

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS

UNITED STATES OF AMERICA, and	)	
the COMMONWEALTH OF MASSACHUSETTS,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	Civil Action
	)	No. 76-cv-02184-RGS
LYNN WATER AND SEWER COMMISSION,	)	
	)	
Defendant.	)	

**THIRD MODIFIED CONSENT DECREE**

WHEREAS, the plaintiff, United States of America, on behalf of the United States Environmental Protection Agency (“EPA”), filed a complaint herein on June 2, 1976 (the “Complaint”), alleging that the City of Lynn, Massachusetts (“Lynn”) and Antonio J. Marino, as the Mayor of Lynn at that time (the “Mayor of Lynn”), were in ongoing violation of section 301(b), 33 U.S.C. § 1311(b), of the Clean Water Act, 33 U.S.C. § 1251, et seq. (the “Act”), the requirements of a certain information request letter issued pursuant to section 308 of the Act, 33 U.S.C. § 1318, the requirements of a certain Administrative Order (EPA Docket No. I-76-20) issued pursuant to section 309 of the Act, 33 U.S.C. § 1319, and the provisions of National Pollutant Discharge Elimination System (“NPDES”) Permit No. MA 0100552, State Permit No. M-37, issued pursuant to section 402 of the Act, 33 U.S.C. § 1342.

WHEREAS, pursuant to section 309(e) of the Act, 33 U.S.C. § 1319(e), the Commonwealth of Massachusetts (the “Commonwealth”) was joined in the Complaint as a party defendant in this action and the Commonwealth filed a cross-claim in this action, alleging that

the municipal defendants had violated the Massachusetts Clean Waters Act, M.G.L. c. 21, § 42 (the "Massachusetts Act") by failing to comply with the provisions of its permit (the "Cross-Claim");

WHEREAS, the Lynn Water and Sewer Commission (the "Commission" or "LWSC") is a body politic and corporate and a political subdivision of the Commonwealth created pursuant to 1982 Massachusetts Act Chapter 381, Section 3, which owns and operates the water and sewer works systems, including but not limited to the publicly owned treatment works located at 2 Circle Avenue, Lynn, Massachusetts (the "POTW") and certain sanitary wastewater collection and conveyance systems associated with combined sewer overflows ("CSOs"), located in Lynn and formerly owned and operated by Lynn;

WHEREAS, the Commission took title to and control of Lynn's water and sewer works systems in December 1982 and has been a defendant to this action since its creation in December 1982 as a successor to Lynn's interest in Lynn's water and sewer works systems and in these proceedings;

WHEREAS, the City of Lynn and the Mayor of Lynn were dismissed as defendants by agreement of the parties, and the Commonwealth of Massachusetts was realigned as a plaintiff by Order of this Court dated September 2, 1993;

WHEREAS, the United States of America, the Commonwealth, and the Commission agreed and consented to, and the Court entered, a Modified Consent Decree entered by the Court on November 2, 1987 (the "Modified Decree");

WHEREAS, the Commission completed a Combined Sewer Overflow Facilities Plan Phase 2 Report, dated March 1990 (“CSO Facilities Plan”);

WHEREAS, by agreement of the parties, Amendments to Modified Consent Decree (Combined Sewer Overflows) were entered by the Court on February 5, 1995, which in turn were modified in an Amendment to Modified Consent Decree entered by the Court on September 26, 1997;

WHEREAS, by agreement of the parties, the Consent Decree was again modified in the Second Modified Consent Decree entered by the Court on June 21, 2001;

WHEREAS, on September 25, 2012, EPA and the Commission entered into an administrative order on consent, EPA Docket No. 12-009 (“AOC Docket No. 12-009”), under Section 309(a)(3) of the Clean Water Act, 33 U.S.C. § 1319(a)(3), attached hereto as Appendix A, requiring the Commission to develop and implement a capacity, management, operation, and maintenance program (“CMOM”) to address any deficiencies the Commission identified in its infrastructure or management program;

WHEREAS, the administrative order on consent (AOC Docket No. 12-009) also included requirements to implement an illicit discharge detection and elimination (“IDDE”) program intended to be consistent with conditions of EPA’s NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (“Small MS4 General Permit”);

WHEREAS, the Commission has completed certain of the obligations required under the Second Modified Consent Decree and has failed to complete certain other of those obligations;

WHEREAS, in October 2014 the Commission completed the Lynn Water and Sewer Commission Combined Sewer Overflow Supplemental Facilities Plan Update (“2014 CSO Plan”), which recommends alternative CSO abatement projects to certain other obligations required under the Second Modified Consent Decree;

WHEREAS, the parties agree that certain further amendments are appropriate and that the Second Modified Consent Decree should be modified and replaced by this Third Modified Consent Decree; and

WHEREAS, the parties agree, without adjudication of facts or law, that settlement of disputes between the parties relating to the Commission’s obligations under the Act and the matters addressed in this Third Modified Consent Decree is in the public interest and that entry of this Third Modified Consent Decree is an appropriate way to resolve such disputes;

NOW, THEREFORE, upon consent of the parties to this action, as evidenced by the signatures of their attorneys and representatives below, it is hereby ordered, adjudged, and decreed as follows:

**I. STATEMENT OF CLAIM**

1. The Complaint filed herein states claims upon which relief can be granted against the Commission pursuant to Sections 301 and 309 of the Act, 33 U.S.C. §§ 1311 and 1319. The Cross-Claim filed herein states claims upon which relief can be granted against the Commission thereunder pursuant to the Massachusetts Act, G.L. c. 21, § 42.



## **II. JURISDICTION AND VENUE**

2. The Court has personal jurisdiction over the parties to this Third Modified Consent Decree. The Court also has jurisdiction over the subject matter of this action pursuant to Section 309(b) of the Act, 33 U.S.C. § 1319(b), and 28 U.S.C. §§ 1331 and 1345. This Court is the proper venue for this action pursuant to 28 U.S.C. § 1391(b). The Commission waives all objections it might have raised to either such jurisdiction or venue. The parties to this action agree that every provision of this Third Modified Consent Decree is fully enforceable against the Commission.

## **III. APPLICABILITY**

3. The provisions of this Third Modified Consent Decree shall apply to and be binding upon the parties to this action, their officers, directors, agents, servants, employees, successors, assigns, and all persons, firms, and corporations in active concert or participation with them. The Commission shall give notice of this Third Modified Consent Decree to any successors in interest prior to any transfer of ownership or operation of the POTW, its Municipal Separate Storm Sewer System ("MS4"), and/or any sanitary wastewater collection and conveyance systems associated with any CSOs, and shall simultaneously notify the EPA Region 1, the United States Attorney for the District of Massachusetts, the Environmental Enforcement Section of the Environment and Natural Resources Division of the United States Department of Justice, and the Attorney General of the Commonwealth at the addresses specified in Paragraph 27 of this Third Modified Consent Decree, that such notice has been given by the Commission.

#### IV. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in the Act or in regulations promulgated under the Act shall have the meaning ascribed to them in the Act or in the regulations promulgated thereunder. Whenever the terms listed below are used in this Consent Decree, the following definitions shall apply.

- a. "Act" or "CWA" shall mean the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act), as amended, 33 U.S.C. §§ 1251-1387.
- b. "Approval by EPA" or "Approved by EPA" shall mean the issuance of a written approval document from EPA approving or approving with conditions a submission in accordance with Section VIII (Review and Approval) herein.
- c. "Approval by EPA and MassDEP" or "Approved by EPA and MassDEP" shall mean the issuance of a single joint written approval document, or two separate approval documents, from EPA and MassDEP approving or approving with conditions a submission in accordance with Section VIII (Review and Approval) herein.
- d. "Best Management Practices or BMPs" shall mean schedules of activities, practices and prohibition of practices, structures, vegetation, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site and road runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
- e. "Collection System" shall mean the wastewater collection, storage, and

transmission system (a.k.a. sanitary and combined sewer system) owned or operated by the Commission, including, but not limited to, all devices, Sewersheds, pump stations, force mains, gravity sewer lines, manholes, and appurtenances.

f. “Combined Sewer Overflow” or “CSO” shall mean any overflow or other discharge from Lynn’s Combined Sewer System that results from wet weather flows in excess of the carrying capacity of the Combined Sewer System.

g. “Combined Sewer System” shall mean the pipelines, conduits, pump stations, force mains, and all other structures, devices, appurtenances, and facilities used for collecting and conveying sanitary wastewaters (domestic, commercial and industrial wastewaters) and stormwater to the Commission’s wastewater treatment facility, and hydraulically connected pipelines, conduits, pump stations, force mains, and all other structures, devices, appurtenances, and facilities that periodically convey a mixture of sanitary wastewater and stormwater to waters of the United States within the meaning of 33 U.S.C. § 1362(7).

h. “Complete sewer separation” shall mean substantial completion of construction of separated sanitary and storm water collection systems with redirection of sanitary wastewater into the separate sanitary sewer collection system for conveyance to the Commission’s wastewater treatment facility.

i. “Date of Lodging” shall mean the Day this Third Modified Consent Decree is filed for lodging with the Clerk of the Court for the United States District Court for the District of Massachusetts.

- j. “Day” shall mean a calendar day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or Massachusetts holiday, the period shall run until the close of business of the next business day.
- k. “Effective Date” shall have the definition provided in Paragraph 64.
- l. “Excessive I/I” shall mean the Infiltration/Inflow (i) that cost-effectively can be eliminated from the Collection System, as determined by an analysis that compares the cost of eliminating the I/I with the total costs of transport and treatment of the I/I (including the capital costs of increasing the POTW’s capacity and treatment operations, and the resulting operating costs) or (ii) that, with respect only to sanitary sewer overflows (“SSOs”), must be eliminated regardless of cost effectiveness to prevent SSOs that present an unacceptable risk, as determined by EPA and MassDEP, to public health and water resources.
- m. “Flow” shall mean all stormwater and sanitary (domestic, commercial, and industrial) wastewater conveyed by any portion of the Collection System or MS4.
- n. “IDDE Program” shall mean an illicit discharge, detection, and elimination program, the goal of which is to identify and eliminate unauthorized discharges of wastewater to the MS4.
- o. “Infiltration” shall mean the water that enters the Collection System (including sewer service connections) from the ground through such means as, but not limited to,

defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, Inflow.

p. "Infiltration/Inflow" or "I/I" shall mean the total quantity of water from both Infiltration and Inflow into the Collection System without distinguishing the source.

q. "Inflow" shall mean all water other than sanitary flow that enters the Collection System and sewer service connections from sources such as, but not limited to, roof leaders, cellar drains, yard drains, sump pumps, area drains, foundation drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, or drainage structures. Inflow does not include, and is distinguished from, Infiltration.

r. "MassDEP" shall mean the Massachusetts Department of Environmental Protection and any successor departments or agencies of the Commonwealth.

s. "Municipal Separate Storm Sewer System" or "MS4" shall mean a system of conveyances (including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) designed to collect, convey and discharge stormwater to receiving waters.

t. "Paragraph" shall mean a portion of this Third Modified Consent Decree identified by an Arabic numeral or an upper or lower case letter.

u. "Parties" shall mean the United States and the Commonwealth of Massachusetts and the Lynn Water and Sewer Commission.

- v. "Sanitary Sewer Overflow" or "SSO" shall mean any overflow, spill, diversion, or release of wastewater from the Collection System to the surface waters of the United States or to the groundwater of the Commonwealth. A CSO is not an SSO.
- w. "Section" shall mean a portion of this Consent Decree identified by a roman numeral.
- x. "Sewershed" shall mean a major portion of the Collection System that drains to one, or a limited number of, major sewer(s),
- y. "Sub-catchment Area" shall mean the geographical area served by and drained to a distinct portion of the LWSC MS4. Also, for CSO outfalls, for IDDE purposes, Sub-catchment Area shall mean the geographical area draining to the CSO outfall downgradient of the CSO regulator.
- z. "Third Modified Consent Decree" or "Decree" shall mean this Third Modified Consent Decree and all appendices attached hereto. In the event of conflict between this Third Modified Consent Decree and any appendix, this Decree shall control.
- aa. "Water Pollution Control Facility" or "WPCF" shall mean LWSC's wastewater treatment facility.
- bb. "Waters of the Commonwealth" shall mean all waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, and ground waters.

## V. CIVIL PENALTY

5. The Commission shall pay a civil penalty in the amount of one hundred twenty-five thousand dollars (\$ 125,000) (“Civil Penalty”), together with interest accruing from the Date of Entry, at the rate specified in 28 U.S.C. § 1961, one half to the United States and one half to the Commonwealth. Payment of the civil penalty shall be made within 30 Days after the Effective Date of the Consent Decree.

6. The Commission shall make payment of one half of the Civil Penalty by Fedwire Electronic Funds Transfer (“EFT”) to the United States Department of Justice in accordance with written instructions to be provided to the Commission by the United States Attorney’s Office for the District of Massachusetts, Financial Litigation Unit, Boston, Massachusetts. The costs of such electronic funds transfer shall be the responsibility of the Commission. At the time of payment, the Commission shall send a copy of the EFT authorization form, the EFT transaction record, and a transmittal letter, which shall state that the payment is for one half of the Civil Penalty owed, and is for the full amount payable to the United States, pursuant to the Third Modified Consent Decree in United States and Commonwealth of Massachusetts v. Lynn Water and Sewer Commission and shall reference the civil action number 76-cv-02184-RGS and DOJ case number 90-5-1-1-545B, to the EPA and the United States Department of Justice as specified in Paragraph 27 of this Third Modified Consent Decree, by email to [acctsreceivable.CINWD@epa.gov](mailto:acctsreceivable.CINWD@epa.gov), and by mail to:

EPA Cincinnati Finance Office  
26 Martin Luther King Drive  
Cincinnati, Ohio 45268.

7. The Commission shall also make payment to the Commonwealth of one half of the Civil Penalty by Fedwire Electronic Funds Transfer in accordance with current EFT procedures, referencing the Massachusetts Office of the Attorney General's Case CIV No. 16-04-39883 and referencing this action. The Commission shall send a copy of the EFT authorization form for this transfer, the EFT record and the transmittal letter to MassDEP and the Massachusetts Attorney General's Office as specified in Section VII (Reporting) herein which shall state that the payment is for one half of the Civil Penalty owed, and is for the full amount payable to the Commonwealth, pursuant to the Third Modified Consent Decree in United States and Commonwealth of Massachusetts v. Lynn Water and Sewer Commission, civil action number 76-cv-02184-RGS.

## **VI. COMPLIANCE**

### **Combined Sewer Overflows**

8. The Commission shall complete a program of projects to abate CSO discharges in accordance with this Third Modified Consent Decree, as provided in Paragraphs 9 through 16 below, and shall achieve and maintain compliance with all CSO discharge standards and restrictions under the Act, the Massachusetts Act, applicable regulations, and the Commission's NPDES permit.

9. The Commission shall implement the recommended plan in the October 2014 Lynn Water and Sewer Commission CSO Supplemental Facilities Plan Update ("2014 CSO Plan"), including the projects referred to below as described in that plan and as further described in Appendix A, by proceeding with the following work:



- a. On or before January 31, 2017, the Commission shall submit for review and Approval by EPA and MassDEP a description of its program for removing Infiltration and Inflow from the Commission's sewer system, including identification and removal of private inflow sources from the sanitary sewer system (the Private Inflow Removal program), including its schedule for implementation of components of the program. The Commission shall implement the approved Private Inflow Removal program in accordance with the approved schedule in the program.
- b. On or before January 31, 2017, the Commission, after conferring with staff at the Massachusetts Executive Office of Energy and Environmental Affairs ("EEA"), shall submit, as appropriate, a Notice of Project Change or an Environmental Notification Form to EEA to comply with M.G.L. c. 30, § 61 through 62I, and the regulations at 301 CMR 11.00. Such EEA submittal shall describe the Commission's revised CSO control program and shall include the results of the Commission's evaluation as to whether a stormwater pump station is necessary as part of the Blossom/Commercial Street Storm Drain project.
- c. On or before July 31, 2018, the Commission shall submit for review and Approval by MassDEP design plans for a project to address CSOs from the Bennett Street storm drain and outfall as described in the 2014 CSO Plan (such project, the "Bennett Street Storm Drain and Outfall Project").

- d. On or before July 31, 2019, the Commission shall submit for Approval by MassDEP design plans for a project to reconstruct the Blossom/Commercial Street Storm Drain, including a stormwater pump station if needed (such project, the “Blossom/Commercial Street Storm Drain Project”), and design plans for sewer separation in the area in the 2014 CSO Plan defined as the Bennett Area (“Bennett Area”). Design of the sewer separation work shall account for identification and removal of private infiltration and inflow sources. The Commission shall also provide a schedule for implementation of components of the sewer separation work in the Bennett Area, including anticipated work to be accomplished in each calendar year.
- e. On or before October 31, 2022, the Commission shall complete construction of the Bennett Street Storm Drain and Outfall Project, in accordance with design plans Approved by MassDEP.
- f. On or before October 31, 2023, the Commission shall complete the Blossom/Commercial Street Storm Drain Project, in accordance with design plans Approved by MassDEP.
- g. On or before October 31, 2024, the Commission shall complete sewer separation in the Bennett Area, in accordance with design plans Approved by MassDEP.

- h. On or before March 31, 2024, the Commission shall submit for review and Approval by MassDEP design plans for the upgrade to the WPCF to provide a flow control Sluice Gate (“WPCF Sluice Gate”) and upgrades to the Overflow Control Structures at CSOs 003 and 006. The design plans shall also include a detailed description of the use and operation of these facilities.
- i. On or before September 1, 2024, the Commission shall submit for review and Approval by MassDEP a modified High Flow Management Plan (“HFMP”), which shall incorporate use and operation of the WPCF Sluice Gate to maximize flows to the WPCF, and minimize CSO discharges, prioritizing the elimination of CSO discharges to King’s Beach. The HFMP shall include an assessment of the CSO regulator weir elevations, and recommend any modifications which may further reduce CSO activations and volumes. The HFMP shall include a schedule for the implementation of any modifications. The Commission shall implement the HFMP upon Approval by MassDEP, including compliance with the schedule for any modifications.
- j. On or before December 31, 2026, the Commission shall complete construction of the WPCF Sluice Gate and upgrades to the Overflow Control Structures at CSOs 003 and 006, in accordance with design plans Approved by MassDEP.
- k. On or before January 31, 2026, the Commission shall submit design plans for review and Approval by MassDEP for sewer separation in the CSO 005 area. Design of

the sewer separation work shall account for identification and removal of private Infiltration and Inflow sources. The Commission shall also provide a schedule for implementation of components of the sewer separation work in the CSO 005 area, indicating anticipated work to be accomplished in each calendar year.

- l. On or before July 31, 2030, the Commission shall complete sewer separation work in the CSO 005 area, in accordance with design plans Approved by MassDEP.
- m. The Commission shall meet the requirements of the Massachusetts Environmental Policy Act, M.G.L. c. 30, §§ 61 – 62I and 301 CMR 11.000, for each project that it implements under this Decree.

10. The Commission shall continue to deploy metering equipment at all CSO regulator structures and outfalls, and any other locations as needed to accurately quantify each CSO activation and volume whenever there is a CSO discharge, and shall report each CSO activation and volume as set forth in Paragraph 13.c below. The Commission shall also make available to the public, through prominent postings on the Commission's website, [www.lynnwatersewer.org](http://www.lynnwatersewer.org), information accurately describing the date, location, duration, and estimated volume, of all CSO discharges as soon as practicable, but no later than within five business days of knowledge of the discharge.

11. The Commission shall provide notice of CSO discharges, and undertake follow up actions to each individual CSO discharge in accordance with the Updated Overflow Response Plan (October 2011) and any revisions thereto approved by MassDEP ("Overflow Response

Plan Approved by MassDEP"). With respect to the Sanderson Avenue Overflow and the Groveland Street Overflow, the Commission shall, *inter alia*:

- (a) conduct continuous monitoring of the volume and duration of flow through the Sanderson Avenue Overflow and the Groveland Street Overflow; and
- (b) during and after each activation of the Sanderson Avenue Overflow or the Groveland Street Overflow between June 1 and September 30 of each year, ensure that daily monitoring at King's Beach for enterococcus bacteria is conducted, until the concentration of such bacteria is below the level utilized by the Massachusetts Department of Conservation and Recreation ("DCR") to post King's Beach for bacterial levels, and immediately provide the results of such monitoring to the Lynn Board of Health and the DCR.

