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STORMWATER MANAGEMENT PLAN

MS4 GENERAL PERMIT COMPLIANCE

2021 UPDATE

CITY OF
Chelsea
MASSACHUSETTS

swmp

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1.0 INTRODUCTION / OVERVIEW

1.1 Regulatory Summary and Purpose

The Federal Water Pollution Control Act (WPCA), initially enacted in 1948, established ambient water quality standards to specify acceptable levels of pollution in lieu of preventing the causes of water pollution. The 1972 amendments to the WPCA, referred to as the Clean Water Act (CWA), implemented measures which were focused on establishing effluent limitations on point sources, or 'any discernable, confined, and discrete conveyance... from which pollutants are or may be discharged."

The 1972 CWA introduced the National Pollutant Discharge Elimination System (NPDES). The NPDES program was established as the fundamental regulatory mechanism of the CWA, requiring direct dischargers of pollutants into waters of the United States to obtain a NPDES permit. Between 1972 and 1987, the NPDES permit program focused on improving surface water quality by reducing pollutants of industrial process wastewater and municipal sewage. During this period, several nationwide studies on water quality, most notably the United States Environmental Protection Agency (EPA) National Urban Runoff Plan (NURP), identified stormwater discharges as a significant source of water pollution.

The results of the NURP and similar studies, resulted in the reauthorization of the CWA in 1987 with the passage of the Water Quality Act (WQA). The WQA established a legal framework and required EPA to develop a comprehensive phased program for regulating municipal and industrial stormwater discharges under the NPDES permit program.

The NPDES Phase I Rule, which was issued in November 1990, addressed stormwater dischargers from medium to large municipal separate storm sewer systems (MS4s), which were communities serving a population of at least 100,000 people, as well as stormwater discharges from 11 categories of industrial activity.

The NPDES Phase II rule, which was promulgated in December 1999, addressed small MS4s serving a population of less than 100,000 people in urbanized areas. The Phase II rule requires that all MS4s located within "urbanized areas" as defined by the Bureau of the Census latest decennial Census automatically comply with the Phase II Stormwater regulations. Since Chelsea is located within an urbanized area (see map in Appendix B), the EPA designated the City as a Phase II community, which must comply with the NPDES regulations. In May 2003, the EPA and the Massachusetts Department of Environmental Protection (MassDEP) jointly issued the NPDES General Permit for Discharges from Small MS4s and in July 2003, Chelsea submitted the required Notice of Intent (NOI) for inclusion under this General Permit.

The 2003 NPDES Phase II MS4 General Permit (2003 MS4 Permit) required the City of Chelsea to develop, implement, and enforce a Stormwater Management Program (SWMP). The objectives of the SWMP were to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA.

The 2003 MS4 Permit expired on May 1, 2008 but was administratively continued for covered permittees until a new MS4 Permit was issued on April 4th, 2016 and became effective on July 1, 2018. A copy of the 2016 MS4 Permit is included in Appendix C. On September 26, 2018, the City submitted a Notice of Intent to EPA to obtain coverage under the 2016 MS4 Permit. A copy of this Notice of Intent is included in

Appendix D. EPA posted the City's Notice of Intent for public comment on April 1, 2019 for a 30-day period. The City received authorization from EPA to discharge under the 2016 MS4 Permit on May 30, 2019. A copy of the City's Authorization to Discharge is included in Appendix D.

Since the City of Chelsea was previously covered under the 2003 Small MS4 General Permit, the City currently has many practices and programs in place related to stormwater management and pollution prevention. This plan update coordinates and incorporates these programs, policies, guidelines and practices into one document and expands their reach to encompass the requirements and goals of the 2016 MS4 Permit. The objectives of the MS4 Permit are accomplished through the implementation of Best Management Practices (BMPs) for each of the following six minimum control measures.

- Public education and outreach
- Public involvement / participation
- Illicit discharge detection and elimination
- Construction site stormwater runoff control
- Post-construction stormwater management in new development or redevelopment
- Pollution prevention/good housekeeping

The City's efforts to comply with these BMPs, as outlined in their NOI, are included in Section 2.0.

1.2 City Governance and Structure

Chelsea's current charter was approved by the Massachusetts House and the Senate on August 22, 1994 and signed by the Governor on August 26, 1994. The Charter was fully implemented on August 18, 1995, with appointment of the first City Manager.

The Charter mandates the Council-Manager form of government, which replaced the prior Mayor-Alderman form of government. The voters of Chelsea continue to elect the policy makers in the form of a City Council (the Council) who in turn select the City Manager. The City Manager is the chief executive of the City and is responsible for the day-to-day administration of City affairs.

The Charter requires the implementation of a coordinated budget process. The Council and School Committee share responsibility and coordinate their activities. In addition, the Charter requires the City to implement and undertake annual processes for capital planning, long-term financial forecasting and an open operating budget development process. The City has successfully implemented all the financial mandates required by the Charter.

The Charter includes an initiative petition procedure that allows citizens to recommend the adoption of local laws which, if not enacted by the City Council or the School Committee, would appear on the ballot for approval or rejection by all of the voters. Measures passed by the Council, with some specific exceptions, are subject to the referendum process. Recall of elected officials who have earned the dissatisfaction of a majority of citizens is provided.

Various entities within the City have the responsibility for implementation of the MS4 Permit requirements as outlined in this plan and include the following:

- Department of Public Works
- Planning and Development
- Health and Human Services
- Department of Inspectional Services

Specific representatives from each of these departments or committees responsible for implementation of the SWMP are outlined in the table below:

Table 1.1
PARTIES RESPONSIBLE FOR SWMP IMPLEMENTATION

Name	Title	Affiliation
Fidel Maltez	Commissioner (Director)	Public Works
Louis Mammolette, PE	City Engineer/ Deputy Commissioner	Public Works
Rebecca Wright	Assistant City Engineer	Public Works
Shavaun Callahan	D3 Primary Drinking Water Operator/ WSD Compliance Manager	Public Works
John DePriest	Director	Planning and Development
Flor Amaya	Director	Department of Public Health
Mike McAteer	Director	Inspectional Services
Lou Cetina	Assistant Superintendent	Water Sewer Drain

1.3 City Demographic Information

Chelsea is located in Suffolk County and has a total area of 1.8 square miles of land area (4.6 square kilometers). It is bordered by Revere to the northeast, Everett to the northwest, and the Chelsea River to the south and east. As of 2018, the population of Chelsea is estimated to be 40,160 according to the US Census Bureau. Chelsea has a density of over 16,036 people per square mile, one of the highest in the country. The racial makeup of the City is 49.6% white, 7.1% Black or African American, 0.2% Native American, 3.6% Asian, 0.0% Pacific Islander, and 30.8% from two or more races. Hispanic or Latino of any race is 65.9% of the population. As of 2017, the median income for a household in the City was $51,839 and the per capita income for the City was $23,340. About 19.5% of the population is below the poverty line.

Chelsea is comprised of eleven neighborhoods: Admirals Hill, Addison-Orange, Bellingham Square, Box District, Carter Park-Wyndham Area, Chelsea Square, Chelsea Commons, Mill Hill, Prattville, Soldiers Home, and Waterfront District.

Principal highways located within the boundaries of Chelsea include Route 1, known locally as the Tobin Bridge and Northeast Expressway, which runs north to south; and Route 16, known locally as

Revere Beach Parkway, which runs from west to northeast. There are approximately 3.2 miles of state-maintained roadways within the City.

Climate within Chelsea ranges from January average minimum temperature of 22 degrees Fahrenheit (°F) to July average maximum temperature of 82°F. The average annual precipitation is 42.5 inches, relatively distributed throughout the year. The wettest month of the year is November with an average precipitation of 3.98 inches.

1.4 Water Resources

Located on a peninsula in Boston Harbor, Chelsea is virtually surrounded by tidally influenced surface waters. It lies within the Mystic River Sub-Basin of the Boston Harbor Watershed. The major surface waters in or abutting Chelsea include the Chelsea River (also known as "Chelsea Creek"), the Mystic River (including Island End River), and Mill Creek.

The Chelsea River begins at the end of Mill Creek and where the cities of Chelsea, East Boston, and Revere meet. The Chelsea River flows southwesterly to the Mystic River near Boston Harbor. It is a shipping channel, supporting large ocean-fairing tankers with typical cargos of liquid petroleum products and road salt.

The Island End River begins north of Chelsea in the community of Everett but flows underground through a series of culverts until it outlets in the southwest corner of Chelsea. It flows south for a short length along the border between Chelsea and Everett before entering the Mystic River.

The Mystic River begins at the outlet of Lower Mystic Lake in Arlington and flows through the communities of Charlestown, Chelsea, Boston, Everett, Medford, and Somerville before discharging to the Boston Inner Harbor.

Mill Creek begins at the outlet of three stormwater outfalls located along the northern border with Revere, and then flows southeast to the Chelsea River. It defines much of the border between the cities of Chelsea and Revere.

All impairments and outfalls discharging to these water bodies are summarized in Table 1.2 below:

Table 1.2
RECEIVING WATERS AND IMPAIRMENTS

Waterbody	Impairment	Number of Outfalls Discharging to Receiving Water
Chelsea River - From confluence with Mill Creek, Chelsea/Revere to confluence with Boston Inner Harbor, Chelsea/East Boston/Charlestown (MA71-06) *(Class SB(CSO) Water)*	Debris/Trash, Ammonia (Un-ionized), Fecal Coliform*, Other, Dissolved Oxygen, PCBs in Fish Tissue, Petroleum Hydrocarbons, Sediment Screening Value (Exceedance), Odor, Turbidity	7
Mill Creek - From Route 1, Chelsea/Revere to confluence with Chelsea River, Chelsea/Revere. (MA71-08) *(Class SB Water)*	Fecal Coliform*, Other, PCB in Fish Tissue	14
Mystic River - Amelia Earhart Dam, Somerville/Everett to confluence with Boston Inner Harbor, Chelsea/Charlestown (Includes Island End River). (MA71-03) *(Class SB(CSO) Water)*	Ammonia (Un-ionized), Fecal Coliform*, Foam/Flocs/Scum, Oil and Grease, Other, Dissolved Oxygen, PCB in Fish Tissue, Petroleum Hydrocarbons, Sediment Screening Value (Exceedance), Odor	3

Note: Impairments which (*) have an approved TMDL. Applicable TMDLs are identified in Section 6.0.

1.5 Interconnections

The City of Chelsea also has five locations where its MS4 connects with another MS4 under another municipality's jurisdiction, all of which are discharges from the City of Everett. There are no known interconnections that originate in Chelsea and discharge to another MS4.

1.6 Endangered Species and Historic Properties Determination

The 2016 MS4 Permit requires that Chelsea demonstrate that all activities regulated under this permit will not adversely affect endangered and threatened species or critical habitat, or impact federal historic properties on the National Register of Historic Properties (NRHP). The City must demonstrate that there is no critical habitat for any endangered species within its boundaries, and if such a habitat exists, that no best management practice shall interfere with that habitat. Chelsea must also certify that no discharge will affect a property that is listed or eligible for listing on the NRHP, that any such effects have written

acknowledgements from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other representative that such effects shall be mitigated, and written proof that any best management practices constructed under this permit will include measures to minimize harmful effects on these properties.

Through consultation with the US Fish & Wildlife Service (USFWS), it was determined that there are no threatened, endangered, or candidate species or critical habitats within the City of Chelsea, nor in proximity to Chelsea's stormwater system or discharges. Therefore, the City has determined that it can certify eligibility under USFWS Criterion A for coverage under the permit. A copy of the Information, Planning, and Conservation generated preliminary determination letter indicating that no listed species of critical habitat is present within the City of Chelsea is appended to the City's Notice of Intent included in Appendix D.

Chelsea can certify eligibility under Criterion A on their Notice of Intent for coverage under the permit because the City was previously covered under the 2003 MS4 Permit, and conditions have not changed since that determination. Chelsea does have multiple federal historic places, including several historic districts: Downtown Chelsea Residential Historic District (88000718), Chelsea Square Historic District (09000144), Naval Hospital Boston Historic District (73000851), Bellingham Square Historic District (85000030). Chelsea also has several historic properties: Chelsea Garden Cemetery (01000089), Kimball, C. Henry House (82004464), Bellingham-Cary House (74000908), and Congregation Agudath Shalom, also known as the Walnut Street Synagogue (93000283). These historic properties are located at a minimum of 1250 feet away from any impaired water body. It has been determined to be very unlikely that any disturbance would impact these properties. Prior to construction of any structural BMPs, the City will consult with the State Historic Preservation Officer by submitting a completed Project Notification Form to confirm that the proposed project will not impact any federal historic properties.

