University of Massachusetts Boston

Stormwater Management Program (SWMP)

For Coverage Under The

National Pollutant Discharge Elimination System (NPDES)
General Permit for Municipal Separate Storm Sewer Systems (MS4)

University of Massachusetts Boston
100 Morrissey Boulevard, Boston, MA 02125

EPA NPDES Permit Number: MAR042050

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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."

Zehra Schneider Graham, Director, Environmental Health and Safety

Signature:  Date: 6/29/2022

Background

Regulatory Context

Under the Clean Water Act, the Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in EPA's effort to preserve, protect, and improve the Nation's water resources from polluted stormwater runoff. The Phase II program expands the Phase I program by requiring additional operators of MS4s in urbanized areas and operators of small construction sites, through the use of NPDES permits, to implement programs and practices to control polluted stormwater runoff. Under the Phase II rule, all MS4s with stormwater discharges from Census designated Urbanized Area are required to seek NPDES permit coverage for those stormwater discharges.

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 small MS4 permit) consistent with the Phase II rule. The 2003 small MS4 permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., Federal and state agencies) MS4 Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect until operators were authorized under the 2016 MS4 general permit, which became effective on July 1, 2018. On May 16, 2022, EPA decided to administratively continue the coverage of the 2016 MS4 Permit to extend past its expiration date of June 30, 2022 until a new MS4 permit is issued.

UMass Boston MS4

University of Massachusetts Boston (UMass Boston) is located on the Columbia Point peninsula in the Dorchester area of Boston. The campus consists of 11 buildings (10 on the main campus plus the former Bayside Expo Center at 200 Mt. Vernon Street). Between the main campus and the Bayside property, the university occupies more than 120 acres on Columbia Point.

Requirements in the MS4 Permit apply to UMass Boston's catch basins, drainage pipes, and stormwater treatment facilities, as well as campus roads and properties where stormwater runoff and pollutants are generated. The Columbia Point campus falls within the "urbanized" area as defined by the 2010 census and is therefore covered as a whole by the MS4 Permit. The University operates four additional buildings at the Nantucket Field Station on Nantucket, which falls outside the urbanized area; the Nantucket buildings are, therefore, not covered by the MS4 Permit.

UMass Boston's MS4 compliance program is managed by the Office of Environmental Health & Safety (EHS). EHS has the overall responsibility and authority to develop policies, programs, and procedures to maintain a healthy and safe campus environment for all faculty, staff, and students. To advance and support the university's teaching, learning and research activities, all environmental health and safety (EHS) initiatives are built upon best practices, which include applicable federal and state regulations, nationally recognized codes and established professional practices.

UMass Boston's MS4 compliance is supported by the Facilities Department, which oversees the operation and maintenance of multiple building and utility systems, the maintenance of university grounds and roadways, and the provision of janitorial and pest control services. In addition, the Facilities Department supports the planning, design, and construction of major renovations and new construction in conjunction with the University of Massachusetts Building Authority and the Commonwealth's Division of Capital Asset Management.

Receiving Waters

Stormwater runoff from UMass Boston flows through the campus' storm drain system to Dorchester Bay within Boston Harbor. In the 2016 Massachusetts Integrated List of Waters, Dorchester Bay is listed as a Category 5 waterbody in need of TMDL, with impairments for enterococcus, fecal coliform, and PCB in Fish Tissue. Columbia Point lies within the Boston Harbor Watershed, which encompasses approximately 293 square miles of land area, including all or part of 45 municipalities, as well as most of downtown Boston. The watershed includes the Mystic River and Charles River Watersheds to the north and the Neponset, Fore, Back, and Weir River Watersheds to the south.

The following table lists UMass Boston's receiving waters, impairments, and number of outfalls discharging to each waterbody segment. The Storm Drain System Map is provided in Appendix A.

Waterbody segment that receives flow from the MS4	Number of outfalls into receiving water segment	Pollutants causing impairments
Dorchester Bay (MA70-03)	9	Fecal coliform, enterococcus, other (contaminants in fish and shellfish), PCB in fish tissue

Stormwater Management Program (SWMP)

The SWMP describes the activities and measures, or Best Management Practices (BMPs), that UMass Boston will implement to meet the terms and conditions of the permit. The SWMP is intended to be a "living document", which UMass Boston will update and/or modify during the permit term as new information is developed or the University's activities are modified, changed, or updated to meet permit conditions. UMass Boston will assess the need for SWMP updates as part of the Annual Evaluation to be completed, along with the Annual Report, by the end of September each year.

