubic yards	Rippowam River	cleared logs and debris from RCP drainage inlet.
1/6/2017	61 Farms Road	1 day	6 men, 2 lowboys, backhoe, vac truck	appx. 12 cubic yards	Mianus River	Removed accumulated sediments from clogged culvert pipe and stream channel
3/5/2017	257 Silver Hill Lane	1 day	4 men, Stetco hydraulic crane and Vac truck	appx. 3 cubic yards	Rippowam River	cleared logs and debris from bar screen drainage inlet.
3/5/2017	87 White Birch Lane	1 Day	4 men, Stetco hydraulic crane and Vac truck	appx. 3 cubic yards	Rippowam River	cleared logs and debris from RCP drainage inlet.
3/30/2017	572 Roxbury Road	1 day	3 men	appx. 30 cubic yards	Mianus River	Removed illegally dumped wood mulch, leaves, and debris. Constructed drainage swale from roadway to CB. Seeded and stabilized exposed soils. Cleaned around guardrail base.
4/5/2017	8 Webbs Hill Rd. on Pheasant Lane	1 day	4 men, Stetco hydraulic crane and Vac truck	appx. 4 cubic yards	Rippowam River	Complaint received by Stormwater Management Department regarding clogged culvert causing flooding on roadway. Drainage inlet cleared with Stetco, drainage pipe jetted with Vac truck. Proper flow restored.

4/10/2017	123 Lawton Ave	1 Day	3 men, stetco hydraulic crane	appx. 3 cubic yards	Noroton River	cleared logs and debris from bar screen drainage inlet at sleepy hollow park.
4/11/2017	98 Westover Ave.	1 Day	4 men, Stetco hydraulic crane and Vac truck	appx. 6 cubic yards	Rippowam River	Complaint received by Stormwater Management Department regarding flooding - water coming over top of road. Drainage inlet cleared with Stetco, drainage pipe jetted with Vac truck. Proper flow restored.
4/12/2017	175 Riverbank Road	1 Day	4 men, Stetco hydraulic crane and Vac truck	appx. 6 cubic yards	Mianus River	Complaint received by Stormwater Management Department regarding clogged culvert causing flooding on roadway. Drainage inlet cleared with Stetco, drainage pipe jetted with Vac truck. Proper flow restored.
4/12/2017	14 Constance Lane	1 Day	4 men, Stetco hydraulic crane and Vac truck	appx. 3 cubic yards	Mianus River	dug out roadside swale, cleaned culvert inlet/outlet.
4/24/2017	Buxton Farms Road	2 days	5 men, loader, rolloff container, vac truck	appx. 40 cubic yards	Rippowam River	Uncovered previously unknown CB at entrance to Merritt Parkway northbound at High Ridge Rd. Cleaned discharge pipe leaving CB, removed sediment blocking stream channel, jetted upstream storm piping in response to flooding service requests.
5/15/2017	44 East Cross Road	1 Day	4 men, Stetco hydraulic crane and Vac truck	appx. 3 cubic yards	Norton River	Stormwater bar screen inlet cleared from leaves, logs, and accumulated debris. Proper flow restored.
5/24/2017	531 Hunting Ridge Road	1 Day	4 men, backhoe, dump truck	appx. 5 cubic yards	Rippowam River	Cleaned out open channel drainage ditch from accumulated sediment. Proper flow restored.
5/30/2017	269 Vine Road	1 Day	4 men, Stetco hydraulic crane and Vac truck	appx. 20 cubic yards	Rippowam River	Jetted six (6) RCP stormwater culvert pipes under vine road. Pipes were clogged with sediment and debris. Proper flow restored in five (5) pipes.

APPENDIX J

2016–17 IDDE SCREENING DATA SUMMARY TABLE

City of Stamford
Dry Weather
Outfall Screening
June 4, 2013
through July 1, 2017

Map Key

- Outfalls Tested before July 1, 2016 (54 points)
- Outfalls Tested between July 1, 2016 and June 30, 2017 (83 points)
- Hydrology
- Parks
- I-95 & Merritt Pkwy
- Major Arterials
- All Other Roads
- Railroads

Notes: Map created by Ciy of Stamford, CT GIS staff for MS4 annual reporting. Questions regarding this map should be directed to the City of Stamford MS4 program.
map created 9/21/2017