1.7 Increased Discharges

Any increased discharges (including increased pollutant loadings) through the MS4 to waters of the United States are subject to Massachusetts antidegradation regulations at 314 CMR 4.04. Section 2.1.2 of the 2016 MS4 Permit requires the City of Chelsea to comply with the provisions of 314 CMR 4.04 including information submittal requirements and obtaining authorization for increased discharges where appropriate. Any authorization by MassDEP for an increased discharge is required to be incorporated into this SWMP.

The City understands that there shall be no increased discharges, including increased pollutant loadings, from the MS4 to impaired waters listed in categories 5 or 4b on the most recent Massachusetts Integrated Report of Waters listed pursuant to Clean Water Act section 303(d) and 305(b), unless the City demonstrates that there is no net increase in loading from the MS4 to the impaired water of the pollutant(s) for which the waterbody is impaired. If necessary, the City of Chelsea will demonstrate compliance with this provision by either:

- Documenting that the pollutant(s) for which the waterbody is impaired is not present in the MS4's discharge and retaining documentation of this finding with the SWMP; or
- Documenting that the total load of the pollutant(s) of concern from the MS4 to any impaired portion of the receiving water will not increase as a result of the activity and retain documentation of this finding in the SWMP.

1.8 Surface Water Drinking Supplies

Section 3.0 of the MS4 Permit requires permittees to prioritize discharges to public drinking water supply sources in implementation of the SWMP. The City does not have any discharges to surface drinking water supply sources or their tributaries.

2.0 MINIMUM CONTROL MEASURES

2.1 Introduction

This section of the report provides a summary of the regulatory requirements for each of the six minimum control measures as defined under the MS4 General Permit. It also provides a summary of those stormwater management practices that the City currently employs. As part of the requirements of the NOI submitted to EPA on September 26, 2018, as included in Appendix D, the City has established a list of the BMPs that it plans to implement in order to comply with each of the six minimum control measures. These BMPs will be implemented over the next five years (i.e. the permit term); however, the City will have up to 20 years to implement some of the permit requirements as indicated. The City's progress with respect to implementation of the BMPs, and other stormwater related activities, are summarized in annual reports submitted to EPA in accordance with the MS4 Permit. Under the 2003 MS4 Permit, the City made significant progress in compliance with many of the elements now required by the 2016 MS4 Permit. The City of Chelsea submitted annual reports to EPA, in compliance with the 2003 MS4 Permit, between 2004 and 2018. Links to these reports are included in Appendix E. Annual Reports submitted after 2018 under the 2016 MS4 Permit are included in Appendix J.

The BMPs selected for each minimum control measure are summarized and briefly described in this section. Specific details for each BMP including measurable goals, implementation dates and individuals responsible for implementation are stated in each of the respective sections. The City Manager, Board of Health, Planning & Development Department, and the Department of Public Works (DPW) will be responsible for implementation and/or future enforcement of each of the BMPs for the six minimum control measures.

Compliance with requirements of the permit related to water quality limited waters and approved Total Maximum Daily Loads (TMDLs) is included in Section 6.

Checklists outlining requirements for Permit Years 1 through 5 are included in Appendix F.

2.2 Permit Requirements and Implementation Timeframes (Permit Year 3 Updates)

2.2.1 *Public Education and Outreach*

The public education and outreach minimum control measure requires the City to make educational information available to the public and other stakeholders specified by the permit. Chelsea has been participating in public education and outreach activities since the 2003 MS4 Permit was enacted.

Regulatory Requirement:

Section 2.3.2 of the 2016 MS4 General Permit requires permittees to "implement an education program that includes educational goals based on stormwater issues of significance within the MS4 area. The ultimate objective of a public education program is to increase knowledge and change behavior of the public so that pollutants in stormwater are reduced."

Existing City Practices:

Chelsea provides public education and outreach to residents on a variety of subjects through multiple medias including, but not limited to water and sewer bill stuffers, bulletin boards in the schools and city offices, the City's website, the local cable access channel, and the local newspaper. Chelsea also provides public education and outreach materials in Spanish and other languages making up its population. Some information relating to stormwater topics has previously been distributed in this manner, and the City will continue to expand this effort. Example public education and outreach materials from the City's website are provided in Appendix G of this document.

Chelsea DPW maintains its own web page, www.chelseama.gov/public-works. On the main page, there are links to Water and Sewer Services which further links to a Stormwater Management Services page. The City of Chelsea also works with the Mystic River Watershed Association (MyRWA) to best utilize public education efforts.

In addition to all the work being performed by the City at present, this new iteration of the permit requires additional public education measures. Chelsea must distribute two targeted messages within five years to the following audiences, spaced at least one year apart for each audience:

1. Residents
2. Businesses, Institutions and Commercial Facilities
3. Developers (Construction)
4. Industrial Facilities

In order to accomplish this, the City will implement the following BMPs:

BMP: Meeting
Description: Continue partnership program with GreenRoots Inc. and MyRWA.
Targeted Audiences: Residents
Responsible Department/Parties: DPW
Measurable Goals: DPW and partners will conduct public forums on a yearly basis and track the number of attendees.
Message Dates: Completed during Permit Year 1 (FY2019) and ongoing throughout the permit term.

BMP: Web Page
Description: Provide stormwater educational information on the City's website addressing stormwater runoff information.
Targeted Audiences: Residents
Responsible Department/Parties: DPW
Measurable Goals: DPW will continue to update the City's Stormwater Management webpage with stormwater runoff information and links to relevant resources targeted at residents and will track the number of visitors to the site.
Message Dates: Completed during Permit Year 2 (FY2020) and materials to be maintained throughout the permit term.

BMP: Social Media (Added after NOI)
Description: Publish information to The City's official Facebook page with tips about stormwater management and links to additional information, including posts about proper pet waste management.

Targeted Audiences: Residents
Responsible Department/Parties: DPW
Measurable Goals: Track the number of followers of the City's Facebook page.
Message Dates: Completed during Permit Years 1 and 2 and to be continued throughout the permit term.

BMP: Brochures/ Pamphlets
Description: Distribute educational materials regarding good housekeeping practices, including equipment, inspection, waste disposal, dumpster maintenance, use and storage of de-icing materials, and parking lot sweeping.
Targeted Audiences: Industrial Facilities
Responsible Department/Parties: DPW
Measurable Goals: Distribute brochures and maintain a list of all recipients.
Message Dates: Implemented during Permit Year 3 (FY2021).

BMP: Brochures/ Pamphlets
Description: Distribute brochures to prospective developers and contractors outlining sediment and erosion control requirements during construction.
Targeted Audiences: Developers (Construction)
Responsible Department/Parties: Planning Department
Measurable Goals: Make brochures available to developers in the Planning Department. Track number of brochures distributed. Verify that sediment and erosion control practices are being followed during site inspections.
Message Dates: Was not implemented during Permit Year 3 (FY2021) and is to be implemented in Permit Year 4 (2022).

BMP: Brochures/ Pamphlets
Description: Provide stormwater educational pamphlets addressing lawn/grounds maintenance, use of salt/ de-icing materials, etc.
Targeted Audiences: Businesses, Institutions, and Commercial Facilities
Responsible Department/Parties: DPW
Measurable Goals: Distribute pamphlets to businesses, institutions and commercial facilities, and maintain a list of all recipients.
Message Dates: Implemented during Permit Year 3 (FY2021).

BMP: Brochures/ Pamphlets
Description: Distribute information to industrial facilities on compliance with EPA's Multi-Sector General Permit.
Targeted Audiences: Industrial Facilities
Responsible Department/Parties: DPW
Measurable Goals: Track number of industrial facilities reached.
Message Dates: To be implemented during Permit Year 4 (FY2022).

BMP: Brochures/ Pamphlets
Description: Make available to developers information on green infrastructure practices for construction projects.
Targeted Audiences: Developers (Construction)
Responsible Department/Parties: Planning Department

Measurable Goals: Make brochures available to developers in the Planning Department. Track number of brochures distributed.
Message Dates: To be implemented during Permit Year 4 (FY2022).

BMP: Web Page
Description: Update the City's website to include information on vehicle maintenance, fertilizer use, parking lot sweeping, ice removal optimization, and waste/material storage for local businesses.
Targeted Audiences: Businesses, Institutions and Commercial Facilities
Responsible Department/Parties: DPW
Measurable Goals: Track number of visits to web site.
Message Dates: To be completed during Permit Year 5 (FY2023) and materials to be maintained throughout the permit term.

Public education materials used in the implementation of the City's SWMP are included in Appendix G.

2.2.2 *Public Involvement / Participation*

Regulatory Requirement:

Section 2.3.3 of the 2016 MS4 Permit requires the permittee to "provide opportunities to engage the public to participate in the review and implementation of the permittee's SWMP." Public participation benefits the program by increasing public support, including additional expertise and involving community groups/organizations.

Existing City Practices:

The City encourages public involvement within the community, and residents participate in a number of different ways. Due to its urban setting, Chelsea has a particular focus on programs aimed at participation and involvement at the youth level. Involvement with stormwater related activities is and will continue to be coordinated through existing organizations, including GreenRoots Inc., MyRWA, and the City's internal youth and community groups.

BMP: SWMP Review
Description: The Engineering Department will make the SWMP available to the public and provide for public comment annually.
Responsible Department/Parties: Engineering
Measurable Goals: Allow annual review of stormwater management plan by posting of stormwater management plan on City website.
Message Dates: The SWMP was made publicly available during Permit Years 1 and has remained accessible to the public since. The most recent SWMP update is posted after its annual update.

BMP: Meetings
Description: Hold coordination meetings with MyRWA.
Responsible Department/Parties: DPW
Measurable Goals: Attend Mystic River Steering Committee meetings on a quarterly basis and continue coordination with Mystic River Watershed Association.
Message Dates: Coordination with MyRWA continues from Permit Year 1 (FY2020) and is to be maintained throughout the permit term.

BMP: Volunteer Water Quality Monitoring
Description: DPW facilitates teams of volunteers to perform water quality monitoring in selected areas.
Responsible Department/Parties: DPW
Measurable Goals: Continue relationship with MyRWA.
Message Dates: To be implemented during Permit Year 1 (FY2019) and continued for the duration of the permit. Volunteer coordination in Permit Years 2 and 3 (FY2020, FY 2021) was limited due to COVID-19 restrictions.

BMP: Collection Days
Description: Hold household hazardous waste and used oil collection day.
Responsible Department/Parties: DPW
Measurable Goals: Continue to hold Household Hazardous Waste Day in April at the Chelsea High School's Carter Street Parking Lot for Chelsea residents. Track amount and type of waste collected.
Message Dates: Held annually during Permit Year 1 (FY2019) and Permit Year 2 (FY2020), and to be continued for the duration of the permit. The Household Hazardous Waste Day for Permit Year 3 (2021) is scheduled for Saturday, July 17, 2021 from 9 AM-1 PM. Location: Parking lot at the Mary C. Burke Elementary Complex, 300 Crescent Ave.

2.2.3 *Illicit Discharge Detection and Elimination*

Regulatory Requirement:

Section 2.3.4 of the 2016 MS4 General Permit requires the permittee to develop a written Illicit Discharge Detection and Elimination (IDDE) program. The IDDE program is designed to "systematically find and eliminate sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges."

Existing City Practices:

Chelsea developed and began implementation of a comprehensive IDDE Program as a response to a 2009 Administrative Consent Order from the EPA to address storm drain discharges of pollutants into Mill Creek, Chelsea Creek, the Island End River, and the Mystic River. The IDDE Program was included in the previous iteration of Chelsea's SWMP, completed in 2010, and is discussed in detail later in this SWMP. The City also updated its existing sewer and drain ordinances in October 2009 to provide more specific provisions for prevention and enforcement of illicit discharges. Lastly, the City will continue their effort to extend IDDE educational outreach by making information available to the public through the City's website and continue to train employees on illicit discharge detection and elimination.

These permit requirements can be achieved through implementation of the following BMPs:

BMP: SSO Inventory
Description: Develop inventory of all Sanitary Sewer Overflows (SSO) that have occurred in the last 5 years in accordance with permit conditions.
Responsible Department/Parties: DPW
Measurable Goals: Complete within 1 year of effective date of permit, and report SSOs annually.

Message Dates: Completed during Permit Year 1 (FY2019) and is updated annually. It is included in Appendix K.