12. Each semi-annual report submitted pursuant to Paragraph 26 of this Third Modified Consent Decree shall include a summary of the results of the monitoring required under the Overflow Response Plan Approved by MassDEP for the preceding six-month period, if applicable; the results of daily monitoring at King's Beach for enterococcus bacteria during and after each activation of the Sanderson Avenue Overflow or the Groveland Street Overflow between June 1 and September 30 of each year; and any dates during which King's Beach is posted by the DCR for elevated bacteria levels or closed by the Lynn Board of Health.

13. The Commission shall implement the following operation, maintenance, and reporting practices to reduce the impact of existing CSO discharges:

- (a) Until such time as all discharges from the corresponding CSO have been eliminated, each tidegate and CSO regulator structure shall be inspected at least once every month and, in addition, after each rain event that activates that CSO. By January 15 of each year, the Commission shall submit a report to EPA and MassDEP which

describes each inspection, adjustment, repair, or any other maintenance work performed on tidegate and combined sewer overflow regulator structures during the previous twelve months. The report shall indicate which structures were inspected; the date and time of each inspection; the condition of each structure at the time of inspection; the nature of any repairs performed; the date(s) on which the repairs were performed; the nature of any repairs planned but not yet performed; the reasons such repairs have not yet been performed; and the anticipated schedule for such repairs.

(b) By January 15 of each year, the Commission shall submit a summary report to EPA and MassDEP which describes each action taken to address Excessive I/I into the sewer system during the previous twelve months.

(c) By January 15 of each year, the Commission shall submit a report to EPA and MassDEP which describes each CSO discharge which occurred during the previous twelve months. The report shall include the following information for each discharge event at each individual CSO outfall: (i) the date(s), time, and estimated duration of the discharge; (ii) the estimated volume of the discharge; (iii) the precipitation data from the nearest gauge measuring precipitation at daily intervals and from the nearest gauge measuring precipitation at hourly intervals for the period of time relevant to the discharge; and (iv) a calculation of the cumulative precipitation that contributes to the discharge.

(d) By January 15 of each year the Commission shall submit a written report to EPA and MassDEP which describes the results of its continuing periodic examination of the Stacey Brook culvert to prevent any further illegal sewage connections from Lynn.

14. The Commission shall continue to implement proper operation and maintenance actions for its MS4, WPCF, and Collection System, and the recommendations included in the following approved Reports and any Approved future updates:

- a. Updated High Flow Management Plan (October 2011)
- b. Best Management Plan for King's Beach Outfall (January 1995)
- c. Updated Overflow Response Plan (October 2011)

15. Within 180 days of the Effective Date of this Decree, the Commission shall submit for review and Approval by EPA and MassDEP a Solids and Floatables Control Plan which shall evaluate alternatives for controlling solid and floatable materials from CSO discharges. The Solids and Floatables Control Plan shall include, at a minimum:

- a. A description of the Commission's actions to mitigate solids and floatables from CSO discharges, including street sweeping and catch basin cleaning practices in the tributary CSO subareas, and any existing structural controls, and the operation and maintenance of such structural controls;
- b. An assessment of the Commission's current practices with recommendations to modify or optimize the efficiency of all non-structural and structural solids and floatables control elements;

- c. An assessment of alternatives to address solids and floatables controls in the CSO regulator structures, at a minimum including alternatives that utilize baffles, screens, or netting technology, including the technical constraints to install these technologies and their associated costs; and
- d. A recommended plan and schedule for structural and non-structural actions to mitigate solids and floatable materials in CSO discharges.

Upon Approval by EPA and MassDEP, the Commission shall implement the plan and schedule for structural and non-structural actions to mitigate solids and floatable materials in CSO discharges.

16. Notwithstanding implementation of the requirements of the Compliance Section of the Third Modified Consent Decree, if additional controls are necessary to achieve compliance with the CWA or the Massachusetts Act, including state water quality standards promulgated pursuant to the Massachusetts Act, the MassDEP or EPA may request that the Commission identify alternatives for additional controls for achieving such compliance. Within 180 days of receipt of such a request from EPA or MassDEP, the Commission shall submit for review and Approval by EPA and MassDEP a proposal for additional controls, including a schedule and an explanation of the alternatives considered, for achieving compliance. Upon Approval by EPA and MassDEP, the plan and schedules submitted under this Paragraph shall be incorporated into, and made fully enforceable under, this Third Modified Consent Decree upon motion to the Court.



Illicit Discharge Detection and Elimination

17. The Commission shall implement an IDDE program, for identifying and eliminating non-stormwater discharges to the Commission's MS4 and unauthorized flow to the Commission's CSO outfalls, in accordance with the IDDE Plan submitted to EPA and MassDEP on August 3, 2016, any updates Approved by EPA and MassDEP, and the following:

a. On August 3, 2016, the Commission submitted to EPA and MassDEP an updated list of its MS4 outfalls and connections to storm drain systems operated by other entities, providing a unique identifier and latitude/longitude coordinates for each outfall and interconnection, and an updated map showing the location of each outfall and interconnection.

b. On August 3, 2016, the Commission submitted for review and Approval by EPA and MassDEP an updated IDDE Plan for screening and monitoring of outfalls and interconnections, investigation of Sub-catchment Areas, identification of illicit discharges, and elimination of illicit discharges. With regard to the updated IDDE Plan,

i. The updated IDDE Plan shall be consistent with the draft EPA New England Bacterial Source Tracking Protocol dated January 2012 (Appendix B hereto) and this Decree; shall address the storm drain system and stormdrain outfalls citywide; and shall prioritize IDDE efforts to identify and remove wastewater discharges to King's Beach.

ii. For determining investigatory needs and for other analytical purposes under the IDDE Plan, the Commission shall utilize the following IDDE screening thresholds as guidelines for its analysis of the data generated for each field sample to include:

Bacteria: Class A or B waters - E. coli: greater than 235 coliform forming units /100 milliliters ("cfu/100 ml")

Class SA or SB waters – enterococci greater than 104 cfu/100 ml

Surfactants: equal to or greater than 0.25 milligrams per liter (“mg/l”) (via field kits) or 0.1 mg/l via laboratory analysis

Ammonia: equal to or greater than 0.5 mg/l

Total residual chlorine: greater than non-detect (0.02 mg/l method detection limit)

iii. The Commission shall include the requirements of Paragraphs 11 to 14 and 16 of AOC Docket No. 12-009 as part of the updated IDDE Plan and shall implement those requirements, including submission of all the reports required thereunder.

iv. The Commission shall implement the updated IDDE Plan as submitted pending review and Approval by EPA and MassDEP, and, following completion of the review and Approval process, continue implementing the updated IDDE Plan with modifications resulting from the review and Approval process.

c. Dry-weather inspections: By October 31, 2016, under dry-weather conditions (less than 0.1 inches of rain in the preceding 24 hours and no significant snowmelt), the Commission shall inspect all known LWSC MS4 and CSO outfalls and LWSC connections to other storm drain systems and sample those with flow. If no flow is observed, but evidence of dry-weather flow exists, the Commission shall revisit the outfall during dry weather to perform a second dry-weather inspection and sampling of any observed flow. If an outfall is inaccessible or submerged, the Commission shall proceed to the first accessible upstream manhole or structure for the dry-weather inspection and sampling. Outfall and interconnection discharge samples shall be analyzed for E. coli bacteria (for freshwater receiving water bodies) or

enterococcus bacteria (for saline or brackish receiving water bodies), surfactants, ammonia, and total residual chlorine using instrumentation defined in Table 1 of the Draft EPA Bacterial Source Tracking Protocol (included in this Third Modified Consent Decree as Appendix B).

The Commission shall maintain detailed and accurate records of the date and time that sampling was conducted, the weather conditions both during and in the 48 hours prior to each sampling event, and the physical condition and presence of potential non-stormwater discharge indicators (including presence or evidence of suspect flow and sensory observations such as odor, color, turbidity, floatables, or oil sheen) at the time of dry-weather sampling. The Commission shall submit a summary of the dry weather inspection results to EPA and MassDEP with the semi-annual Compliance Reports under Paragraph 26 of this Decree.

d. Wet-weather inspections: Between March 1, 2017, and May 31, 2017, under wet-weather conditions, the Commission shall sample all known LWSC MS4 and CSO outfalls and LWSC connections to storm drain systems operated by other entities. For the purposes of sampling outfalls or interconnections, "wet-weather conditions" should consist of at least 0.25-inches of rain over the 24-hour period prior to sampling. To facilitate sample planning and execution, however, precipitation events sufficient to produce any flow in outfalls or interconnections to be sampled will also be acceptable. If an outfall is inaccessible or submerged, the Commission shall proceed to the first accessible upstream manhole or structure for the wet-weather inspection and sampling. Sampling at CSO outfalls shall be performed during a precipitation event prior to activation of the upstream CSO regulator(s), or during a precipitation event that does not cause any upstream CSO regulator(s) to activate. Outfall and

interconnection discharge samples shall be analyzed for E. coli bacteria (for freshwater receiving water bodies) or enterococcus bacteria (for saline or brackish receiving water bodies), surfactants, ammonia, and total residual chlorine using instrumentation defined in Table 1 of the Draft EPA Bacterial Source Tracking Protocol (included in this Third Modified Consent Decree as Appendix B). The Commission shall maintain detailed and accurate records of the date and time that sampling was conducted, the weather conditions both during and in the 24 hours prior to each sampling event, and the physical condition and presence of potential non-stormwater discharge indicators (including presence or evidence of suspect flow and sensory observations such as odor, color, turbidity, floatables, or oil sheen) at the time of wet-weather sampling. The Commission shall submit a summary of the wet-weather inspection results with the semi-annual Compliance Reports under Paragraph 26 of this Decree.

e. By June 30, 2017, the Commission shall submit to EPA and MassDEP an updated detailed priority ranking for IDDE, in order of water quality impacts, of Sub-catchment Areas based on all information and data available, including monitoring and screening results. The updated detailed priority ranking shall explain the basis for its order of priority. At the same time, the Commission shall also submit a schedule, in accordance with the priority ranking, for commencing and conducting the investigatory work to identify sources of illicit discharges in each Sub-catchment Area, broken down by calendar year.

f. Within three years of the Date of Lodging of this Third Modified Consent Decree, the Commission shall complete investigations of all Sub-catchment Areas in the Commission's existing system, according to the Commission's updated detailed priority ranking order and

schedule. Within two years of the date of completion of sewer separation in the Bennett Street area and the CSO 005 area, respectively, the Commission shall complete IDDE screening and investigations of Sub-catchment in each of those Areas.

g. For purposes of this Decree, the “date of verification” of an illicit discharge shall be the date on which the Commission has identified a point of entry from a specific location or address that contributes wastewater or other illicit flow to the MS4 or unauthorized flow to CSO outfalls.

h. Except as provided in Paragraph 17.i. below, the Commission shall remove all illicit discharges within 60 Days of the date of verification.

i. If the Commission cannot remove an illicit discharge within 60 Days of the date of verification, or within 60 Days of the Effective Date for illicit discharges verified before the Effective Date, the Commission shall submit for review and Approval by EPA and MassDEP a schedule to remove the illicit discharge(s) as expeditiously as possible. The Commission shall meet milestones in such schedule as submitted pending review and Approval by EPA and MassDEP and, following completion of the review and approval process, continue implementing the schedule with any modifications resulting from the review and approval process. Schedules for removal of verified illicit discharges shall be consistent with the following criteria stated in Paragraphs 17.j. to 17.l. unless special design requirements dictate an alternative schedule.

j. Within 30 Days of the date of verification, or within 30 Days of the Effective Date for illicit discharges verified before the Effective Date, the Commission shall either refer the case of the illicit discharge to its engineering department for removal of the illicit discharge in

accordance with Paragraph 17.h. and 17.i., or, if the Commission determines that the removal of the illicit discharge is the responsibility of the property owner, notify the property owner in writing, sent both by certified mail/return receipt requested and regular mail, that it is responsible for eliminating the illicit discharge.

k. If the Commission determines that removal of the illicit discharge is the responsibility of the property owner, and the property owner has not eliminated the illicit discharge within 60 Days of the date of verification, or within 60 Days of the Effective Date for existing verified illicit discharges, the Commission's legal department shall send the property owner within 75 Days of the date of verification, or within 75 Days of the Effective Date for illicit discharges verified before the Effective Date, a letter that notifies the property owner of its responsibility to remove the illicit discharge as expeditiously as possible, the legal consequences of its failure to do so, and details the range of available enforcement options from penalties to terminating service.

l. If the Commission determines that removal of the illicit discharge is the responsibility of the property owner, and the property owner has not eliminated the illicit discharge within 105 Days of the date of verification, or within 105 Days of the Effective Date for illicit discharges verified before the Effective Date, the Commission's legal department shall send the property owner a second letter within 120 Days of the date of verification, or within 120 Days of the Effective Date for illicit discharges verified before the Effective Date. This letter shall notify the property owner that imposition of monetary penalties is commencing, that such penalties will continue to escalate until removal of the illicit discharge, and that such penalties

will be included in the property owner's water and sewer bill. In addition, the letter shall enumerate further actions that the Commission may take in accordance with its regulations governing the use of sanitary and combined sewers and storm drains. Thereafter, the Commission's legal department shall diligently prosecute its action against the property owner for removal of the illicit discharge. Under Paragraph 26 (Compliance Report) of this Decree, the Commission shall report on each legal action and the steps it has taken to escalate enforcement.

m. The Commission shall comply with all schedules for removal of verified illicit discharges established pursuant to this Paragraph 17.

n. Within 60 Days following the removal of a verified illicit discharge, the Commission shall conduct additional dry- and wet-weather monitoring, bracketing the verified illicit discharge, to confirm that the illicit discharge has been eliminated. The Commission shall submit a summary of the results of this monitoring to EPA and MassDEP with the semi-annual Compliance Reports required under Paragraph 26 of this Consent Decree.

o. Within one year of removing all known illicit discharges within an outfall's or interconnection's Sub-catchment Area, the Commission shall conduct at least two rounds of both dry- and wet-weather monitoring, as described in Paragraphs 17.c. and 17.d., to confirm that all illicit discharges under the Small MS4 General Permit to the MS4 outfall or interconnection (or unauthorized flow to the CSO outfall) have been eliminated. The Commission shall submit a summary of the results of this monitoring with the semi-annual Compliance Reports required under Paragraph 26 of this Third Modified Consent Decree.

Capacity, Management, Operation and Maintenance

18. The Commission shall have an ongoing program to identify and remove sources of Infiltration and Inflow in accordance with 314 CMR 12.04 (2), which shall include, but not be limited to, provisions for mitigating impacts from any new connections or extensions to the sewer system with design flows of greater than 15,000 gallons per day, by requiring removal of four gallons of infiltration or inflow for each gallon of new flow to be generated by the new connection or extension, unless otherwise Approved by MassDEP.

19. The Commission shall implement the CMOM Long-Term Preventive Maintenance Plan (“LTPMP”) submitted to EPA in April 2013 and the LTPMP Implementation Schedule submitted to EPA in September 2013 under AOC Docket No. 12-009. As part of such implementation, the Commission shall implement manhole, gravity line/pipe, catch basin, force main, pump station, and special structure inspection and maintenance in accordance with the procedures and at the frequencies described in the plan, implement a training program as described in the plan, and implement a record keeping, tracking, and management information system (“MIS”) that includes a computerized maintenance management system (“CMMS”), a geographic information system (“GIS”), and mapping. The Commission shall also implement the other components of the LTPMP. The Parties may modify the LTPMP or the LTPMP Implementation Schedule by written agreement. The Commission shall comply with any such modifications.

20. The Commission shall implement the CMOM Corrective Action Plan (“CAP”) and the CMOM Implementation Schedule (CAP Appendix B) submitted to EPA in September 2013



under AOC Docket No. 12-009. As part of such implementation, the Commission shall complete and submit to EPA and MassDEP the Information Technology (IT) gap analysis, implement a management information system that fully implements Computerized Maintenance Management Systems (CMMS) and incorporates GIS, and complete and submit to EPA and MassDEP (a) the detailed list of jobs with corresponding descriptions (to be included as Appendix C to the CMOM Program Document), (b) the Sanitary Sewer Overflow Emergency Response Plan (to be included as Appendix D to the CMOM Program Document), and (c) the Fats, Oil and Grease (“FOG”) Program (to be included as Appendix F to the CMOM Program Document). The Commission shall also implement the other components of the CAP. The Parties may modify the CAP or the CMOM Implementation Schedule by written agreement. The Commission shall comply with any such modification.

21. By March 31, 2017, the Commission shall submit to EPA and MassDEP an updated and complete CMOM Program Self-Assessment that includes:

- a. A detailed inventory of the Commission’s Collection System that characterizes the age, condition, type of construction, and operation of each element of its Collection System and provides for further assessments where warranted;
- b. an assessment of the capacity of all of the critical elements of the Collection System; and
- c. an updated assessment of the Commission’s operation and maintenance practices;

d. as part of the assessments, the Commission shall determine whether improvements to the Commission's preventative maintenance practices are necessary in order to preserve the infrastructure of the Collection System and to prevent future overflows from the Collection System. The updated CMOM Program Self-Assessment shall be conducted in accordance with EPA's Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002, January 2005) (available on-line at [http://www.epa.gov/npdes/pubs/cmom\\_guide\\_for\\_collection\\_systems.pdf](http://www.epa.gov/npdes/pubs/cmom_guide_for_collection_systems.pdf)). As part of the updated CMOM Program Self Assessment, the Commission shall complete and submit the Wastewater Collection System CMOM Program Self-Assessment Checklist (the "CMOM Program Self-Assessment Checklist") (see Attachment 2 to AOC Docket No. 12-009), which is a Region 1 modification of the checklist that accompanies the above CMOM guidance; and

e. An assessment of the operation and maintenance activities the Commission is required to conduct pursuant to 314 CMR 12.00.

22. On or before June 30, 2017, the Commission shall submit for review and Approval by EPA and MassDEP proposed modifications to the CMOM Corrective Action Plan to address deficiencies that the Commission identifies through this updated CMOM Program Self-Assessment and to address comments, if any, made by MassDEP or EPA on the updated CMOM Program Self-Assessment. The proposed modifications shall provide, *inter alia*, for adequate pump station inspections, I/I mitigation for new connections, and other activities needed to satisfy 314 CMR 12.00. The Commission shall implement the modified CMOM Corrective

Action Plan upon Approval by EPA and MassDEP.

23. The Commission shall comply with the CMOM Program Implementation Annual Report requirements of Paragraph 7 of AOC Docket No. 12-009.

24. The Commission shall submit an updated CMOM Program Self-Assessment Checklist to EPA and MassDEP by March 31, 2020.

25. All work pursuant to this Third Modified Consent Decree shall be performed using sound engineering practices to ensure that construction, management, operation, and maintenance of the Commission's sewer system complies with the Act and the Massachusetts Act, including practices to improve the resilience of the sewer system to the impacts of climate change. Sound engineering practices may include appropriate provisions of (a) *EPA's Handbook: Sewer System Infrastructure Analysis and Rehabilitation*, EPA/625/6-91/030, Oct. 1991, or as amended; (b) *Existing Sewer Evaluation and Rehabilitation*, WEF Manual of Practice ("MOP") No. FD-6, 2009, or as amended; (c) MassDEP's *Guidelines for Performing Infiltration/Inflow Analyses And Sewer System Evaluation Survey*, Revised January 1993, or as amended; (d) the National Association of Sewer Service Companies (NASSCO) *Manual of Practice*; and (e) the currently effective edition of *TR 16: Guides for the Design of Wastewater Treatment Works*.

## **VII. REPORTING**

26. In addition to the specific reporting requirements listed or referenced in the Compliance Section (Paragraphs 8 to 25) of this Third Modified Consent Decree, on or before the 25th day of each January and July, following the calendar month in which this Third

Modified Consent Decree is entered, and continuing until completion of all actions required of it by this Third Modified Consent Decree, the Commission shall submit in writing to the EPA and MassDEP a compliance report concerning the projects required by this Third Modified Consent Decree. The report shall describe in detail the status, progress, and work performed during the six months preceding the month in which the report is due, and shall also include a description of the work to be performed during the following half year. Notification to EPA or MassDEP pursuant to this Paragraph of any anticipated delay shall not excuse the delay.