Site	Date	Time	Photo	Physical Condition	Other Defects	Illicit Discharges	Flow	Flow Estimation (gallon/second)	Conductivity (µS)	Turbidity (NTU)	DO (mg/L)	pH (pH Units)	Chlorine (mg/L)	Temp (°C)	Surfactants as (MBAS) (ppm)	Potassium (mg/L)	Ammonia (mg/L)	Fecal Coliform (CFU/100mL)	*E. coli* (CFU/100mL)	*Enterococci* (CFU/100mL)	Notes
SON-0002	8/24/2016	1110	Yes	Intact	none	None	Yes	Low but steady, too shallow to test with	373.50	0.93	8.44	7.10	0.10	19.70	0.00	15.00	0.00	1300	1300	n/a	Algae/moss growing in pipe
SON-0011	10/18/2016	719	Yes	Intact	none	Water was steaming and VERY warm	Yes	1.10	497	0.72	5.98	7.1	0.40	34.3	0.00	4.0	0.00	0	0	<10	
SON-0012	8/24/2016	1217	Yes	Intact	none	None	Yes	Fast flow, but unable to measure with bucket in manhole	557.00	0.40	8.85	7.10	0.40	20.30	0.00	8.00	0.00	460	330	n/a	Sampled from first upstream manhole. Dye tested with Tyler Theder to confirm discharge to outfall.
SON-0013	10/19/2016	721	Yes	Intact	Rebar exposed	Algae growing in pipe	Yes	0.34	36102.00	0.93	6.41	6.90	0.40	19.10	2.00	330.00	0.00	10	8	50	Dead fish present. Pipe was completely above tide level (See photo)
SON-0015	10/18/2016	953	Yes	Intact	none	Slight white/tan foam (looked natural)	Yes	Steady low flow, unable to test with bucket	40613.00	24.20	4.17	7.00	0.30	18.40	2.00	590.00	0.25	16	6	30	
SON-0016	10/18/2016	927	Yes	Intact	Small amount of rebar exposed	None	Yes	0.12	29702.00	1.58	3.18	7.20	0.30	18.60	2.00	540.00	0.25	44	26	340	
SON-0017	10/19/2016	806	Yes	Collapsed	Pipe ioints seoarated. rebar showine	None	Yes	0.19	3814.00	0.73	6.52	7.00	0.40	18.70	2.00	420.00	0.00	8	12	10	Flowing coming out side of pipe because end is packed with sand (not fully clogging pipe, but enough to push it out side joint). 60ft of pipe all covered at high tide
SON-0019	10/18/2016	845	Yes	Intact	none	None	Yes	0.01	2536.00	1.17	8.69	6.90	0.30	17.30	0.25	46.00	0.00	220	150	2270	
SON-0023	10/18/2016	813	Yes	Intact	none	None	Yes	Visual guesss = 0.13	37858.00	5.10	1.62	6.80	0.10	18.80	2.00	370.00	0.00	590	560	90	
SON-0030	10/19/2016	842	Yes	Intact	none	None	Yes	Visual guesss = 0.09	15021	0.38	7.61	7.0	0.10	18.6	0.75	210.0	0.00	7900	4900	TNTC	
SON-0033	4/11/2017	853	Yes	Intact	none	None	Yes	Medium flow, large volume flwoing through manhole	1485.00	0.78	9.70	7.30	0.10	10.00	0.25	5.00	0.00	3300	3200	1280.00	Sample taken from first upstream manhole because outfall was partially submerged. Water drained slowly through the marsh
SON-0034	8/24/2016	1326	Yes	Intact	Too broken away 6-12inches from end	None	Yes	Constant low flow, but could not measure with bucket due to pipe submersion	585	0.39	3.67	6.1	0.40	20.1	0.00	9.0	0.00	230	50	n/a	Pipe was 75% submerged. No catchbasin or manhole in area to test from. Ground around pipe is errodine/felt like sinkhole.
SON-0037	4/10/2017	928	Yes	Intact	2 feet into the pipe a 3ft long cement/rock slab is visible filling the bottom half of the pipe.	Wet observed in pipe	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2/28/17: Standing water observed behind cement/rock slab in pipe. PVC connected into outfall as well. Opened 1st manhole and observed it to be dry. Did observe a pile of possible fecal matter and toilet paper or plastic bag (hard to differentiate) up on the ledge inside manhole. Had to sandbag outfall. Return trip on 3/1/17 (Failed, rain cause the sample to be unuseable). 4/10/17: returned to try sampling again. Observed moisture on the pipe so we sandbagged. Returned 4 hours later (1331) and found no accumulation behind bag. Water was present both times behind the cement block. No samples were collected.
SON-0038	2/28/2017	955	Yes	Intact	none	None	Yes	Steady moderate flow. Observed flow out of south pipe only.	1252	0.41	8.33	6.5	0.1	14	0.25	10	0	1	0	n/a	2 outfalls at area where SON-0038 was on map. Caps on the end of both pipes. Flow observed from south pipe. Sampled from 1st manhole as suggested. Only one manhole observed in the area, assume it feeds both outfalls.
SON-0046	8/8/2016	1124	Yes	Collapsed	Completely corroded out on bottom (metal pipe)	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-0052	4/10/2017	938	Yes	Intact	none	Discoloration on pipe	no	Upon removing the sandbag and letting that flow subside, flow again began at 0.004gal/sec	510	101.00	10.50	7.5	0.80	9.4	>3.0	6.0	3.00	0	0	n/a	2/28/17: Flowing 1 drip per second. Possible greywater, slight sewage smell. Had to sandbag. Return Trip on 3/1/17 FAILED, rain so sample could not be taken). 4/10/17: Returned to try sampling again. No odors or greywater observed like last time. Pipe was discolored so we sandbagged. Returned 4 hours later (1400) and water had accumulated behind bag and was still coming out. We believed this was due to the Northeast Tent company that was washing tents and letting the waste run into the storm drain (washing had begun just after we placed the sandbag, we saw them as we were leaving). Called Tyler and he said to use the sample even though we were sure where the discharge was comine from.
SON-0053	8/8/2016	1151	Yes	Intact	none	Iron slime/orange slime	Yes	0.05	1059	3.92	7.63	7.2	0.30	22.2	0.00	23.0	0.25	66	10	n/a	
SON-0054	8/8/2016	1300	Yes	Intact	none	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-0055	8/8/2016	1301	Yes	Intact	none	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-0057	11/14/2016	1048	Yes	Intact	none	Natural looking foam below discharge in riverbed	Yes	High flow over very wide area and very shallow water depth	569	0.39	12.15	7.1	0.10	8.1	0.00	8.0	0.00	32	24	n/a	Samples taken from north side of culvert
SON-0058	11/14/2016	1340	Yes	Intact	none	None	Yes	Low flow, deep water, and wide pipe	505	0.35	8.63	6.9	0.10	14.3	0.25	22.0	0.00	112	98	n/a	Sampled from first upstream manhole. Saw outfall, but River was higher than the pipe. Inside manhole could see a metal pipe and PVC pipe, but bother were dry.
SON-0059	11/14/2016	1158	Yes	Intact	none	None	Yes	Visual guess = 0.03	1163	1.94	11.62	6.8	0.20	8.5	0.25	7.0	0.00	140	136	n/a	
SON-0061	11/14/2016	1312	Yes	Intact	none	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Leaves and dirt in pipe
SON-0063	11/14/2016	1035	Yes	Intact	none	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-0066	11/14/2016	1004	Yes	Intact	none	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-0067	11/14/2016	1017	Yes	No eyes on outfall. Manhole looked intact	none	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Could not access outfall, homeowner not home and property is fenced in. Opened 1st upstream manhole and found it dry as well as the catchbasins.
SON-0068	11/14/2016	955	Yes	Intact	none	Some darkening on bottom of pipe from use, but no evidence of recent flow or illicit discharge	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-0069	1/30/2017	1435	Yes	Intact	none	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No noticebale flow at outfall but river height was up into pipe. Checked manhole in street and no flow observed.
SON-0070	4/10/2017	1038	Yes	Intact	none	Oil present on river surface, oil also seen in first upstream manhole. (Lots of iron slime present on previous trips)	Yes	low but constant	1823.00	3.84	2.85	6.80	0.10	10.80	0.25	21.00	1.00	1	0	n/a	Water up into pipe, sampled from first upstream manhole. Flow observed from two pipes in manhole. Majority of flow coming from the pipe which is connected to the system visible on the map. The other was just a wet trickle (maybe connected to catch basin?). This was the third trip to sample this outfall. The first time on 1/30/17 we tried sampling in first upstream manhole. There was a small flow from a pipe, but the water we could sample would have been standing water and we did not have maps to indicate where the other manholes/catchbasins were. The Photo on file shows the iron slime that was in the river below the outfall and the oil. Returned on 2/28/17 and there was again a samll flow from a pipe but where we could sample was standing water in first upstream manhole. The other upstream manholes were dry.
SON-0071	4/10/2017	1000	Yes	Intact	none	none	Yes	moderate to high (couldn't use bucket to test in manhole)	2458	0.33	9.25	6.3	0.10	10.4	0.25	12.0	0.00	8	8	n/a	Water up into pipe, sampled from first upstream manhole. Flow observed from all three pipes that enter manhole. Sample contains flow from all three pipes.
SON-0075	1/30/2017	1117	Yes	Intact	none	None	Yes	Shallow flow byt constant from west pipe	1164.00	0.22	10.21	6.10	0.00	10.70	0.25	7.00	0.00	0	0	n/a	River height into outfall so sampled from first upstream manhole. No catchbasin in area like shown on map. Two pipes discharged into manhole, only west pipe was flowing.
SON-0076	1/30/2017	1200	Yes	Intact	some rebar exposed	slight rust color in pipe	Yes	0.09	1106	0.72	9.55	6.2	0.10	10.3	0.25	9.0	0.00	0	0	n/a	
SON-0077	1/30/2017	1318	Yes	Intact	none	Oil sheen in pool below outfall	Yes	constant trickle	1528	0.18	10.50	6.2	0.00	6.6	0.25	12.0	0.00	4	4	n/a	
SON-0081	4/11/2017	722	Yes	Intact	Could not tell from the angle of sample collection	None	Yes	0.07	6486	3.26	10.85	7.7	0	9.9	0.75	61	0	34	33	300	Had to sample from above, would have needed a boat to be on same level or below outfall.
SON-0082	4/11/2017	711	Yes	Intact	Breakage around edges	none	Yes	Low but constant	12853	6.19	9.4	7.4	0.1	8.6	1	120	0.25	1	1	20	
SON-0084	5/17/2017	1132	Yes	Intact	none	None	Yes	Very high flow	140.00	0.67	9.64	7.30	0.10	14.30	0.00	3.00	0.00	330	330	n/a	
SON-0085	5/17/2017	840	Yes	Intact	some rebar exposed	None	Yes	0.15	988.00	0.26	10.20	7.40	0.00	13.70	0.00	4.00	0.00	190	190	100.00	
SON-0086	5/17/2017	1115	Yes	Intact	none	None	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-0092	5/17/2017	927	Yes	Intact	none	None	Yes	medium flow	455.00	3.12	8.39	7.00	0.10	14.40	0.00	3.00	0.00	198	198	90.00	Outfall 3/4 submerged at lowtide so sampled from first upstream manhole. Inside manhole, one inbound pipe has small flow