BMP: Storm Sewer System Map
Description: Continue to update storm/ drainage map annually during IDDE field investigations or as changes are otherwise identified.
Responsible Department/Parties: DPW
Measurable Goals: Continue annual map updates as a result of IDDE field investigations or as changes are otherwise identified.
Message Dates: Annual map updates were completed in Permit Years 1, 2, and 3 and are to be continued annually throughout the duration of the permit term.

BMP: Written IDDE Program
Description: Update existing written IDDE plan as needed to satisfy all permit requirements.
Responsible Department/Parties: Engineering
Measurable Goals: Complete update within 1 year of the effective date of permit and update as required thereafter.
Message Dates: Completed during Permit Year 1 (FY2019).

BMP: Implement IDDE Program
Description: Continue ongoing catchment investigations according to program and permit conditions.
Responsible Department/Parties: Engineering
Measurable Goals: Complete 10 years after effective date of permit. Continue to track annually the number of illicit connections that are identified and removed.
Message Dates: IDDE Program was implemented prior to Permit Year 1 (FY 2019) and will continue throughout the duration of the permit term.

BMP: Employee Training
Description: Train employees on IDDE implementation.
Responsible Department/Parties: DPW
Measurable Goals: Train annually. Track number of employees trained.
Message Dates: Completed in November 2019 and September 2020. To be continued annually for the duration of the permit. Training for 2021 is scheduled for the first full week in July.

BMP: Conduct Dry Weather Screening
Description: Continue dry weather screening and sampling procedures in accordance with permit conditions.
Responsible Department/Parties: Engineering
Measurable Goals: Complete all dry weather screening and sampling within 3 years of permit effective date. Track number of outfalls that are screened.
Message Dates: Continue annual dry weather screening, as required per Chelsea's ACO. Additional parameter dry weather screening per MS4 requirements was completed in 2018. Dry weather screening has been completed for Permit Year 1 (FY 2019) and Permit Year 2 (FY2020) and will be completed for Permit Year 3 (FY2021) when sampling conditions allow.

BMP: Conduct Wet Weather Screening
Description: Continue wet weather outfall screening and sampling procedures in accordance with permit conditions.
Responsible Department/Parties: Engineering
Measurable Goals: Complete all wet weather screening and sampling within 10 years of permit effective date. Continue to track number of outfalls that are screened and sampled annually.
Message Dates: Continue annual wet weather screening, as required per Chelsea's ACO. Additional parameter wet weather screening per MS4 requirements was completed in 2018. Wet weather screening has been completed for Permit Year 1 (FY 2019) and Permit Year 2 (FY2020) and will be completed for Permit Year 3 (FY2021) when sampling conditions allow.

BMP: Ongoing Screening
Description: Conduct dry and wet weather screening (as necessary).
Responsible Department/Parties: Engineering
Measurable Goals: Complete outfall screening upon completion of IDDE program implementation.
Message Dates: Screening has been completed for Permit Year 1 (FY 2019) and Permit Year 2 (FY2020) and will continue annually, per Chelsea's ACO.

BMP: IDDE Ordinance/Bylaw
Description: Continue to prohibit illicit discharges as outlined in the City's ordinances and take enforcement actions as needed.
Responsible Department/Parties: DPW
Measurable Goals: Report the number of enforcement actions taken annually.
Message Dates: Completed in Permit Year 1 (FY2019).

BMP: Catchment Investigation Procedures
Description: Develop written catchment investigation procedures and incorporate into the IDDE Plan.
Responsible Department/Parties: DPW
Measurable Goals: Amend written IDDE Plan as needed with catchment investigation procedures.
Message Dates: Completed in Permit Year 1 (FY2019

BMP: Assessment and Priority Ranking of Outfalls/ Interconnections
Description: Assess and rank the potential for all catchments to have illicit discharges.
Responsible Department/Parties: DPW/ Health Department
Measurable Goals: Determine ranking and priority order for screening outfalls and interconnections.
Message Dates: Completed prior to Permit Year 1 (FY2019).

BMP: Follow-up Ranking
Description: Update catchment prioritization and ranking as additional dry weather screening information becomes available.
Responsible Department/Parties: Engineering
Measurable Goals: The outfall ranking described above shall be amended by the City as new sampling results become available after the first round of dry-weather screening and sampling.
Message Dates: Completed in Permit Year 1 (FY2019) and Permit Year 2 (FY2020) and to be annually updated throughout the duration of the permit term following annual sampling.

2.2.4 *Construction Site Stormwater Runoff Control*

Regulatory Requirement:

Section 2.3.5 of the 2016 MS4 Permit requires the permittee to create a program to "minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a water of the US through the permittee's MS4." The permittee will conduct site plan reviews, site inspections and include procedures for public involvement.

Existing City Practices:

Construction site runoff control (CSRC) is accomplished in a variety of methods in Chelsea. Projects disturbing one acre or more require a NPDES General Permit for Construction Activities, and Chelsea requires that all contractors show proof that they have applied for coverage under this permit prior to starting construction. CSRC for all projects governed by the Wetlands Protection Act, regardless of size, is regulated by the Chelsea Conservation Commission. Simple utility connection and street opening permits are issued through the DPW and Building Permits are issued through the Inspectional Services Department (ISD). Throughout construction, staff members from appropriate city departments perform site inspections related to their area of expertise to ensure that requirements are being met. The City also recently updated its existing ordinances to provide specific provisions with respect to CSRC.

To attain compliance with the 2016 MS4 Permit, the City will implement the following BMPs to supplement the guidelines set forth in their ordinances.

BMP: Site Inspection and Enforcement of Erosion and Sediment Control (ESC) Measures
Description: Develop written procedures for site inspections and enforcement.
Responsible Department/Parties: Planning Department, Engineering
Measurable Goals: Report on the number of site inspections and enforcement actions annually.
Message Dates: Completed in Permit Years 1, 2, and 3 (FY2019) and to be annually updated throughout the duration of the permit term).

BMP: Site Plan Review
Description: Develop written procedures for site plan review that meet permit requirements and begin implementation.
Responsible Department/Parties: Planning Department, Engineering
Measurable Goals: Report on the number of site plan reviews conducted, inspections conducted, and enforcement actions taken annually.
Message Dates: Completed in Permit Years 1, 2, and 3 (FY2019) and to be annually updated throughout the duration of the permit term).

BMP: Erosion and Sediment Control
Description Continue to require construction operators to implement a sediment and erosion control program and enhance program as needed to meet permit requirements. Review and update existing ordinance as needed to ensure that construction operators implement a sediment and erosion control program that includes BMPs that are appropriate for conditions at the construction site in accordance with permit requirements.
Responsible Department/Parties: Engineering, Planning Department

Measurable Goals: Continue to enforce existing sediment and erosion control requirements, and update regulations as needed.
Message Dates: Completed in Permit Years 1, 2, and 3 (FY2019) and to be annually updated throughout the duration of the permit term).

BMP: Waste Control
Description: Update existing ordinance to include requirements for construction site operators to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.
Responsible Department/Parties: Planning Department
Measurable Goals: Review existing practices and modify if necessary.
Message Dates: Completed in Permit Year 1 (FY2019).

2.2.5 Post-Construction Stormwater Management

Regulatory Requirement:

Section 2.3.6 of the 2016 MS4 Permit requires the permittee to require developers to "reduce the discharge of pollutants found in stormwater through the retention or treatment of stormwater after construction on new or redeveloped sites." In this case, a site is defined as the "area extent of construction activities which includes but is not limited to the creation of new impervious cover and improvement of existing impervious cover." New Development is defined as construction activity that results in a total earth disturbance area equal to or greater than one acre on land that did not have any impervious area before work began. Redevelopment is defined as any construction activity that disturbs greater than or equal to one acre and does not meet the requirements to be designated as new development.

Existing City Practices and Amendments:

Post-Construction Runoff Control (PCRC) is primarily regulated by the Department of Planning & Development through City Ordinances, with input from the DPW and ISD. Where appropriate, the City will also enlist the services of a consulting engineer to provide detailed review of proposed projects. Due to its old and urban nature, there is no new development in Chelsea; everything is redevelopment. Site Plan Review provisions in the Zoning Ordinance govern all applications to "build, alter or expand any building, structure or use." Stormwater management for proposed redevelopment is handled through the Site Plan Review process, including compliance with City design standards, formal public hearings, and requirements for structural and non-structural BMPs. In addition to the Site Plan Review process, projects falling under the Wetlands Protection Act also require review and approval by the Chelsea Conservation Commission. After the review process has been completed, any necessary changes are then incorporated into the construction drawings prior to issuance of any permits for the work.

The City updated its existing ordinances in 2009 to provide written provisions with respect to PCRC. The revised ordinance included requirements for the use of BMPs on all future developments of public or private property, including provisions for proper O&M of structural BMPs, and also included references directly linking the City's ordinances to federal and state stormwater regulatory mechanisms to ensure that requirements remain current.

In order to comply with the requirements of the 2016 MS4 Permit, the City shall implement the following BMPs:

BMP: As-Built Plans for On-Site Stormwater Control
Description: Update existing ordinance to require submission of as-built drawings within two years, and long term operation and maintenance of BMPs as needed to meet permit requirements.
Responsible Department/Parties: Planning Department, Engineering
Measurable Goals: Review existing practices for submission of as-built plans and long-term O&M for completed projects and modify as necessary.
Message Dates: Completed in Permit Year 3 (FY2021).

BMP: Target Properties to Reduce Impervious Areas
Description: Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually.
Responsible Department/Parties: Engineering
Measurable Goals: Report annually on retrofitted properties.
Message Dates: Complete within 4 years of the permit effective date (FY2022).

BMP: Allow Green Infrastructure Practices
Description Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist.
Responsible Department/Parties: Planning Department, Engineering
Measurable Goals: Review existing practices and implement recommendations of report, where feasible.
Message Dates: Complete within 4 years of the permit effective date (FY2022).

BMP: Street Design and Parking Lot Guidelines
Description: Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.
Responsible Department/Parties: Engineering, Planning Board
Measurable Goals: Complete assessment and implement recommendations of the report where feasible.
Message Dates: Complete within 4 years of the permit effective date (FY2022).

BMP: Ensure the Requirements of the MA Stormwater Handbook are met
Description: Review, and update existing regulations as needed, to meet retention and treatment requirements of the permit, and require compliance with the Stormwater Management Standards.
Responsible Department/Parties: Engineering, Planning Board
Measurable Goals: Adopt, amendment, or modification of a regulatory mechanism to meet permit requirements.
Message Dates: Completed in Permit Year 3 (FY2021).

2.2.6 Pollution Prevention / Good Housekeeping

Regulatory Requirement:

Section 2.3.7 of the 2016 MS4 Permit requires the permittee to "implement an operations and maintenance program for permittee-owned operations that has a goal of preventing or reducing pollutant runoff and protecting water quality form all permittee-owned operations."

This minimum control measure includes a training component and has the ultimate goal of preventing or reducing stormwater pollution from municipal activities and facilities such as parks and open spaces, buildings and facilities, vehicles and equipment, and providing for the long-term operation and maintenance of MS4 infrastructure.

Existing City Practices:

A primary component of Chelsea's pollution prevention program is regular street sweeping. Each street in Chelsea is swept twice each month between March 1st and December 31st. To maximize the benefits of the sweeping program, parking is prohibited during sweeping and curbside rubbish removal follows sweeping by one day. The street sweeping program has been in effect for over ten years. Chelsea also maintains municipal trash receptacles strategically located throughout the City, which are emptied four times per week, to reduce litter. Under their contract for Operation & Maintenance (O&M) of the stormwater collection system, Chelsea cleans at least 450 catch basins each year to remove accumulated settleable and floatable solids.

Chelsea has performed audits of all its municipally-owned properties located within the MS4 area to assess pollution prevention and good housekeeping efforts associated with its municipal operations. The City has also provided formal training to municipal employees to increase awareness of pollution prevention and good housekeeping.

To achieve compliance with the 2016 MS4 Permit, catch basins must be no more than 50% full at any given time. To achieve this, all structures must be cleaned, measured, logged and monitored to prevent excessive sediment accumulation. The City has purchased a CCTV truck to help identify areas for more frequent maintenance. These measures are summarized in the following BMP practices:

BMP: O&M Procedures
Description: Create written O&M procedures addressing proper storage of materials, lawn maintenance and landscaping activities, protective practices, use and storage of petroleum products, employee training, waste management procedures for buildings and facilities, location of fueling areas, evaluation of possible leaks, and storage locations of City-owned vehicles and equipment.
Responsible Department/Parties: DPW
Measurable Goals: Review existing procedures and implement.
Message Dates: Completed in 2020.