27. Reports, plans, schedules, and/or notices required by this Third Modified Consent Decree to be sent by the Commission to EPA; the United States Attorney for the District of Massachusetts; the Environmental Enforcement Section of the Environment and Natural Resources Division; MassDEP; and the Attorney General of the Commonwealth, shall be made in writing to the following addresses, respectively, unless the United States or the Commonwealth gives the Commission written notice that another person has been designated to receive such report, plan, schedule, or notice:

To EPA

Jeffrey Kopf  
Senior Enforcement Counsel  
U.S. Environmental Protection Agency  
5 Post Office Square (OES-04-4)  
Boston, MA 02109-3912

George Harding  
U.S. Environmental Protection Agency  
5 Post Office Square (OES-04-4)  
Boston, MA 02109-3912

To the United States Attorney for the District of Massachusetts

George B. Henderson, II  
Assistant U.S. Attorney  
One Courthouse Way, Suite 9200  
Boston, MA 02210

To the Environmental Enforcement Section, Environment and Natural Resources Division

EES Case Management Unit  
Environment and Natural Resources Division  
United States Department of Justice  
P.O. Box 7611, Ben Franklin Station  
Washington, D.C. 20044  
eescasemanagement.enrd@usdoj.gov  
Re: DJ No. 90-5-1-1-545B

To MassDEP

Kevin Brander  
Massachusetts Department of Environmental Protection  
Northeast Regional Office  
205B Lowell St.  
Wilmington, MA 01887

Heidi Zisch, Lead Regional Counsel  
Massachusetts Department of Environmental Protection  
Northeast Regional Office  
205B Lowell St.  
Wilmington, MA 01887

To the Attorney General of the Commonwealth

Andrew Goldberg  
Assistant Attorney General  
Environmental Protection Division  
One Ashburton Place, 18<sup>th</sup> Floor  
Boston, MA 02108

The aforementioned reporting requirements do not relieve the Commission of its obligation to submit any other reports or information required by the Act or the Massachusetts Act, the

regulations promulgated under each Act, respectively, any applicable NPDES permit, or any local requirements.

28. All written notices, reports and all other submissions required by this Third Modified Consent Decree shall contain the following certification signed by a duly authorized representative of the Commission:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

#### **VIII. REVIEW AND APPROVAL**

29. After review of any plan, schedule, report, or other item that is required to be submitted for (i) Approval by EPA, (ii) for Approval by MassDEP, or (iii) for Approval by EPA and MassDEP pursuant to this Third Modified Consent Decree, EPA, MassDEP, or both EPA and MassDEP, respectively, shall in writing:

- a. approve, in whole or in part, the submission;
- b. approve, in whole or in part, the submission upon specified conditions; or
- c. disapprove, in whole or in part, the submission.

30. In the event of approval pursuant to Paragraph 29.a. above, the Commission shall take all actions required to implement such plan, schedule, report, or other item, as approved. In the event of approval in part pursuant to Paragraph 29.a., or approval upon specified conditions pursuant to Paragraph 29.b., upon written direction of MassDEP or EPA, the Commission shall

take all actions required by the approved plan or schedule, report or other item that MassDEP or EPA determines are technically severable from any disapproved portions, subject to the Commission's right to dispute only the specified conditions or non-approved portions pursuant to the Dispute Resolution Section below.

31. Upon receipt of a written notice of disapproval pursuant to Paragraph 29.c. above, the Commission shall, within 30 Days or such other time as the Commission, MassDEP, and EPA agree in writing, correct the deficiencies and resubmit the plan, schedule, report, or other item, or portion thereof, for Approval by EPA, Approval by MassDEP, or Approval by EPA and MassDEP. Any stipulated penalties applicable to the original submission shall accrue during the thirty (30) Day period or other specified period, but shall not be payable unless the resubmission is untimely and/or disapproved as provided in Paragraph 29.

32. In the event that a resubmitted plan, schedule, report or other item, or portion thereof, is disapproved by MassDEP or EPA, MassDEP or EPA may again require the Commission to correct the deficiencies in accordance with the preceding Paragraphs.

33. If upon resubmission, a plan, schedule, report, or item, or portion thereof, is disapproved by MassDEP or EPA, the Commission shall be bound by MassDEP's or EPA's decision unless the Commission invokes the dispute resolution procedures set forth in the Dispute Resolution Section (Paragraphs 46 to 53) within twenty (20) Days of receipt of MassDEP's or EPA's last written position. If MassDEP's or EPA's disapproval is upheld after dispute resolution, stipulated penalties shall accrue for the violation from the date of the disapproval of the original submission.

34. All plans, schedules, reports, and other items required to be submitted for approval by EPA and/or MassDEP under this Decree shall, upon approval by MassDEP and/or EPA, be enforceable under this Consent Decree. In the event MassDEP and/or EPA approves a portion of a plan, schedule, report, or other item required to be submitted to MassDEP and/or EPA for approval under this Third Modified Consent Decree, the approved portion shall be enforceable under this Decree.

35. In the event a dispute arises among the Parties regarding MassDEP's or EPA's approval upon specified conditions or disapproval in part or in whole of any plans, schedules, reports, and other items required to be submitted to MassDEP and/or EPA for approval under this Decree, the position of MassDEP and EPA shall govern unless the Commission invokes the dispute resolution procedures set forth in the Dispute Resolution Section below.

36. Permits. Where any compliance obligation under this Section requires the Commission to obtain a federal, state, or local permit or approval, the Commission shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. The Commission may seek relief under the provisions of Section X (Force Majeure) for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if the Commission has submitted timely and complete applications and has taken all other actions necessary to obtain all such permits or approvals.

#### **IX. STIPULATED PENALTIES**



37. The Commission shall pay stipulated penalties to the United States and the Commonwealth of Massachusetts for violations or noncompliance with the requirements of this Third Modified Consent Decree, as set forth below, unless excused under Force Majeure. A violation or noncompliance includes failing to perform an obligation required by the terms of this Third Modified Consent Decree, including any work plan or schedule approved under this Third Modified Consent Decree, according to all applicable requirements of this Third Modified Consent Decree and within the specified time schedules or by the date(s) established by or approved under this Third Modified Consent Decree:

a. Reporting Requirements. For every Day that the Commission fails to timely submit a report required by Paragraph 26 of this Third Modified Consent Decree or fails to provide the certification required by Paragraph 28 of this Third Modified Consent Decree, the Commission shall pay a stipulated penalty as follows:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 500	1st through 14th Day
\$ 1,500	15th through 30th Day
\$ 2,500	31st Day and beyond.

b. Remedial Measures. For every Day that the Commission fails timely to meet the requirements of the Compliance Section (Paragraphs 8 to 25) of this Third Modified Consent Decree, including but not limited to, by failing to submit an approvable plan, schedule, report, or other item, other than a report required by Paragraph 26, or by failing to implement remedial

requirements in a plan, schedule, report, or other item approved by MassDEP or EPA or required under this Consent Decree, the Commission shall pay a stipulated penalty as follows:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 750	1st through 14th Day
\$ 1,000	15th through 30th Day
\$ 2,500	31st Day and beyond.

c. Unpermitted Discharges. For each Day that an SSO occurs, the Commission shall pay a stipulated penalty of \$6,500. Notwithstanding the foregoing, the Commission shall not be liable for such a stipulated penalty for an SSO if all of the following conditions are met: (i) the Commission stopped the SSO as soon as reasonably practicable; (ii) the Commission is in full compliance with and is fully implementing the schedules and other requirements set forth pursuant to the Compliance Section of this Consent Decree; and (iii) the Commission has complied with all reporting requirements and response actions included in the Commission's Mass-DEP Approved Overflow Response Plan.

38. Stipulated penalties shall automatically begin to accrue on the Day after performance is due or on the Day a violation occurs and shall continue to accrue each Day until performance is satisfactorily completed or until the violation or noncompliance ceases. Stipulated penalties shall accrue simultaneously for separate violations of or instances of noncompliance with this Third Modified Consent Decree.

Stipulated penalties shall accrue regardless of whether the United States or the Commonwealth of Massachusetts has notified the Commission of a violation of or

noncompliance with the requirements of this Third Modified Consent Decree or demanded payment of stipulated penalties.

39. The Commission shall pay stipulated penalties as specified in this Section by delivering the payment to the United States and the Commonwealth within 30 Days of the date of a demand for payment of stipulated penalties by the United States or the Commonwealth. The Commission shall pay one half of the total stipulated penalty amount due to the United States and one half to the Commonwealth in the manner set forth below. In the event the Commission fails to pay stipulated penalties according to the terms of this Consent Decree, such penalty (or portion thereof) shall be subject to interest at the statutory judgment rate set forth at 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be construed to limit the United States or the Commonwealth in seeking any remedy otherwise provided by law for the Commission's failure to pay any stipulated penalties.

a. The Commission shall make payment of stipulated penalties by Fedwire Electronic Funds Transfer ("EFT") to the United States Department of Justice in accordance with written instructions to be provided to the Commission by the United States Attorney's Office for the District of Massachusetts, Financial Litigation Unit, Boston, Massachusetts. The costs of such electronic funds transfer shall be the responsibility of the Commission. At the time of payment, the Commission shall send a copy of the EFT authorization form, the EFT transaction record, and a transmittal letter, which shall state that the payment is for stipulated penalties and shall state for which violation(s) or noncompliance the penalties are being paid and reference the civil action number 76-cv-02184-RGS and DOJ case number 90-5-1-1-545B, to the EPA and the

United States Department of Justice as specified in Paragraph 27 of this Third Modified Consent Decree, by email to [acctsreceivable.CINWD@epa.gov](mailto:acctsreceivable.CINWD@epa.gov), and by mail to:

EPA Cincinnati Finance Office  
26 Martin Luther King Drive  
Cincinnati, Ohio 45268.

b. The Commission shall also make payment to the Commonwealth by Fedwire Electronic Funds Transfer in accordance with current EFT procedures, referencing the Massachusetts Office of the Attorney General's Case CIV No. 16-04-39883 and referencing this action. The Commission shall send a copy of the EFT authorization form for this transfer, the EFT record and the transmittal letter to MassDEP and the Massachusetts Attorney General's Office as specified in Section VII (Reporting) herein which shall state that the payment is for stipulated penalties and shall state for which violation(s) or noncompliance the penalties are being paid.

40. Stipulated penalties shall continue to accrue as provided in Paragraph 37 above, during dispute resolution, but need not be paid until the following:

a. If the dispute is resolved by agreement of the Parties, or by a decision of the United States or the Commonwealth that is not appealed to the Court, the Commission shall pay accrued penalties determined to be owing, together with interest, to the United States and the Commonwealth within 30 Days of the effective date of the agreement or the receipt of the United States' or the Commonwealth's decision.

b. If the dispute is appealed to the Court and the United States or the Commonwealth prevails in whole or in part, the Commission shall pay all accrued penalties

determined by the Court to be owing, together with interest, within 60 Days of receiving the Court's decision or order, except as provided in subparagraph c., below.

c. If any Party appeals the Court's decision, the Commission shall pay all accrued penalties determined to be owing, together with interest, within 15 Days of receiving the final appellate court decision.

d. The stipulated penalties set forth above shall be in addition to any other remedies, sanctions, or penalties which may be available by reason of the Commission's failure to comply with the requirements of this Consent Decree. The United States and the Commonwealth expressly reserve any and all legal and equitable remedies, including contempt sanctions, which may be available to enforce the provisions of this Consent Decree. Either Plaintiff may, in the unreviewable exercise of its discretion, reduce or waive stipulated penalties otherwise due it under this Consent Decree.

#### **X. FORCE MAJEURE**

41. "Force Majeure," for purposes of this Third Modified Consent Decree, is defined as any event arising from causes beyond the control of the Commission or of any entity controlled by the Commission, including its engineers, consultants, contractors and subcontractors, that delays or prevents the timely performance of any obligation under this Third Modified Consent Decree notwithstanding the Commission's best efforts to fulfill the obligation. The requirement that the Commission exercise "best efforts" includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any such event (a) as it is occurring and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent

possible. "Force Majeure" does not include unanticipated or increased costs or expenses associated with the implementation of actions called for by this Third Modified Consent Decree, changed financial circumstances or decreased revenues, and/or reasonably foreseeable technical problems. Stipulated Penalties shall not be due for the number of Days of noncompliance caused by a Force Majeure event as defined in this Section, provided that the Commission complies with the terms of this Section.

42. If any event occurs that may delay or prevent the performance of any obligation under this Third Modified Consent Decree, whether or not caused by a Force Majeure event, the Commission shall notify EPA and MassDEP within 72 hours after the Commission first knew that the event might cause a delay or prevent the performance of any obligation under this Third Modified Consent Decree. Within 10 working Days thereafter, the Commission shall submit to MassDEP and EPA, at the addresses specified in Paragraph 27, (i) a written explanation of the cause(s) of any actual or expected delay or noncompliance, (ii) the anticipated duration of any delay, (iii) the measure(s) taken and to be taken by the Commission to prevent or minimize the delay, (iv) a proposed schedule for the implementation of such measures, (v) the Commission's rationale for attributing such delay to a Force Majeure event if it intends to assert such a claim; and (vi) a statement as to whether, in the opinion of the Commission, such event may cause or contribute to an endangerment to public health, welfare, or the environment. The Commission shall include with any notice all available documentation supporting the claim that the delay was attributable to a Force Majeure. The Commission shall be deemed to know of any circumstances of which the Commission, any entity controlled by the Commission, or the

Commission's contractors knew or should have known. Failure to provide timely and complete notice in accordance with this Paragraph shall constitute a waiver of any claim of Force Majeure with respect to the event in question.

43. If EPA and MassDEP agree that a delay or anticipated delay is attributable to Force Majeure, the time for performance of the obligations under this Third Modified Consent Decree that are affected by the Force Majeure event shall be extended by EPA and MassDEP for a period of time as may be necessary to allow performance of such obligations. EPA and MassDEP will notify the Commission in writing of the length of the extension, if any, for performance of the obligations affected by the Force Majeure event.

44. If EPA or MassDEP does not agree the delay or anticipated delay is attributable to Force Majeure, or on the number of Days of noncompliance caused by such event, EPA or MassDEP will notify the Commission in writing of its decision. The Commission may then elect to initiate the dispute resolution process set forth in the Dispute Resolution Section below. In any dispute resolution proceeding, the Commission shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that "best efforts" were exercised to avoid and mitigate the effects of the delay, and that the Commission complied with the requirements of Paragraphs 41 and 42, above. If the Commission carries this burden, the delay at issue shall be deemed not to be a violation by the Commission of the affected obligation(s) of this Third Modified Consent Decree identified to EPA, MassDEP, and the Court.

45. Delay in performance of any obligation under this Third Modified Consent Decree shall not automatically justify or excuse delay in complying with any subsequent obligation or requirement of this Third Modified Consent Decree.

#### **XI. DISPUTE RESOLUTION**

46. Unless otherwise expressly provided for in this Third Modified Consent Decree, the dispute resolution procedures set forth in this Section (Paragraphs 46 to 52) shall be the exclusive mechanism to resolve disputes arising under or with respect to this Third Modified Consent Decree, including but not limited to disputes relating to a notice of disapproval, an Approval with conditions or modification, a Force Majeure determination by EPA or MassDEP, or a written demand for payment of stipulated penalties. The Commission's failure to seek resolution of a dispute under this Section shall preclude the Commission from raising any such undisputed issue as a defense to an action by the United States or the Commonwealth to enforce any obligation of the Commission arising under this Third Modified Consent Decree. The procedures set forth in this Section shall not apply to actions by the United States or the Commonwealth to enforce obligations that the Commission has not disputed in accordance with this Section.

47. Informal Dispute Resolution. Any dispute subject to dispute resolution under this Third Modified Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when the Commission delivers to the United States and the Commonwealth in accordance with paragraph 27 above a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute, and shall be accompanied by a



Statement of Position that shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the Commission. The period of informal negotiations shall not exceed thirty (30) Days from the date the dispute arises, unless that period is modified by written agreement between the Parties. EPA shall maintain an administrative record of the dispute, which shall contain all statements of the Parties, including supporting documentation, submitted pursuant to this Section.

48. In the event that the Commission elects to invoke dispute resolution according to this Section, the Commission shall do so by delivering a Notice of Dispute to the United States and the Commonwealth of Massachusetts within 20 Days after receipt of a notice of disapproval, an Approval with conditions or modification, a Force Majeure determination by EPA or MassDEP, or a written demand for payment of stipulated penalties. If the Commission fails to give such notice, it shall be deemed to have waived any right to invoke dispute resolution regarding such dispute, and the position advanced by the United States and the Commonwealth of Massachusetts shall be considered binding.

49. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the United States and the Commonwealth of Massachusetts shall be considered binding unless, within 30 Days after the conclusion of the informal negotiation period, the Commission seeks judicial review of the dispute by filing with the Court and serving on the United States and the Commonwealth, in accordance with Paragraph 27 of the Third Modified Consent Decree, a motion requesting judicial resolution of the dispute. Any such motion shall contain a written statement of the Commission's position on the matter in dispute, including any

supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Third Modified Consent Decree.

50. The United States and the Commonwealth of Massachusetts shall respond to the Commission's motion within the time period allowed by the Federal Rules of Civil Procedure and the Local Rules of this Court. The Commission may file a reply memorandum, to the extent permitted by the Federal Rules of Civil Procedure and the Local Rules.

51. Standard of Review.

a. Disputes Concerning Matters Accorded Record Review. Except as otherwise provided in this Third Modified Consent Decree, in any dispute brought under this Dispute Resolution Section pertaining to: (1) the adequacy or appropriateness of plans, procedures to implement plans, schedules, or any other items requiring Approval by EPA and/or Approval by MassDEP under this Third Modified Consent Decree; (2) the adequacy of the performance of work undertaken pursuant to this Third Modified Consent Decree; and (3) all other disputes that are accorded review on the administrative record under applicable principles of administrative law, the Commission shall have the burden of demonstrating, based upon the administrative record, that the United States' and the Commonwealth's position is arbitrary and capricious or otherwise not in accordance with law.

b. Other Disputes. Except as otherwise provided in this Third Modified Consent Decree, in any other dispute brought under this Dispute Resolution Section, the Commission shall bear the burden of demonstrating that its position complies with this Third Modified

Consent Decree, furthers the objectives of this Third Modified Consent Decree more positively than the position advanced by the United States and the Commonwealth, and that the Commission is entitled to relief under applicable principles of law.

52. The invocation of dispute resolution procedures under this Dispute Resolution Section shall not, by itself, extend, postpone, or affect in any way any obligation of the Commission under this Third Modified Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 40 above. If the Commission does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in the Stipulated Penalties Section (Paragraphs 37 to 40) of this Third Modified Consent Decree.

## **XII. FUNDING**

53. Performance of the terms of this Third Modified Consent Decree by the Commission is not conditioned on the receipt of any Federal or State grant funds. In addition, performance is not excused by the lack of any Federal or State grant funds.

## **XIII. RIGHT OF ENTRY**

54. Until termination of the provisions of this Third Modified Consent Decree, EPA, MassDEP and their contractors, consultants, and attorneys, shall have the authority to enter any facility covered by this Third Modified Consent Decree, at all times, upon proper presentation of credentials to the highest ranking representative present on the premises, for the purposes of monitoring the progress of activity required by this Third Modified Consent Decree, verifying

any data or information submitted in accordance with the terms of this Third Modified Consent Decree, and for obtaining any samples, and on request, splits of any samples taken by the Commission or its consultants. This provision in no way limits or otherwise affects any right of entry held by the United States or the Commonwealth pursuant to applicable Federal or State laws, regulations, or permits.

#### **XIV. NOT A PERMIT**

55. This Third Modified Consent Decree is not and shall not be interpreted to be a permit, or a modification of the Commission's NPDES permit or the Small MS4 General Permit, issued pursuant to Section 402 of the Clean Water Act, 33 U.S.C. § 1342, or M.G.L. c. 21, § 43, nor shall it in any way relieve the Commission of its obligation to comply with the requirements of any applicable NPDES or State permit or with any other Federal or State law or regulation.

#### **XV. OBLIGATION TO COMPLY**

56. The pendency of any proceeding concerning the issuance, reissuance, or modification of any NPDES or State permit shall neither affect nor postpone the Commission's duties and liabilities as set forth herein. Further, notwithstanding any other provisions of this Third Modified Consent Decree, the obligations to achieve and maintain complete compliance with the terms, provisions, and requirements of this Third Modified Consent Decree, the Act, the Massachusetts Act, and applicable regulations rest solely with the Commission.

#### **XVI. NON-WAIVER PROVISION**

57. The United States and the Commonwealth do not waive any rights or remedies available to them for any violation by the Commission of the Act or Massachusetts Act and

associated regulations or permit conditions following completion of the requirements of this Third Modified Consent Decree. Further, this Third Modified Consent Decree in no way affects the ability of the United States or the Commonwealth to bring an action for further relief pursuant to Federal or State law for any violations not specifically the subject of this Decree. This Third Modified Consent Decree in no way affects or relieves defendants of responsibility to comply with any other Federal, State, or local law, regulations, or permit conditions. Nothing herein shall be construed to limit the power of the United States or the Commonwealth, consistent with their respective authorities, to undertake any action against any person, including the Commission, in response to conditions which may present an imminent and substantial endangerment to the public health, welfare, or the environment.