Site	Date	Time	Photo	Physical Condition	Other Defects	Illicit Discharges	Flow	Flow Estimation (gallon/second)	Conductivity (µS)	Turbidity (NTU)	DO (mg/L)	pH (pH Units)	Chlorine (mg/L)	Temp (°C)	Surfactants as (MBAS) (ppm)	Potassium (mg/L)	Ammonia (mg/L)	Fecal Coliform (CFU/100mL)	*E. coli* (CFU/100mL)	Enterococci (CFU/100mL)	Notes
SON-100	6/20/2016	1150	yes	intact	pipe is filled with sediment about 2 ft into pipe	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	spray paint marking on sidewalk identified pipe as DIS-248
SON-101	4/17/2017	839	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Rock in pupe. Not blocking pipe entirely, but a decent amount.
SON-102	4/17/2017	852	yes	intact	none	Standing water in pipe, sandbagged	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Rock infront of pipe which may impede flow. Had to sandbagged because there was standing water in pipe. Returned after 4 hours (1252) to check and no additional water had built up behind bag and standing water did not flow out when removing the bag.
SON-103	7/18/2016	1531	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-104	6/20/2016	1215	yes	intact	rebar showing on pipe rim	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-105	5/17/2017	1025	yes	Only saw manhole	n/a	none	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-106	4/18/2017	845	yes	Collapsed	Concrete is non-existent anymore. Only the rebar cage is present (aprox 5ft seen).	none	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Pipe is submerged at high tide. Individual small standing pools were observed, but water was remaining from high tide. No flow observed.
SON-107	4/18/2017	857	yes	intact	none	none	yes (see notes)	4 drops per second	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Could not sample outfall for two reasons - not enough water was coming out and sandbagging would not be feasible, and it was not accessible from above or below. We checked the first manhole in the street baised on the maps available and it was dry.
SON-108	4/18/2017	915	yes	Cemented shut	Plugged with cement (see photo)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Checked first upstream catchbasin which had standing water in it. Moved to next point, a manhole, which had apparent dampness in the pipe, but nothing that we could sample or sandbag.
SON-109	4/19/2017	1045	yes	intact	none	none	yes	0.14	519	0.48	11.4	7.2	0.1	10.7	0.25	10	0	2	2	n/a	Sandbagged on 6/20/16. Returned 6/21/16, but area looked like it received a lot of rainfall (puddles present, ground still wet at 10:30am) and the amount of water behind sandbags was more indicative of runoff than illicit discharge we were trying to catch. Site revisited on 4/19/17 and there was a large flow.
SON-110	6/20/2016	1343	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-111	6/20/2016	1347	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-112	4/18/2017	1214	yes	intact		A smell was in the air, but it could not be placed, and continually shifted with the wind.	yes	Large volume over wide area	753.00	0.56	11.76	7.40	0.60	10.70	0.25	7.00	0.00	0.00	0.00	<10	
SON-113	5/16/2017	845	yes	Only saw manhole	n/a	none	yes	low/medium	16573	5.12	5.86	7.0	0.10	13.4	2.00	200.0	0.00	3700	2100	3350	Sampled from manhole at the Cummings Park pump station with Tyler Theder
SON-114	5/16/2017	1133	yes	intact	none	none	yes	very low	9522.00	14.40	6.70	7.20	0.10	15.40	1.00	130.00	0.00	70.00	64.00	160.00	
SON-116	4/17/2017	908	yes	intact	none	Lots of algae in and on pipe, when removed algae some water flowed out of pipe but seemed to end. Enough water in pipe for us to sandbag because we were concerned. Upon return to check, foamy bubbles observed below outfall.	no	trickle if any	3268	65.50	9.60	7.4	0.00	12.1	0.50	31.0	0.00	68	54	400	Sandbagged and returned to check four hours later at 1253. Water built up behind bag. Lots of sedimentation in discharge (see photo). Bacteria samples may not be readable due to sediment in sample.
SON-117	4/17/2017	935	yes	unknown (see notes)	unknown (see notes)	unknown (see notes)	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Could not find the outfall in the seawall. Found first upstram catchbasin and it was dry (lots of sand in catchbasin though). Nothing on the sand in front of the seawall indicated an outfall that was illicitly discharging.
SON-118	4/17/2017	942	yes	intact	first section of pipe is disjointed and actually tilted upwards. Sand, rock, and shell built up in the disjointed section	Goose poop present below outfall to the side	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-119	4/17/2017	940	yes	intact	none	none	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Checked first upstream catchbasin and any water in catchbasin was not high enough to reach outlet pipe.
SON-120	4/17/2017	955	yes	intact	none	white staining on bottom of pipe, possible white slime which could be found downstream of outfall and to the sides of the outfall, foaming beneath pipe	yes	strong trickle	14215	12.20	7.87	7.2	0.20	14.4	1.00	130.0	0.25	4	0	20	
SON-121	4/17/2017	1000	yes	intact	none	aeration foam below the discharge	yes	Very high flow. Too much water to check with bucket.	2785	2.76	11.14	7.4	0.2	12.9	0.25	23	0	448	448	680	Lots of algae in pipe as well as oysters and mussels growing
SON-122	4/17/2017	1104	yes	collapsed	Very degraded at mouth with rebar exposed and rusted away	none	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Marina worker said outfall never flows unless it is raining
SON-123	4/17/2017	1114	yes	intact	Lots of rebar on rim showing	none	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-124	4/19/2017	1148	yes	intact	none	none	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Pipe is visible and accessible at low tide, even though the map says it is not.
SON-125	4/18/2017	912	yes	intact	none	orange staining on pipe, iron slime?, bubbles below outfall (possibly natureal aeration)	yes	0.17	2855.00	31.90	4.92	6.90	0.00	11.60	0.25	49.00	1.00	0.00	0.00	<10	
SON-126	4/18/2017	959	yes	intact	some degregation of bottom rim	Rusting/orange on outside of rim, algae present	yes	constant low flow (greater than a trickle)	22980.00	1.53	5.60	7.40	0.00	11.80	2.00	230.00	0.50	17.00	16.00	50.00	Mussels and oysters growing in pipe.
SON-128	4/11/2017	836	yes	intact	some rebar showing	none	yes	0.59	4458	1.10	11.30	7.3	0.10	9.7	0.50	30.0	0.00	1600	1600	980	Some algae and oysters growing in pipe
SON-129	6/20/2016	1057	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-130	7/18/2016	1535	yes	intact	slight deterioration of edge	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-132	7/18/2016	1550	yes	Damaged	cracked all the way up the middle, 1.5 foot portion at top is missing	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-133	7/18/2016	1558	yes	intact	some rebar showing	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-134	7/18/2016	1554	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-135	5/16/2017	12117	yes	intact	none	none	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Per previous visits and conversations with Tyler Theder, we sampled from the first upstream manhole. There was standing water in manhole, but the water level was not high enough to reach outlet pipe. No sample was taken.
SON-136	7/18/2016	1619	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	pvc pipe
SON-137	7/18/2016	1604	yes	intact	substantial reust and deterioration at end of pipe	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-138	7/18/2016	1600	yes	collapsed	over 1 food of end of pipe is missing	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-140	7/18/2016	1524	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-141	7/18/2016	1515	yes	intact	Bottom of pipe has chunk missing	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-142	7/18/2016	1525	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	pvc pipe
SON-143	5/16/2017	1005	yes	Only saw inside vault	n/a	none	no	standing water	1912.00	5.84	6.71	7.20	0.20	13.80	0.25	26.00	0.00	320.00	410.00	20.00	Sampled with Tyler Theder inside vault of stormwater pump station.
SON-144	5/16/2017	926	yes	Only saw manhole	n/a	none	yes	very low	2099	9.15	2.74	6.7	0	13.6	0.25	26	0.25	48	30	190	Sampled with Tyler Theder in manhole at stormwater pump station.
SON-145	6/20/2016	1230	yes	intact	none	wet in pipe, standing water below	no, sanbagged														Sandbagged. Return trip necessary 6/21/16. Returned 6/21/16 and found small amount of water behind sandbag, but not enough to complete analysis on. When sandbag was removed, water did not exit pipe due to dirt build up at outfall. This may be we saw dampness in pipe to begin with - residual from old storms). Update 5/19/17: Did not complete this outfall as per discussions with Tyler Theder.
SON-146	7/18/2016	1610	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-94	6/20/2016	1351	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
SON-96	5/16/2017	1050	yes	Only saw manhole	none	none	yes	medium	1313	1.56	8.90	7.1	0.10	14.6	0.25	22.0	0.00	12	11	30	
SON-97	4/18/2017	1107	yes	unknown (see notes)	n/a	n/a	no (see notes)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Pipe was completely hidden by the seawall boulders. We could hear a discharge and we could see a small flow through the rocks and down the mudflat, but no eyes on an outfall. We opened the first upstream manhole and it had standing water that was shallow (below pipe lips). Both input pipes and the discharge pipe were dry. This led us to believe the drainage we heard/saw by the seawall was the tide still receeding.
SON-98	4/18/2017	1134	yes	intact	First section of pipe is not connected to the rest of the pipe which goes underground.	none	yes	medium (substantial, but not gushing)	2975	4.53	8.21	7.0	0.10	10.5	0.25	41.0	0.50	10	10	10	Dowestream (approx 6ft) of pipe, the mud was very black and grey
SON-99	6/20/2016	1225	yes	intact	none	n/a	no	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	discoloration on bottom of pipe but nothing to indicate any evidence of recent flow

APPENDIX K

2016–17 IDDE INVESTIGATION DATA SUMMARY TABLES

Description of IDDE Investigation Locations:

9/21/16

This data was a split sample during an EPA sampling event.

1) Round concrete pipe in retaining wall at Palmer's Landing (condominium). DIS 342
2) Round concrete pipe below high tide line in Stamford Harbor located between 125 and 135 Downs Avenue. DIS 334
3) Round concrete pipe on beach below intersection of Ralsey Road and Ralsey Road South. DIS 333
4) Round concrete pipe in headwall at Stamford Yacht Club. DIS 341
5) Round concrete pipe in stone headwall at end of Saddle Rock Road. DIS 331
6) Round concrete pipe with flared end in stone wall on Greenwich Avenue at South State Street. DIS 407
7) Round concrete pipe in headwall approx. 30 ft from DIS 407 connected to I95 DOT corridor on Greenwich Avenue at South State Street. DIS DOT

5/17/17

This dry weather sampling event was conducted with Jack Melcher from the EPA and Tyler Theder of the City of Stamford. Eight samples were collected and split with the EPA.

DIS-338:

- Round 60" concrete pipe in headwall which discharges into LIS at end of Stamford Avenue.