BMP: Inventory all Permittee-Owned Property
Description: Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment and update annually.
Responsible Department/Parties: DPW
Measurable Goals: Update existing inventory from the November 2009 Audit.
Message Dates: Completed in 2020 and to be updated annually.

BMP: Infrastructure O&M
Description: Establish and implement a program for repair and rehabilitation of MS4 infrastructure.
Responsible Department/Parties: DPW
Measurable Goals: Review existing programs and update as necessary.
Message Dates: Completed in 2020 and to be updated annually.

BMP: Stormwater Pollution Prevention Plan (SWPPP)
Description: Create SWPPP for DPW maintenance garage.
Responsible Department/Parties: DPW
Measurable Goals: Provide inspections quarterly and training annually thereafter. Track number of employees trained annually.
Message Dates: Completed in 2020 and to be updated annually.

BMP: Catch Basin Cleaning
Description: Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule.
Responsible Department/Parties: DPW
Measurable Goals: Clean catch basins on established schedule and report number of catch basins cleaned and volume of material removed annually.
Message Dates: An informal catch basin cleaning schedule has been in place prior to 2018. A catch basin cleaning monitoring program was implemented in 2021.

BMP: Street Sweeping Program
Description: Continue to sweep all streets and permitee-owned parking lots at least once a year in accordance with permit conditions.
Responsible Department/Parties: DPW
Measurable Goals Continue ongoing program of sweeping every street twice a month from April to November, and report annually the miles of roadway swept or the volume of material removed.
Message Dates: Completed in 2019 and to be continued for the duration of the permit term.

BMP: Road Salt Use Optimization Program
Description: Establish and implement a program to optimize the use of road salt, while maintaining public safety standards.
Responsible Department/Parties: DPW
Measurable Goals: Implement salt use optimization during deicing season.
Message Dates: Completed in Permit Year 1 (FY2019).

BMP: Catch Basin Optimization
Description: Develop and implement a plan to optimize inspection, cleaning, and maintenance of catch basins to ensure that permit conditions are met.
Responsible Department/Parties: DPW
Measurable Goals: Complete and implement.
Message Dates: A standard operating procedure for catch basin cleaning was implemented in 2020. An optimization plan is targeted for Permit Year 4 (FY2022).

3.0 REGULATORY STANDARDS

3.1 Introduction

In order to prevent pollutants from entering the drainage system and being discharged to the environment with stormwater, Chelsea has implemented a wide variety of Best Management Practices (BMPs) categorized under the six minimum control measures as discussed earlier in this document. The control measures for Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, and Post-Construction Stormwater Management are focused on improving stormwater pollution prevention into the future by ensuring that all new construction includes appropriate requirements for BMPs. To ensure post-construction stormwater management, the City previously developed and adopted the following under the 2003 MS4 Permit.

- Regulatory mechanisms establishing legal authority, prohibitions and requirements
- Design and construction standards governing stormwater infrastructure
- Requirements for long-term Operation and Maintenance (O&M) of structural BMPs.

Additional information regarding the City's current regulatory mechanisms adopted under the 2003 MS4 Permit, as well as the status of the City's compliance with the 2016 MS4 Permit regulatory requirements are included in this section.

3.2 Existing Stormwater Regulatory Mechanisms

In 2009, under the 2003 MS4 Permit, the City made revisions to existing City ordinances to address the requirements of the NPDES Phase II permit, and to improve stormwater management city-wide. The majority of revisions are contained in Article V. Sewers and Storm Drains of Chapter 30 – Water and Sewer Systems of Chelsea's Code of Ordinances. A copy of this Ordinance is included in Appendix H.

3.3 Review of Regulatory Mechanisms for Compliance with the 2016 MS4 Permit

A comprehensive review was conducted to evaluate whether the City's existing regulatory mechanisms for construction and post-construction stormwater management comply with the 2016 MS4 Permit requirements, and identify what modifications, if any, are needed to bring the City into compliance. The findings are discussed below.

3.3.1 Construction Site Stormwater Runoff Control

The 2016 MS4 Permit builds on the requirements of the 2003 MS4 Permit for construction site runoff control and requires the following (Year 1 requirements):

Site Inspection & Enforcement

Permit Requirement: Development of written procedures for site inspections and enforcement of sediment and erosion control measures. These procedures shall clearly define who is responsible for site inspections as well as who has authority to implement enforcement procedures. The program shall provide that the permittee may, to the extent authorized by law, impose sanctions to ensure compliance with the local program. These procedures and regulatory authorities shall be documented in the SWMP.

Excerpts from Chelsea's Regulations that Support Permit Requirement:
Section 32-224. of the City's Storm Drains Ordinance generally outlines the requirements for site inspections of systems designed to manage stormwater prior to discharge to the public drain, though no specific inspection procedures are included in the ordinance. Inspection procedures should be maintained at City Hall per the Department of Public Works or the Planning Board. This Section clearly states that the owner is responsible for annual inspections performed by the manufacturer. The director, defined as the director of public works, has the ability to enforce maintenance, repair, or replacement of the systems.

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.

"Sec. 30-224. - Maintenance, cleaning and inspection of systems to manage stormwater.

...

(a) Where systems are provided on a property to treat or otherwise manage stormwater prior to discharge to the public drain, public combined sewer, or natural outlet, the system shall be maintained continuously in satisfactory and effective operation by the owner at the owner's expense, including all maintenance and cleaning of the system as may be recommended by the system manufacturer, and annual inspection of the system by a person authorized by the manufacturer. Whenever such systems become clogged, broken, obstructed, out of order, unfit for drainage purposes, or detrimental to the public drain or to the receiving water, the owner, agent, occupant or person having charge of any such system shall, when directed by written notice from the director, remove, reconstruct, alter, cleanse or repair the system, as the conditions thereof require. In case of neglect or refusal to comply with such notice within five days after the same is given, the director may cause the system to be removed, reconstructed, repaired, altered or cleaned, as the director may deem expedient, at the expense of the owner, agent, occupant or other person so notified, who shall also be liable to pay the penalty provided for in this chapter.

(b) The owner of such facilities shall maintain a written record describing the date and type of all cleaning, maintenance and inspections performed, and the identity and qualifications of the person who performed such tasks. Records shall be maintained for six years and shall be made available for inspection and copying by the DPW. By March 31 of each year, the owner shall submit to the DPW a written record of the date and type of all maintenance, cleaning, and inspection performed during the prior calendar year. Records shall be specific to the site, system, and work performed. The director may reject any records that are not site specific."

Sediment and Erosion Control BMPs

Permit Requirement: Requirements for construction site operators performing land disturbance activities within the MS4 jurisdiction that result in stormwater discharges to the MS4 to implement a sediment and erosion control program that includes BMPs appropriate for the conditions at the construction site. The program may include references to BMP design standards in state manuals, such as the Massachusetts Stormwater Handbook or design standards developed by the MS4. EPA supports and encourages the use of design standards in local programs. Examples of appropriate sediment and erosion control measures for construction sites include local requirements to:

- *Minimize the amount of disturbed area and protect natural resources*
- *Stabilize sites when projects are complete, or operations have temporarily ceased*
- *Protect slopes on the construction site*
- *Protect all storm drain inlets and armor all newly constructed outlets*
- *Use perimeter controls at the site*

- *Stabilize construction site entrances and exists to prevent off-site tracking*
- *Inspect stormwater controls at consistent intervals*

Excerpts from Chelsea's Ordinances that Support Permit Requirement: Within its Water and Sewer Systems' Ordinance, Chelsea requires that owners of property wishing to establish a new or repair an old connection to the MS4 or otherwise discharge stormwater to an outlet, must first prepare and implement a sediment and erosion control plan.

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.
"Sec. 30-223. - Stormwater management.
(a) All owners of existing properties shall implement industry standard structural and nonstructural best management practices (BMPs) to minimize the discharge of pollutants carried by stormwater runoff from their properties to any public drain or natural outlet.
(b) Every owner seeking to establish a new connection to the public drain or combined sewer, or natural outlet; to reconstruct, repair or modify an existing connection for a facility undergoing expansion; or as otherwise deemed necessary by the director under this chapter, may be required to do the following:
(1) Prepare and implement a stormwater management plan that identifies regulatory, structural, administrative, managerial, maintenance, physical and chemical measures or devices designed to prevent the discharge of pollutants to stormwater.
(2) Prepare and implement an erosion and sedimentation control plan to prevent the erosion of soil and the introduction of sediment into the public sewers and drains, during and after construction."

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.
"Sec. 30-220. - Pollution prevention in the stormwater collection system.
In order to maintain the city's efforts in prohibiting pollutants from being discharged into its waterways the following is required:
...
(2) The proponents of all construction projects within the city must submit to DPW for approval a plan to manage sediment and erosion control, which includes stormwater and drainage, at the proposed location prior to or in conjunction with its building permit application. No building permits shall be approved and issued until such plan has been approved by the director."

Control of Wastes

Permit Requirement: Requirements for construction site operators within the MS4 jurisdiction to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes. These wastes may not be discharged to the MS4.

Excerpts from Chelsea's Ordinances that Support Permit Requirement: Construction waste is explicitly referenced in the Sewers and Storm Drains Ordinance. It is made clear that the City will take action to prevent non-stormwater discharges to the City's MS4 at the cost of the property owner.

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.

"Sec. 30-219. - Use of the public drains.

(a) No person shall directly or indirectly discharge or cause to be discharged any pollutants, as defined by federal and state surface water quality standards, to any building storm drain, public drain or natural outlet. No person shall directly or indirectly discharge or cause to be discharged, any sewage or any other waters not composed entirely of stormwater into a building storm drain or public drain except as provided in subsection (c) of this section. Each user shall provide reasonable and appropriate protection from any discharge, including accidental discharges, in violation of this chapter or any federal or state laws or regulations. No person shall directly or indirectly dump, discharge or cause to be discharged into any catchbasin, any solid waste, construction debris, paint or painting product, antifreeze, hazardous waste, oil, gasoline, grease and all other automotive and petroleum products, solvents and degreasers, drain cleaners, commercial and household cleaners, soap, detergent, ammonia, food and food waste, grass or yard waste, leaves, animal feces, dirt, sand, gravel or other pollutant. Any person determined by the director to be responsible for the direct or indirect discharge of any of the substances stated in this subsection to a catchbasin may be held responsible for cleaning the catchbasin, paying the cost for such cleaning or for paying any penalties assessed by the DPW."

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.

"Sec. 30-220. - Pollution prevention in the stormwater collection system.

In order to maintain the city's efforts in prohibiting pollutants from being discharged into its waterways the following is required:

(1) In accordance with the city's illicit discharge detection and elimination plan nonstormwater discharges to the city's small MS4 system are strictly prohibited. Failure to comply with this section will require the immediate stoppage of such discharge and removal of any condition causing such discharge upon the order of the director or designee. If such orders are not complied with within seven days of issuance, the city will take such action that is necessary to remedy the situation and the cost of such action shall be the sole responsibility of the property owner. "

Site Plan Review Inspection and Enforcement

Permit Requirement: Development of written procedures for site plan review, inspection and enforcement. The site plan review procedure shall include a pre-construction review by the permittee of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned BMPs to be used to manage runoff created after development. The review procedure shall incorporate procedures for the consideration of potential water quality impacts, and procedures for the receipt and consideration of information submitted by the public. The site plan review procedure shall also include evaluation of opportunities for use of low impact design and green infrastructure. When the opportunity exists, the permittee shall encourage project proponents to incorporate these practices into the site design. The procedures for site inspection conducted by the permittee shall include the requirement that inspections occur during construction of BMPs as well as after construction of BMPs to ensure they are working as described in the approved plans, clearly defined procedures for inspections including qualifications necessary to perform the inspections, the use of mandated inspections forms if appropriate, and procedure for tracking the number of site reviews, inspections, and enforcement actions.

Excerpts from Chelsea's Regulations that Support Permit Requirement: Chelsea's Sewers and Storm Drains Ordinance requires that written records of all maintenance and inspections be kept by the owner of stormwater management systems and provided to the DPW yearly. Inspections must be performed yearly by a party approved by the manufacturer. However, it would be beneficial to include written inspection procedures for Sediment and Erosion Control inspections.

> Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.
> *"Sec. 30-224. - Maintenance, cleaning and inspection of systems to manage stormwater.*
> ...
> *(a) Where systems are provided on a property to treat or otherwise manage stormwater prior to discharge to the public drain, public combined sewer, or natural outlet, the system shall be maintained continuously in satisfactory and effective operation by the owner at the owner's expense, including all maintenance and cleaning of the system as may be recommended by the system manufacturer, and annual inspection of the system by a person authorized by the manufacturer. Whenever such systems become clogged, broken, obstructed, out of order, unfit for drainage purposes, or detrimental to the public drain or to the receiving water, the owner, agent, occupant or person having charge of any such system shall, when directed by written notice from the director, remove, reconstruct, alter, cleanse or repair the system, as the conditions thereof require. In case of neglect or refusal to comply with such notice within five days after the same is given, the director may cause the system to be removed, reconstructed, repaired, altered or cleaned, as the director may deem expedient, at the expense of the owner, agent, occupant or other person so notified, who shall also be liable to pay the penalty provided for in this chapter.*
> *(b) The owner of such facilities shall maintain a written record describing the date and type of all cleaning, maintenance and inspections performed, and the identity and qualifications of the person who performed such tasks. Records shall be maintained for six years and shall be made available for inspection and copying by the DPW. By March 31 of each year, the owner shall submit to the DPW a written record of the date and type of all maintenance, cleaning, and inspection performed during the prior calendar year. Records shall be specific to the site, system, and work performed. The director may reject any records that are not site specific."*

Overall Compliance:
Construction site stormwater runoff control is well documented. Chelsea's ordinances outline requirements for sediment and erosion control, control of wastes, plan review, inspections, and enforcement mechanisms. Chelsea may seek to augment its ordinance by further documenting its review and inspection procedures in separate, written documents.

3.3.2 *Post-Construction Stormwater Management*

The 2016 MS4 Permit builds on the requirements of the 2003 MS4 Permit for post construction runoff from new development and redevelopment and requires the following (Year 2 requirements):

Low Impact Development

Permit Requirement: Low Impact Development (LID) site planning and design strategies must be used to the maximum extent feasible.

Excerpts from Chelsea's Regulations that Support Permit Requirement: Chelsea's Water and Sewer Systems Ordinance requires or encourages that Low Impact Development planning and design be utilized to the maximum extent feasible.

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.
"Sec. 30-220. - Pollution prevention in the stormwater collection system.

In order to maintain the city's efforts in prohibiting pollutants from being discharged into its waterways the following is required:

(1)In accordance with the city's illicit discharge detection and elimination plan nonstormwater discharges to the city's small MS4 system are strictly prohibited. Failure to comply with this section will require the immediate stoppage of such discharge and removal of any condition causing such discharge upon the order of the director or designee. If such orders are not complied with within seven days of issuance, the city will take such action that is necessary to remedy the situation and the cost of such action shall be the sole responsibility of the property owner.

(2)The proponents of all construction projects within the city must submit to DPW for approval a plan to manage sediment and erosion control, which includes stormwater and drainage, at the proposed location prior to or in conjunction with its building permit application. No building permits shall be approved and issued until such plan has been approved by the director.

(3)The proponents of all development and redevelopment projects within the city must submit to DPW for approval a plan to manage post construction runoff at the proposed location prior to or in conjunction with its building permit application to DPW. No occupancy permits shall be issued by the inspectional services department until such plan has been approved by the director and such approval has been communicated to the inspectional services department. The plan must include provisions for low impact development (LID) site planning and design strategies to be used to the maximum extent feasible. Applicants shall address each of the following LID principles:

a .Preservation of natural areas
b. Tree protection
c. Vegetation and landscaping
d. Riparian buffer protection
e. Limit land disturbance during construction
f. Limit new impervious surfaces
g .Promote the use of vegetative (green infrastructure) stormwater controls
h. Disconnect flow paths
i. Promote infiltration
j. Capture and reuse stormwater

Applicants not incorporating low impact development practices into their plans must indicate why LID is not feasible at the site."

BMP Design Guidance

Permit Requirement: The design of treatment and infiltration practices should follow the guidance in Volume 2 of the Massachusetts Stormwater Handbook, as amended, or other federally or State approved BMP design guidance.

Excerpts from Chelsea's Regulations that Support Permit Requirement: Within its Sewer and Storm Drains' Ordinance, Chelsea requires that stormwater management practices be designed to conform to any City regulations, and in the absence of such regulations, to the standards of one of several listed documents, including the Massachusetts Stormwater Handbook.

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.

"Sec. 30-223. - Stormwater management.

...

(c) All systems required by this section shall be of a type and capacity approved by the director, and shall be located so as to be readily and easily accessible for operation, maintenance, cleaning and inspection. The design and installation of the systems shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the city. In the absence of such specifications or in amplification thereof, the materials and procedures set forth in appropriate specifications of the American Society for Testing and Materials, the WEF Manual of Practice No. 9, Design and Construction of Urban Stormwater Management Systems and Gravity Sanitary Sewer Design and Construction, New England Interstate Water Pollution Control Commission, New England Interstate Water Pollution Control Commission Guides for the Design of Wastewater Treatment Works, the most recent version of Volume 2 of the Massachusetts Stormwater Handbook, and title V of the State Environmental Code shall apply. Design and installation shall be at the facility owner's expense. The owner shall notify the director when the systems are ready for inspection and connection to the public drain. The connection shall be made under the supervision of the director or designee. If the applicant fails to make such notifications, any and all costs to uncover the systems as necessary for inspection shall be borne by the applicant.

Compliance with the Stormwater Management Standards for New Development

Permit Requirement: Stormwater Management systems on new development sites shall be designed to:

- *Not allow new stormwater conveyances to discharge untreated stormwater in accordance with Massachusetts Stormwater Handbook Standard 1;*
- *Control peak runoff rates in accordance with Massachusetts Stormwater Handbook Standard 2;*
- *Recharge groundwater in accordance with Massachusetts Stormwater Handbook Standard 3;*
- *Eliminate or reduce the discharge of pollutants from land uses with higher pollutant loads as defined in the Massachusetts Stormwater Handbook in accordance with Massachusetts Stormwater Handbook Standard 5;*
- *Protect Zone 2 or Interim Wellhead Protection Areas of public water supplies in accordance with Massachusetts Stormwater Handbook Standard 6;*
- *Implement long term maintenance practices in accordance with Massachusetts Stormwater Handbook Standard 9;*
- *Require that all stormwater management systems be designed to:*

1. *Retain the volume of runoff equivalent to, or greater than, one (1) inch multiplied by the total post-construction impervious surface area on the site;*

   AND/OR

2. *Remove 90% of the average annual load of TSS generated from the total post-construction impervious surface area on the site AND 60 % of the average annual load of TP generated from the post-construction impervious surface area on the site. Pollutant removal shall be calculated consistent with EPA Region 1's Evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance any federally or State approved BMP design guidance or performance standards may be used to calculated BMP performance.*

Excerpts from Chelsea's Regulations that Support Permit Requirement: Within its Sewer and Storm Drains' Ordinance, Chelsea requires that stormwater management practices be designed to conform the requirements listed above.

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.
"Sec. 30-223. - Stormwater management.
...
(d) All systems required by this section shall be designed to:
(1)Not allow new stormwater conveyances to discharge untreated stormwater in accordance with Massachusetts Stormwater Handbook Standard 1;
(2)Control peak runoff rates in accordance with Massachusetts Stormwater Handbook Standard 2;
(3)Recharge groundwater in accordance with Massachusetts Stormwater Handbook Standard 3;
(4)Eliminate or reduce the discharge of pollutants from land uses with higher pollutant loads as defined in the Massachusetts Stormwater Handbook in accordance with Massachusetts Stormwater Handbook Standard 5;
(5)Protect Zone 2 or interim wellhead protection areas of public water supplies in accordance with Massachusetts Stormwater Handbook Standard 6;

(6)Implement long term maintenance practices in accordance with Massachusetts Stormwater Handbook Standard 9;

(7)Either [(1)] retain the volume of runoff equivalent to, or greater than, one inch multiplied by the total post-construction impervious surface area on the site or (2) remove 90 percent of the average annual load of TSS generated from the total post-construction impervious surface area on the site and 60 percent of the average annual load of TP generated from the post-construction impervious surface area on the site. Pollutant removal shall be calculated consistent with EPA Region 1's evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance any federally or state-approved BMP design guidance or performance standards may be used to calculate BMP performance.

Compliance with the Stormwater Management Standards for Redevelopment

Permit Requirement: Stormwater management systems on redevelopment sites shall meet the following standards to the maximum extent feasible:

- *Not allow new stormwater conveyances to discharge untreated stormwater in accordance with Massachusetts Stormwater Handbook Standard 1;*
- *Control peak runoff rates in accordance with Massachusetts Stormwater Handbook Standard 2;*
- *Recharge groundwater in accordance with Massachusetts Stormwater Handbook Standard 3;*
- *The pretreatment and structural best management practices requirements of Standards 5 (eliminate or reduce the discharge of pollutants from land uses with higher pollutant loads as defined in the Massachusetts Stormwater Handbook) and 6 (protect Zone 2 or Interim Wellhead Protection Areas of public water supplies in accordance with Massachusetts Stormwater Handbook Standard 6);*
- *Stormwater management systems on redevelopment sites shall also improve existing conditions by requiring that stormwater management systems be designed to:*
  1. *Retain the volume of runoff equivalent to, or greater than 0.8 inch multiplied by the total post-construction impervious surface area on the site;*
     AND/OR
  2. *Remove 80% of the average annual post-construction load of TSS generated from the total post-construction impervious area on the site AND 50% of the average annual load of TP generated from the total post-construction impervious surface area on the site. Pollutant removal shall be calculated consistent with EPA Region 1's Evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance any federally or State approved BMP design guidance or performance standards may be used to calculated BMP performance.*
- *Stormwater management systems on redevelopment sites may utilize offsite mitigation within the same USGS HUC10 as the redevelopment site to meet the equivalent retention or pollutant removal requirements indicated above.*

Excerpts from Chelsea's Regulations that Support Permit Requirement: Within its Sewer and Storm Drains' Ordinance, Chelsea requires that stormwater management practices be designed to conform the requirements listed above. See the excerpted section of Sec. 30-223 above.

Permit Requirement: Redevelopment activities that are exclusively limited to maintenance and improvement of existing roadways, (including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving projects) shall improve existing conditions

where feasible and are exempt from any of the parts listed previously in part d. Roadway widening or improvements that increase the amount of impervious area on the redevelopment site by greater than or equal to a single lane width shall meet the requirements of part d fully.

Excerpts from Chelsea's Regulations that Support Permit Requirement: Every owner wishing to establish a new connection or modify an existing connection to the public drain or natural outlet, must prepare a stormwater management plan as defined by the requirements of Sec. 30-223 – Stormwater Management in the City's Storm Drains Ordinance. There are no exceptions given to maintenance work. Additional applicability should be considered for projects where land in disturbed but a new or modified connection to the public drain is not needed.

Submission of As-Builts

Permit Requirement: The permittee shall require, at a minimum, the submission of as-built drawings no later than two (2) years after completion of construction projects. The as-built drawings must depict all on site controls, both structural and non-structural, designed to manage the stormwater associated with the completed site (post construction stormwater management).

Excerpts from Chelsea's Regulations that Support Permit Requirement: Chelsea's Sewers and Storm Drains Ordinance requires that owners of all stormwater management systems submit a detailed Operation and Maintenance Plan and as-built drawings depicting all site controls to be approved by the Director of Public Works prior to startup.

Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.

"Sec. 30-223. - Stormwater management.

...

(e) Prior to startup of all systems required by this section, owners of such systems shall submit to the director for review and approval, an operation and maintenance (O&M) plan for the system and as-built drawings depicting all site controls designed to manage the stormwater on site. The O&M plan shall include, at a minimum, a detailed listing of all operation, inspection, maintenance, cleaning or other procedures or activities required to ensure that the system operates in a continuously satisfactory and effective manner. The O&M plan shall be prepared at the owner's expense, and include site-specific procedures and activities as recommended by the system manufacturer for the particular installation."

Long-term Operation & Maintenance

Permit Requirement: The new development/redevelopment program shall have procedures to ensure adequate long-term operation and maintenance of stormwater management practices that are put in place after the completion of a construction project. These procedures may include the use of dedicated funds or escrow accounts for development projects or the acceptance of ownership by the permittee of all privately owned BMPs. These procedures may also include the development of maintenance contracts between the owner of the BMP and the permittee. Alternatively, these procedures may include the submission of an annual certification documenting the work that has been done over the last 12 months to properly operate and maintain the stormwater control measures. The procedures to require submission of as-built drawings and ensure long term operation and maintenances shall be a part of the SWMP.