#### **XVII. COSTS OF SUIT**

58. Each party shall bear its own costs and attorney's fees in this action.

#### **XVIII. SEVERABILITY**

59. The provisions of this Third Modified Consent Decree shall be severable and should any provision be declared by a court of competent jurisdiction to be inconsistent with Federal law or Massachusetts law, and therefore unenforceable, the remaining provisions of this Decree shall remain in full force and effect.

#### **XIX. MODIFICATION**

60. The terms of this Third Modified Consent Decree, including modifications to any schedule specified in or approved under the Third Modified Consent Decree, may be modified only by a subsequent written agreement signed by all Parties. Where the modification

constitutes a material change to the Third Modified Consent Decree, it shall be effective only upon approval by the Court. Any disputes concerning modification of this Third Modified Consent Decree shall be resolved pursuant to the Dispute Resolution Section (Paragraphs 46 to 52), provided, however, that, instead of the burden of proof provided by Paragraph 51, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

#### **XX. RETENTION OF JURISDICTION**

61. The Court shall retain jurisdiction to enforce the terms and conditions of this Third Modified Consent Decree, to make modifications necessary to effectuate compliance with the Act and the Massachusetts Act, this Third Modified Consent Decree, applicable NPDES permits, and any applicable Federal or State regulations, and to resolve all disputes arising hereunder as may be necessary or appropriate for the construction or execution of this Third Modified Consent Decree or to reflect modifications of or amendments to existing laws and regulations relating to the subject matter of this Third Modified Consent Decree.

#### **XXI. TERMINATION OF DECREE**

62. On or after July 31, 2030, if the Commission has paid all outstanding penalties, completed all remedial measures specified in Section VI (Compliance) of the Third Modified Consent Decree, and has achieved compliance with all requirements of this Third Modified Consent Decree for a period of one year, any party may move the Court to terminate this Third Modified Consent Decree.

## **XXII. PUBLIC COMMENT; EFFECTIVENESS; ENTRY**

63. The parties agree and acknowledge that final approval by the United States and entry of this Third Modified Consent Decree are subject to the requirements of 28 C.F.R. § 50.7, which provides for notice and an opportunity for public comment. The Commission and the Commonwealth consent to the entry of this Third Modified Consent Decree without further notice. The United States consents to the entry of this Third Modified Consent Decree, subject to publication of notice thereof in the Federal Register, pursuant to 28 C.F.R. § 50.7, and an opportunity to consider comments thereon.

64. The Effective Date of this Third Modified Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket; provided, however, that the Commission hereby agrees that it shall be bound to perform duties scheduled to occur prior to the Effective Date. In the event the United States withdraws or withholds consent to this Consent Decree before entry, or the Court declines to enter the Consent Decree, then the preceding requirement to perform duties scheduled to occur before the Effective Date shall terminate.

65. Each undersigned representative of the Defendant and the Commonwealth and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to sign this Third Modified Consent Decree on behalf of the party for whom the signature is made.

66. The Court finds this Third Modified Consent Decree to be a reasonable and fair settlement of matters pending among the parties, which adequately protects the public interest in accordance with the Clean Water Act, 33 U.S.C. §§ 1251, et seq.

Dated and entered this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
United States District Judge



FOR THE LYNN WATER AND SEWER COMMISSION:

D. F. O'Neill

DANIEL F. O'NEILL, P.E.  
Executive Director  
Lynn Water and Sewer Commission  
400 Parkland Ave.  
Lynn, MA 01905

1-11-17

DATE

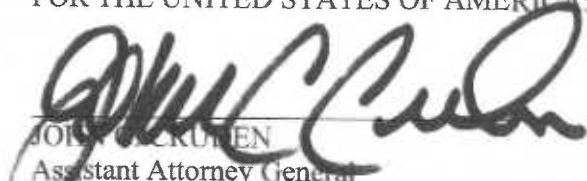
Barry P. Fogel

Barry P. Fogel, Esq.  
Keegan Werlin LLP  
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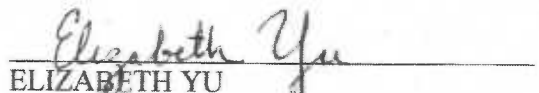
1/11/17

DATE

FOR THE UNITED STATES OF AMERICA:

  
JOHN C. CRUDEN  
Assistant Attorney General  
Environment & Natural Resources Division  
United States Department of Justice

January 10, 2017  
DATE

  
ELIZABETH YU  
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DATE

FOR THE UNITED STATES OF AMERICA:

WILLIAM D. WEINREB  
Acting United States Attorney

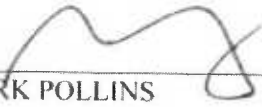


Handwritten signature of George B. Henderson, II in black ink.

GEORGE B. HENDERSON, II  
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1/18/2017  
DATE

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:

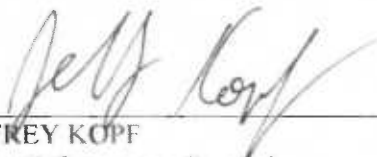
  
\_\_\_\_\_  
MARK POLLINS  
Director  
Water Enforcement Division  
Office of Civil Enforcement  
Office of Enforcement and Compliance Assurance  
United States Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460

1-17-17  
DATE

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:

  
\_\_\_\_\_  
SUSAN STUDLIEN  
Director  
Office of Environmental Stewardship  
United States Environmental Protection Agency,  
Region I  
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Boston, MA 02109-3912

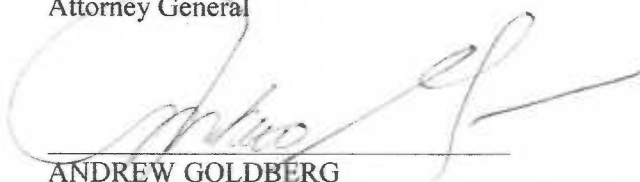
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DATE

  
\_\_\_\_\_  
JEFFREY KOPF  
Senior Enforcement Counsel  
Office of Environmental Stewardship  
United States Environmental Protection Agency,  
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1/10/17  
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FOR THE COMMONWEALTH OF MASSACHUSETTS:

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Attorney General



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1/12/17  
DATE

# Appendix A

To  
Third Modified Consent Decree

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION I

IN THE MATTER OF	)	DOCKET NO. 12-009
	)	
Lynn Water and Sewer Commission	)	FINDINGS OF VIOLATION
Lynn, Massachusetts	)	
NPDES Permit No. MA0100552	)	AND
	)	
Proceedings under Sections 308(a)	)	ORDER FOR COMPLIANCE
and 309(a)(3) of the Clean Water Act,	)	ON CONSENT
<u>as amended, 33 U.S.C. § 1319(a)(3)</u>	)	

I. STATUTORY AUTHORITY

The following FINDINGS are made and ORDER ON CONSENT issued pursuant to Sections 308(a) and 309(a)(3) of the Clean Water Act, as amended (the "Act"), 33 U.S.C. §§ 1318 and 1319(a)(3). Section 308(a) of the Act authorizes EPA to require the submission of any information required to carry out the objectives of the Act. Section 309(a)(3) of the Act grants to the Administrator of the U.S. Environmental Protection Agency ("EPA") the authority to issue orders requiring persons to comply with Sections 301, 302, 306, 307, 308, 318 and 405 of the Act and any permit condition or limitation implementing any of such sections in a National Pollutant Discharge Elimination System ("NPDES") permit issued under Section 402 of the Act, 33 U.S.C. § 1342. These authorities have been delegated to EPA Region I's Regional Administrator and, in turn, to the Director of EPA, Region I's Office of Environmental Stewardship (the "Director").

The Order herein is based on findings of violation of Section 301 of the Act, 33 U.S.C. § 1311, and the conditions of NPDES Permit No. MA0100552 and the NPDES General Permit for Small Municipal Separate Storm Sewer Systems. Pursuant to Section 309(a)(5)(A) of the Act, 33 U.S.C. § 1319(a)(5)(A), the Order provides a schedule for compliance which the Director has

In the Matter of Lynn Water & Sewer Commission  
Docket No.12-009



determined to be reasonable.

## II. FINDINGS

The Director makes the following findings of fact:

1. The Lynn Water and Sewer Commission ("Commission") is a public body established under the laws of the Commonwealth of Massachusetts having jurisdiction over disposal of sewage, and is therefore a municipality, as defined in Section 502(4) of the Act, 33 U.S.C. § 1362(4).
2. The Commission is a person under Section 502(5) of the Act, 33 U.S.C. § 1362(5). The Commission is the owner and operator of a Publicly-Owned Treatment Works ("POTW") which includes a wastewater collection system ("Collection System"), a wastewater treatment facility ("WWTF") and four combined sewer overflow ("CSO") outfalls from which it discharges pollutants, as defined in Sections 502(6) and (12) of the Act, 33 U.S.C. §§ 1362(6) and (12), from point sources, as defined in Section 502(14) of the Act, 33 U.S.C. § 1362(14), to Strawberry Brook, the Saugus River, Lynn Harbor (Broad Sound), and Nahant Bay. Strawberry Brook flows into the Saugus River, which flows into Broad Sound. These water bodies are all "waters of the United States" as set forth at 40 C.F.R. § 122.2 and, thereby navigable waters under Section 502(7) of the Act, 33 U.S.C. § 1362(7).
3. The Commission also operates a Small Municipal Separate Storm Sewer System ("Small MS4"), which is a system of conveyances (including roads with drainage systems, municipal streets, catch basins, gutters, ditches, man-made channels, and storm drains) designed to collect, convey, and discharge stormwater to receiving waters. The Small MS4 is designed to keep the stormwater separate from the Collection System.
4. The Commission's Small MS4 discharges through point sources, as defined in Section 502(14) of the Act, 33 U.S.C. § 1362(14), to Nahant Bay, Lynn Harbor (Broad Sound), the Saugus River, the Little River, Strawberry Brook, and Stacey Brook. The Little River and Strawberry Brook flow into the Saugus River, which flows into Broad Sound. Stacey Brook flows into Nahant Bay. These water bodies are all "waters of the United States" as

set forth at 40 C.F.R. § 122.2 and navigable waters under Section 502(7) of the Act, 33 U.S.C. § 1362(7).

**Unpermitted Discharges from the Collection System**

5. On March 30, 2007, the Commission was reissued NPDES Permit No. MA0100552 (the "NPDES Permit") by the Director of the Office of Ecosystem Protection of EPA, Region I, under the authority given to the Administrator of EPA by Section 402 of the Act, 33 U.S.C. § 1342. This authority has been delegated by the Administrator of EPA to the Regional Administrator of EPA, Region I, who in turn delegated this authority to the Director of the Office of Ecosystem Protection of EPA, Region I.
6. The NPDES Permit authorizes the Permittee to discharge pollutants from specified point sources at the WWTF (outfall serial numbers 001 and 002) and the CSO outfalls (outfall serial numbers 003, 004, 005 and 006) to specified waters of the United States subject to the effluent limitations, monitoring requirements and other conditions specified in the NPDES Permit.
7. Section 301(a) of the Act, 33 U.S.C. § 1311(a), makes unlawful the discharge of pollutants to waters of the United States except in compliance with, among other things, the terms and conditions of an NPDES permit issued pursuant to Section 402 of the Act, 33 U.S.C. § 1342.
8. Part 1.B. of the NPDES Permit prohibits point source discharges of pollutants from any location other than outfall serial numbers 001 through 006.
9. In the past, the Commission has reported untreated sanitary sewer overflows containing pollutants from its Collection System to navigable waters from locations other than outfall serial numbers 001 through 006.
10. The Commission's unauthorized discharges from its Collection System to navigable waters occur in violation of Section 301(a) of the Act, 33 U.S.C. § 1311(a).

**Storm Drain Discharges of Pollutants**

11. Pursuant to Section 402(p) of the Act, 33 U.S.C. § 1342(p), on December 8, 1999 (64 Fed. Reg. 68722), EPA promulgated regulations at 40 C.F.R. § 122.26 that set forth NPDES permit requirements to address stormwater discharges from Small MS4s.

12. On April 18, 2003, EPA issued an NPDES General Permit for Stormwater Discharges from Small MS4s (the "Small MS4 General Permit" or "General Permit") pursuant to Section 402(p) of the Act, 33 U.S.C. § 1342(p), and 40 C.F.R. § 122.26<sup>1</sup> Pursuant to the Small MS4 General Permit, the Commission notified EPA it was seeking coverage under such permit on July 29, 2003. On October 2, 2003, EPA notified the Commission that its application was complete and it was authorized to discharge stormwater subject to the limitations and requirements of the Small MS4 General Permit.
13. Part I(B)(2)(j) of the Small MS4 General Permit specifically provides that the General Permit does not authorize the discharge of stormwater that is mixed with non-stormwater unless the discharge is in compliance with another NPDES permit or allowable under Part I(F) of the General Permit.<sup>2</sup>
14. Part I(B)(2)(k) of the Small MS4 General Permit does not authorize the discharge of stormwater that would cause or contribute to instream exceedances of water quality standards.
15. Fecal coliform bacteria, enterococcus bacteria, and sewage are "pollutants" within the meaning of Section 502(6) of the Act, 33 U.S.C. § 1362(6).
16. Nahant Bay is a surface water body designated as Class SA. Broad Sound and the Saugus River are designated as Class SB. They are all designated as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth, and other critical functions, for shellfishing, and for primary and secondary contact recreation, pursuant to the Massachusetts Surface Water Quality Standards, 314 C.M.R. § 4.00.
17. The Massachusetts surface water quality standard for fecal coliform bacteria in Class SA

<sup>1</sup> This Small MS4 General Permit covers Small MS4s within the Commonwealth of Massachusetts; the State of New Hampshire; Indian Country lands within Connecticut, Massachusetts and Rhode Island; and Federal Facilities within Vermont. It applies to MS4s that are not defined as large or medium MS4s pursuant to 40 C.F.R. § 122.26(b)(4) and (b)(7), nor designated under 40 C.F.R. § 122.26(a)(1)(v).

<sup>2</sup> Part I(F) of the Small MS4 General Permit authorizes 18 categories of non-stormwater discharges provided that it has been determined by the permittee that the discharges are not significant contributors of pollutants to the MS4. These categories include water line flushing, landscape irrigation, diverted stream flows, and rising ground waters. In addition, discharges or flows from fire fighting activities conducted during emergency situations are authorized as allowable non-stormwater discharges, unless identified by EPA as significant sources of pollutants.

waters designated for shellfishing provides that the geometric mean of the most probable number ("MPN") of samples collected may not exceed 14 organisms per 100 milliliters ("organisms/100 ml"), nor shall more than 10% of the samples exceed 28 organisms/100 ml. The Massachusetts surface water quality standard for fecal coliform bacteria in Class SB waters designated for shellfishing provides that the median or geometric mean of the MPN of samples collected may not exceed 88 organisms/100 milliliters, nor shall more than 10% of the samples exceed 260 organisms/100 ml.

18. The Massachusetts surface water quality standard for enterococci bacteria in Class SA and SB waters designated for primary and secondary contact recreation provides that the geometric mean of colony forming units ("cfu") of the most recent five samples collected may not exceed 35 cfu/100 milliliters, nor shall any single sample exceed 104 cfu/100 ml.
19. On November 11, 2011, EPA Region I staff collected and transported to the EPA New England Laboratory ("NERL") in accordance with an EPA-approved Quality Assurance Project Plan ("QAPP") water quality samples from the Commission's outlet of Stacey Brook<sup>3</sup> at Kings Beach. This discharge flows across the beach into Nahant Bay. The data from analysis of these samples (included as Attachment 1) demonstrate that the Commission's Small MS4, in violation of the General Permit, is discharging *Escherichia coli* ("E. coli")<sup>4</sup> and enterococcus bacteria that cause or contributes to violations of the Massachusetts water quality standards in Nahant Bay. The discharges were also analyzed for, and found to contain, selected Pharmaceuticals and Personal Care Products ("PPCPs"). The presence of the PPCPs in these samples provides evidence that the sources of the bacterial water quality exceedances are of human origin.
20. On May 8, 2012, EPA Region I staff collected and transported to the NERL in accordance with an EPA-approved QAPP water quality samples taken from the Commission's stormwater outfalls and storm sewers tributary to the Saugus River. The

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<sup>3</sup> The Stacey Brook outfall consists of two large 10-foot by 10-foot box culverts that discharge onto Kings Beach along Nahant Bay at the municipal boundary of the Lynn, MA and Swampscott, MA. The south culvert discharges flow from Lynn's Small MS4. Both culverts were sampled during the inspection.

<sup>4</sup> *E. coli* is one of the organisms that constitute fecal coliform bacteria. A concentration of *E. coli* in excess of the water quality standard for fecal coliform bacteria demonstrates a violation of that standard.

data from analysis of these samples (included as Attachment 1) demonstrate that the Commission's Small MS4, in violation of the General Permit, is discharging E. coli and enterococcus bacteria that cause or contributes to violations of the Massachusetts water quality standards in the Saugus River. The discharges were also analyzed for, and found to contain, selected PPCPs. The presence of the PPCPs in these samples provides evidence that the sources of the bacterial water quality exceedances are of human origin.

21. The Commission has engaged in efforts to identify and eliminate illicit wastewater discharges to its Small MS4. The Commission has conducted field testing of Stacey Brook and areas tributary to the Saugus River to identify and remove illicit wastewater discharges to its Small MS4 drains. It is currently collaborating with the Massachusetts Department of Environmental Protection ("MassDEP") in bacteriological and caffeine analysis in the Stacey Brook drain to identify the source of elevated bacteria counts in the outfall, and during August 2012 conducted surfactant and ammonia analyses of samples taken from drains tributary to the Saugus River.
22. Discharges of pollutants from the Commission's Small MS4 drains include waste streams that are not "stormwater" as defined in 40 C.F.R. § 122.26(b)(13) and are not any of the 18 categories of allowable non-stormwater discharges under Part I(F) of the Small MS4 General Permit. Such discharges are specifically listed in Parts I(B)(j) and I(B)(2)(k) of the Small MS4 General Permit as not authorized by the General Permit and are not authorized by any other NPDES permit or any other provision of the Act.
23. The discharges from the Commission's Small MS4 drains that have caused or contributed to in-stream exceedances of water quality standards have occurred in violation of the General Permit and Section 301(a) of the Act, 33 U.S.C. § 1311(a).

### III. ORDER ON CONSENT

Accordingly, it is hereby ordered that:

#### **LONG-TERM PREVENTATIVE MAINTENANCE PROGRAM**

1. Within 180 calendar days of receipt of this Order, submit for approval a long-term preventative maintenance plan (the "Preventative Maintenance Plan"). The Preventative Maintenance Plan shall be designed as a reference guide for the Commission's employees and its contractors and shall include, but need not be limited to, the following:
  - a. physical inspection and testing procedures, and protocols that will be used by the Commission's staff to routinely inspect and maintain the Commission's Collection System including all pump stations, force mains, emergency generators, alarms, telemetry equipment, siphons, interceptor, and lateral sewers. The Preventative Maintenance Plan shall also establish procedures and protocols to identify and correct any structural, mechanical, or operational problems that may result in unauthorized discharges from its Collection System;
  - b. priority and routine cleaning and maintenance schedules and procedures, including, but not limited to specific maintenance plans for those areas of the Collection System prone to fats, oils, and grease, silt and debris deposits and root penetration, as well as those areas that have been the source of unauthorized discharges in the past;
  - c. a tracking system for all maintenance activities, including, at a minimum, the use of Collection System maintenance software designed to catalog the maintenance history of the Collection System and to plan and schedule future Collection System maintenance activities;
  - d. procedures and protocols for corrective maintenance;
  - e. a description of the staffing, organizational structure, and resource commitments necessary to maintain the Collection System and to implement the Preventative Maintenance Plan;

- f. a plan for routine maintenance cleaning of the Collection System to maintain the its capacity and to prevent Collection System blockages; and
  - g. an implementation schedule.
2. The Preventative Maintenance Plan Implementation Schedule shall be incorporated and enforceable hereunder upon the Preventative Maintenance Plan Implementation Schedule's approval by, and as amended by, EPA.