DIS 343:

- Round 36" concrete pipe in headwall which discharges into LIS between 20 and 22 North Ocean Drive.

DSN-435:

- Unknown size and shaped outfall. Sample collected from the manhole at the corner of Jefferson and Canal Street and discharges into the Norton River.

DIS-892:

- Round 36" concrete pipe in headwall which discharges into the Noroton River at the end of Brookside Drive.

DIS-903:

- Round 60" concrete pipe near active railroad tracks west of the Bob's Discount Furniture on Hope Street. The sample was collected from the closest upgradient catch basin and discharges into the Noroton River.

DIS-1004:

- Round 60" concrete pipe which discharges into the Noroton River located in headwall behind 92 Ocean Drive.

DIS-1005:

- Round 60" concrete pipe which discharges into the Noroton River located in headwall behind 92 Ocean Drive.

CITY OF STAMFORD MS4 OUTFALL SAMPLING RESULTS

STAMFORD, CONNECTICUT

September 21, 2016

PARAMETERS	UNITS	DIS 342	DIS 334	DIS 333	DIS 341	DIS 331	DIS 407	DIS DOT
Description	-	Pipe in headwall at Palmer's Landing Condominium	Pipe below high tide line between 125 & 135 Downs Avenue	Pipe on beach below intersection of Ralsey Road and Ralsey Road South	Pipe in headwall at Stamford Yacht Club	Pipe in stone headwall at end of Saddle Rock Road	Pipe with flared end in stone wall on Greenwich Avenue at South State Street	Pipe in headwall 30' upgradient from DIS 407 connected to I-95 DOT corridor
Receiving Stream	-	East Branch Stamford Harbor	Stamford Harbor	Stamford Harbor	Stamford Harbor	Stamford Harbor	Rippowam River	Rippowam River
Outfall size	inches	est. 24	36	48	36	36	36	36
Outfall type	-	concrete pipe	concrete pipe	concrete pipe	concrete pipe	concrete pipe	concrete pipe	concrete pipe
Date of sample	-	9/21/2016	9/21/2016	9/21/2016	9/21/2016	9/21/2016	9/21/2016	9/21/2016
pH	S.U.	8.58	8.04	8.25	8.34	8.54	8.89	8.59
Temperature	C	22.91	24.86	23.70	21.55	23.82	25.10	23.06
Specific Conductance	µmhos/cm	21,647	31,509	35,219	2,945	31,146	1,277	2,238
Turbidity	NTU	0.01	0.01	0.01	0.01	2.80	0.01	0.01
Chlorine Residual	mg/L	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02
Enterococci Bacteria	MPN/100 mls	96	1,720	594	583	158	373	780
Fecal Coliforms	/100 mls	420	>2,000	890	>2,000	>2,000	>2,000	>2,000
Escherichia Coli	/100 mls	450	474	414	1,010	5,480	>24,200	9,800
MBAS	mg/L	<0.10	<0.10	<0.10	<0.05	<0.10	<0.05	0.07
Ammonia as Nitrogen	mg/L	0.15	0.26	0.14	<0.05	0.41	0.42	0.06
Salinity	mg/L	21	27	24	1.1	21	<0.05	1.2

Notes:

Dry Sampling Event

- Not Analyzed

Samples split with Environmental Protection Agency

CITY OF STAMFORD MS4 OUTFALL SAMPLING RESULTS

STAMFORD, CONNECTICUT

May 17, 2017

PARAMETERS	UNITS	DIS-338	DIS-343	DIS-435	DIS-892	DIS-893	DIS-903	DIS-1004	DIS-1005
Description	-	Outfall in headwall discharging into LIS at end of steet	Headwall discharging into LIS between 20 and 22 North Ocean Drive	Manhole at corner of Jefferson and Canal Street	Outfall in headwall at end of Brookside drive.	Outfall in headwall at end of Brookside drive.	Outfall near active RR tracks, sample collected from upstream catch basin	Outfall in headwall behind 92 Research Drive.	Outfall in headwall behind 92 Research Drive.
Receiving Strem	-	LIS	LIS	Noroton River	Noroton River	Noroton River	Noroton River	Noroton River	Noroton River
Outfall size	inches	60	36	-	36	24	60	60	60
Outfall type	-	concerte pipe	concrete pipe	-	concrete pipe	concrete pipe	concrete pipe	concrete pipe	concrete pipe
Date of sample	-	5/17/2017	5/17/2017	5/17/2017	5/17/2017	5/17/2017	5/17/2017	5/17/2017	5/17/2017
pH	S.U.	6.93	6.68	6.99	7.33	7.31	7.19	7.04	7.79
Temperature	C	14.87	14.21	13.94	12.78	13.01	12.82	13.56	12.90
Specific Conductance	µmhos/cm	1,046	1,934	15,026	831	833	886	871	888
Turbidity	NTU	3.94	4.76	7.22	6.61	5.76	1.06	4.12	5.18
Chlorine Residual	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Enterococci Bacteria	MPN/100 mls	711	370	171	52	31	210	395	139
Fecal Coliforms	/100 mls	300	<100	900	<100	200	100	400	500
Escherichia Coli	/100 mls	496	<10	988	63	41	546	437	298
MBAS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ammonia as Nitrogen	mg/L	<0.05	0.13	0.25	<0.05	<0.05	0.09	0.11	0.09
Salinity	mg/L	0.62	0.92	18.8	0.41	0.42	0.44	0.29	0.31

Notes:

Dry Sampling Event

- Not Analyzed

Samples split with Environmental Protection Agency

APPENDIX L

IDDE PRIORITY AREAS MAP

City of Stamford
IDDE Priority Areas
6/30/2016

Map Key

- IDDE Priority Outfalls
- IDDE Priority Areas
- Hydrology
- Parks
- I-95 & Merritt Pkwy
- Major Arterials
- All Other Roads
- Railroads

Notes: Map created by Ciy of Stamford, CT GIS staff for MS4 annual reporting. Questions regarding this map should be directed to the City of Stamford MS4 program.
map created 9/16/2016

APPENDIX M

2016–17 IN-STREAM SAMPLING DATA SUMMARY TABLE

CITY OF STAMFORD MS4 INSTREAM SAMPLING RESULTS
STAMFORD, CONNECTICUT

PARAMETER	UNITS	ISS-001	ISS-002	ISS-003	ISS-004	ISS-005	ISS-006	ISS-007	ISS-008	ISS-009	ISS-010
DSN	-	DSN-001	DSN-002	DSN-003	DSN-004	DSN-005	DSN-006	DSN-007	DSN-008	DSN-009	DSN-010
Description	-	Mianus River (7407)	East Mianus River (7406)	Mill River (7403)	Nororton River (7403)	Rippowam River "A" (7405)	Rippowam River "B" (7405)	Rippowam River "C" (7405)	LIS Coastal Watershed "A" (7000)	LIS Coastal Watershed "B" (7000)	LIS Coastal Watershed "C" (7000)
Latitude	dec. deg	41.10746	41.13363	41.1648	41.06329	41.05458	41.066	41.08963	41.02823	41.04359	41.04414
Longitude	dec. deg	-73.58722	-73.58796	-73.54427	-73.50879	-73.54503	-73.55778	-73.55925	-73.55566	-73.51705	-73.56443
Receiving Stream	-	Long Island Sound	Mianus River	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound
Date of Sample	-	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016
Magnitude of Storm	inches	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17
Event Type	-	WET	WET	WET	WET	WET	WET	WET	WET	WET	WET
Date of Last Storm	-	7/25/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016
LAB SAMPLE #	-	BN82734	BN82735	BN82736	BN82737	BN82738	BN82739	BN82740	BN82741	BN82742	BN82743
pH	S.U.	7.51	7.43	7.37	7.56	7.39	7.50	7.26	7.42	7.52	7.67
Temperature	° C	20.94	20.62	20.90	21.95	21.61	21.02	21.44	21.31	21.84	21.01
Specific Conductivity	µmhos/cm	314	329	312	362	305	216	479	424	234	157
Dissolved Oxygen	mg/L	5.99	6.20	5.30	5.44	6.16	6.36	5.74	5.75	5.59	6.11
B.O.D./5 day	mg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	12	<4.0	<4.0
Chloride	mg/L	66.2	76.5	59.3	70.7	73.0	43.2	126	114	60.0	20.2
C.O.D.	mg/L	18	31	20	35	33	23	20	61	27	23
Hardness (CaCO3)	mg/L	83.6	68.2	87.8	65.2	57.4	35.0	90.7	78.9	27.1	32.1
MBAS	mg/L	<0.05	<0.05	<0.05	0.14	0.07	0.07	<0.05	0.09	0.10	0.08
Phosphorus, as P	mg/L	0.06	0.14	0.03	0.20	0.16	0.12	0.13	0.26	0.13	0.13
Total Suspended Solids	mg/L	12	28	8.0	18	23	15	10	19	9.5	5.5
Oil and Grease, Total	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Oil and Grease, TPH	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Copper	mg/L	<0.005	<0.005	0.012	0.007	0.007	<0.005	0.007	0.038	0.006	0.007
Lead	mg/L	<0.002	<0.002	<0.002	0.004	0.004	0.002	<0.002	0.008	0.002	<0.002
Zinc	mg/L	0.002	0.009	0.003	0.025	0.024	0.009	0.006	0.010	0.029	0.025
Nitrite-N	mg/L	<0.010	<0.010	<0.010	<0.026	<0.010	<0.010	<0.010	<0.010	0.016	0.012
Nitrate-N	mg/L	0.05	0.51	0.08	0.70	0.66	0.50	0.53	0.32	0.46	0.42
Ammonia as Nitrogen	mg/L	0.06	0.11	<0.05	0.28	0.13	0.13	0.18	0.23	0.22	0.19
Nitrogen Tot Kjeldahl	mg/L	0.52	0.68	0.36	0.86	0.60	0.55	0.81	2.12	0.67	0.61
Escherichia Coli	/100 mls	1,180	8,160	816	>24,200	9,800	9,210	3,450	3,450	9,210	6,490
Enterococci Bacteria	/100 mls	404	6,490	1,350	6,130	5,480	8,660	2,610	4,880	10,500	6,870
Fecal Coliforms	/100 mls	975	>2,000	670	>2,000	>2,000	>2,000	>2,000	>2,000	>2,000	>2,000
LC 50	%	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100
NOAEL	%	100	100	100	100	100	100	100	100	100	100