Excerpts from Chelsea's Regulations that Support Permit Requirement: Chelsea's Sewers and Storm Drains Ordinance requires that owners of all stormwater management systems submit a detailed Operation and Maintenance Plan and as-built drawings depicting all site controls to be approved by the Director of Public Works prior to startup.

> Chapter 30 – Water and Sewer Systems, Article V. – Sewers and Storm Drains, Division 2. Storm Drains.
> *"Sec. 30-223. - Stormwater management.*
> ...
> *(e) Prior to startup of all systems required by this section, owners of such systems shall submit to the director for review and approval, an operation and maintenance (O&M) plan for the system and as-built drawings depicting all site controls designed to manage the stormwater on site. The O&M plan shall include, at a minimum, a detailed listing of all operation, inspection, maintenance, cleaning or other procedures or activities required to ensure that the system operates in a continuously satisfactory and effective manner. The O&M plan shall be prepared at the owner's expense, and include site-specific procedures and activities as recommended by the system manufacturer for the particular installation."*

Overall Compliance (Permit Year 3 Update):
The City Council voted to adopt a Sewers and Storm Drains ordinance which had been updated with language to meet the requirements of the MS4 Permit as discussed above on November 2, 2020.

4.0 IDDE MONITORING AND PROGRESS

4.1 IDDE Plan

The 2016 MS4 Permit defines an illicit discharge "as any discharge to a municipal separate storm sewer that is not composed entirely of stormwater" including, but not limited to:

- Fixed point source discharges such as illegal/improper sanitary or floor drain connections, and cross connections between the sanitary and drainage infrastructure,
- Isolated or recurring discharges such as illegal dumping and improper disposal of waste from boats, and
- Indirect sources that infiltrate into the drainage system through cracks/defects in infrastructure, such as sanitary wastes from failing sewer pipes.

Exceptions do exist in the regulation for the discharge of clean water from sources such as water line flushing, fire-fighting operations, non-contact cooling waters, and for other discharges that have separately obtained a permit from the NPDES Program.

The City of Chelsea developed and implemented an Illicit Discharge Detection and Elimination (IDDE) Plan in response to a 2009 EPA Administrative Consent Order concerning non-stormwater discharges from the MS4 and its tributaries to the Mystic River. The purpose of the plan was to create a methodology for investigating the municipal storm drain system, identifying illicit connections, and removing identified sources of illicit discharge.

Revisions to the IDDE Plan are being prepared to ensure compliance with the requirements set forth in the 2016 MS4 Permit.

The City has already assessed within existing catchments the potential for illicit discharges by obtaining and evaluating data regarding the following:

- Sensitivity or critical nature of the receiving water or environment
- Severity of the illicit connection indicator parameters
- Potential for direct or indirect public exposure
- Areas with chronic problems and inadequate level of service
- Areas proposed for infrastructure capital improvements

Since the City has already ranked and prioritized their catchments for investigation, most notably based on available outfall sampling data, the City has a strong understanding of problem catchment areas. To complete an additional ranking exercise seems redundant and priority for ongoing investigations is being assigned to outfalls as determined by the criteria above, and available outfall sampling data.

4.1.1 *Mapping*

The City's entire drainage system has been mapped, outfalls have been identified, and interconnections from other MS4s into Chelsea have been located. Each outfall and interconnection have been analyzed to create a defined catchment area that includes the portion of City that contributes drainage from catch basins. Field reconnaissance was performed to determine that the City has approximately:

- 10 miles of stormwater drains and 40 miles of sanitary and combined sewage collection conduit/piping ranging in size from 6-inches in diameter to 6-feet in diameter,
- 1,350 catch basins,
- 24 municipal outfalls,
- 37 non-municipal outfalls, and
- 5 interconnections from Everett to Chelsea; no known interconnections from Chelsea to other MS4s.

4.1.2 *Sampling and Analysis*

In 2006, Chelsea began annual monitoring of municipal stormwater outfalls. The monitoring consisted of inspection and, if appropriate, sampling of discharges at each outfall during alternating dry and wet-weather conditions once per year. Intermunicipal connections are also a part of this program.

For the testing purposes, a dry-weather period is defined as a minimum of 48 hours without precipitation. All outfalls are inspected for the presence of dry weather flow at the time of monitoring. For both dry and wet weather monitoring, samples are collected and analyzed for ammonia-nitrogen, Escherichia Coliform (E-coli), Enterococcus, surfactants, and specific conductance by a contract laboratory. Samples are analyzed onsite for temperature and total chlorine with test kits. Visual observations are also recorded. All samples are analyzed, and that data is tabulated and submitted to EPA annually.

4.1.3 *Field Investigation*

The scope of field investigation in support of Chelsea's IDDE Plan is determined based on site-specific factors for each individual outfall including, but not limited to factors such as the size, density, and land uses in the tributary drainage area; the configuration, diameters, and total footage of drain pipe in the tributary area; the specific pollutants identified during monitoring; and other potential environmental influences. Selected field investigation methods incorporate important elements from the EPA New England IDDE Protocol, while also taking into account the difficulties that a municipality would face in attempting to finance and procure contracts for combined field identification and removal construction efforts. The scope of work for field investigation aims to substantially reduce the amount of area that might require a comprehensive, and costly, IDDE field investigation approach, as presented in Phase III of the EPA New England IDDE Protocol.

The field investigation methods to be utilized include, but are not limited to the following, and may be utilized in combination:

- In small tributary areas, or as confirmation of findings from other field investigation work, various methods include:

- Television Inspection of Drains: Drain pipes will be inspected internally to pinpoint and evaluate connections. Television inspection will consist of passing a closed circuit television (CCTV) camera through all or a portion of the drain segments containing suspected illicit connections. The City is in the process of purchasing its own CCTV Truck.
- Smoke Testing of Drains: Smoke testing may be utilized in selected areas in an attempt to locate illicit connections. Smoke testing will consist of the introduction of a non-toxic smoke into drainage segments containing suspected illicit discharges and observing adjacent buildings for signs of illicit connections (e.g., smoke emanating from sewer vent stacks, floor drains, and cleanouts).
- Dyed-water Testing: Buildings adjacent to that drainage system will be tested with dyed-water to determine the discharge location for its building drains. Dyed water tests will consist of pouring dyed-water into to plumbing fixtures and observing the sanitary sewer and drainage system downstream in an attempt to confirm connection.
- ZoomCam Inspection: Drainage structures will be inspected with a "zoom camera-on-a-stick" in an attempt to gather additional information and narrow the location of observed dry-weather flow.

- Dry-weather Assessment: Topside inspection of drain manholes and other structures will be made during a period of dry weather to make area-wide determinations regarding the existence (and location) of continuous dry-weather flows. For structures observed to have dry-weather flow, the estimated quantity and visual characteristics such as color, odor, solids, or turbidity will also be documented. In key locations observed to have dry-weather flow, grab samples will be collected and analyzed for ammonia, fluoride, pH, potassium, surfactants, and temperature with portable meters and test kits. Key locations for sampling are those upstream manholes where dry-weather flow is first observed, or at junction points downstream from these manholes. At drainage structures where dry-weather flow ceases to be observed, the drain system will be isolated by sandbag or plug for a period of 24-48 hours to verify that no intermittent illicit discharges exist in tributary drainage upstream of that structure.

- Comprehensive Dry-Weather Discharge Investigation: If required to identify the source of illicit discharges, Chelsea will conduct a comprehensive dry-weather discharge investigation. The comprehensive investigation will follow a "top down" approach similar to that outlined in Phase III of the EPA New England IDDE Protocol. Each manhole-to-manhole segment of drain in the area of concern will be isolated for 24 to 48 hours during a dry weather period to determine if any intermittent dry-weather flow is present. If intermittent flow is captured, grabs samples will be collected and analyzed for ammonia, fluoride, pH, potassium, surfactants, and temperature with portable meters and test kits. If contaminant concentrations exceed benchmarks, the investigation will be stopped until such time as all illicit discharges to that drain segment are identified and removed, and repeat investigation shows no further evidence of contaminated dry-weather flow. If there is no dry-weather flow captured, or if sample results indicate contaminant concentrations below benchmark criteria, the investigation will proceed to the next drain segment downstream.
- If an illicit discharge is found and under municipal responsibility, then the connection is removed, documented, and reported in the annual report to EPA.

- If an illicit discharge is found and under non-municipal responsibility, the City will undertake removal of illicit discharges under non-municipal responsibility through City ordinances via prohibitions against illicit connections and provisions detailing legal authority for enforcement.

Owners of private property will be required to eliminate illicit discharges from their properties, through progressive enforcement steps including letter to the property owners and notice posted to the building.

4.1.4 *Sanitary Sewer Overflows (Permit Year 2 Update)*

The City of Chelsea has consistently maintained an inventory of Sanitary Sewer Overflows (SSOs). Since 2013, sixteen SSOs have occurred. Table 1.3 below gives an abbreviated list of the SSO's in the past 5 years. The inventory as recorded beginning in 2013 can be found in Appendix K.

Table 1.3
Sanitary Sewer Overflow Inventory

Date	Location	Estimated Volume (gal)	SSO Type	Cause
8/1/13	7 Jones Ave	<1,000	Basement backup	Sewer blockage
12/29/13	73 Addison St	10,000-100,000	Basement backup	Rain and sewer line blockage
1/25/14	59 Essex St	<10,000	Basement backup	Sewer Blockage - line inaccessible
12/12/14	193 Nichols St	<1,000	Basement backup	Rain and sewer line blockage
3/16/15	22-24 Washington Ave	200	Basement backup	Sewer system blockage/ rags in pipe
2/16/16	300 Third St	25,000	SMH Surcharge, pumped to CB by prop owner	Sewer blockage
3/2/16	Eleanor @ Clark	<1,000	SMH Surcharge, flow to CB	Rain and sewer line blockage
4/11/16	75 Botswain Way	1,000	Sanitary sewer manhole to CB to receiving water / Island End	Sewer Blockage/ unknown
5/25/16	330 Third St	15,000	Drain structure onsite to ground surface	Sewer system blockage / towels, rags, vegetables
6/22/16	32 Everett Ave	10,000	CMH Surcharge	Sewer blockage/collapse - inaccessible
09/09/16	41-43 Central Ave	100	Basement backup	Sewer blockage/collapse
10/22/16	Normandy Rd	Unknown	Sanitary sewer manhole	Rain event/ blockage
4/27/17	79 & 87 Gillooly Rd	<2,000	Basement backup	Sewer blockage
7/18/17	City-wide	Unknown	Basement backup	Rainfall
9/30/17	21 Jones	2,500-3,000	Basement backup	Sewer surcharge; no cap on cleanout
3/22/19	149 Everett	<10,000	CB surcharge; flow to CB on Combined Sewer	Sewer collapse
9/31/2020	12 Hawthorn St.	400	Basement backup	Sewer collapse
06/22/2021	92 Park St.	1000	Basement backup	Sewer collapse

In the event of an overflow or bypass, the City makes a report within 24 hours by phone to MassDEP, EPA, and other relevant parties. Verbal notification is followed by a written report in accordance with MassDEP's Sanitary Sewer Overflow (SSO)/Bypass notification form within five (5) calendar days of becoming aware of the overflow or backup.

5.0 STANDARD OPERATING PROCEDURES

5.1 MS4 Permit Requirement

As part of the minimum control measure for Pollution Prevention/Good Housekeeping for Municipal Operations, the MS4 Permit requires permittees to implement an Operations and Maintenance (O&M) program for permittee-owned facilities and activities to prevent or reduce pollutant runoff and protect water quality. The O&M Program is required to include the following elements:

1) An inventory of all permittee-owned facilities.
2) Written O&M procedures for the following activities:
    a. Parks and open space
    b. Buildings and facilities where pollutants are exposed to runoff
    c. Vehicles and equipment
3) A written program detailing the activities and procedures the permittee will implement so that MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4, to include:
    a. Optimization of routine inspections, cleaning and maintenance of catch basins.
    b. Implementation of procedures for sweeping and/or cleaning streets, and permittee-owned parking lots.
    c. Proper storage and disposal of catch basin cleanings and street sweepings.
    d. Implementation of procedures for winter road maintenance.
    e. Implementation of inspection and maintenance frequencies and procedures for storm drain systems and stormwater treatment structures.
4) Written records for all maintenance activities, inspections and training.