The SWMP is organized by minimum control measures (MCMs) and additional BMPs for discharges to water quality limited waterbodies.

MCM 1: A public education program aiming to affect public behavior causing stormwater pollution,

MCM 2: An opportunity for the public to participate and provide comments on the stormwater program,

MCM 3: A program to effectively find and eliminate illicit discharges within the MS4,

MCM 4: A program to effectively control construction site stormwater discharges to the MS4,

MCM 5: A program to ensure that stormwater from development projects entering the MS4 is adequately controlled by the construction of stormwater controls, and

MCM 6: A good housekeeping program to ensure that stormwater pollution sources on municipal properties and from municipal operations are minimized.

Water Quality Impairments: Enhanced BMPs to reduce pollutants of concern discharging to waterbodies with water quality impairments related to urban stormwater runoff.

Small MS4 Authorization

UMass Boston submitted our Notice of Intent on September 26, 2018. EPA granted Authorization to discharge on February 14, 2019. The NOI and Authorization Letter can be found at the following link:

https://www.epa.gov/npdes-permits/regulated-ms4-massachusetts-communities

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Eligibility: Endangered Species and Historic Properties

Endangered Species Act (ESA) eligibility determination

UMass Boston has completed the ESA eligibility process outlined in the MS4 Permit Appendix C. According to the U.S. Fish & Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool, UMass Boston Columbia Point campus does not contain habitat for endangered species. The IPaC printout is provided in Appendix B.

UMass Boston has determined that the stormwater discharges and discharge related activities will have no effect on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the USFWS. If, during the course of the permit term, UMass Boston plans to install a structural BMP not identified in the NOI, UMass Boston will conduct an endangered species screening for the proposed site and will contact the USFWS if UMass Boston determines that the new activity "may affect" or is "not likely to adversely affect" listed species or critical habitat under the jurisdiction of the USFWS.

In accordance with the ESA eligibility process outlined in Appendix C of the MS4 Permit, UMass Boston certifies permit eligibility with the ESA under **Criterion C.**

USFWS Criterion C: *Using the best scientific and commercial data available, the effect of the stormwater discharge and discharge related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the applicant and affirmed by EPA, that the stormwater discharges and discharge related activities will have "no affect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the USFWS.*

National Historic Preservation Act (NHPA) eligibility determination

UMass Boston has completed the NHPA eligibility process outlined in the MS4 Permit Appendix D. According to the National Register of Historic Places, UMass Boston contains one historic property on our campus: the Calf Pasture Pumping Station Complex at 435 Mount Vernon Street. The National Register of Historic Places map is provided in Appendix C. The nearest stormwater outfall is approximately 650 feet from the Calf Pasture Complex. A visual inspection found that the outfall exhibits minimal erosion and scour and therefore has no impact on the Calf Pasture Pumping Station Complex.

As part of the Stormwater Management Program, UMass Boston does not plan to undertake any activity involving less than an acre of land disturbance in the vicinity of the historic property. If, during the course of the permit term, UMass Boston plans to undertake subsurface land disturbance near the historic property, UMass Boston will assess the potential for the activity to affect the historic property and will consult with the Massachusetts Historical Commission as appropriate.

In accordance with the NHPA eligibility process outlined in the MS4 Permit Appendix D, UMass Boston certifies permit eligibility with the NHPA under **Criterion A.**

NHPA Criterion A: *The discharges do not have the potential to cause effects on historic properties.*

MCM 1 Public Education and Outreach

Permit Part 2.3.2

Objective

The objective of UMass Boston's public education and outreach program is to increase awareness and influence behavior of the public so that stormwater pollutants are reduced.