**CAPACITY, MANAGEMENT, OPERATION AND MAINTENANCE ("CMOM")  
PROGRAM ASSESSMENT**

3. Within 180 calendar days of the effective date of this Order, the Commission shall complete and submit:
- a. an inventory of the Commission's Collection System that characterizes the age, condition, type of construction, and operation of each element of its Collection System and provides for further assessments where warranted;
  - b. an assessment of the capacity of critical elements of the Collection System; and
  - c. an assessment of the Commission's operation and maintenance practices all of which shall comprise the "CMOM Program Self-Assessment".
  - d. As part of the assessments, the Commission shall determine whether improvements to the Commission's preventative maintenance practices are necessary in order to preserve the infrastructure of the Collection System and to prevent future overflows from the Collection System. The CMOM Program Self-Assessment shall be conducted in accordance with EPA's Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002, January 2005) ) (available on-line at [http://www.epa.gov/npdes/pubs/cmom\\_guide\\_for\\_collection\\_systems.pdf](http://www.epa.gov/npdes/pubs/cmom_guide_for_collection_systems.pdf)). As part of the CMOM Program Self Assessment, the Commission shall complete and submit the Wastewater Collection System CMOM Program Self-Assessment Checklist (the "CMOM Program Self-Assessment Checklist") (see Attachment 2),



which is a Region 1 modification of the checklist that accompanies the above CMOM guidance.

**CMOM Corrective Action Plan**

4. Within 270 calendar days of the effective date of this Order, the Commission shall submit a plan (the "CMOM Corrective Action Plan") that shall include the following:
  - a. a list of any deficiencies identified by the CMOM Program Self-Assessment;
  - b. a list of causes and contributing factors that lead to the overflows identified in response to this Order and the CMOM Program Self-Assessment Checklist;
  - c. a description of the specific short and long-term actions that the Commission is taking, or plans to take, to address any of the deficiencies identified during the completion of the CMOM Program Self-Assessment Checklist; and
  - d. a schedule for implementation of the CMOM Corrective Action Plan (the "CMOM Corrective Action Plan Implementation Schedule").
5. The CMOM Corrective Action Plan Implementation Schedule shall be incorporated and enforceable hereunder upon approval by, and as amended by, the EPA and MassDEP.

**CMOM Program Document**

6. Within one year of the effective date of this Order, the Commission shall consolidate all of the Collection System preventative and reactive maintenance programs and Collection System capital improvement plans into a single CMOM Program document. The CMOM Program document shall be maintained at a location that is readily accessible to the Commission's maintenance staff, and is available for inspection by the EPA and MassDEP.
7. Until further notice, beginning January 31, 2014, and each January 31<sup>st</sup> annually thereafter, the Commission shall submit a report (the "CMOM Program Implementation Annual Report"), detailing the actions taken by the Commission during the prior calendar year, or known by the Commission to have been taken by other parties, to resolve the deficiencies identified in the CMOM Corrective Action Plan and to comply with



Paragraphs III.3. through III.6. of this Order. The CMOM Program Implementation Annual Report shall also include:

- a. a summary listing of all unauthorized discharges, overflows, spills, and releases that have occurred during the previous calendar year, including building/private property backups, that result from capacity limitations, blockages, or mechanical, electrical or structural failures in that portion of the Collection System owned by the Commission. The tabular listing shall be organized chronologically and shall include:
  - i. the dates and times on which each event began and was stopped, or if it is continuing, a schedule for its termination;
  - ii. the location (nearest address) of each such event;
  - iii. the source of the notification (property owner, field crew, police);
  - iv. the cause of the event, including but not limited to, whether it was caused by debris, fats, oils, and grease, or root blockages, collapsed pipes, mechanical, electrical and structural failures, hydraulic overloads, vandalism and/or illicit connections;
  - v. the estimated gallons of wastewater released, and the method used to estimate the volume;
  - vi. a clear statement of whether the release did or did not reach a storm water catch basin or any other portion of the Commission's Small MS4. If the release occurred to the ground or street, regardless of whether the discharge reached any portion of the Commission's Small MS4, the Commission shall provide the location of the nearest down-gradient stormwater catch basin and the name of the receiving water to which the catch basin discharges;
  - vii. a clear statement of whether the release did or did not reach any surface water. If the release reached a surface water, the Commission shall include the name of the surface water;

- viii. the estimated gallons of wastewater discharged to the Small MS4 or surface water and the method used to estimate the volume;
  - ix. the measures taken to stop the overflow and prevent future overflows at the same location;
  - x. the date that overflow was reported to the EPA and MassDEP;
  - xi. the date of the last overflow that occurred at the same location; and
  - xii. The location of each event included in the summary listing shall also be noted on a map of the Commission's Collection System (See Paragraph III.16.b.).
- b. a description of the measures and programs implemented by the Commission to resolve any of the deficiencies identified pursuant to Paragraphs III.3. and III.4. of this Order and to reduce the frequency, duration and volume of unauthorized discharges, overflows, spills, and releases from the Commission's Collection System during the previous calendar year including copies of any contracts signed by the Commission to address any issues identified in the CMOM Corrective Action Plan. The report shall also include a description of the activities that the Commission has implemented to measure the effect and success of its efforts;
  - c. a description of the type of the Commission's Collection System mapping (i.e. GIS, paper) and the last date the map(s) was updated;
  - d. copies of the annual Collection System operation and maintenance budgets for the current and previous fiscal year noting the source of the funding – enterprise fund, general tax rate. Specifically indicate whether a capital replacement fund (“sinking fund”) has been established to provide for replacement of aging wastewater Collection System infrastructure. Provide the Collection System maintenance staffing levels for the current fiscal year including:
    - i. budgeted positions;
    - ii. vacant positions; and

- iii. a brief description of the responsibilities of each position clearly distinguishing Collection System maintenance responsibilities from responsibilities for the WWTF and other public works operations;
- e. a description of any existing or proposed Commission programs designed to reduce the levels of extraneous flows that enter the Commission's Collection System and the specific measures that were taken by the Commission under these programs during the past calendar year including whether properties are inspected during the property transfer process to determine whether infiltration/inflow sources are tied into the Collection System and whether sanitary services have been tied into the Small MS4;
- f. a description of any existing or proposed Commission easement maintenance programs for locating and uncovering lost or buried Collection System manholes and the specific measures that were taken by the Commission under these programs during the past calendar year; and
- g. a projection of the measures that will be taken during the current calendar year to resolve any deficiencies identified in the CMOM Corrective Action Plan and to comply with this Order.

**Third-Year CMOM Program Self-Assessment Checklist**

- 8. An updated CMOM Program Self-Assessment Checklist shall be submitted in conjunction with the annual report required to be submitted by January 31, 2017 pursuant to Paragraph III.7. of this Order.

**ILLCIT CONNECTION DETECTION AND ELIMINATION**

- 9. By January 31, 2013, the Commission shall develop and submit to EPA for review and approval a comprehensive Illicit Discharge Detection and Elimination Plan ("IDDE Plan") for identifying and eliminating non-stormwater discharges to the Commission's Small MS4. The Commission shall develop the IDDE Plan by applying the EPA Region I's IDDE Protocol for the identification and elimination of illicit connections included as Attachment 3. The IDDE Plan shall address the Commission's entire Small MS4.

10. The Commission shall implement the IDDE Plan upon approval, conditional approval, or modification by EPA pursuant to Paragraph IV.9 of this Order. For those Small MS4 sub-catchment areas and associated Small MS4 outfalls subject to IDDE investigations, the IDDE Plan shall also include provisions for monitoring during both dry and wet weather to demonstrate the effectiveness of its illicit connection removal efforts. The IDDE Plan shall also include installation of signs at each Small MS4 outfall to allow each outfall to be readily identified in the field.
11. As part of the IDDE Plan the Commission shall track, for each calendar year and cumulative to date, the number of illicit discharges identified, their location, and the approximate flow removed by their elimination. This information shall be submitted as part of the Compliance Reports required by Paragraph III.16. of this Order.
12. As Part of the IDDE Plan, the Commission shall propose a program to publicize through local cable television, local newspapers, and inserts included with water and sewer bills a request that members of the public report to the Commission all Sanitary Sewer Overflows, whether to surface waters, streets, parklands or buildings and other property. The request shall identify a single point of contact at the Commission to which the reports shall be made.
13. The Commission shall report all such events to EPA and MassDEP. Events shall be reported within 24 hours via electronic mail ([harding.george@epa.gov](mailto:harding.george@epa.gov)) to EPA, and shall be tabulated and submitted as part of the compliance reports required by Paragraph III.16. of this Order.
14. As a separate section of the IDDE Plan, the Commission shall provide an assessment of whether it has the resources to implement the IDDE Plan. Where it cannot be demonstrated to EPA's satisfaction that the Commission's in-house resources are adequate to execute the specific tasks of the IDDE Plan, the Commission shall execute a contract with a qualified contractor(s) to complete the specific tasks necessary to determine and remove the sources of non-stormwater pollutants in the Small MS4.
15. The Commission may be entitled to reimbursement from third parties for some of the work necessary to remove illicit connections. Nothing in this Order shall be construed to

make the Commission responsible for costs that would ordinarily be borne by third parties.

**Reporting Requirements**

16. On or before July 31, 2013, and quarterly until completion of all remedial measures required by the IDDE Plan, the Commission shall submit for review by EPA and MassDEP a Compliance Report that details actions taken during the previous calendar quarter by the Commission, or known by the Commission to have been taken by other parties, to comply with the terms and conditions of Paragraphs III.9-14 of this Order. Each Compliance Report shall include, at a minimum, the following items:
- a. a listing of all illicit connections identified during the previous calendar quarter, including the estimated flow from each connection, the actions taken by the Commission to remove each connection, the date each connection was removed, and the cost of removing each connection. The report shall estimate the wastewater volume removed from the Small MS4 under the IDDE Plan during the reporting period for each individual illicit connection, cumulative for all illicit connections during the reporting period, and cumulative for all illicit connections to date. The report shall include an appendix with a summary listing of the address, associated volume, and date eliminated for all illicit connections identified to date.
  - b. a map or figure indicating the location of each illicit connection identified and each illicit connection removed, cumulative to date;
  - c. a description of any activities undertaken during the previous calendar quarter to achieve compliance with Paragraphs III.9.-14. of this Order;
  - d. a listing of all plans, reports, and other deliverables required by this Order that the Commission completed and submitted during the previous calendar quarter to comply with this Order;
  - e. the activities expected to be undertaken during the current calendar quarter in order to achieve compliance with this Order; and
  - f. all instances of noncompliance with this Order's requirements. If noncompliance

is reported, notification shall be provided in accordance with Paragraph V.2 and 3 of this Order.

**IV. SUBMISSIONS REQUIRING EPA APPROVAL:  
THE COMMISSION'S OBLIGATION TO PROCEED**

1. After review of any deliverable, plan, report, or other item ("submissions") which the Commission is required to submit for approval under this Order, EPA may: (a) approve, in whole or in part, the submission; (b) conditionally approve, in whole or in part the submission upon specified conditions; (c) disapprove the submission, in whole or in part, and notify the Commission of the deficiencies; or (d) disapprove the submission, in whole or in part, and modify the deliverable, plan, report, or other item itself, or portions thereof, to cure any deficiencies. In the event EPA that approves, conditionally approves, or modifies the submission, or portion thereof, the Commission shall perform all actions required by the submission or portion thereof, as approved, conditionally approved, or modified by EPA.
2. Upon receipt of a notice of disapproval with deficiencies (Paragraph IV.1.(c) above), the Commission shall correct the deficiencies and resubmit the affected document within **seven (7) days of receipt** or such other time period specified in the notice of disapproval. Notwithstanding a notice of disapproval, the Commission shall proceed to take any action required by any non-deficient portion of the submission. If EPA finds the submission as resubmitted is still deficient, the Commission shall be in violation of the Order.

**V. NOTIFICATION PROCEDURES**

1. Where this Order requires a specific action to be performed within a certain time frame, the Commission shall submit a written notice of compliance or noncompliance with each deadline. Notification shall be mailed within fourteen (14) days after each required deadline. The timely submission of a required report shall satisfy the requirement that a notice of compliance be submitted.

2. If noncompliance is reported, notification shall include the following information
  - a. a description of the noncompliance;
  - b. a description of any actions taken or proposed by the Commission to comply with the lapsed schedule requirements;
  - c. a description of any factors that explain or mitigate the noncompliance; and
  - d. an approximate date by which the Commission will perform the required action.
3. After a notification of noncompliance has been filed, compliance with the past requirement shall be reported by submitting any required documents or providing EPA with a written report indicating that the required action has been achieved. Submissions required by this Order shall be in writing and shall be mailed to the following addresses:

Office of Environmental Stewardship  
U.S. Environmental Protection Agency  
5 Post Office Square – Suite 100  
Boston, MA 02109-3912  
Attn: George Harding (OES 04-04)

Massachusetts Department of Environmental Protection  
Northeast Regional Office  
205 B Lowell Street  
Wilmington, MA 01887  
Attn: Kevin Brander

#### V. GENERAL PROVISIONS

1. The Commission may, if it desires, assert a business confidentiality claim covering part or all of the information requested, in the manner described by 40 C.F.R. § 2.203(b). Information covered by such a claim will be disclosed by EPA only to the extent set forth in 40 C.F.R. Part 2, Subpart B. If no such claim accompanies the information when it is received by EPA, the information may be made available to the public by EPA without further notice to the Commission. The Commission should carefully read the above-cited regulations before asserting a business confidentiality claim since certain categories of information are not properly the subject of such a claim. For example, the Act provides

that "effluent data" shall in all cases be made available to the public. See Section 308(b) of the Act, 33 U.S.C. § 1318(b).

2. This Order does not constitute a waiver or a modification of the terms and conditions of the NPDES Permit and General Permit. The NPDES Permit and General Permit remains in full force and effect. EPA reserves the right to seek any and all remedies available under Section 309 of the Act, 33 U.S.C. § 1319, as amended, for any violation cited in this Order.
3. This Order shall become effective upon receipt by the Commission.
4. The Commission waives any and all claims for relief and otherwise available rights or remedies to judicial or administrative review which the Commission may have with respect to any issue of fact or law set forth in this Order on Consent, including, but not limited to, any right of judicial review of the Section 309(a)(3) Compliance Order on Consent under the Administrative Procedure Act, 5 U.S.C. §§ 701-708.

9-21-12

Date

D. F. O'Neill

Daniel F. O'Neill, P.E.

Executive Director

Lynn Water and Sewer Commission

09/25/12

Date

Susan Studien

Susan Studien, Director

Office of Environmental Stewardship

Environmental Protection Agency, Region I



EPA New England Stormwater Outfall Inspection & Sampling Summary - Lynn, MA 8/25/11, 11/15/11 and 5/8/12

Date	Town	Site Name	Time	E.coli (MPN/100ml)	Enterococcus (MPN/100ml)	Surfactants	Chlorine	NH3 (mg/l)	PPCP ng/L						YSI Meter			
									Atenolol	Acetaminophen	Cotinine	Dimethyl xanthine	Caffeine	Sulfamet hazline	Carbama zepine	Salinity ppt	Temp C	Conductivity $\mu$ S
8/25/11	Lynn, MA	Stacey S-1	1315	1230	631	0.25	0.5	0	13	77	10	96	120	ND	6.8	0.4	18.2	580
8/25/11	Lynn, MA	Stacey S-2	1345	1741	733	<0.25	0.2	0	23	88	8.8	43	160	ND	6.2	0.2	18	446.2
8/25/11	Lynn, MA	Stacey S-3	1415	2665	496	0.25	0.3	0	2.8	32	15	68	110	ND	6.4	0.3	19.1	526
11/15/11	Lynn, MA	StaceyS	835	806	148	0.3	0.01	0.00	4.8	100	5.8	20	110	ND	9	0.4	12.8	782
11/15/11	Lynn, MA	StaceyS	907	445	309	0.2	0	0.00	ND	1100	5.8	46	1300	ND	3.9	0.4	12.8	787
11/15/11	Lynn, MA	StaceyS	935	1,379	278	0.2	0	0.00	ND	110	4.8	39	1300	ND	9.6	0.4	12.8	731
5/8/12	Lynn, MA	Strawberry Brook Outfall	900			0.025	0.01	0.25	12	260	110	100	2200		1.1	0.63	13.5	1270
5/8/12	Lynn, MA	Moore's Brook Outlet	940			0.25	0.26	0.50	14	230	140	95	2600		1	0.2	11.9	417.7
5/8/12	Lynn, MA	Convergence of Strawberry Brook and Stony Brook: Strawberry Brook	1040	39	74	<0.25	0.05	0.00	ND	16	15	10	310		0.83	0.28	13.7	564
5/8/12	Lynn, MA	MH in Barry Park - Convergence of Strawberry Brook and Stony Brook: Stony Brook	1040	5,654		0.25	0	0.25	3	190	65	48	1100		1	0.28	13.7	564
8/8/12	Lynn, MA	MH on Granite Street Adjacent to LynnsGate Plaza: Strawberry Brook	1140	30	20	<.25	0.07	0.00	1.7	10	8.8	8.8	140		0.84	0.27	13.8	550

8/25/11 and 11/15/11 sampling conducted in dry weather  
 5/8/12 sampling conducted after >0.10" rain, no rain falling at time samples collected.  
 E. coli - color key: Red  $\geq$  10,000 col/100ml, Orange  $\geq$  1260 col/100ml, Yellow  $\geq$  235 col/100ml, Black < 235 col/100ml  
 Enterococcus - color key: Red  $\geq$  1000 col/100ml, Orange  $\geq$  350 Yellow  $\geq$  61 col/100ml, Black < 61 col/100ml  
 NH3 - color key: Red  $\geq$  6 mg/L, Orange  $\geq$  0.5 mg/L, Yellow  $\geq$  0.0 mg/L  
 Surfactants - color key: Red  $\geq$  1.0 mg/L, Orange  $\geq$  0.5 mg/L, Yellow  $\geq$  0.25 mg/L, Black < 0.25 mg/L. \*\*\* may give false positive at salinity greater than 1 ppt  
 PPCP color key: Pink = Concentrations greater than background  
 Cl2 - color key: Red  $\geq$  1.0 mg/L, Orange  $\geq$  0.3 mg/L, Yellow  $\geq$  0.02 mg/L, Black < 0.02 mg/L

REPORTING LIMITS

E. coli = 4 MPN/100ml  
 Enterococcus = 10 MPN/100ml  
 Surfactants Field = 0.1 mg/L  
 Ammonia Field = 0.1 mg/L

ND - not detected above the associated detection limit  
 NA - not applicable (analyte not tested for at that site at this time)

**Attachment No. 2**

**United States Environmental Protection Agency, EPA New England**

**Wastewater Collection System CMOM Program Self-Assessment Checklist – September 2009**

Name of your system \_\_\_\_\_ Date \_\_\_\_\_

Put an "A" in the final column for an issue you intend to address with future action, or leave blank if you have evaluated your program as sufficient.

**I. General Information – Collection System Description**

I	Question	Response	*Act
1	Identify the number of people currently served by your wastewater collection system.		
2	Identify the number of service connections to your collection system. Specify the number of residential, commercial, and industrial connections. Provide a list of the commercial and industrial connections. Provide the number of manholes, pump stations, force mains, and siphons. Provide the length (in feet or miles) of gravity sewers and force mains? List by size and type.		
3	What is the age of your system (e.g., percentage over 100, 75, 50, 30, etc. years old)?		
4	Type(s) and age of collection system maps that are available and what percent of the system is mapped by each method (e.g., paper only, paper scanned into electronic, digitized, interactive GIS, etc.)?		
5	Indicate whether you have a systematic numbering and identification method/system to identify sewer system manholes, sewer lines, and other components (pump stations, etc.). Please describe.		
6	Are "as-built" plans (record drawings) or maps available and used by field crews in the office and in the field?		
7	Describe the type of asset management (AM) system you use (e.g. card catalog, spreadsheets, AM software program, etc.)		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

\* Put an "A" in the final column if this is an issue you intend to address with future action.

## II. Continuing Sewer Assessment Plan

II	Question	Response	*Act
1	<p>Describe under what conditions, if any, the collection system overflows. Does it overflow during both wet and dry weather? Characterize common causes of overflows:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> hydraulic capacity, <input type="checkbox"/> debris,</li> <li><input type="checkbox"/> roots, <input type="checkbox"/> Fats, Oils &amp; Grease (FOG), <input type="checkbox"/> vandalism, <input type="checkbox"/> other (specify). Describe your system's history of structural collapses, and PS or force main failures.</li> </ul>		
2	<p>Provide the number of sanitary sewer overflows (SSOs), including building and private property backups, that have occurred in each of the last three calendar years. In an attachment, provide the date, location, cause, volume and fate of the discharge for each SSO event.</p>		
3	<p>Describe how you responded to the building and private property backups listed in II.2, including how you document the response, result of the investigation into the cause, and the ultimate fate of the discharge.</p>		
4	<p>What is the ratio of peak wet-weather flow to average dry-weather flow at the wastewater treatment plant or municipal boundary for satellite collection systems?</p>		
5	<p>Describe short-term measures that have been implemented or planned to mitigate overflows at each location. If actions are planned, when will they be implemented for each location?</p>		
6	<p>Describe long-term measures that have been implemented or planned to mitigate overflows at each location. If actions are planned, when will they be implemented for each location?</p>		
7	<p>Describe preventive maintenance programs; how are they tracked (e.g., card</p>		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

<b>files, electronic spreadsheets, specific software)? Do you have a system to prioritize investigations, repairs and rehabilitation?</b>		
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\* Put an "A" in the final column if this is an issue you intend to address with future action.