5.2 Inventory of Municipal Facilities

Chelsea has developed a comprehensive Operations and Maintenance (O&M) Plan to meet permit requirements, included in Appendix I. The inventory of municipally-owned facilities and property, including vehicles, equipment, and stormwater treatment structures is included in Appendix C of the O&M Plan.

5.3 Operation and Maintenance Procedures for Municipal Activities and Facilities

Chelsea's comprehensive O&M Plan includes Standard Operating Procedures (SOPs) which address the MS4 Permit requirements. SOPs associated with the identified municipal activities and facilities were developed by September 2020 and are updated as needed. The SOPs are included in the O&M Plan which is located in Appendix I. The following SOPs are included:

- Parks and Open Space Management
- Fuel and Oil Handling
- Hazardous Materials Storage and Handling
- Spill Response
- Operation and Maintenance of Buildings and Facilities
- Operation and Maintenance of Municipal Vehicles and Equipment

- Catch Basin Inspection and Cleaning
- Street Sweeping
- Winter Road Maintenance

5.4 Catch Basin Cleaning and Optimization

The City currently has approximately 1,350 catch basins, of which at least 450 are cleaned each year. The City disposes of the accumulated sediments in accordance with state and local requirements. In addition to annual cleaning, the City performs catch basin cleaning as needed or in response to complaints or inquiries.

To meet requirements of the 2016 MS4 Permit, the City will need to optimize catch basin inspection, cleaning and maintenance such that the following conditions are met:

- Inspection and maintenance of catch basins located near construction activities (roadway construction, residential, commercial, or industrial development or redevelopment) are prioritized. Catch basins in such areas must be cleaned more frequently if inspection and maintenance activities indicate excessive sediment or debris loading.

- A schedule must be established such that the frequency of routine cleaning ensures that no catch basin at any time will be more than 50 percent full. A catch basin sump is more than 50 percent full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin.

- If a catch basin sump is more than 50 percent full during two consecutive routine inspections/cleaning events, the City must document the finding, investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practicable, abate contributing sources.

- The City shall maintain documentation, including metrics and other information, used to reach the determination that the established plan for cleaning and maintenance is optimal and meets the requirements of the MS4 Permit, including a log of catch basins cleaned and inspected.

- The City must continue to track and report the following information to EPA annually:

    - Total number of catch basins city-wide
    - Number of catch basins inspected
    - Number of catch basins cleaned
    - Total volume or mass of material removed from all catch basins

The City is currently working to collect data as part of their optimization plan to ensure that no catch basin is more than 50% full. Procedures exist in the O&M Plan for what actions to take if a catch basin is found to be more than 50% full.

6.0 TMDLS AND WATER QUALITY LIMITED WATERS

6.1 Discharges to Water Quality Limited Waters

Under Massachusetts General Law (MGL) Chapter 21, MassDEP is responsible for monitoring the waters of the Commonwealth, identifying those waters that are impaired, and developing a plan to bring them back into compliance with Massachusetts Surface Water Quality Standards. The list of impaired waters, better known as the "303(d) List," identifies impaired surface waters and the reasons for impairment.

Once a waterbody is identified as impaired, MassDEP is required by the Federal Clean Water Act (CWA) to develop a strategy for restoring the health of the impaired waterbody. The process of developing this strategy, which is generally referred to as a Total Maximum Daily Load (TMDL), includes identifying the type of pollutant, and the potential sources of the pollutant, in addition to determining the maximum amount of pollutant that can be discharged to a specific surface water body in order to meet surface water quality standards. Part of the TMDL also includes the development of a plan to help in meeting the Total Maximum Daily Load limits once they have been established. These impaired waters are listed under Category 4A in Part 2 of the Massachusetts Integrated List of Waters. Based on the 2016 Integrated List of Waters Massachusetts, Chelsea does not currently have any surface water bodies within its boundaries for which a TMDL has been developed. However, a Pathogen TMDL was approved in 2018, after the 2016 Integrated List of Waters was released, which identifies several surface water bodies in Chelsea as having a TMDL. Therefore, these water bodies are instead listed under Category 5 of the 2016 Integrated List of Waters as requiring a TMDL. In Chelsea, these water bodies include segment MA71-06 of the Chelsea River, segment MA71-08 of Mill Creek, and segment MA71-03 of the Mystic River. The list of receiving waters and impairments can be found in Table 1.2.

6.2 Bacteria/Pathogens Impairments

Impaired waters in Chelsea with an approved TMDL for a bacteria/pathogen impairment include segment MA71-06 of the Chelsea River for Fecal Coliform, segment MA71-08 of Mill Creek for Fecal Coliform, and segment MA-71-03 of the Mystic River for Fecal Coliform. In October 2018, the EPA and the DEP approved a Pathogen TMDL for the Boston Harbor watershed, which includes the Mystic River Sub-basin and, thus, Chelsea. A copy of this document is included in Appendix L of this document.

To ensure attainment of Water Quality Standards (WQS) throughout the waterbody, MassDEP emphasizes the simplest and most readily understood way of meeting the TMDL is to have a goal of bacteria sources not exceeding the WQS criteria at the point of discharge. Therefore, Waste Load Allocations (WLA) have been set equal to the WQS Criteria and assigned to the portion of stormwater that discharges to surface waters via storm drains. Therefore, in order to limit bacterial contamination in the watershed, the TMDL sets forth an expectation that discharges from Chelsea's MS4 to the segments of the Chelsea River (71-06) and Mystic River (71-03) not exceed 35 colonies Enterococci per 100mL and single sample nor 104 colonies per 100mL for non-CSO discharges. The TMDL sets forth an expectation that discharges from Chelsea's MS4 to the segment of the Mill Creek (71-08) not exceed 88 organisms Fecal Coliform per 100mL nor 10% of the samples exceed 269 organisms per 100 mL. It sets these standards based on fecal coliform densities in Coliform Forming Units per 100 milliliters (CFU/100mL). As discussed throughout this SWMP, Chelsea is implementing BMPs to address this TMDL goal.

For any illicit sources including illicit discharges to stormwater systems and sewer system overflows (SSOs) the goal is complete elimination (100% reduction), therefore, addressing MS_4 discharges containing pollutants from illicit sewer connections, SSOs, and failing sewer/drain infrastructure is of primary importance. Chelsea is addressing these sources through its IDDE BMPs. The TMDL also lists non-point sources from stormwater runoff as a major source of pathogens in the watershed, which Chelsea is addressing through a variety BMPs currently in place or under development.

The TMDL also lists a few sources that are not applicable to Chelsea - including failing septic systems, wastewater treatment plants, and swimmers – and, thus, no BMPs have been developed specific to these sources. Elimination of Combined Sewer Overflows (CSOs) is of utmost importance in the TMDL and to Chelsea but is outside the scope of this SWMP.

6.2.1 Public Education and Outreach

The City is required to comply with the impaired waters requirements for bacteria/pathogens for the Chelsea and Mystic Rivers and Mill Creek. The City must supplement its residential education and outreach program with an annual message encouraging the proper management of pet waste. The Animal Waste Ordinance (Sec. 4-8, Article I, Chapter 4, Chelsea Code of Ordinances) stipulates that the owner of every animal shall be responsible for the removal of any fecal matter deposited by the owner's animal on the owner's property, public walks, recreation areas or private property. The City maintains a website dedicated to the dissemination of information regarding stormwater management to the public, including an interactive map of dog waste stations and cigarette butlers.

Illicit Discharge

All 24 of Chelsea's outfalls discharge to a waterbody with a bacteria/pathogen impairment and are monitored under the IDDE plan. The priority status of those outfalls has been determined by the progress achieved since the IDDE program beginning in 2009. A priority ranking system would be redundant in Chelsea, and investigative priority will be given to those outfalls which show any sign of illicit connection over the course of routine testing that Chelsea has engaged in to date.

6.3 Oil and Grease and Turbidity Impairments

Impaired waters in Chelsea without an approved TMDL for a specific impairment (that could be related to stormwater discharges) include segment MA71-06 of the Chelsea River for petroleum hydrocarbons and turbidity, and segment MA-71-03 of the Mystic River for petroleum hydrocarbons.

The City is required to comply with the impaired waters requirements for solids and oil and grease for the Chelsea and Mystic Rivers. The City's ordinances regarding stormwater management must include a requirement that for new development and redevelopment, stormwater management systems designed on commercial and industrial land use areas draining to impaired waters incorporate spill containment isolation.

Street sweeping is ongoing throughout Chelsea year round. Catch basin cleaning will be increased in high density tributary areas as needed. The City currently sweeps all public streets at least twice per side of the street each week between March 1st and December 31st. At least 450 catch basins are cleaned each year, with a goal to clean 100% of Chelsea's catch basins in the future. This current, aggressive street sweeping and catch basin cleaning frequency may be adequate to meet the conditions of the permit.

6.4 Phosphorus Impairments

Though an upstream segment of the Mystic River does have a phosphorus impairment, segment 71-03 of the Mystic River which extends from the Amelia Earhart Dam, Somerville/Everett to its confluence with the Boston Inner Harbor, Chelsea/Charlestown, is not currently impaired for Phosphorus according to the 2016 Integrated List of waters. Therefore, no additional provisions regarding phosphorus impairments are needed for Chelsea. Correspondence with the EPA confirming this can be found is included in Appendix D.

7.0 REPORTING, EVALUATION AND MODIFICATION

7.1 MS4 Permit Reporting

The MS4 Permit requires submission of annual reports assessing the effectiveness of the proposed BMPs and reporting if the minimum control measures were met. The initial report is due 90 days from the close of the reporting period, or September 29th, 2019, and annually thereafter. Reports are to be submitted to both EPA and MADEP. At a minimum, the report should include the following:

- The status of compliance with permit conditions, including an assessment of the appropriateness of the selected BMPs and progress toward achieving the selected measurable goals for each minimum control measure.
- Results of any information collected and analyzed, including monitoring data, if any. Outfall screening and monitoring data collected shall be submitted for both the reporting cycle and cumulative for the permit term.
- A summary of the stormwater activities planned for the next reporting cycle.
- A change in any identified best management practices or measurable goals for any minimum control measure.
- Notice of relying on another governmental entity to satisfy some of the permit obligations, if applicable.

As indicated in an earlier section, copies of past annual reports submitted by Chelsea are referenced in Appendix E of this SWMP. Chelsea will append future annual reports, and that prepared in 2019, in compliance with the 2016 MS4 Permit as they are prepared in Appendix J.

7.2 Evaluation of SWMP Success

This SWMP should be considered a dynamic document that is modified as necessary to account for changes such as in drainage infrastructure, laws and regulations, and City leadership and policy. The success of programs implemented by the SWMP – such as IDDE – should also be evaluated to ensure that they are accomplishing the goals for which they were intended and in a method and timetable that continues to be appropriate. In addition, the SWMP should be reviewed and revised as necessary to keep text and appendices current. For example:

- After each year of stormwater monitoring to update appended findings and priorities.
- As needed to keep appended IDDE investigation, identification and removal documentation current.
- After each NPDES stormwater permit renewal to incorporate new requirements, as well as append copies of new permits and associated Notices of Intent (NOIs).

- After adoption of any new or revised ordinances or other regulatory mechanisms related to stormwater or drainage infrastructure.

Chelsea undertook this SWMP, in part, in order to ensure the protection of its water resources and the large investment in drainage infrastructure. Periodic review and revision of this written document will help achieve these goals on a perpetual basis.

7.3 Modifications to the SWMP or Notice of Intent (Permit Year 3 Update)

As discussed above, minor modifications to this SWMP should be made on a regular and frequent basis to keep it current. Annual updates have been denoted in the section or subsection heading. However, major changes to the SWMP or needed modifications to the NOI for inclusion under the NPDES Permit require an official process. In accordance with the MS4 Permit, modifications to the SWMP or NOI may be made under the following provisions:

- At any time, the City may add (but not subtract or replace) components, controls or requirements to the SWMP.
- The City may request to replace an ineffective or infeasible BMP specifically identified in the SWMP with an alternative BMP at any time as long as the basis for the change is documented in the SWMP by, at a minimum:
    - An analysis of why the BMP is ineffective or infeasible (or cost prohibitive).
    - Expectations on the effectiveness of the replacement BMP.
    - An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.
- The City shall indicate BMP modifications along with a brief explanation of the modification in each Annual Report.