Program Overview

UMass Boston's program is structured in accordance with the MS4 Permit at Part 2.3.2 and with specific requirements for impaired waterbodies in Appendix H and Appendix F of the MS4 Permit. As a non-traditional MS4, UMass Boston's target audiences differ slightly from those targeted by traditional (municipal) MS4s. UMass Boston's target audiences include the people who are most likely to affect pollution on UMass Boston properties, and those who are most likely to be reached through interaction with UMass Boston: visitors, students, staff, and contractors. The messages focus on stormwater pollutants that are most likely to be generated by the public on UMass Boston properties and to impact UMass Boston's receiving waterbodies:

- Dog waste,
- Trash,
- Sediment,
- Fertilizer,
- Leaf litter, and
- Grass clippings.

The educational messages will be distributed through a range of forums, selected to best reach each target audience. Each public education BMP has a measurable goal, which UMass Boston will assess annually to ensure that educational messages are reaching target audiences effectively.

The following table summarizes the educational messages, target audiences, and distribution schedule.

BMP	Target Audience	Schedule by Permit Year (Fiscal Year)					
		1 (FY19)	2 (FY20)	3 (FY21)	4 (FY22)	5 (FY23)	6 (FY24)
1-1: Think Blue Advertising Campaign	Visitors, Students, Staff	x					
1-2: Web Page Links	Students, Staff, Contractors		x	x	x	x	x
1-3: Social Media Post about Stormwater Pollution Prevention	Visitors, Students, Staff		x	x	x	x	x
1-4: Social Media Post about Dog Waste Management	Visitors, Students, Staff		x	x	x	x	x
1-5: Stormwater Fact Sheet	Contractors		x	x	x	x	x

BMP 1-1: Think Blue Advertising Campaign

Description:

Think Blue Massachusetts (https://www.thinkbluemassachusetts.org/) ran an advertising campaign on behalf of MS4 communities from May 31 to June 25th, 2018. The "Fowl Water" advertisement, targeting MA urban residents, aimed to help viewers visualize stormwater pollution from motor oil, pet waste, and trash. Even though UMass Boston is not part of a municipal coalition, UMass Boston staff and visitors reside within those communities. Relevant to UMass Boston, Think Blue targeted outreach to the Charles River region (TOC-TBM-Charles-River-Regional-Campaign-Report-06252018) and the Neponset River region (TOC-TBM-Neponset-Campaign-Report-06252018). UMass Boston will amplify the "Fowl Water" message by adding links on UMass Boston's stormwater webpage (BMP 1-2).

Targeted Audience:

- Visitors, students, and staff

Responsible Department/Parties:

- Massachusetts Statewide Stormwater Coalition

Measurable Goal(s):

- Views in Boston region

BMP 1-2: Website Updates

Description:

UMass Boston will update our stormwater management website with stormwater pollution prevention tips, links to ThinkBlue Massachusetts videos and educational materials, and information about UMass Boston's stormwater management program. The educational material will include topics relevant to students, staff, and contractors. The webpage is located at: https://www.umb.edu/ehs/environmental/stormwater_info

Targeted Audience:

- Students, staff, contractors

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Updates completed

BMP 1-3: Social Media Post about Stormwater Pollution Prevention

Description:

UMass Boston will post on social media about pollution prevention and will provide a link to UMass Boston stormwater webpage. The educational message will focus on general stormwater awareness and pollution prevention (such as ThinkBlue's Stormwater 101 materials).

Targeted Audience:

- Visitors, students, and staff

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Followers, likes, shares, and comments

BMP 1-4: Social Media Post About Dog Waste Management

Description:

UMass Boston will post on social media with the Think Blue Massachusetts pet waste meme, "Do your doody."

Targeted Audience:

- Visitors, students, and staff

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Followers, likes, shares, and comments

BMP 1-5: Stormwater Fact Sheet

Description:

UMass Boston will provide stormwater awareness and pollution prevention fact sheets to contractors with new purchase orders to educate them on stormwater management. For designers, UMass Boston will also provide the Architecture and Landscape Design Guidelines, which include Low Impact Development (LID) guidelines. The Guidelines are available at:
https://www.umb.edu/editor_uploads/images/university/masterplan/Design_Guidelines_121019FINAL_1.pdf

Targeted Audience:

- Contractors

Responsible Department/Parties:

- Office of Environmental Health & Safety, Department of Facilities

Measurable Goal(s):

- Number of fact sheets distributed

MCM 2 Public Involvement and Participation

Permit Part 2.3.3

Objective

UMass Boston's objective for our Public Involvement and Participation program is to engage the public in review and implementation of the SWMP.