Notes:

Wet sampling event.

Rainfall data taken from National Weather Service Gauging Station in White Plains, NY

CITY OF STAMFORD MS4 INSTREAM SAMPLING RESULTS
STAMFORD, CONNECTICUT

PARAMETER	UNITS	ISS-001	ISS-002	ISS-003	ISS-004	ISS-005	ISS-006	ISS-007	ISS-008	ISS-009	ISS-010
DSN	-	DSN-001	DSN-002	DSN-003	DSN-004	DSN-005	DSN-006	DSN-007	DSN-008	DSN-009	DSN-010
Description	-	Mianus River (7407)	East Mianus River (7406)	Mill River (7403)	Nororton River (7403)	Rippowam River "A" (7405)	Rippowam River "B" (7405)	Rippowam River "C" (7405)	LIS Coastal Watershed "A" (7000)	LIS Coastal Watershed "B" (7000)	LIS Coastal Watershed "C" (7000)
Latitude	dec. deg	41.10746	41.13363	41.1648	41.06329	41.05458	41.066	41.08963	41.02823	41.04359	41.04414
Longitude	dec. deg	-73.58722	-73.58796	-73.54427	-73.50879	-73.54503	-73.55778	-73.55925	-73.55566	-73.51705	-73.56443
Receiving Stream	-	Long Island Sound	Mianus River	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound
Date of Sample	-	8/30/2016	8/30/2016	8/30/2016	8/30/2016	8/30/2016	8/30/2016	8/30/2016	8/30/2016	8/30/2016	8/30/2016
Magnitude of Storm	inches	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Event Type	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Date of Last Storm	-	8/21/2016	8/21/2016	8/21/2016	8/21/2016	8/21/2016	8/21/2016	8/21/2016	8/21/2016	8/21/2016	8/21/2016
LAB SAMPLE #	-	BV00528	BV00529	BV00530	BV00531	BV00532	BV00533	BV00534	BV00535	BV00536	BV00537
pH	S.U.	7.83	7.76	7.25	8.62	9.38	7.29	6.91	8.37	8.05	8.65
Temperature	° C	23.22	23.13	23.82	21.89	26.33	23.00	22.84	24.08	26.87	24.19
Specific Conductivity	µmhos/cm	353	445	342	645	800	754	666	23,929	27,738	1,260
Dissolved Oxygen	mg/L	4.16	3.07	5.11	0.18	7.57	6.17	5.13	4.94	4.21	5.11
B.O.D./5 day	mg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
C.O.D.	mg/L	<10	<10	12	<10	12	<10	12	412	734	12
Hardness (CaCO3)	mg/L	83.1	82.6	81.7	131	145	134	123	2,720	3,220	254
MBAS	mg/L	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.10	<0.05
Phosphorus, as P	mg/L	0.04	0.06	0.04	0.08	0.07	0.08	0.06	0.11	0.18	0.06
Total Suspended Solids	mg/L	<5.0	7.0	<5.0	<5.0	<5.0	11	8.0	7.5	6.5	<5.0
Oil and Grease, Total	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Oil and Grease, TPH	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Copper	mg/L	< 0.005	<0.005	0.012	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	mg/L	< 0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002
Zinc	mg/L	< 0.002	<0.002	<0.002	<0.002	<0.002	0.006	<0.002	<0.002	0.010	0.004
Nitrite-N	mg/L	0.08	0.52	0.05	1.14	0.60	0.86	0.74	0.86	0.74	1.07
Nitrate-N	mg/L	0.08	0.52	0.05	1.13	0.60	0.86	0.74	0.85	0.70	1.05
Ammonia as Nitrogen	mg/L	<0.05	0.07	0.05	0.05	0.05	0.10	0.07	0.25	0.43	0.11
Nitrogen Tot Kjeldahl	mg/L	0.62	0.46	0.47	0.49	0.42	0.53	0.55	0.72	3.20	0.85
Escherichia Coli	/100 mls	345	171	10	384	130	223	2,760	4,350	4,110	691
Enterococci Bacteria	/100 mls	63	31	10	97	<10	<10	85	175	218	146
Fecal Coliforms	/100 mls	350	130	10	430	140	490	930	>2,000	>2,000	>2,000
24 hr. LC50	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
48 hr. LC50	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Dry sampling event

Rainfall data taken from National Weather Service Guaging Station in White Plains, NY

CITY OF STAMFORD MS4 INSTREAM SAMPLING RESULTS
STAMFORD, CONNECTICUT

PARAMETER	UNITS	ISS-001	ISS-002	ISS-003	ISS-004	ISS-005	ISS-006	ISS-007	ISS-008	ISS-009	ISS-010
DSN	-	DSN-001	DSN-002	DSN-003	DSN-004	DSN-005	DSN-006	DSN-007	DSN-008	DSN-009	DSN-010
Description	-	Mianus River (7407)	East Mianus River (7406)	Mill River (7403)	Nororton River (7403)	Rippowam River "A" (7405)	Rippowam River "B" (7405)	Rippowam River "C" (7405)	LIS Coastal Watershed "A" (7000)	LIS Coastal Watershed "B" (7000)	LIS Coastal Watershed "C" (7000)
Latitude	dec. deg	41.10746	41.13363	41.1648	41.06329	41.05458	41.066	41.08963	41.02823	41.04359	41.04414
Longitude	dec. deg	-73.58722	-73.58796	-73.54427	-73.50879	-73.54503	-73.55778	-73.55925	-73.55566	-73.51705	-73.56443
Receiving Stream	-	Long Island Sound	Mianus River	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound
Date of Sample	-	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016
Magnitude of Storm	inches	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Event Type	-	WET	WET	WET	WET	WET	WET	WET	WET	WET	WET
Date of Last Storm	-	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016
LAB SAMPLE #	-	BV68004	BV68005	BV68006	BV68007	BV68008	BV68009	BV68010	BV68011	BV68012	BV68013
pH	S.U.	8.59	8.30	8.34	8.72	8.27	7.58	7.50	7.19	7.60	6.76
Temperature	° C	4.85	4.73	5.71	5.28	4.31	7.02	8.04	10.68	8.43	10.72
Specific Conductivity	µmhos/cm	376	460	343	2,012	870	788	783	12,341	37,798	851
Dissolved Oxygen	mg/L	13.50	12.15	9.20	8.67	10.29	6.44	6.37	0.17	8.33	4.32
B.O.D./5 day	mg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	8.7	<4.0	<4.0	<4.0
Chloride	mg/L	67.3	104	57.1	153	192	195	111	4,430	15,300	210
C.O.D.	mg/L	12	20	12	18	12	12	37	179	654	<10
Hardness (CaCO3)	mg/L	89.9	97.0	98.0	162	170	171	94.3	1,610	5,120	227
MBAS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12	<0.05	<0.05	<0.05
Phosphorus, as P	mg/L	0.047	0.035	0.035	0.046	0.040	0.054	0.116	0.086	0.147	0.089
Total Suspended Solids	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Oil and Grease, Total	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Oil and Grease, TPH	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Copper	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.012	0.006	0.007	<0.005
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc	mg/L	<0.002	<0.002	<0.002	0.007	0.005	0.005	0.032	0.007	0.009	0.009
Nitrite-N	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	0.016	<0.010
Nitrate-N	mg/L	0.11	<0.02	0.05	0.79	0.23	0.46	0.29	0.62	0.24	0.70
Ammonia as Nitrogen	mg/L	<0.05	<0.05	0.06	0.09	<0.05	<0.05	0.21	0.18	0.12	<0.05
Nitrogen Tot Kjeldahl	mg/L	0.39	0.27	0.38	0.48	0.26	0.41	0.67	0.50	0.26	0.37
Escherichia Coli	/100 mls	63	20	30	96	269	96	1,090	>24,200	199	594
Enterococci Bacteria	/100 mls	<10	<10	10	20	30	<10	384	>24,200	294	63
Fecal Coliforms	/100 mls	20	30	30	160	190	140	1,360	>2,200	180	370
LC 50	%	-	-	-	-	-	-	-	-	-	-
NOAEL	%	-	-	-	-	-	-	-	-	-	-

Notes:

Wet sampling event.