At this time, Chelsea does not anticipate any major modifications to the SWMP or NOI requiring official notification.

CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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."

Printed Name Thomas G. Ambrosini

Signature _____ Date 7/1/21

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STORMWATER POLLUTION PREVENTION FOR INDUSTRIAL SITES

Contaminated stormwater is a source of pollutants in many of our ponds, lakes, rivers and streams.

Storm drains carry runoff from streets, urban centers, and industrial sites, and open-spaces into streams, creeks, and rivers.

Industrial operations are only one contributor to this problem, but they are known to be a source of heavy metals, oily wastes, and other substances.

Reducing or eliminating the exposure of industrial operations to rainfall and runoff is a proven way to reduce pollution into our surface waters.

What Is a Stormwater Pollution Prevention Plan?

A Stormwater Pollution Prevention Plan (SWPPP) describes how you are going to reduce or eliminate stormwater pollution from your industrial operations.

Federal stormwater regulations require many kinds of industrial facilities to take steps to prevent storm water pollution.

Based upon SIC codes and stormwater exposure, your facility may need to be covered under the Multi Sector General Permit (MSGP.)

If so, you need to prepare a SWPPP that is in part a collection of Best Management Practices (pollution control measures) like the ones described in this notification.
For more information on coverage under the Multi Sector General Permit, see https://www.epa.gov/npdes/stormwater-discharges-industrial-activities#msgp.

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How Do I Prevent Stormwater Pollution at My Industrial Operations?

Eliminating unauthorized non-stormwater discharges (illicit discharges)

As Chelsea moves forward towards sewer separation it is more important than ever to take action to prevent pollution from entering the stormwater system.

In areas that have separated storm drains, your site's stormwater system is designed to handle stormwater, but is not designed to handle illicit discharges like sewage and septic flows, wash-water, spills and other dumped materials.

Non-structural BMPs for non-stormwater discharges include:

- Inspecting and testing floor drains, sinks, and process drains; eliminating connections to storm sewers, surface or subsurface drains
- Preventing mixing of non-stormwater and stormwater discharges; once mixed, the discharge cannot be managed as stormwater and requires different permits. Illicit discharges are not authorized under the industrial stormwater permit.

Erosion prevention, sediment control, and runoff management

Chelsea has an average rainfall of 48 inches, per year. The US average is 38 inches of rain per year.

Chelsea averages 48 inches of snow per year. The US average is 28 inches of snow per year.

Where soils are exposed to water, wind, or ice, erosion can result.

Typical non-structural BMPs that can be implemented to limit erosion and control sediment include:

- Leaving as much vegetation onsite as possible
- Minimizing the length of time bare soil is exposed
- Diverting or preventing runoff from flowing across exposed areas
- Stabilizing disturbed soils as soon as possible

Dust control

Dust comes from smokestacks and vents, stockpiles, cleared ground, gravel roads, and open areas.

Non-structural methods to control dust include:

- Storing all materials, products, and waste inside the facility
- Routine cleaning of vents and filters
- Spraying controlled amounts of uncontaminated stormwater to dampen dust-generating areas
- Regular sweeping

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Salt Storage

Any facility using salt must manage it to prevent contact with stormwater.

Usual BMPs include covering salt piles and placing an impervious pad under salt storage and work areas.

Additional BMPs to manage salt storage:

- Use environmentally-friendly de-icing products
- Apply de-icing products sparingly
- Sweep up salt that is tracked out of the storage area
- Train employees about proper salt application and storage

Employee training program

Employee training is crucial to making sure these BMPS actually reduce pollution.

Training should occur at least once a year and can be achieved by through formal classes, in-house training sessions, webinars, and on-the-job training.

Spill prevention and response procedure

A spill prevention and response procedure enables your staff to quickly and consistently respond to any spills that may occur.

Typical spill prevention and response procedures include:

- Identifying potential discharge locations
- Identifying monitoring locations or surface waters that may be impacted by emergency firefighting techniques
- Training employees in proper prevention and response techniques
- Developing and implementing proper material handling, storage, and cleanup procedures
- Posting contact information for all individuals who need to be notified in the event of a spill
- Promptly reporting and documenting any spills or leaks to appropriate individuals

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SPANISH VERSION

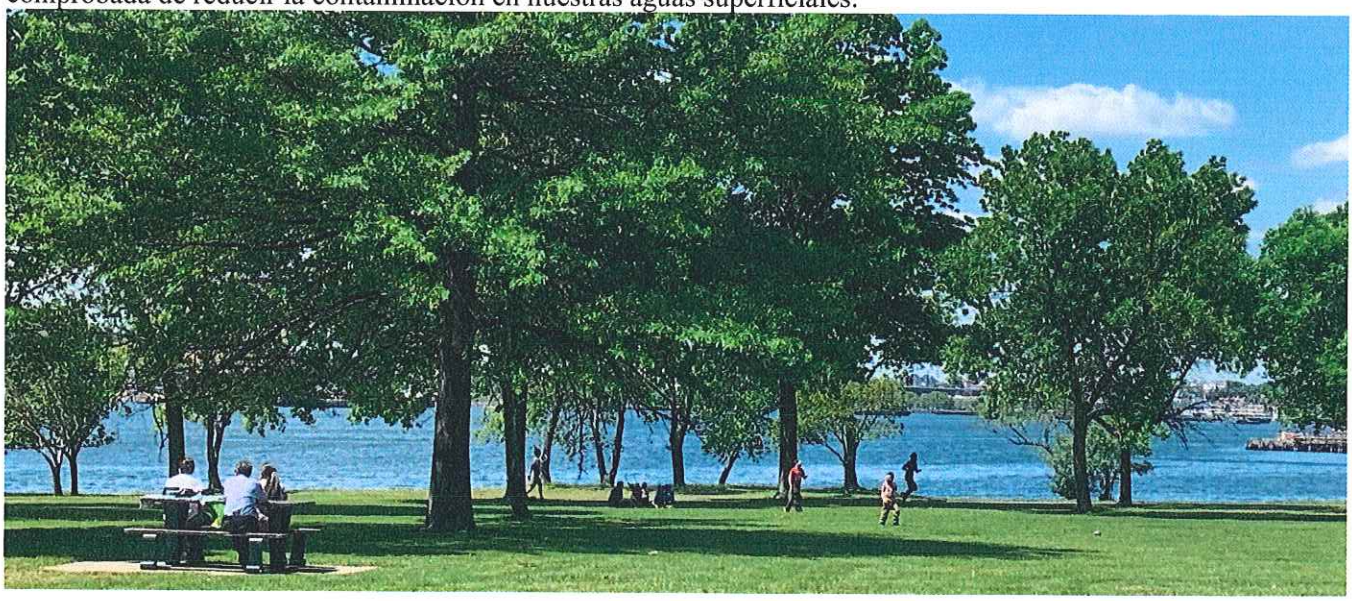
PREVENCIÓN DE LA CONTAMINACIÓN POR AGUAS PLUVIALES PARA SITIOS INDUSTRIALES

Las aguas pluviales contaminadas son una fuente de contaminantes en muchos de nuestros estanques, lagos, ríos y arroyos.

Los desagües pluviales transportan la escorrentía de las calles, los centros urbanos y los sitios industriales, y los espacios abiertos hacia los arroyos, arroyos y ríos.

Las operaciones industriales son solo uno de los factores que contribuyen a este problema, pero se sabe que son una fuente de metales pesados, desechos aceitosos y otras sustancias.

Reducir o eliminar la exposición de las operaciones industriales a la lluvia y la escorrentía es una forma comprobada de reducir la contaminación en nuestras aguas superficiales.



¿Qué es un plan de prevención de la contaminación por aguas pluviales?

Un plan de prevención de la contaminación de las aguas pluviales (SWPPP) describe cómo reducirá o eliminará la contaminación de las aguas pluviales de sus operaciones industriales.

Las regulaciones federales sobre aguas pluviales requieren que muchos tipos de instalaciones industriales tomen medidas para prevenir la contaminación de las aguas pluviales.

Según los códigos SIC y la exposición a las aguas pluviales, es posible que su instalación deba estar cubierta por el Permiso general multisectorial (MSGP).

Si es así, debe preparar un SWPPP que sea en parte una colección de Mejores Prácticas de Gestión (medidas de control de la contaminación) como las que se describen en esta notificación.

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Para obtener más información sobre la cobertura bajo el Permiso General Multisectorial, consulte https://www.epa.gov/npdes/stormwater-discharges-industrial-activities#msgp.

¿Cómo puedo prevenir la contaminación por aguas pluviales en mis operaciones industriales?

Eliminar descargas no autorizadas de aguas no pluviales (descargas ilícitas)

A medida que Chelsea avanza hacia la separación de alcantarillado, es más importante que nunca tomar medidas para evitar que la contaminación ingrese al sistema de aguas pluviales.

En áreas que tienen desagües pluviales separados, el sistema de aguas pluviales de su sitio está diseñado para manejar aguas pluviales, pero no está diseñado para manejar descargas ilícitas como aguas residuales y flujos sépticos, agua de lavado, derrames y otros materiales vertidos.

Las BMP no estructurales para descargas de aguas no pluviales incluyen:

• Inspección y prueba de desagües de piso, fregaderos y desagües de proceso; eliminando conexiones a alcantarillas pluviales, desagües superficiales o subterráneos

• Prevenir la mezcla de descargas de aguas pluviales y no pluviales; una vez mezclada, la descarga no puede manejarse como agua de lluvia y requiere diferentes permisos. Las descargas ilícitas no están autorizadas bajo el permiso de aguas pluviales industriales.

Prevención de la erosión, control de sedimentos y gestión de la escorrentía

Chelsea tiene una precipitación promedio de 48 pulgadas por año. El promedio de Estados Unidos es de 38 pulgadas de lluvia por año.

Chelsea tiene un promedio de 48 pulgadas de nieve por año. El promedio de Estados Unidos es de 28 pulgadas de nieve por año.

Cuando los suelos están expuestos al agua, el viento o el hielo, puede producirse erosión.

Las BMP típicas no estructurales que se pueden implementar para limitar la erosión y controlar los sedimentos incluyen:

• Dejar tanta vegetación en el lugar como sea posible
• Minimizar la cantidad de tiempo que el suelo desnudo está expuesto
• Desviar o evitar que la escorrentía fluya a través de áreas expuestas
• Estabilizar los suelos alterados lo antes posible

Control de polvo

El polvo proviene de chimeneas y conductos de ventilación, pilas, terreno despejado, caminos de grava y áreas abiertas.

Los métodos no estructurales para controlar el polvo incluyen:

• Almacenar todos los materiales, productos y desechos dentro de la instalación.

• Limpieza de rutina de rejillas de ventilación y filtros

• Pulverizar cantidades controladas de aguas pluviales no contaminadas para humedecer las áreas generadoras de polvo

• Barrido regular

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Almacenamiento de sal

Cualquier instalación que utilice sal debe gestionarla para evitar el contacto con las aguas pluviales.

Las BMP habituales incluyen cubrir las pilas de sal y colocar una almohadilla impermeable debajo de las áreas de almacenamiento y trabajo de sal.

BMP adicionales para gestionar el almacenamiento de sal:

- Utilice productos de deshielo respetuosos con el medio ambiente
- Aplicar productos descongelantes con moderación
- Barra la sal que se haya extraído del área de almacenamiento
- Capacite a los empleados sobre la aplicación y el almacenamiento

Programa de formación de empleados

La capacitación de los empleados es crucial para asegurarse de que estas BMPS realmente reduzcan la contaminación.

La capacitación debe ocurrir al menos una vez al año y puede lograrse mediante clases formales, sesiones de capacitación internas, seminarios web y capacitación en el trabajo.

Procedimiento de prevención y respuesta a derrames

Un procedimiento de prevención y respuesta a derrames permite a su personal responder rápida y consistentemente a cualquier derrame que pueda ocurrir.

Los procedimientos típicos de prevención y respuesta a derrames incluyen:

- Identificación de posibles ubicaciones de descarga
- Identificar ubicaciones de monitoreo o aguas superficiales que puedan verse afectadas por técnicas de extinción de incendios de emergencia.
- Capacitar a los empleados en técnicas adecuadas de prevención y respuesta.
- Desarrollar e implementar procedimientos adecuados de manipulación, almacenamiento y limpieza de materiales.
- Publicar información de contacto para todas las personas que necesitan ser notificadas en caso de un derrame.
- Informar y documentar rápidamente cualquier derrame o fuga a las personas adecuadas.