8	Are chronic problem areas systematically identified and tracked? Is there an established schedule for more frequent maintenance for problem areas? How are these maintenance regimes tracked and evaluated? Is there an established program to identify and address underlying causes for problem areas?		
9	If septage is accepted, are haulers required to declare the origin of their load? Are records of these declarations maintained? Are these declarations used to identify potential SSOs?		

### III.A. Collection System Management Organizational Structure

III A	Question	Response	*Act
1	Provide an organizational chart that shows the overall personnel structure for collection system operations, including operation and maintenance staff.		
2	Provide up-to-date job descriptions that delineate responsibilities and authority for each position.		
3	How many staff members work on collection system maintenance? If these workers are also responsible for other duties, (e.g., road repair or maintenance, O&M of the storm water collection system), what percentage of their time is dedicated to the collection system?		
4	Are there any collection system maintenance position vacancies? How long have these positions been vacant?		
5	For which, if any, maintenance activities do you use an outside contractor?		
6	Describe any group purchase contracts you participate in.		

### III.B. Collection System Management: Training

\* Put an "A" in the final column if this is an issue you intend to address with future action.

III B	Question	Response	*Act
1	What types of training are provided to staff?		
2	Is training provided in any of the following areas: <input type="checkbox"/> general safety, <input type="checkbox"/> routine line maintenance, <input type="checkbox"/> confined space entry, <input type="checkbox"/> MSDS <input type="checkbox"/> lockout/tagout, <input type="checkbox"/> biologic hazards, <input type="checkbox"/> traffic control, <input type="checkbox"/> record keeping, <input type="checkbox"/> electrical and instrumentation, <input type="checkbox"/> pipe repair, <input type="checkbox"/> public relations, <input type="checkbox"/> SSO/emergency response, <input type="checkbox"/> pump station operations and maintenance, <input type="checkbox"/> trenching and shoring, <input type="checkbox"/> other (explain)?		
3	Which training requirements, if any, are mandatory for key employees?		
4	How many collection system employees are certified (e.g, NEWEA certification program) and at what grade are they certified?		

### III.C. Collection System Management: Communication and Customer Service

III C	Question	Response	*Act
1	Describe your public education/outreach programs (e.g., for user rates, FOG, extraneous flow, SSOs etc.)?		
2	What are the most common collection system complaints? How many complaints have you received in each of the past three calendar years?		
3	Are formal procedures in place to evaluate and respond to complaints?		
4	How are complaint records maintained (e.g, logs, spreadsheets)? How are complaints tied to emergency response and operations and maintenance programs?		

### III.D. Collection System Management: Management Information Systems

III D	Question	Response	*Act
1	How do you manage collection system information? (Commercial		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

	software package, spreadsheets, data bases, SCADA, etc). What information and functions are managed electronically?		
2	What procedures are used to track and plan collection system maintenance activities?		
3	Who is responsible for establishing maintenance priorities? What records are maintained for each piece of mechanical equipment within the collection system?		
4	What is the backlog for various types of work orders?		
5	How do you track emergencies and your response to emergencies? How do you link emergency responses to your maintenance activities?		
6	What written policies and protocols do you have for managing and tracking the following: scheduled and unscheduled work orders, including complaint response? Scheduled inspections and preventative maintenance? Safety incidents and emergency responses? Compliance and overflow tracking? Equipment and tools tracking? Spare parts inventory?		

**III.E. Collection System Management: SSO Notification Program**

III E	Question	Response	*Act
1	What are your procedures, including time frames, for notifying state agencies, health agencies, regulatory authorities, and the drinking water authorities of overflow events?		
2	Do you use a standard form to record and report overflow events? Provide a copy of the form that is used.		

**III.F. Collection System Management: Legal Authority**

III F	Question	Response	*Act
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\* Put an "A" in the final column if this is an issue you intend to address with future action.



1	<p>Are discharges to the sewer regulated by a sewer use ordinance (SUO)? Does the SUO contain procedures for controlling and enforcing the following: <input type="checkbox"/> FOG; <input type="checkbox"/> defects in service laterals located on private property; <input type="checkbox"/> building structures over the sewer lines; <input type="checkbox"/> storm water connections to sanitary lines; <input type="checkbox"/> sump pumps, roof drains and other private sources of inflow; <input type="checkbox"/> Infiltration and Inflow (I/I)?</p>		
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\* Put an "A" in the final column if this is an issue you intend to address with future action.

2	Who is responsible for enforcing various aspects of the SUO? Does this party communicate with your department on a regular basis?		
3	Summarize any SUO enforcement actions/activities that have occurred in the last three calendar years.		
4	Is there a program to control FOG entering the collection system? If so, does it include the following elements: <input type="checkbox"/> permits, <input type="checkbox"/> minimum performance criteria, <input type="checkbox"/> inspection <input type="checkbox"/> enforcement? Are commercial grease traps inspected regularly? Who is responsible for inspections and enforcement?		
5	Is there an ordinance dealing with storm water connections or requirements to remove storm water connections?		
6	Does the collection system receive flow from satellite communities? If yes, which communities? How are flows from these satellite communities recorded and regulated? Are satellite flow capacity issues periodically reviewed?		
7	Does the collection system receive flow from other collection systems (e.g. colleges and universities, military bases, or private collection systems)? If so, list these sources. How are flows from these collection systems recorded and regulated? Are there required inspection and maintenance programs? How are overflows addressed? How are overflows recorded and reported?		

**IV.A. Collection System Operation: Financing**

IV A	Question	Response	*Act
1	Has an enterprise (or other)		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

	fund been established? Does it include: wastewater collection and treatment operations; collection system maintenance; long-term infrastructure improvements; etc.? Are the funds sufficient to properly fund future system needs?		
2	How are rates calculated (have you done a rate analysis)? What is the current sewer charge rate? When was the last increase? How much was the increase?		
3	What is your O&M budget?		
4	If an enterprise fund has not been established, how are collection system maintenance operations funded?		
5	Is there a Capital Improvement Plan (CIP) that provides for system repair/replacement on a prioritized basis exist? What is the collection system's average annual CIP budget?		
6	How do you account for the value of your system infrastructure for the Government Accounting Standards Board Standard 34 (GASB 34)?		

**IV.B. Collection System Operation: Hydrogen Sulfide Monitoring and Control**

<b>IV B</b>	<b>Question</b>	<b>Response</b>	<b>*Act</b>
1	Are odors a frequent source of complaints? How many have been received in the last calendar year? List location(s) of complaints.		
2	Do you have a hydrogen sulfide problem, and if so, do you have corrosion control programs? What are the major elements of the program?		
3	Does your system contain air relief valves at the high points of the force main system? If so, how often are they inspected? How often are they exercised?		

**IV.C. Collection System Operation: Safety**

\* Put an "A" in the final column if this is an issue you intend to address with future action.

IV C	Question	Response	*Act
1	Do you have a formal Safety Training Program? If so, how do you maintain safety training records?		
2	Are the following items available and in adequate supply: <input type="checkbox"/> rubber/disposable gloves; <input type="checkbox"/> confined space ventilation equipment; <input type="checkbox"/> hard hats, <input type="checkbox"/> safety glasses, <input type="checkbox"/> rubber boots; <input type="checkbox"/> antibacterial soap and first aid kit; <input type="checkbox"/> tripods or non-entry rescue equipment; <input type="checkbox"/> fire extinguishers; <input type="checkbox"/> equipment to enter manholes; <input type="checkbox"/> portable crane/hoist; <input type="checkbox"/> atmospheric testing equipment and gas detectors; <input type="checkbox"/> oxygen sensors; <input type="checkbox"/> H2S monitors; <input type="checkbox"/> full body harnesses; <input type="checkbox"/> protective clothing; <input type="checkbox"/> traffic/public access control equipment; <input type="checkbox"/> 5-minute escape breathing devices; <input type="checkbox"/> life preservers for lagoons; <input type="checkbox"/> safety buoys at activated sludge plants; <input type="checkbox"/> fiberglass or wooden ladders for electrical work; <input type="checkbox"/> respirators and/or self-contained breathing apparatus; <input type="checkbox"/> methane gas or OVA analyzer; <input type="checkbox"/> LEL metering?		

**IV.D. Collection System Operation: Emergency Preparedness and Response**

IV D	Question	Response	*Act
1	Do you have a written collection system emergency response plan? If so, when was the plan last updated? What departments are included in your emergency planning?		
2	Does the emergency response plan consider the following: <input type="checkbox"/> vulnerable points in the system, <input type="checkbox"/> severe natural events, <input type="checkbox"/> a failure of critical system components, <input type="checkbox"/> vandalism or other third party events (specify), <input type="checkbox"/> other types of incidents (specify)?		
3	How do you train staff to		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

	<b>respond to emergency situations? Where are responsibilities detailed for personnel who respond to emergencies?</b>		
<b>4</b>	<b>How many emergency calls have you had in the past calendar year? What was their nature?</b>		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

**IV.E. Collection System Operation: Engineering – Capacity**

<b>IV E</b>	<b>Question</b>	<b>Response</b>	<b>*Act</b>
1	How do you evaluate the capacity of your system and what capacity issues have you identified, if any? What is your plan to remedy the identified capacity issues?		
2	What procedures do you use to determine whether the capacity of existing gravity sewer system, pump stations and force mains are adequate for new connections? Who does this evaluation?		
3	Do you charge hook up fees for new development and if so, how are they calculated?		
4	Do you have a hydraulic model of your collection system? Is it used to predict the effects of system remediation and new connections?		

**IV.F. Collection System Operation: Pump Stations - Inspection**

<b>IV F</b>	<b>Question</b>	<b>Response</b>	<b>*Act</b>
1	How many pump stations are in the system? How often are pump stations inspected? How many are privately owned, and how are they inspected? Do you use an inspection checklist?		
2	Describe backup equipment at pump stations. Is there sufficient redundancy of equipment at all pump stations?		
3	How are pump stations monitored? If a SCADA system is used, what parameters are monitored?		
4	How many pump station/force main failures have you had in each of the last three years? Who responds to pump station/force main failures and overflows? How are the responders notified?		
5	How many pump stations have backup power? How many require portable generators? How many		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

	portable generators does your system own? Explain how portable generators will be deployed during a system-wide electrical outage.		
6	Are operation logs maintained for all pump stations? Are the lead, lag, and backup pumps rotated regularly?		
7	Are pump station operations adjusted (manually or automatically) during wet weather to maximize in-line storage of wet weather flows?		

**V.A. Equipment and Collection System Maintenance: Sewer Cleaning**

V A	Question	Response	*Act
1	Do you have a schedule for cleaning sewer lines on a system-wide basis? At this rate, how long does it take to clean the entire system? How is sewer line cleaning recorded?		
2	How do you identify sewer lines that have chronic problems and should be cleaned more frequently? Is a list of these areas maintained and cleaning frequencies established?		
3	Approximately, how many collection system blockages have occurred during the last calendar year, and what were the causes? How many resulted in overflows?		
4	Has the number of blockages increased, decreased, or stayed the same over the past five years?		
5	What equipment is available to clean sewers? Is sewer line cleaning ever contracted to other parties? If so, under what circumstances?		
6	Do you have a root control program? Describe its critical components.		

**V.B. Equipment and Collection System Maintenance: Maintenance Right-of-Way**

V B	Question	Response	*Act
1	Is scheduled maintenance		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

	performed on Rights-of-Way and Easements? How often? How many manholes are located in easement areas? Are there problems locating and accessing these manholes. How many cannot be accessed or located? Are the manholes equipped with watertight and/or locking manhole covers?		
2	Are road paving operations coordinated with collection system operators. Are there manholes that have been paved over? If so, how many manholes have been paved over? Describe systems in place to locate and raise manholes that have been paved over.		

**V.C. Equipment and Collection System Maintenance: Parts Inventory**

V C	Question	Response	*Act
1	Do you have a central location for the storage of spare parts?		
2	How have critical spare parts been identified?		
3	How do you determine if adequate supplies are on hand? Has an inventory tracking system been implemented?		

**VI A. SSES: System Assessment**

VI A	Question	Response	*Act
1	Do flow records, or prior I/I or Sewer System Evaluation Survey (SSES) programs indicate public or private sources of inflow? Please explain.		
2	If I/I studies or an SSES has been conducted? When were the studies conducted? What is the status of the recommendations? If no SSES or I/I have been conducted, is there a plan and schedule for conducting one?		
3	Do you have a program to identify and eliminate sources of I/I into the system including private service laterals and illegal		

\* Put an "A" in the final column if this is an issue you intend to address with future action.



	<b>connections? If so, describe.</b>		
<b>4</b>	<b>Have private residences and businesses been inspected for sump pumps and roof leader connections? If so, how many have been inspected what percentages of the total residences and businesses does this represent?</b>		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

5	Are inspections to identify illicit connections conducted during the property transfer process?		
6	How many sump pumps and roof leaders have been identified? How many have been removed?		
7	Have follow-up residential and business inspections been conducted?		
8	Are there incentive programs to encourage residences and businesses to disconnect roof leaders & sump pumps (e.g. matching funds)?		
9	What disincentive programs exist to encourage residences and businesses to disconnect roof leaders & sump pumps (e.g. fines, surcharges)?		

**VI.B. SSES: Manhole Inspection**

VI B	Question	Response	*Act
1	Do you have a manhole inspection and assessment program? If so, describe.		
2	Is a formal manhole inspection checklist used? If so, provide a copy.		
3	How many manholes were inspected during the past calendar year? What percentage of the total number of manholes in system?		

**VII. Energy Use**

VII	Question	Response	*Act
1	What is your annual energy cost for operating your system? For which pieces of equipment do you track energy use?		
2	Have you upgraded any of your pumps and motors to more energy efficient models? If so, please describe.		
3	Have you performed an energy audit in the past three years?		
4	Where do you use the		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

	<b>most energy (fuel, electricity) in operating your collection system?</b>		
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\* Put an "A" in the final column if this is an issue you intend to address with future action.

5	If you have a treatment plant, would you be interested in participating in EnergyStar benchmarking of your treatment plant?		
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**VIII. Other Actions**

VIII	Question	Response	*Act
1	Describe any other actions that you plan to take to improve your CMOM Program that are not discussed above.		

\* Put an "A" in the final column if this is an issue you intend to address with future action.

**EPA New England Illicit Discharge Detection & Elimination (IDDE) Protocol  
December 2008**

**Purpose**

This document provides a common framework for EPA New England ("EPA-NE") communities to develop and implement a comprehensive plan to identify and eliminate dry and wet weather illicit discharges to their separate storm sewer systems. Adopted from BWSC (2004), Pitt (2004), and based upon fieldwork conducted and data collected by EPA-NE, the protocol relies primarily on visual observations and the use of field test kits and portable instrumentation during dry weather to complete a thorough inspection of the communities' storm sewers in a prioritized manner. The protocol is applicable to most typical storm sewer systems, however modifications to materials and methods may be required to address situations such as open channels, systems impacted by sanitary sewer overflows or sanitary sewer system under drains, or situations where groundwater or backwater conditions preclude adequate inspection. The primary focus of the protocol is sanitary waste, however, toxic and nuisance discharges may also be identified. EPA has established the protocol as the expected standard of practice for EPA-NE communities. Implementation of the protocol will assist in compliance with the Illicit Discharge Detection and Elimination ("IDDE") provisions of the NPDES Small MS4 General Permit.

**Introduction**

The protocol is structured into several phases of work that progress logically through elements of mapping, prioritization, investigation, removal, verification, and monitoring. Each community should assess their current IDDE Program and identify where it has or has not successfully satisfied the elements of the protocol. In modifying their IDDE Programs to become consistent with the protocol, communities may need to refine particular elements or phases of the protocol to accommodate their institutional constraints or preferences. Regardless, the rigor and comprehensive nature of the protocol must remain unchanged.

**Step I - Mapping**

The goal of the requisite mapping is the comprehensive depiction of key infrastructure and factors influencing proper system operation and the potential for inappropriate sanitary sewer discharges. The required scale, detail, and number of maps should be appropriate to facilitate a rapid understanding of the system by the municipality and regulators, serve as a planning tool for the implementation and phasing of investigations, and demonstrate the extent of completed and planned investigations and corrections, and other related capital projects. Further, municipal representatives, community members, or regulatory personnel must be able, using a publicly available version of the map, to locate and identify all stormwater outfalls in the field with reasonable effort. To ensure legible mapping, information should be grouped appropriately and represented thematically (e.g. by color) with legends or schedules where possible. Mapping should be updated as necessary to reflect newly discovered information, corrections or modifications, and progress made. The following information and features should be considered for inclusion in the mapping:

### Infrastructure

- Municipal storm sewer system (including inter-municipal and private connections where available)
- Municipal sanitary sewer system (including inter-municipal connections)
- Municipal combined sewer system (if applicable)
- Thematic representation (with legend) of sewer material, size, and age
- Sewer flow direction and flow type (pressure v. gravity)
- Rim and invert elevations for select structures (for comparison with water table and vertical separation between systems)
- MWRA interceptor alignment(s) and connect point(s)
- Aerial delineations of major separate storm sewer catchment areas, sanitary sewersheds, combined sewersheds, and areas served by on-site subsurface disposal systems
- Common manholes or structures (structures serving or housing both separate storm and sanitary sewers)
- Sanitary and storm sewer alignments served by known or suspected underdrain systems
- Sewer alignments with common trench construction and major crossings representing high potential for communication due to water table
- Lift stations (public and private), siphons, and other key sewer appurtenances
- Sewersheds or sewer alignments experiencing inadequate level of service (LOS) (with indication of reason(s))
- Location(s) of known sanitary sewer overflows (SSO) (with indication of cause(s))

### Water Resources and Topographic Features

- Water bodies and watercourses identified by name
- Seasonal high water table elevations or sanitary sewer alignments impacted by groundwater
- Topography
- Orthophotographic overlays

### O&M, Investigations, Remediation, and Capital Projects

- Alignments, dates, and thematic representation of work completed (with legend) of past illicit connection investigations (e.g. flow isolation, dye testing, CCTV, etc.)
- Locations of suspected, confirmed, and corrected illicit connections (with dates and flow estimates)
- Water quality monitoring locations with graphical indication of indicator concentrations
- Recent and planned sewer infrastructure cleaning and repair projects
- Alignments and dates of past and planned I/I investigations and sanitary sewer remediation work
- Planned capital projects relative to utility and roadway rehabilitation or replacement
- Proposed phasing of future IDDE investigations

### **Step II - Drainage Area/Outfall Prioritization**

Whether documented by EPA, the permittee, or others, drainage catchments or alignments with known or suspected contributions of illicit flows may have already been identified in some instances. Additional investigation or removal procedures should proceed immediately in these areas.

Where a municipality has little or no specific knowledge of potential illicit contributions to its storm sewer system, a system of prioritization for Step III investigations should be developed that is based on multiple-parameter outfall monitoring data (preferred), information collected during the mapping phase, or through a rapid screening and ranking process.

## 1. Outfall Monitoring Data

The preferred method of drainage area and outfall prioritization is through the collection and analyses of grab samples from outfalls during both dry and wet weather (See Step III for precise criteria). Measured values are then compared with benchmark values in Table 1 or by using the flow chart in Figure 1 to determine a priority ranking or tiers for further focused evaluation. Analyses of outfall samples for conventional indicator bacteria organisms (e.g. *E. coli*, enterococcus), in addition to surfactants and ammonia is the recommended minimum approach.