Rainfall data taken from National Weather Service Gauging Station in White Plains, NY

CITY OF STAMFORD MS4 INSTREAM SAMPLING RESULTS
STAMFORD, CONNECTICUT

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Description	-	Mianus River (7407)	East Mianus River (7406)	Mill River (7403)	Nororton River (7403)	Rippowam River "A" (7405)	Rippowam River "B" (7405)	Rippowam River "C" (7405)	LIS Coastal Watershed "A" (7000)	LIS Coastal Watershed "B" (7000)	LIS Coastal Watershed "C" (7000)
Latitude	dec. deg	41.10746	41.13363	41.1648	41.06329	41.05458	41.066	41.08963	41.02823	41.04359	41.04414
Longitude	dec. deg	-73.58722	-73.58796	-73.54427	-73.50879	-73.54503	-73.55778	-73.55925	-73.55566	-73.51705	-73.56443
Receiving Stream	-	Long Island Sound	Mianus River	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound
Date of Sample	-	11/29/2016	11/29/2016	11/29/2016	11/29/2016	11/29/2016	11/29/2016	11/29/2016	11/29/2016	11/29/2016	11/29/2016
Magnitude of Storm	inches	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
Event Type	-	WET	WET	WET	WET	WET	WET	WET	WET	WET	WET
Date of Last Storm	-	11/24/2016	11/24/2016	11/24/2016	11/24/2016	11/24/2016	11/24/2016	11/24/2016	11/24/2016	11/24/2016	11/24/2016
LAB SAMPLE #	-	BV91460	BV91461	BV91463	BV91459	BV91457	BV91454	BV91462	BV91456	BV91458	BV91455
pH	S.U.	7.41	7.24	6.95	7.16	7.34	8.41	6.36	7.85	7.07	8.69
Temperature	° C	7.33	7.93	9.97	11.66	11.22	10.88	12.88	10.70	11.83	10.76
Specific Conductivity	µmhos/cm	386	382	492	533	1,307	362	96	14,661	22,827	802
Dissolved Oxygen	mg/L	6.48	5.43	5.48	0.47	0.62	6.51	0.87	5.58	0.32	8.21
B.O.D./5 day	mg/L	<4.0	<4.0	<4.0	5.5	9.7	9.1	<4.0	4.1	10	11
Chloride	mg/L	71.0	80.9	117	126	97.1	84.9	8.1	7,280	9,180	14.4
C.O.D.	mg/L	22	20	39	27	39	39	33	217	714	52
Hardness (CaCO3)	mg/L	92.3	81.8	96.4	137	92.0	79.9	10.7	1,790	3,220	27.5
MBAS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	0.05	0.16
Phosphorus, as P	mg/L	0.095	0.050	0.085	0.113	0.189	0.190	0.132	0.282	0.252	0.277
Total Suspended Solids	mg/L	<5.0	<5.0	15	<5.0	23	13	22	9.0	9.0	45
Oil and Grease, Total	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Oil and Grease, TPH	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Copper	mg/L	<0.005	<0.005	0.015	<0.005	0.011	0.007	0.010	0.012	0.011	0.022
Lead	mg/L	0.002	<0.002	<0.002	<0.002	0.006	0.003	0.013	<0.002	0.005	0.011
Zinc	mg/L	0.005	0.005	0.008	0.013	0.038	0.023	0.036	0.012	0.037	0.086
Nitrite-N	mg/L	0.12	0.28	0.25	0.91	0.41	0.34	0.08	0.59	0.51	0.23
Nitrate-N	mg/L	0.11	0.26	0.26	0.89	0.40	0.35	0.08	0.59	0.48	0.21
Ammonia as Nitrogen	mg/L	0.07	0.09	0.12	0.14	0.15	0.09	0.15	<0.25	0.18	0.27
Nitrogen Tot Kjeldahl	mg/L	0.74	0.48	0.70	0.68	0.83	0.68	0.69	1.12	0.62	1.01
Escherichia Coli	/100 mls	41	51	10	>24,200	>24,200	5,480	332	17,300	15,500	19,900
Enterococci Bacteria	/100 mls	10	122	10	24,200	4,350	1,720	801	13,000	5,480	6,870
Fecal Coliforms	/100 mls	20	10	10	>2,000	>2,000	>2,000	480	>2,000	>2,000	>2,000
LC 50	%	-	-	-	-	-	-	-	-	-	-
NOAEL	%	-	-	-	-	-	-	-	-	-	-

Notes:

Wet Sampling Event.

Rainfall data taken from National Weather Service Gauging Station in White Plains, NY

- = Not Analyzed

CITY OF STAMFORD MS4 INSTREAM SAMPLING RESULTS
STAMFORD, CONNECTICUT

PARAMETER	UNITS	ISS-001	ISS-002	ISS-003	ISS-004	ISS-005	ISS-006	ISS-007	ISS-008	ISS-009	ISS-010
DSN	-	DSN-001	DSN-002	DSN-003	DSN-004	DSN-005	DSN-006	DSN-007	DSN-008	DSN-009	DSN-010
Description	-	Mianus River (7407)	East Mianus River (7406)	Mill River (7403)	Nororton River (7403)	Rippowam River "A" (7405)	Rippowam River "B" (7405)	Rippowam River "C" (7405)	LIS Coastal Watershed "A" (7000)	LIS Coastal Watershed "B" (7000)	LIS Coastal Watershed "C" (7000)
Latitude	dec. deg	41.10746	41.13363	41.1648	41.06329	41.05458	41.066	41.08963	41.02823	41.04359	41.04414
Longitude	dec. deg	-73.58722	-73.58796	-73.54427	-73.50879	-73.54503	-73.55778	-73.55925	-73.55566	-73.51705	-73.56443
Receiving Stream	-	Long Island Sound	Mianus River	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound
Date of Sample	-	4/6/2017	4/6/2017	4/6/2017	4/6/2017	4/6/2017	4/6/2017	4/6/2017	4/6/2017	4/6/2017	4/6/2017
Magnitude of Storm	inches	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Event Type	-	WET	WET	WET	WET	WET	WET	WET	WET	WET	WET
Date of Last Storm	-	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017
LAB SAMPLE #	-	BY00040	BY00041	BY00042	BY00043	BY00044	BY00045	BY00046	BY00047	BY00048	BY00049
pH	S.U.	7.44	7.90	7.81	8.15	7.14	7.60	7.69	7.49	7.42	7.49
Temperature	° C	6.95	7.66	5.69	6.01	5.24	6.53	4.91	7.47	6.44	6.47
Specific Conductivity	µmhos/cm	341	338	311	695	315	465	425	873	7,680	682
Dissolved Oxygen	mg/L	6.43	7.39	5.48	10.78	11.15	12.03	11.72	10.11	10.46	10.91
B.O.D./5 day	mg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Chloride	mg/L	72.1	82.4	63.8	98.4	118	111	99.5	129	4,160	177
C.O.D.	mg/L	19	27	14	29	17	17	17	17	125	23
Hardness (CaCO3)	mg/L	72.7	51.4	72.5	89.3	79.0	74.5	71.1	103	1,530	117
MBAS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phosphorus, as P	mg/L	0.045	0.077	0.020	0.058	0.043	0.039	0.032	0.070	0.076	0.085
Total Suspended Solids	mg/L	9.0	25	6.0	5.0	<5.0	5.0	<5.0	8.0	14	10
Oil and Grease, Total	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Oil and Grease, TPH	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Copper	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	0.005	0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc	mg/L	0.003	0.012	0.004	0.014	0.007	0.005	0.006	0.011	0.030	0.043
Nitrite-N	mg/L	0.42	0.76	0.08	1.48	0.90	0.84	0.75	1.14	1.81	1.45
Nitrate-N	mg/L	0.42	0.76	0.08	1.48	0.90	0.84	0.75	1.14	1.81	1.43
Ammonia as Nitrogen	mg/L	0.10	0.05	<0.05	0.09	0.06	<0.05	0.06	0.10	0.10	0.16
Nitrogen Tot Kjeldahl	mg/L	0.65	0.57	0.42	0.89	0.73	0.55	0.56	0.71	0.44	0.57
Escherichia Coli	/100 mls	20	31	10	839	313	185	63	480	295	4,480
Enterococci Bacteria	/100 mls	15	336	<10	399	457	31	62	63	422	512
Fecal Coliforms	/100 mls	10	20	<10	500	270	110	60	510	210	>2,000
LC 50	%	-	-	-	-	-	-	-	-	-	-
NOAEL	%	-	-	-	-	-	-	-	-	-	-

Notes:

Wet Sampling Event.