Program Overview

The following table summarizes the public involvement and participation BMPs and schedule.

BMP	Schedule by Permit Year (Fiscal Year)					
	1 (FY19)	2 (FY20)	3 (FY21)	4 (FY22)	5 (FY23)	6 (FY24)
2-1: Public Review of SWMP	x	x	x	x	x	x
2-2: Stormwater Hotline	x	x	x	x	x	x
2-3: Coastal Cleanups	x	x	x	x	x	x

BMP 2-1: Public Review of Stormwater Management Program (SWMP)

Description:

UMass Boston will post our SWMP online on the EHS website (BMP 1-2) to allow for ongoing public review of the SWMP. To make sure the webpage is easy to find, UMass will add links to the stormwater page on other sites such as the sustainability-green campus webpage. The stormwater website will provide a phone number and email address for the public to provide comments. UMass Boston will annually share the stormwater management website link on a social media post, so the public can easily navigate to the page and review the SWMP. The SWMP is located at: https://www.umb.edu/ehs/environmental/stormwater_info

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Post stormwater management plan on website

BMP 2-2: Stormwater Hotline

Description:

UMass Boston will provide a phone number and email address on the stormwater webpage for the public to report drainage problems or potential stormwater pollution issues, such as clogged storm drains, excessive litter, illegal dumping, illicit discharges, and sediment from construction sites flowing into the storm drain.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Track comments received and resolutions

BMP 2-3: Coastal Cleanups

Description:

UMass Boston will support volunteer litter cleanups by students and staff. In 2018, a student group called Green Planet Living Learning Community participated in the CoastSweep cleanup. The Facilities Department and Division of Student Affairs will continue to support CoastSweep and other volunteer cleanup opportunities.

Responsible Department/Parties:

- Department of Facilities and Division of Student Affairs

Measurable Goal(s):

- Number of cleanup events sponsored/supported annually

MCM 3 Illicit Discharge Detection and Elimination (IDDE) Program

Permit Part 2.3.4

Objective

UMass Boston's objective for the IDDE program is to systematically find and eliminate illicit sources of non-stormwater discharges to our MS4 and to prevent such discharges.

Program Overview

The following table summarizes the IDDE BMPs and schedule.

BMP	Schedule by Permit Year (Fiscal Year)					
	1 (FY19)	2 (FY20)	3 (FY21)	4 (FY22)	5 (FY23)	6 (FY24)
3-1: Written IDDE Program				x	x	x
3-2: Sanitary Sewer Overflow (SSO) Inventory				Initial inventory	x	x
3-3: Map of Storm Sewer System		x	x	x	Complete phase 1 map	Begin phase 2 map
3-4: Employee Training	x	x	x	x	x	x
3-5: Dry Weather Screening					x	x
3-6: Catchment Investigations						x
3-7: Wet Weather Screening						x
3-8: Ongoing Screening (beyond permit term)						

BMP 3-1: Written IDDE Program

Description:

UMass Boston will develop a written IDDE program, which will include:

- Illicit discharge policy,
- Roles and responsibilities
- SSO inventory
- Assessment and priority ranking of outfalls/interconnections
- Dry weather outfall screening and sampling procedures
- Catchment investigation procedures
- Wet weather sampling procedures

- Training
- Reporting

UMass Boston will complete initial outfall assessment and ranking in Permit Year 4 (FY2023), using available data. As new data become available through GIS mapping, outfall inspections, and catchment investigations, UMass Boston will annually update the outfall ranking. Outfalls will be categorized as Problem, High Priority, Low Priority, or Excluded, as defined in the MS4 Permit at Part 2.3.4.7. Outfalls discharging to waterbodies impaired for or with a TMDL for bacteria or pathogens will be categorized as Problem or High Priority.