## 2. Mapping-Based Prioritization

Priority areas identified through mapping might include those:

- with direct discharges to critical or impaired waters (e.g. water supplies, swimming beaches);
- with inadequate sewer LOS, SSOs, or the subject of numerous/chronic customer complaints;
- served by common/twin-invert manholes or underdrains; and
- scheduled for near-term capital improvements (e.g., infrastructure improvements, paving)

## 3. Rapid-Assessment Prioritization

A municipality may alternatively choose to implement a screening and ranking process consisting of a rapid assessment of its storm sewer system through visual inspections and discharge monitoring at select locations. This approach would yield an understanding of the extent and degree of illicit contributions throughout the system, including identification of areas of significant and immediate concern. A municipality would then be enabled to rank areas and develop a budget and schedule for prioritized investigation and remediation. A screening process would include a simplified version of the Step III - Drainage Area Investigations effort described below, plus select dry weather monitoring for conventional indicator bacteria organisms (e.g. *E. coli*, enterococcus), surfactants, and ammonia. For example, a municipality could identify and visually inspect a limited number of stormwater structures within each major catchment area and test suspicious flows using field test kits or instrumentation. Concurrent sampling and analysis of conventional indicator organism densities at the same structures would assist in the identification of potentially significant sources of illicit contributions.

### Step III - Drainage Area Investigations

#### 1. Public Notification/Outreach Program

Provide letter/mailer to residents and building owners located within subject drainage basin, sewershed, or other targeted area notifying them of scope and schedule of investigative work, and the potential need to gain access to their property to inspect plumbing fixtures. Where necessary, notification of property owners through letter, door hanger, or otherwise will be required to gain

entry. Assessors' records will provide property owner identification.

2. **Field verification and correction of sub-catchment storm sewer mapping**

Adequate storm and sanitary sewer mapping is a prerequisite to properly execute an illicit discharge detection and elimination program. As necessary and to the extent possible, infrastructure mapping should be verified in the field and corrected prior to investigations. This effort affords an opportunity to collect additional information such as latitude and longitude coordinates using a global position system (GPS) unit if so desired. To facilitate subsequent investigations (see Part 5. below), tributary area delineations should be confirmed and junction manholes should be identified during this process. Orthophotographic coverages (available from previous engineering studies and such sources as MassGIS, NH GRANIT, or TerraServer) will also facilitate investigations by providing building locations and land use features.

3. **Infrastructure cleaning requirements**

To facilitate investigations, storm drain infrastructure should be evaluated for the need to be cleaned to remove debris or blockages that could compromise investigations. Such material should be removed to the extent possible prior to investigations, however, some cleaning may occur concurrently as problems manifest themselves.

4. **Dry weather criteria**

In order to limit or remove the influence of stormwater generated flows on the monitoring program, antecedent dry weather criteria need to be established. An often used metric is to sample when no more than 0.1 inches of rainfall have occurred in the previous 24-hour period; however, exact language in the applicable permit should be verified.

5. **Manhole inspection and flow monitoring methodology**

Beginning at the uppermost junction manhole(s) within each tributary area, drainage manholes are opened and inspected for visual evidence of contamination after antecedent dry weather conditions are satisfied (e.g. after 48 hours of dry weather). Where flow is observed, and determined to be contaminated through visual observation (e.g. excrement or toilet paper present) or field monitoring (see Part 6. below), the tributary storm sewer alignment is isolated for investigation (e.g. dye testing, CCTV; see Part 7. below). No additional downstream manhole inspections are performed unless the observed flow is determined to be uncontaminated or until all upstream illicit connections are identified and removed. Where flow is not observed in a junction manhole, all inlets to the structure are partially dammed for the next 48 hours when no precipitation is forecasted. Inlets are dammed by blocking a minimal percentage (approximately 20% +/- depending on pipe slope) of the pipe diameter at the invert using sandbags, caulking, weirs/plates, or other temporary barriers. The manholes are thereafter reinspected (prior to any precipitation or snow melt) for the capture of periodic or intermittent flows behind any of the inlet dams. The same visual observations and field testing is completed on any captured flow,



and where contamination is identified, abatement is completed prior to inspecting downstream manholes.

In addition to documenting investigative efforts in written and photographic form, it is recommended that information and observations regarding the construction, condition, and operation of the structures also be compiled.

#### 6. Field Measurement/Analysis:

Where flow is observed in the manhole and does not demonstrate obvious olfactory evidence of contamination, samples are collected and analyzed with field instruments identified in Table 1. Measured values are then compared with benchmark values in Table 1 or by using the flow chart in Figure 1 to determine the likely prominent source of the flow. This information facilitates the investigation of the upstream stormsewer alignment described in Part 7. Benchmark values may be refined over the course of investigations when compared with the actual incidences of observed flow sources. Concurrent sampling and analysis of conventional indicator organism (e.g. *E. coli*, enterococcus) densities at all or a subset of the same structures will assist greatly in the identification of potentially significant sources of illicit contributions.

In those manholes where periodic or intermittent flow is captured through damming inlets, additional laboratory testing (e.g. toxicity, metals, etc.) should be considered where an industrial batch discharge is suspected for example.

#### 7. Isolation and confirmation of illicit sources

Where field monitoring has identified storm sewer alignments to be influence by sanitary flows or washwaters, the tributary area is isolated for implementation of more detailed investigations. Additional manholes along the tributary alignment are inspected to refine the longitudinal location of potential contamination sources (e.g. individual or blocks of homes). Targeted internal plumbing inspections/dye testing or CCTV inspections are then employed to more efficiently confirm discrete flow sources.

#### 8. Post-Removal confirmation

After completing the removal of illicit discharges from a sub-catchment area and before beginning the investigation of downstream areas, the sub-catchment area is reinspected to verify corrections. Depending on the extent and timing of corrections, verification monitoring can be done at the initial junction manhole or the closet downstream manhole to each correction. Verification is accomplished by using the same visual inspection, field monitoring, and damming techniques as described above.

Since verification of illicit discharges removals is required prior to progressing downstream through the storm sewer system, consideration must be given to providing adequate staffing and equipment resources to initiate investigations in other subareas to facilitate progress while

awaiting completion of corrections.

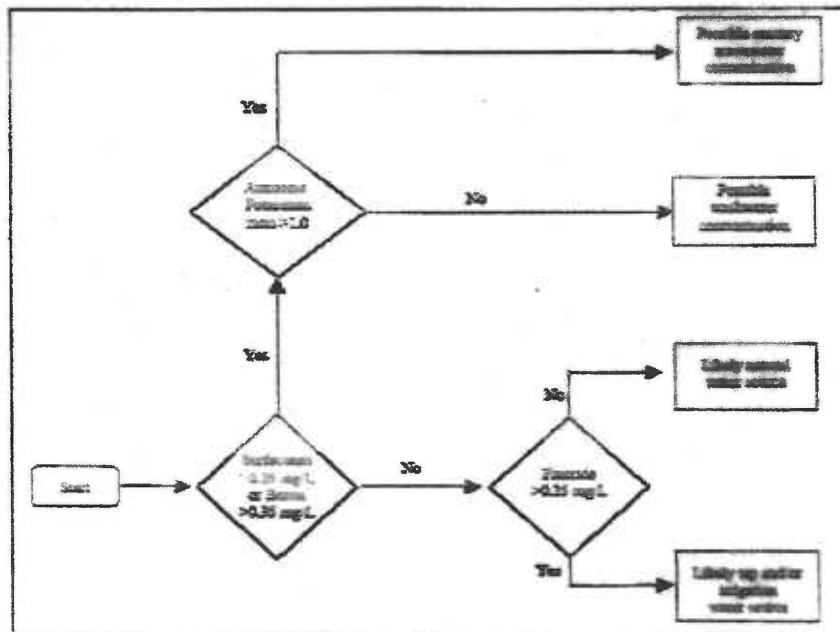
**Table 1 – Freshwater Water Quality Criteria, Benchmark levels of other indicators, and available field instrumentation**

Analyte/ Indicator	Geometric mean	Benchmark/ Single Sample <sup>3</sup>	Instrumentation
E. coli <sup>2</sup>	126 <sup>b</sup> cfu/100ml	235 cfu/100ml	
Enterococci <sup>2</sup>	33 <sup>b</sup> cfu/100ml	61 cfu/100ml	
Surfactants (as MBAS)	–	0.25 mg/l	MBAS Test Kit (e.g. CHEMetrics K-9400)
Ammonia (NH <sub>3</sub> )	–	0.5 mg/l	Portable Ion Meter (e.g. Horiba Cardy C-131)
Potassium (K)	–	(ratio below)	Portable Colorimeter or Photometer (e.g. Hach DR/890, CHEMetrics V-2000)
Fluoride (F)	–	>0.25 mg/L	Portable Colorimeter or Photometer (e.g. Hach DR/890, CHEMetrics V-2000)
Temperature	–	≥ 83°F(28.3°C) and change 5°C(2.8°C) in rivers <sup>2</sup>	Thermometer
pH	–	Outside of 6.5 and 8 <sup>2</sup>	pH Meter

<sup>2</sup> 314 CMR 4.00 MA - Surface Water Quality Standards - Class B Waters.

<sup>3</sup> Potential wastewater or washwater contamination

<sup>b</sup> Geometric mean of the most recent five samples collected within the same bathing season



**Figure 1. Flow Chart for Determining Likely Source of Discharge (Pitt, 2004)**

#### **Step IV - Outfall Monitoring**

Upon conclusion of investigations and removal of identified illicit discharges, municipalities should measure program success and compliance with bacteriological water quality standards through initiation of a regular outfall monitoring program. In addition to supporting the confirmation of successful removal of illicit discharges identified during Phase III, ongoing monitoring can facilitate discovery of new illicit discharges as they occur as a result of redevelopment, infrastructure deterioration, or otherwise.

Municipalities should design and implement their program to monitor all stormwater outfalls on an annual basis during dry and wet weather conditions. EPA recommends analyzing grab samples for either *E.coli* or enterococcus as appropriate, in addition to surfactants, and ammonia. Water quality criteria for these indicators are provided in Table 1. Outfalls that exhibit substantially elevated densities of indicator organisms should be reinvestigated using the IDDE Protocol. Obviously, elevated densities of indicator organisms combined with elevated levels of ammonia or surfactants, or both, significantly increase confidence in the suspected source and greatly assist in prioritizing outfalls for further study.

#### **Program Evaluation**

The success and progress of a municipality's IDDE program can be represented by improvements in receiving water quality. Progress and success of the program can also be evaluated by tracking a variety of metrics including:

- Percentage of manholes/structures inspected
- Percentage of outfalls screened
- Percentage of home plumbing inspections/dye tests completed
- Percentage of pipe inspected by CCTV
- Number (and relative percentage) of illicit discharges identified through:
  - visual inspections; field testing results; and temporary damming procedures
- Number of illicit discharges removed
- Cost of illicit discharge removals (total and average unit cost)
- Estimated flow or volume of illicit discharges removed
- Estimated flow or volume of inflow/infiltration removed
- Percentage of infrastructure jetting/cleaning completed
- Infrastructure defects identified or repaired
- Number and estimated flow of water main breaks identified or repaired

### References Cited

Boston Water & Sewer Commission, 2004, *A systematic Methodology for the Identification and Remediation of Illegal Connections*. 2003 Stormwater Management Report, chap. 2.1.

Pitt, R. 2004 *Methods for Detection of Inappropriate Discharge to Storm Drain Systems*. Internal Project Files. Tuscaloosa, AL, in The Center for Watershed Protection and Pitt, R., *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*: Cooperative Agreement X82907801-0, U.S. Environmental Protection Agency, variously paged. Available at: <http://www.cwp.org>.

### Instrumentation Cited (Manufacturer URLs)

MBAS Test Kit - CHEMetrics K-9400: <http://www.chemetrics.com/Products/Deters.htm>

Portable Photometer - CHEMetrics V-2000: <http://www.chemetrics.com/v2000.htm>

Portable Colorimeter - Hach DR/890: <http://www.hach.com/>

Portable Ion Meter: Horiba Cardy C-131: <http://www.wq.hii.horiba.com/c.htm>

**Disclaimer:** *The mention of trade names or commercial products in this manual does not constitute endorsement or recommendation for use by the U.S. EPA.*

**Appendix B**  
To  
Third Modified Consent Decree

# **EPA New England Bacterial Source Tracking Protocol**

## **Draft – January 2012**

### **Purpose**

This document provides a common framework for EPA New England (“EPA-NE”) staff to develop and implement bacterial source tracking sample events, and provides a recommended approach to watershed association, municipal, and State personnel. Adopted from Boston Water and Sewer Commission (“BWSC”) (2004), Pitt (2004), and based upon fieldwork conducted and data collected by EPA-NE, the protocol relies primarily on visual observations and the use of field test kits and portable instrumentation during dry and wet weather to complete a screening-level investigation of stormwater outfall discharges or flows within the drainage system. When necessary, the addition of more conclusive chemical markers may be included. The protocol is applicable to most typical Municipal Separate Storm Sewer Systems (“MS4s”) and smaller tributary streams. The smaller the upstream catchment area and/or more concentrated the flow, the greater the likelihood of identifying an upstream wastewater source.

### **Introduction**

The protocol is structured into several phases of work that progress through investigation planning and design, laboratory coordination, sample collection, and data evaluation. The protocol involves the concurrent collection and analyses of water samples for surfactants, ammonia, total chlorine, and bacteria. When more precise confirmation regarding the presence or absence of human sanitary sewage is necessary, and laboratory capacity is available, the additional concurrent collection of samples for select Pharmaceutical and Personal Care Product (“PPCP”) analysis is advised. When presented with a medium to large watershed or numerous stormwater outfalls, the recommended protocol is the screening of all outfalls using the surfactant, ammonia, total chlorine, and bacterial analyses, in addition to a thorough visual assessment. The resulting data and information should then be used to prioritize and sample a subset of outfalls for all parameters, including PPCP compounds and additional analyses as appropriate. Ideally, screening-level analyses can be conducted by state, municipal, or local watershed association personnel, and a prioritized sub-set of outfalls can be sampled through a commercial laboratory or by EPA-NE using more advanced confirmatory techniques.

### **Step I – Reconnaissance and Investigation Design**

Each sample event should be designed to answer a specific problem statement and work to identify the source of contamination. Any relevant data or reports from State, municipal, or local watershed associations should be reviewed when selecting sample locations. Aerial photography, mapping services, or satellite imagery resources are available free to the public through the internet, and offer an ideal way to pre-select locations for either field verification or sampling.

Sample locations should be selected to segregate outfall sub-catchment areas or surface waters into meaningful sections. A common investigative approach would be the identification of a

specific reach of a surface water body that is known to be impaired for bacteria. Within this specific reach, stormwater outfalls and smaller tributary streams would be identified by desktop reconnaissance, municipal outfall mapping, and field investigation when necessary. Priority outfalls or areas to field verify the presence of outfalls should be selected based on a number of factors, including but not limited to the following: those areas with direct discharges to critical or impaired waters (e.g. water supplies, swimming beaches); areas served by common/twin-invert manholes or underdrains; areas with inadequate levels of sanitary sewer service, Sanitary Sewer Overflows (“SSOs”) or the subject of numerous/chronic sanitary sewer customer complaints; formerly combined sewer areas that have been separated; culverted streams, and; outfalls in densely populated areas with older infrastructure. Pitt (2004) provides additional detailed guidance.

When investigating an area for the first time, the examination of outfalls in dry-weather is recommended to identify those with dry-weather flow, odor, and the presence of white or gray filamentous bacterial growth that is common (but not exclusively present) in outfalls contaminated with sanitary. For those outfalls with dry-weather flow and no obvious signs of contamination, one should never assume the discharge is uncontaminated. Sampling by EPA-NE staff has identified a number of outfalls with clear, odorless discharges that upon sampling and analyses were quite contaminated. Local physical and chemical conditions, in addition to the numerous causes of illicit discharges, create outfall discharges that can be quite variable in appearance. Outfalls with no dry-weather flow should be documented, and examined for staining or the presence of any obvious signs of past wastewater discharges downstream of the outfall.

As discussed in BWSC (2004), the protocol may be used to sample discreet portions of an MS4 sub-catchment area by collecting samples from selected junction manholes within the stormwater system. This protocol expands on the BWSC process and recommends the concurrent collection of bacteria, surfactant, ammonia, and chlorine samples at each location to better identify and prioritize contributing sources of illicit discharges, and the collection of PPCP compounds when more conclusive source identification is necessary.

Finally, as discussed further in Step IV, application of this sampling protocol in wet-weather is recommended for most outfalls, as wet-weather sampling data may indicate a number of illicit discharge situations that may not be identified in dry weather.

## **Step II – Laboratory Coordination**

All sampling should be conducted in accordance with a Quality Assurance Project Plan (“QAPP”). A model QAPP is included as Attachment 1. While the QAPP details sample collection, preservation, and quality control requirements, detailed coordination with the appropriate laboratory staff will be necessary. Often sample events will need to be scheduled well in advance. In addition, the sampling team must be aware of the strict holding time requirements for bacterial samples – typically samples analysis must begin within 6 hours of sample collection. For sample analyses conducted by a commercial laboratory, appropriate coordination must occur to determine each facilities respective procedures and requirements.

The recommendations in this protocol are based on the use of a currently unpublished EPA-NE modification to *EPA Method 1694 – Pharmaceuticals and Personal Care Products in Water, Soil, Sediment, and Biosolids by HPLC/MS/MS*. Several commercial laboratories may offer Method 1694 capability. EPA-NE recommends those entities wishing to utilize a contract laboratory for PPCP analyses ensure that the laboratory will provide quantitative analyses for acetaminophen, caffeine, cotinine, carbamazepine, and 1,7-dimethylexanthine, at Reporting Limits similar to those used by EPA-NE (See Attachment 2). Currently, the EPA-NE laboratory has limited capacity for PPCP sampling, and any proposed EPA-NE PPCP sample events must be coordinated well in advance with the appropriate staff.

### **Step III – Sample Collection**

Once a targeted set of outfalls has been selected, concurrent sampling and analyses for surfactants, ammonia, and total chlorine (which can all be done through the use of field kits), in addition to bacteria (via laboratory analysis) should be conducted. When numerous outfalls with dry-weather flow exist, sample locations should be prioritized according to the criteria mentioned above. In addition, field screening using only the field kits may occur during the field reconnaissance. However, it must be emphasized that the concurrent sampling and analyses of bacteria, surfactant, ammonia, and total chlorine parameters is the most efficient and cost-effective screening method.

When first observed, the physical attributes of each outfall or sampling location should be noted for construction materials, size, flow volume, odor, and all other characteristics listed on the data collection form (Attachment 3). In addition, GPS coordinates should be collected and a photograph of the sample location taken. Whenever possible, the sampling of storm drain outfalls should be conducted as close to the outfall opening as possible. Bacterial samples should be collected first, with care to not disturb sediment materials or collect surface debris/scum as best possible. A separate bottle is used to collect a single water sample from which aliquots will be analyzed for surfactants, ammonia, and total chlorine. A sample for PPCP analysis is recommended to be collected last, as the larger volume required and larger bottle size may cause some sediment disturbance in smaller outfalls or streams. If necessary, a second smaller, sterile and pre-cleaned sampling bottle may be used to collect the surface water which can then be poured into the larger PPCP bottle. Last, a properly calibrated temperature/specific conductance/salinity meter should be used to record all three parameters directly from the stream or outfall. When flow volume or depth is insufficient to immerse the meter probe, a clean sample bottle may be utilized to collect a sufficient volume of water to immerse the probe. In such instances, meter readings should be taken immediately.

As soon as reasonably possible, sample aliquots from the field kit bottle should be analyzed. When concurrent analyses are not possible, ammonia and chlorine samples should be processed first, followed by surfactant analysis, according to each respective Standard Operating Procedure as appropriate based on the particular brand and type of field test kit being used. All waste from the field test kits should be retained and disposed of according to manufacture instructions. Where waste disposal issues would otherwise limit the use of field kits, EPA-NE recommends



that, at a minimum, ammonia test strips with a Reporting Limit below 0.5 mg/L be utilized. Such test strips typically are inexpensive and have no liquid reagents associated with their use. Results should be recorded, samples placed in a cooler on ice, and staff should proceed to the next sample location.

Upon completion of sampling and return to the laboratory, all samples will be turned over to the appropriate sample custodian(s) and accompanied by an appropriate Chain-of-Custody (“COC”) form.

#### Step IV – Data Evaluation

Bacterial results should be compared to the applicable water quality standards. Surfactant and ammonia concentrations should be compared to the thresholds listed in Table 1. Evaluation of the data should include a review for potential positive results due to sources other than human wastewater, and for false negative results due to chemical action or interferences. In the EPA-NE region, field sampling has indicated that the biological breakdown of organic material in historically filled tidal wetlands may cause elevated ammonia readings, as can the discharge from many landfills. In addition, salinity levels greater than 1 part per thousand may cause elevated surfactant readings, the presence of oil may likewise indicate elevated levels, and fine suspended particulate matter may cause inconclusive surfactant readings (for example, the indicator ampule may turn green instead of a shade of blue). Finally, elevated chlorine from leaking drinking water infrastructure or contained in the illicit wastewater discharge may inhibit bacterial growth and cause very low bacterial concentrations. Any detection of total chlorine above the instrument Reporting Limit should be noted.