Rainfall data taken from National Weather Service Gauging Station in White Plains, NY

- = Not Analyzed

CITY OF STAMFORD MS4 INSTREAM SAMPLING RESULTS
STAMFORD, CONNECTICUT

PARAMETER	UNITS	ISS-001	ISS-002	ISS-003	ISS-004	ISS-005	ISS-006	ISS-007	ISS-008	ISS-009	ISS-010
DSN	-	DSN-001	DSN-002	DSN-003	DSN-004	DSN-005	DSN-006	DSN-007	DSN-008	DSN-009	DSN-010
Description	-	Mianus River (7407)	East Mianus River (7406)	Mill River (7403)	Noroton River (7403)	Rippowam River "A" (7405)	Rippowam River "B" (7405)	Rippowam River "C" (7405)	LIS Coastal Watershed "A" (7000)	LIS Coastal Watershed "B" (7000)	LIS Coastal Watershed "C" (7000)
Latitude	dec. deg	41.10746	41.13363	41.1648	41.06329	41.05458	41.066	41.08963	41.02823	41.04359	41.04414
Longitude	dec. deg	-73.58722	-73.58796	-73.54427	-73.50879	-73.54503	-73.55778	-73.55925	-73.55566	-73.51705	-73.56443
Receiving Stream	-	Long Island Sound	Mianus River	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound	Long Island Sound
Date of Sample	-	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017
Magnitude of Storm	inches	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Event Type	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Date of Last Storm	-	6/17/2017	6/17/2017	6/17/2017	6/17/2017	6/17/2017	6/17/2017	6/17/2017	6/17/2017	6/17/2017	6/17/2017
LAB SAMPLE #	-	BY51096	BY51097	BY51098	BY51099	BY51100	BY51101	BY51102	BY51103	BY51104	BY51105
pH	S.U.	7.17	6.96	7.62	8.38	8.21	7.49	7.09	7.89	7.64	8.37
Temperature	° C	21.44	21.09	19.18	22.01	24.34	21.89	22.71	21.73	22.80	21.92
Specific Conductivity	µmhos/cm	376	378	346	601	779	767	754	*	6,685	1,283
Dissolved Oxygen	mg/L	7.38	7.10	5.09	0.17	0.17	6.10	6.15	0.08	0.07	0.66
B.O.D./5 day	mg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Chloride	mg/L	71.8	78.6	67.2	131	198	191	175	1,740	2,280	286
C.O.D.	mg/L	24	39	22	18	20	20	26	181	208	24
Hardness (CaCO3)	mg/L	73.3	66.6	72.1	127	135	130	124	641	836	251
MBAS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phosphorus, as P	mg/L	0.053	0.124	0.034	0.074	0.056	0.066	0.071	0.091	0.175	0.064
Total Suspended Solids	mg/L	<5.0	15	<5.0	<5.0	<5.0	6.0	<5.0	11	<5.0	6.0
Oil and Grease, Total	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Oil and Grease, TPH	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Copper	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc	mg/L	<0.002	0.011	0.004	0.008	0.003	0.009	0.002	0.005	0.017	0.023
Nitrite-N	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	0.017	0.064	0.012
Nitrate-N	mg/L	0.22	0.46	0.18	1.18	1.09	1.06	1.80	1.80	1.81	1.12
Ammonia as Nitrogen	mg/L	0.12	0.17	0.22	0.16	0.11	0.12	0.11	0.22	0.37	0.19
Nitrogen Tot Kjeldahl	mg/L	0.45	0.85	0.71	0.60	0.56	0.68	0.67	0.98	0.84	0.87
Escherichia Coli	/100 mls	108	86	10	754	441	1,080	420	9,210	2,190	1,410
Enterococci Bacteria	/100 mls	10	86	216	576	52	97	63	341	882	213
Fecal Coliforms	/100 mls	190	170	50	570	340	760	380	>2,000	>2,000	420
LC 50	%	-	-	-	-	-	-	-	-	-	-
NOAEL	%	-	-	-	-	-	-	-	-	-	-

Notes:

Wet Sampling Event.

Rainfall data taken from National Weather Service Gauging Station in White Plains, NY

- = Not Analyzed

APPENDIX N

2016–17 WET WEATHER OUTFALL MONITORING SUMMARY TABLE

CITY OF STAMFORD MS4 OUTFALL SAMPLING RESULTS					
STAMFORD, CONNECTICUT					
November 15, 2016					
PARAMETERS	**UNITS**	**SON-0037**	**SON-0038**	**SON-0053**	**SON-0069**
Description	-	Viaduct Road adjacent to end of streat	North side of Poplar street	Backyard of 74 Research Drive	Backyard of 133 Joffre Avenue
Latitude	dec. deg	41.0806488746	41.0799421626	41.0772254298	41.0831284720
Longitude	dec. deg	-73.5180996960	-73.5181280099	-73.5175624569	-73.5264045113
Recieving Stream	-	Noroton River	Noroton River	Noroton River	Noroton River
Date of sample	-	11/15/2016	11/15/2016	11/15/2016	11/15/2016
Magnitude of storm	inches	1.56	1.56	1.56	1.56
Date of last storm	-	10/24/2016	10/24/2016	10/24/2016	10/24/2016
pH	s.u	7.16	7.06	6.15	6.65
Temperature	C	9.09	8.03	8.04	8.39
Dissolved Oxygen	mg/l	6.37	7.21	6.72	9.91
Specific Conductance	µmhos/cm	152	276	410	337
B.O.D./5 day	mg/L	4.9	7.1	4.1	22
Chloride	mg/L	<3.0	75.5	3.5	<3.0
C.O.D.	mg/L	29	67	52	56
Escherichia Coli	MPN/100 mls	10,500	15,500	595	3,450
Enterococci Bacteria	MPN/100 mls	1,340	2,500	816	1,220
Fecal Coliforms	/100 mls	>2,000	>2,000	840	>2,000
Hardness (CaCO3)	mg/L	16.9	27.0	25.4	7.4
MBAS	mg/L	<0.05	0.08	<0.05	<0.05
Ammonia as Nitrogen	mg/L	0.10	0.21	0.10	0.08
Nitrite-N	mg/L	0.11	0.24	0.15	<0.01
Nitrate-N	mg/L	0.11	0.22	0.15	<0.02
Oil and Grease by EPA 1664	mg/L	2.0	3.8	3.4	<1.4
Total Coliforms	MPN/100 mls	>24,200	>24,200	>24,200	>2,000
Nitrogen Tot Kjeldahl	mg/L	0.39	0.85	0.65	0.45
O&G, Non-polar Material	mg/L	<1.4	<1.4	<1.4	<1.4
Phosphorus, as P	mg/L	0.114	0.365	0.187	0.298
Total Suspended Solids	mg/L	58	110	130	23
Copper	mg/L	0.008	0.033	0.037	<0.005
Lead	mg/L	0.005	0.027	0.017	<0.002
Zinc	mg/L	0.056	0.096	0.133	0.015
Notes:					
Wet Sampling Event.					
Rainfall data taken from National Weather Service Gauging Station in White Plains, NY					
- = Not Analyzed					