UMass Boston will update the IDDE Program annually and will post the Program online on our stormwater management webpage.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete within 4 years of permit effective date (by June 30, 2022) and update as required

BMP 3-2: Sanitary Sewer Overflow (SSO) Inventory

Description:

UMass Boston will develop an inventory of sanitary sewer overflows (SSOs) that have occurred on the UMass Boston campus over the past 5 years and will update that list annually. An SSO is a discharge of untreated sanitary wastewater from a municipal sanitary sewer. In the case of SSOs from Boston Water and Sewer Commission (BWSC) sanitary and combined sewers, BWSC is responsible for reporting and mitigation measures.

UMass Boston will update the SSO inventory annually and will include the SSO inventory in the written IDDE program (BMP 3-1).

Responsible Department/Parties:

- Office of Environmental Health & Safety and Department of Facilities

Measurable Goal(s):

- Complete within 4 years of permit effective date (by June 30, 2022) and update as required

BMP 3-3: Map of Storm Sewer System

Description:

UMass Boston will incrementally build a GIS map of our stormwater system. The map will be included in UMass Boston's written IDDE program (BMP 3-1).

The Phase I map, scheduled to be completed by June 30, 2023, will include:

- Outfalls
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- UMass Boston-owned stormwater treatment structures (e.g., detention and retention basins, infiltration systems, bioretention areas, water quality swales, particle separators, oil/water separators, or other proprietary systems)
- Waterbodies identified by name and indication of all use impairments as identified on the most recent EPA approved Massachusetts Integrated List of Waters report
- Initial catchment delineations. A catchment is the area that drains to an individual outfall or interconnection.

The Phase II map, scheduled to be completed by June 30, 2031, will include:

- Outfall spatial location (latitude and longitude with a minimum accuracy of +/-30 feet)
- Pipes
- Manholes
- Catch basins
- Refined catchment delineations. Catchment delineations will be updated to reflect information collected during catchment investigations
- Municipal sanitary sewer system (if available)
- Municipal combined sewer system (if applicable).

Responsible Department/Parties:

- Office of Environmental Health & Safety and Department of Facilities

Measurable Goal(s):

- Prepare Phase 1 map within 5 years of permit effective date (by June 30, 2023) and complete full system map 13 years after permit effective date (by June 30, 2031)

BMP 3-4: Employee Training

Description:

UMass Boston will discuss stormwater management and the IDDE Program, including how to recognize and respond to illicit discharges and SSOs, at the annual training for Facilities Department staff.

Responsible Department/Parties:

- Office of Environmental Health & Safety and Department of Facilities

Measurable Goal(s):

- Train annually

BMP 3-5: Dry Weather Screening

Description:

UMass Boston will conduct dry weather outfall screening in accordance with outfall screening procedures and permit conditions to identify illicit contributions to the system. Procedures for and findings from dry weather outfall screening will be documented in the written IDDE Program (BMP 3-1). UMass Boston will complete dry weather screening of all outfalls by June 30, 2024.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete within 6 years of permit effective date (by June 30, 2024)

BMP 3-6: Catchment Investigations

Description:

UMass Boston will implement catchment investigations according to program and permit conditions. Procedures for and findings from catchment investigations will be documented in the written IDDE Program (BMP 3-1). UMass Boston will complete catchment investigations by June 30, 2031.

Responsible Department/Parties:

- Office of Environmental Health & Safety and Department of Facilities

Measurable Goal(s):

- Complete within 13 years of permit effective date (by June 30, 2031)

BMP 3-7: Wet Weather Screening

Description:

UMass Boston will conduct wet weather screening in accordance with outfall screening procedure to identify illicit discharges to our MS4. Procedures for and findings from wet weather screening will be documented in the written IDDE Program (BMP 3-1). UMass Boston will complete wet weather screening by June 30, 2031.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete within 13 years of permit effective date (by June 30, 2031)

BMP 3-8: Ongoing Screening

Description:

After completion of BMPs 3-5, 3-6, and 3-7, UMass Boston will continue dry weather and wet weather screening as necessary to identify and eliminate illicit discharges.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete ongoing outfall screening upon completion of IDDE program

MCM 4 Construction Site Stormwater Runoff Control

Permit Part 2.3.5

Objective

UMass Boston's objective for our construction stormwater runoff control program is 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 U.S. through UMass Boston's MS4.