**Table 1 – Freshwater Water Quality Criteria, Threshold Levels, and Example Instrumentation <sup>1</sup>**

Analyte/ Indicator	Threshold Levels/ Single Sample <sup>3</sup>	Instrumentation
E. coli <sup>2</sup>	235 cfu/100ml	Laboratory via approved method
Enterococci <sup>2</sup>	61 cfu/100ml	Laboratory via approved method
Surfactants (as MBAS)	≥ 0.25 mg/l	MBAS Test Kit (e.g. CHEMetrics K-9400)
Ammonia (NH <sub>3</sub> )	≥ 0.5 mg/l	Ammonia Test Strips (e.g. Hach brand)
Chlorine	> Reporting Limit	Field Meter (e.g. Hach Pocket Colorimeter II)
Temperature	See Respective State Regulations	Temperature/Conductivity/Salinity Meter (e.g. YSI Model 30)

<sup>1</sup> The mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. EPA

<sup>2</sup> 314 CMR 4.00 MA - Surface Water Quality Standards - Class B Waters.

<sup>3</sup> Levels that may be indicative of potential wastewater or washwater contamination

Once dry-weather data has been examined and compared to the appropriate threshold values, outfalls or more discreet reaches of surface water can be selected for sampling or further investigation. Wet-weather sampling is also recommended for all outfalls, in particular for those that did not have flow in dry weather or those with dry-weather flow that passed screening thresholds. Wet-weather sampling will identify a number of situations that would otherwise pass unnoticed in dry weather. These wet-weather situations include, but are not limited to the following: elevated groundwater that can now cause an exchange of wastewater between cracked or broken sanitary sewers, failed septic systems, underdrains, and storm drains; increased sewer volume that can exfiltrate through cracks in the sanitary piping; increased sewer volume that can enter the storm drain system in common manholes or directly-piped connections to storm drains; areas subject to capacity-related SSO discharges, and; illicit connections that are not carried through the storm drain system in dry-weather.

### Step V – Costs

Use of field test kits and field instruments for a majority of the analytical parameters allows for a significantly reduced analytical cost. Estimated instrument costs and pro-rated costs per 100 samples are included in Table 2. The cost per 100 samples metric allows averaged costs to account for reagent refills that are typically less expensive as they do not include the instrument cost, and to average out the initial capital cost for an instrument such as a temperature/ conductivity/salinity meter. For such capital costs as the meters, the cost over time will continue to decrease.

**Table 2 – Estimated Field Screening Analytical Costs <sup>1</sup>**

Analyte/ Indicator	Instrument or Meter <sup>2</sup>	Instrument or Meter Cost/No. of Samples	Cost per Sample (Based on 100 Samples) <sup>3</sup>
Surfactants (as MBAS)	Chemetrics K- 9400	\$77.35/20 samples  (\$58.08/20 sample refill)	\$3.09
Ammonia (NH <sub>3</sub> )	Hach brand 0 – 6 mg/l	\$18.59/25 samples	\$0.74
Total Chlorine	Hach Pocket Colorimeter II	\$389/100 samples  (\$21.89 per 100 sample refill)	\$3.89
Temperature/ Conductivity/ Salinity	YSI	\$490 (meter and cable probe)	\$4.90

<sup>1</sup> Estimated costs as of February 2011

<sup>2</sup> The mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. EPA

<sup>3</sup> One-time meter costs and/or refill kits will reduce sample costs over time

From Table 2, the field analytical cost is approximately \$13 per outfall. Typical bacterial analyses costs can vary depending on the analyte, method, and total number of samples to be

performed by the laboratory. These bacterial analyses costs can range from \$20 to \$60. Therefore, the analytical cost for a single outfall, based on the cost per 100 samples, ranges from \$33 to \$73. As indicated above, these costs will decrease slightly over time due to one-time capitals costs for the chlorine and temperature/conductivity/salinity meters.

## **Step VI – Follow-Up**

Once all laboratory data has been reviewed and determined final in accordance with appropriate quality assurance controls, results should be reviewed with appropriate stakeholders to determine next steps. Those outfalls or surface water segments that fail to meet the appropriate water quality standard, and meet or exceed the surfactant and ammonia threshold values, in the absence of potential interferences mentioned in Step IV, indicate a high likelihood for the presence of illicit connections upstream in the drainage system or surface water. Whereas illicit discharges are quite variable in nature, the exceedance of the applicable water quality standard and only the ammonia or surfactant threshold value may well indicate the presence of an illicit connection. When available, the concurrent collection and analyses of PPCP data can greatly assist in confirming the presence of human wastewater. However, such data will not be available in all instances, and the collective data set and information regarding the physical characteristics of each sub-catchment or surface water reach should be used to prioritize outfalls for further investigation. As warranted, data may be released to the appropriate stakeholders, and should be accompanied by an explanation of preliminary findings. Release of EPA data should be fully discussed with the case team or other appropriate EPA staff.

## **References Cited**

Boston Water & Sewer Commission, 2004, *A systematic Methodology for the Identification and Remediation of Illegal Connections*. 2003 Stormwater Management Report, chap. 2.1.

Pitt, R. 2004 *Methods for Detection of Inappropriate Discharge to Storm Drain Systems*. Internal Project Files. Tuscaloosa, AL, in The Center for Watershed Protection and Pitt, R., *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*: Cooperative Agreement X82907801-0, U.S. Environmental Protection Agency, variously paged. Available at: <http://www.cwp.org>.

## **Instrumentation Cited (Manufacturer URLs)**

MBAS Test Kit - CHEMetrics K-9400: <http://www.chemetrics.com/Products/Deterg.htm>

Portable Colorimeter – Hach Pocket Colorimeter II: <http://www.hach.com/>

Ammonia (Nitrogen) Test Strips: <http://www.hach.com/>

Portable Temperature/Conductivity/Salinity Meter: YSI Model 30:  
<http://www.ysi.com/productsdetail.php?30-28>

***Disclaimer: The mention of trade names or commercial products in this protocol does not constitute endorsement or recommendation for use by the U.S. EPA.***

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**Stormwater Monitoring Quality Assurance Project Plan  
2012-2017**

RFA #

**Sampling Plan Acceptance**

EPA OES Enforcement and Project Manager/Coordinator <b>Signature:</b>	<b>Date:</b>
EPA OEME Project Managers/Coordinator <b>Signature:</b>	<b>Date:</b>
EPA OEME QA Officer <b>Signature:</b>	<b>Date:</b>
EPA Chemistry Team Lead <b>Signature:</b>	<b>Date:</b>

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### **1.0 Background**

U.S. EPA Administrative Order 5360.1 requires that "all projects involving environmental monitoring performed by or for the U.S. EPA shall not be undertaken without an adequate Quality Assurance Project Plan (QAPP)." The purpose of this document is to describe the process used to develop, select, manage, and finalize stormwater monitoring projects. In describing this process, quality assurance goals and methods will be established, thus ensuring that the overall program and each monitoring project will meet or exceed EPA requirements for quality assurance.

The objective of these projects will be to collect data that is usable by EPA OES enforcement staff for enforcement actions and information requests. The primary focus of this project will be on urban water stormwater outfalls in the New England Region watersheds.

### **2.0 Sampling overview**

Monitoring will be conducted on pre-scheduled days with the Laboratory. Samples will be retrieved from surface water, in stream or outfalls at suspected hotspots or areas that need further delineation. Sample sites will be located using GPS, with an accuracy goal of  $\pm 1$  meter and PDOP less than 6. Less accurate GPS reading or coordinates from maps will be accepted when site or other conditions do not allow  $\pm 1$  meter accuracy.

The primary focus of this sampling will be used to identify illegal discharges. Results from the sampling will be used by EPA enforcement staff for enforcement purposes. For this project, sampling will be conducted according to EPA's Ambient Water Sampling SOP (Table 3). Volunteers and watershed association staff may assist in sampling. All procedures will be followed that are specified in Table 3. Parameter to be sampled will be predetermined by enforcement (OES) and OEME staff, based on data needs.

#### **A. Locations**

Site locations will be determined from field or desktop reconnaissance by project staff. Sample analyses will be predetermined based on conditions known about the sampling location prior to sampling. These may include data from previous sampling or from data collected from Mass DEP or local watershed associations. Any of the parameters listed in table 2 may be analyzed.

#### **B. Analytical Methods and Reporting limits**

Sample analyses will be conducted by EPA Laboratories.

This effort will test and compare the most appropriate analytical methods including, but not limited to; laboratory analysis, test kits and field analysis to determine the most effective and cost-efficient outfall and in-stream sampling approach.

Multiple and repeated testing will occur at each location to compare different method for identifying sewage contamination.

PPCPs, E.coli and enterococcus will be analyzed by EPA's Laboratory. Surfactants, ammonia, total chlorine will be analyzed with field test kits. Potential additional laboratory analyses include nitrogen (nitrate/nitrite), TSS, BOD, surfactants, ammonia and TPH. The Laboratory used

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for each sampling event will be determined prior to sampling by the OEME Project Manager based on required analyses Laboratory availability and contract funds available.

Where available, a known concentration sample will be used to evaluate the performance of each test method. The known concentration sample will be processed in the field and Laboratory as a routine sample. The analyst or field technician will not know the concentration of the sample prior to analyzing and reporting the sample result. Sampling for PPCP testing will be done using extreme care not to contaminate the sample. No caffeine products should be consumed prior to sampling.

**Table 1: Parameter specifications**

PH	None	Immediate
Temperature	None	Immediate
Sp Cond	None	Immediate
DO	None	Immediate
Total Phosphorus (EPA)	H <sub>2</sub> SO <sub>4</sub> (pH <2) + Ice	28 days
TSS (EPA)	Ice	7 days
TSS (Alpha)	Ice	7 days
BOD (Alpha)	Ice	48 hours
Surfactants (Alpha)	Ice	48 hours
Surfactants (field kit – Chemetrics)	None	Immediate
Ammonia (alpha)	H <sub>2</sub> SO <sub>4</sub> (pH <2) + Ice	28 days
Ammonia (test strips)	None	Immediate
TPH Petroleum ID (alpha)	Ice	7 Days to extraction 40 days after extraction
E. Coli (EPA)	Ice	6 hrs to lab
Enterococcus (EPA)	Ice	6 hrs to lab
PPCP	Ice (acidified in Lab)	7 day to extraction 40 days after extraction
Chlorine (Field kit – Hach)	None	Immediate

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**Table 2: Analytical References and Quality Control Goals**

Parameter	Reporting Unit	MA Criteria	QA Assurance Goal	QA Assurance Goal	QA Assurance Goal
PH	4 to 10 units	6.5 - 8.3	0.02 unit	+ 0.3 units	90%
Temperature	0 to +40°C	28.3°C	0.1 °C	+ 0.15°C	90%
Sp Cond	0 to 100 mS/cm	NA	5 uS/cm	+10% cal std (µS/cm)	90%
DO	0.5mg/l to Sat	>5 mg/l , >60% saturation	0.02mg/l	± .5 mg/l	90%
Total Phosphorus (EPA)	5.0 ug/l	NA	Field dup 30% RPD	MS 70-130%	90%
TSS (EPA)	5mg/L	NA	Field dup 30% RPD	See SOP	
TSS (Alpha)	5 mg/L	NA	Field dup 30% RPD	See SOP	90%
BOD (Alpha)	2 mg/L	NA	Field dup 30% RPD	See SOP	90%
Surfactants (field kit – Chemetrics)	0.25 mg/L <sup>1</sup>	0.25 mg/L	Field dup 30% RPD	TBD	90%
Ammonia (test strips)	0.25 mg/L <sup>1</sup>	1.0 mg/L	Field dup 30% RPD	TBD	90%
TPH Petroleum ID (alpha)	Variable	NA	Field dup 30% RPD	See SOP	
E. Coli (EPA)	4 col./ 100 ml	<=126 col./100 ml* <= 235 col./100 ml	+100 col/100ml or 30% RPD	N/A	90%
Enterococcus (EPA)	1 col/100ml	<=33 col./100 ml* <= 61 col./100 ml	+100 col/100ml or 30% RPD	See SOP	90%
PPCP	TBD	NA	Field dup 50% RPD	TBD	90%
Chlorine (Field kit – Hach)	0.02 mg/l	NA	Field dup 30% RPD	TBD	90%

Note

\*Geometric mean Criteria

TBD = To be determined, Field methods and some colorimeter methods do not have accuracy criteria determined.

<sup>1</sup> Needs field verification to confirm

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**Table 3: Field and Laboratory References**

Parameter	Analytical Method Reference	SOP reference
	Field Reference-Tables	
pH		
Conductivity		
Temperature		
dissolved oxygen	n/a	ECASOP-YSISondes9
Ambient water samples	n/a	ECASop-Ambient Water Sampling2
Chain of custody of samples	n/a	EIASOP-CHAINOFCUST
Sample login, tracking, disposition	n/a	EIASOP-ADMLOG14
<b>Laboratory References</b>		
Total Phosphorus (EPA)	EPA 365.3	EIASOP-INGTP8
TSS (EPA)	EPA 160.2	EIASOP-INGTSS-TDS-VRES5
TSS (Alpha)	EPA 160.2,SM2540D	SOP/07-29
BOD (Alpha)	EPA 405.1,SM5210B	SOP/07-13
Surfactants (field kit – Chemetrics)	Chemetrics	Draft
Ammonia (test strips)	Hach	Draft
TPH Petroleum ID (alpha)	8015B (M)	0-017
E. Coli (EPA)	SM9230	ECASOP- TC/EC Colilert2
Enterococcus (EPA)	SM9230	ECASOP-Enterolert1
PPCP	EPA 1694	TBD
Chlorine (Field kit – Hach)	Hach	TBD

\*Specific conductance is the only parameter identified as non critical

Bottle list

**Table 4: Bottle Sampling List**

<b>Primary analyses</b>		
E. Coli (EPA)	(2) 120ml or 250ml sterile	Ice
Enterococcus (EPA)		Ice
PPCP	1 Liter Amber	Ice (acidified in Lab)
<b>Optional analyses</b>		
Chlorine (Alpha)	500 ml	Ice
Total Phosphorus (EPA)	125 ml	H <sub>2</sub> SO <sub>4</sub> (pH <2) + Ice
TSS (EPA)	1 liter	Ice
TSS (Alpha)	1 liter	Ice
BOD (Alpha)	1 Liter	Ice
TPH Petroleum ID (alpha)	2 -1 Liter Amber Glass teflon lined	Ice
E. Coli (Alpha)	120 ml sterile	Ice
Enterococcus (Alpha)	120 ml sterile	Ice



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### **C. Quality Control**

- Calibration: EPA will calibrate its sondes according to the EPA sonde calibration SOP.
- Field duplicate: One duplicate sample will be collected per sampling event or approximately for every ten samples.
- Trip Blank: OEME Chemist will run appropriate QA samples for PPCP's. One blank sample will be collected for approximately every ten bacteria samples. Reported data that is less than 5 times the trip (field) blank concentration will be flagged.
- QC Criteria: Are specified in table 2, data not meeting this criteria will be reviewed by the Project Manager. Data that does not meet laboratory QA/QC criteria will be flagged by the laboratory.

### **D. Chain of Custody**

Chain of custody procedures will follow the OEME/Investigations Office SOP (Table 3)

### **3.0 Data Review**

EPA Microbiology data will be reviewed by the Biology QAO. Alpha generated microbiology samples will be reviewed by the OEME Project Manager. All field data and draft data reports will be reviewed by the OEME Project manager. Laboratory generated data (from Alpha and EPA) will be reviewed by the Chemistry Team Leader.

### **4.0 Data reports**

Data reports will be reviewed by the Project Coordinator and the OEME Project Manager before a final report is release to the Enforcement Coordinator. Draft reports may be released without a complete review.

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### **5.0 Attachments**

- 1) Standard Operating Procedure Enterococcus (SM9230B), Multiple Tube Technique. SOP/07-01 *Alpha Analytical, Inc. May 28, 2005*
- 2) Standard Operating Procedure E. Coli (SM9213D). SOP/07-41 *Alpha Analytical, Inc. May 28, 2005*
- 3) Standard Operating Procedure MBAS, Ionic Surfactants. Draft SOP *EPA Laboratory. January 28, 2010*
- 4) Standard Operating Procedure Nitrogen Ammonia. Draft SOP *EPA Laboratory. February 10, 2011*
- 5) Standard Operating Procedure Total Chlorine. Draft SOP *EPA Laboratory. February 12, 2010*
- 6) Standard Operating Procedure TSS/ TVSS (SM2540 D, EPA 160.2). SOP/07-29 *Alpha Analytical, Inc. September 29, 2007*
- 7) Standard Operating Procedure BOD-5day, SBOD-5day, and cBOD-5day (SM 5210B, and EPA 405.1). SOP/07-13 *Alpha Analytical, Inc. September 29, 2007*
- 8) Standard Operating Procedure TPH 8015D – Modified 0-017 (EPA 8015D Modified) *Alpha Analytical, Inc. March 04, 2008*
- 9) Standard Operating Procedure determination of Trace Elements in Water and Wastes by Inductively Coupled Plasma- Mass Spectrometry (200.8). SOP/06-11 *Alpha Analytical, Inc. July 13, 200*
- 10) Standard Operating Procedure Inductively Coupled Plasma – Mass Spectrometry (6020). SOP/06-10 *Alpha Analytical, Inc. October 25, 2007*

## Target Compounds, Uses, and Reporting Limits

Target Compound	Major Use	RL (ng/L)	Daily Dose (ng)
Caffeine	Natural Stimulant	5.0	200,000,000
1,7-DMX	Metabolite of caffeine	2.5	N/A
Acetaminophen	Pain Reliever	2.5	650,000,000
Carbamazepine	Anti- depressant / bi-polar Anti-convulsant (epilepsy)	0.5	100,000,000
Primidone	Anti- epilepsy drug (AED)	5.0	100,000,000
Atenolol	Beta Blocker High Blood Pressure	2.5	50,000,000
Cotinine	Metabolite of Nicotine	0.5	3,500-7,200 (ng/mL)
Urobilin	By-product of hemoglobin breakdown (mammals)	5.0	1,300,000 ng/g in feces
Azithromycin	Antibiotic	1.6	200,000,000

# STORMWATER MONITORING

## Field Collection Requirements (To be recorded at each site)

### Sample-

Site Name \_\_\_\_\_

Time collected \_\_\_\_\_

Date collected \_\_\_\_\_

### Inspection-

**\*\*Take picture at site\*\***

Outfall diameter \_\_\_\_\_ ('na' if open stream)

Flow estimate \_\_\_\_\_ ('na' if open stream)

Odor \_\_\_\_\_

Color \_\_\_\_\_

Turbidity \_\_\_\_\_

Floatables \_\_\_\_\_

Other observations \_\_\_\_\_

\_\_\_\_\_

### YSI Meter (calibrate in lab)-

Salinity \_\_\_\_\_

Temp \_\_\_\_\_

Conductivity (give both #'s)

\_\_\_\_\_

### Location information-

Short description of where sample was collected at site \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

GPS \_\_\_\_\_

\_\_\_\_\_

**Field Kits** listed in the order they should be conducted in, include any applicable notes-

NH3 strip \_\_\_\_\_

Cl2 kit \_\_\_\_\_

Hach meter - (3 min wait)

Surfactant \_\_\_\_\_

Chemetrics K-9400 Blue box/detergent test kit

### Additional Notes:

(Note any changes in weather conditions) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **STORMWATER MONITORING (PAGE 2)**

### **Field Equipment List**

#### **Waste Containers (2 total – clearly labeled):**

- 1 liter amber plastic for surfactants/detergents kit waste
- 1 liter amber plastic for Cl2 kit waste

#### **Sample Bottles (3 total for each sample location)-**

- 120ml sterile – E.coli/entero
- 1 Liter amber glass: PPCP, EPA (Peter Philbrook)
- 120ml-250ml plastic – Field Kit Bottle – to be used on site for kits listed above

\*\*\*Fill out chain of custody

#### **In Carboy Container**

- Log book
- COC forms
- Extra sample bottles
- Colored tape
- Sharpies
- Write-On-Rain Pens
- Paper towels
- GPS
- Sampling plan & GPS locations
- Regular length Powder Free Gloves
- Squirt bottle of DI Water
- Coolers with Ice
- Waders/Boots
- YSI multi parameter Meter