CITY OF STAMFORD MS4 OUTFALL SAMPLING RESULTS

STAMFORD, CONNECTICUT

March 31, 2017

PARAMETERS	UNITS	SON-0013	SON-0017	SON-0019	SON-0029	SON-0046	SON-0083	SON-0086	SON-0090	SON-0091
Description	-	Harbor Drive- Located in Schooner Cove Condos	Ralsey Road South, north side of Stamford Yacht Club	Ocean Drive West, south side of Stamford Yacht Club	South side of bridge at Main and Mill Street	18" RCP behind 119 Courtland Hill Street	Backyard of 26 Florence Court	18' RCP backyard of 87 Crestview Avenue	24" RCP ar Overhill and Barncroft Road	15" RCP at 174 Barncroft Road
Latitude	dec. deg	41.0368346093	41.0298391452	41.0289733271	41.0518964271	41.0671424332	41.0885628793	41.0664135186	41.0934869169	41.0941738075
Longitude	dec. deg	-73.5307065434	-73.5310756103	-73.5303297929	-73.5457753900	-73.5099851324	-73.5556020457	-73.5499507486	-73.5696990540	-73.5680548658
Recieving Stream	-	Stamford Harbor / LIS	Stamford Harbor / LIS	Stamford Harbor / LIS	Rippowam River	Noroton River	Rippowam River	Rippowam River	Rippowam River	Rippowam River
Date of sample	-	3/31/2017	3/31/2017	3/31/2017	3/31/2017	3/31/2017	3/31/2017	3/31/2017	3/31/2017	3/31/2017
Magnitude of storm	inches	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Date of last storm	-	3/28/2017	3/28/2017	3/28/2017	3/28/2017	3/28/2017	3/28/2017	3/28/2017	3/28/2017	3/28/2017
pH	s.u	9.00	4.61	8.37	6.79	6.62	7.95	7.12	7.76	8.01
Temperature	C	9.10	6.48	6.69	3.92	6.13	4.03	6.78	3.60	4.15
Dissolved Oxygen	mg/l	0.32	0.58	0.46	9.14	9.03	14.27	8.24	12.77	13.91
Specific Conductance	µmhos/cm	2,774	539	284	614	305	427	414	614	454
B.O.D./5 day	mg/L	6.9	8.6	5.6	14	5.5	<4.0	<4.0	<4.0	<4.0
Chloride	mg/L	845	113	54.9	89.0	92.8	184	21.9	138	174
C.O.D.	mg/L	118	31	29	59	38	19	36	10	19
Escherichia Coli	MPN/100 mls	345	959	862	6,490	1,550	546	187	41	292
Enterococci Bacteria	MPN/100 mls	369	1,300	1,970	355	1,240	880	160	10	31
Fecal Coliforms	/100 mls	440	1,110	1,330	>2,000	1,560	510	1,250	<10	660
Hardness (CaCO3)	mg/L	323	74.0	16.3	79.6	45.9	89.4	5.5	96.2	93.7
MBAS	mg/L	<0.05	<0.05	0.05	0.12	<0.05	<0.05	<0.05	<0.05	<0.05
Ammonia as Nitrogen	mg/L	0.13	0.06	0.13	0.48	0.16	0.10	0.16	<0.05	0.06
Nitrite-N	mg/L	1.54	0.70	0.38	0.72	1.55	1.24	0.38	2.00	0.62
Nitrate-N	mg/L	1.53	0.69	0.37	0.70	1.52	1.23	0.35	2.16	0.61
Oil and Grease by EPA 1664	mg/L	<1.4	2.6	1.4	3.9	2.1	<1.4	<1.4	<1.4	<1.4
Total Coliforms	MPN/100 mls	10,500	19,900	24,200	>24,200	>24,200	24,200	>24,200	4,880	5,480
Nitrogen Tot Kjeldahl	mg/L	0.63	0.74	0.62	2.52	0.95	0.93	0.82	0.78	0.46
O&G, Non-polar Material	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Phosphorus, as P	mg/L	0.100	0.159	0.183	0.526	0.133	0.067	0.169	0.060	0.073
Total Suspended Solids	mg/L	<5.0	27	14	38	12	10	7.0	<5.0	<5.0
Copper	mg/L	0.007	0.037	0.010	0.023	0.015	<0.005	0.028	<0.005	<0.005
Lead	mg/L	<0.002	<0.002	0.003	0.002	0.006	<0.002	0.009	<0.002	<0.002
Zinc	mg/L	0.035	0.026	0.014	0.092	0.054	0.016	0.032	0.002	0.008

Notes:

Wet Sampling Event.

Rainfall data taken from National Weather Service Gauging Station in White Plains, NY

- = Not Analyzed

CITY OF STAMFORD MS4 OUTFALL SAMPLING RESULTS

STAMFORD, CONNECTICUT

May 5, 2017

PARAMETERS	UNITS	SON-0030	SON-0045	SON-0052	SON-0058	SON-0066	SON-0074	SON-0080	SON-0082	SON-0089	SON-0092
Description	-	Ocean Drive West - behind 115 ODW, S. side of Stam. Yacht Club	8 Stanwick Circle - backyard, b/w fences along right side of house	Research Drive - north of 74 Research Dr.	Camp Ave. - located at southeast corner of prop. Adj. to RR tracks	Regent Court - backyard of 46 Regent Court	Dannell Drive - W. side of headwall	Davenport Drive	Davenport Street - O & G	Crestview Ave. - backyard of 87 Crestview Ave.	Kenilworth Drive East
Latitude	dec. deg	41.0350501618	41.0758887236	41.0781388452	41.0926754769	41.1010715592	41.0893366639	41.0294308173	41.0426428680	41.0887749631	41.0402948085
Longitude	dec. deg	-73.5226967763	-73.5444008566	-73.5176627793	-73.5147609293	-73.5111700437	-73.5452830881	-73.5436899503	-73.5462418506	-73.5257088573	-73.5104554343
Recieving Stream	-	Westcott Cove / Long Island Sound	Rippowam River	Noroton River	Noroton River	Noroton River	Undetermined	Stamford Harbor / Long Island Sound	Stamford Harbor / Long Island Sound	Noroton River	Westcott Cove / Long Island Sound
Date of sample	-	5/5/2017	5/5/2017	5/5/2017	5/5/2017	5/5/2017	5/5/2017	5/5/2017	5/5/2017	5/5/2017	5/5/2017
Magnitude of storm	inches	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21
Date of last storm	-	4/26/2017	4/26/2017	4/26/2017	4/26/2017	4/26/2017	4/26/2017	4/26/2017	4/26/2017	4/26/2017	4/26/2017
pH	s.u	6.70	7.99	7.25	7.68	6.82	6.96	7.08	7.26	7.91	7.77
Temperature	C	11.70	10.48	11.03	10.89	10.80	9.94	10.26	11.02	9.09	10.99
Dissolved Oxygen	mg/l	4.29	9.98	9.66	8.57	7.54	10.61	10.11	8.71	11.36	9.28
Specific Conductance	µmhos/cm	777	165	396	345	384	745	1,176	1,295	1,039	145
B.O.D./5 day	mg/L	57	29	12	25	54	5.5	20	13	28	13
Chloride	mg/L	147	3.6	82.2	65.8	86.4	166	332	346	278	19.0
C.O.D.	mg/L	258	156	66	87	274	24	87	254	54	72
Escherichia Coli	MPN/100 mls	>24,200	6,490	>24,200	4,610	19,900	1,100	11,200	12,000	>24,200	13,000
Enterococci Bacteria	MPN/100 mls	>24,200	4,880	4,610	1,660	5,480	279	5,170	7,270	19,900	6,490
Fecal Coliforms	/100 mls	>2,000	>2,000	>2,000	>2,000	>2,000	700	>2,000	>2,000	>2,000	>2,000
Hardness (CaCO3)	mg/L	115	18.1	94.2	71.3	19.2	129	102	251	130	17.1
MBAS	mg/L	9.58	0.15	0.07	<0.05	0.20	<0.05	<0.05	0.21	0.12	<0.05
Ammonia as Nitrogen	mg/L	6.72	0.72	0.19	0.28	0.81	0.18	0.24	0.49	0.35	0.29
Nitrite-N	mg/L	0.100	0.010	0.015	0.013	0.041	0.018	<0.010	0.049	0.104	0.013
Nitrate-N	mg/L	1.81	0.17	0.64	0.57	0.55	1.68	0.18	0.39	3.25	0.28
Oil and Grease by EPA 1664	mg/L	16	1.9	2.3	1.4	3.0	<1.4	<1.4	9.1	<1.4	<1.4
Total Coliforms	MPN/100 mls	>24,200	>24,200	>24,200	>24,200	>24,200	17,300	>24,200	>24,200	>24,200	>24,200
Nitrogen Tot Kjeldahl	mg/L	25.0	5.15	1.50	2.26	5.12	0.71	1.95	4.08	2.14	1.82
O&G, Non-polar Material	mg/L	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	4.1	<1.4	<1.4
Phosphorus, as P	mg/L	2.93	0.871	0.233	0.390	0.871	0.117	0.498	1.52	0.266	0.410
Total Suspended Solids	mg/L	84	180	110	140	150	230	130	500	44	270
Copper	mg/L	0.037	0.029	0.015	0.016	0.023	<0.005	0.015	0.144	0.019	0.015
Lead	mg/L	0.002	0.042	0.004	0.007	0.005	<0.002	0.017	0.123	<0.002	0.009
Zinc	mg/L	0.101	0.090	0.069	0.058	0.094	0.012	0.047	0.916	0.038	0.035

Notes:

Wet Sampling Event.

Rainfall data taken from National Weather Service Gauging Station in White Plains, NY

- = Not Analyzed