Program Overview

The following table summarizes Construction Site Stormwater Runoff Control BMPs and schedule.

BMP	Schedule by Permit Year (Fiscal Year)					
	1 (FY19)	2 (FY20)	3 (FY21)	4 (FY22)	5 (FY23)	6 (FY24)
4-1: Construction Site Stormwater Runoff Control Policy	x	x	x	x	x	x
4-2: Project Design Review	x	x	x	x	x	x
4-3: Erosion and Sediment Control and Construction Waste Management for Campus Projects	x	x	x	x	x	x
4-4: Site Inspection	x	x	x	x	x	x

BMP 4-1: Construction Site Stormwater Runoff Control Policy

Description:

As a non-traditional MS4, UMass Boston does not have the authority to enact an ordinance, bylaw, or other regulatory mechanism regarding construction site stormwater management. The MS4 Permit at Part 5.1.2 stipulates that MS4s without the authority to enact an ordinance should instead have written policies or procedures in place to ensure erosion and sediment control and control of construction wastes on projects that disturb one or more acres of land.

UMass Boston will ensure construction site stormwater management through compliance with the NPDES Construction General Permit for campus projects disturbing over 1 acre.

Responsible Department/Parties:

- Office of Environmental Health & Safety, Department of Facilities, UMass Building Authority

Measurable Goal(s):

- Continue to comply with NPDES Construction General Permit

BMP 4-2: Project Design Review

Description:

UMass Boston will review capital project designs by other public agencies (UMass Building Authority, DCAMM) for the UMass Boston campus.

Responsible Department/Parties:

- Office of Environmental Health & Safety and Department of Facilities

Measurable Goal(s):

- Continue to perform internal reviews

BMP 4-3: Erosion and Sediment Control and Construction Waste Management for Campus Projects

Description:

UMass Boston will develop Stormwater Pollution Prevention Plans (SWPPPs) for projects with land disturbance of one or more acres.

Responsible Department/Parties:

- Office of Environmental Health & Safety, Department of Facilities, UMass Building Authority

Measurable Goal(s):

- Number of new construction projects with SWPPPs

BMP 4-4: Site Inspection

Description:

UMass Boston will require contractors to perform site inspections on campus projects in accordance with NPDES construction general permit requirements. UMass Building Authority will ensure compliance for projects under its oversight.

Responsible Department/Parties:

- Office of Environmental Health & Safety, Department of Facilities, UMass Building Authority

Measurable Goal(s):

- Number of new construction projects with SWPPPs

MCM 5 Post-Construction Stormwater Management in New Development and Redevelopment

Permit Part 2.3.6

Objective

UMass Boston's objective for our post-construction stormwater management program is to reduce the discharge of stormwater pollutants to our MS4 and receiving waterbodies. This is accomplished by retaining or treating stormwater runoff after construction on new or redeveloped sites, and by ensuring proper maintenance of installed stormwater controls.

Program Overview

The following table summarizes Post-Construction Stormwater Management BMPs and schedule.

BMP	Schedule by Permit Year (Fiscal Year)					
	1 (FY19)	2 (FY20)	3 (FY21)	4 (FY22)	5 (FY23)	6 (FY24)
5-1: Design Guidelines for New Development and Redevelopment			x			
5-2: As-Built Plans for On-Site Stormwater Control			x	x	x	x
5-3: Target Properties for Stormwater Retrofits						x
5-4: Street Design and Parking Lot Guidelines						x

BMP 5-1: Design Guidelines for New Development and Redevelopment

Description:

UMass Boston will ensure any stormwater controls or management practices for new development and redevelopment meet the retention or treatment requirements of the permit and all applicable requirements of the Massachusetts Stormwater Handbook. UMass Boston will adopt design guidelines for post-construction stormwater management to meet permit requirements.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete within 3 years of permit effective date (by June 30, 2021)

BMP 5-2: As-Built Plans for On-Site Stormwater Control

Description:

UMass Boston will require contractors to submit as-built plans. Procedures will require submission of as-built drawings no later than two (2) years after completion of applicable UMass Boston construction projects. The as-built drawings will depict all on-site controls, both structural and non-structural, designed to manage stormwater associated with the completed site.

Responsible Department/Parties:

- Department of Facilities, UMass Building Authority, DCAMM

Measurable Goal(s):

- Require submission of as-built plans for completed projects

BMP 5-3: Target Properties for Stormwater Retrofits

Description:

UMass Boston will identify at least five (5) campus sites that could be modified or retrofitted with stormwater BMPs to reduce the frequency, volume, and pollutant loads of stormwater discharges from our MS4. In determining the potential for modifying or retrofitting particular properties, UMass Boston will consider factors such as maintenance access; subsurface conditions; proximity to water supply, swimming beaches, and shellfish growing areas; and opportunities for public education. UMass Boston will compile the list of potential retrofits, with five (5) prioritized sites, by the end of Permit Year 6. Beginning with the seventh annual report and in each subsequent annual report, UMass Boston will identify additional sites that could be retrofitted, to maintain a minimum of five (5) sites in the inventory. UMass Boston will report on all properties that have been modified or retrofitted with BMPs in each annual report.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete within 6 years of permit effective date (by June 30, 2024) and report annually on retrofitted properties.

BMP 5-4: Street Design and Parking Lot Guidelines

Description:

UMass Boston will review campus road and parking lot design standards and other design guidelines that affect the creation of impervious cover. The assessment will help determine if changes can be made to support low impact design options, such as permeable paving and minimizing impervious surface. If the assessment indicates that changes can be made, the report will include recommendations and proposed schedules to incorporate policies and standards into relevant documents and procedures to minimize impervious cover

attributable to parking areas and roadway designs. UMass Boston will implement recommendations, in accordance with the schedules contained in the assessment.

Responsible Department/Parties:

- Office of Environmental Health & Safety and Office of Campus Master Planning

Measurable Goal(s):

- Complete within 6 years of permit effective date (June 30, 2024) and implement recommendations of report

MCM 6 Good Housekeeping and Pollution Prevention for Permittee Owned Operations

Permit Part 2.3.7

Objective

The objective of UMass Boston's Good Housekeeping program is to prevent or reduce pollutant runoff from the Columbia Point campus.

Program Overview

The following table summarizes Good Housekeeping BMPs and schedule.

BMP	Schedule by Permit Year (Fiscal Year)					
	1 (FY19)	2 (FY20)	3 (FY21)	4 (FY22)	5 (FY23)	6 (FY24)
6-1: Campus Facility Inventory				x	x	x
6-2: Facility O&M Procedures				x	x	x
6-3: Facility SWPPPs				x	x	x
6-4: Written MS4 O&M Program				x	x	x
6-5: Catch Basin Inspection and Cleaning	x	x	x	x	x	x
6-6: Street and Parking Lot Sweeping	x	x	x	x	x	x
6-7: Winter Road Maintenance	x	x	x	x	x	x
6-8: Stormwater Treatment Facility Inspections	x	x	x	x	x	x

BMP 6-1: Campus Facility Inventory

Description:

UMass Boston will create an inventory of campus open spaces, buildings and facilities, and vehicles and equipment maintenance and storage areas.

Responsible Department/Parties:

- Department of Facilities and Office of Campus Master Planning

Measurable Goal(s):

- Complete within 4 years of permit effective date (by June 30, 2022); review annually and update as necessary

BMP 6-2: Facility Operations & Maintenance (O&M) Procedures

Description:

UMass Boston will develop written O&M procedures including all requirements contained in 2.3.7.a.ii for open space, buildings and facilities, and vehicle and equipment storage and maintenance areas. The O&M Procedures will include pollution prevention practices specific to each category, as listed below.

1) Open Space:
    - Use, storage, and disposal of pesticides, herbicides, and fertilizers
    - Lawn maintenance and landscaping
    - Pet waste collection and disposal stations
    - Trash container placement and cleanings
    - Erosion control and vegetative cover
2) Buildings and facilities where pollutants are exposed to stormwater runoff:
    - Use, storage, and disposal of petroleum products and other potential stormwater pollutants
    - Employee training
    - Spill prevention plans, if applicable
    - Management of dumpsters and other waste management equipment
    - Sweeping and cleaning around facilities
3) Vehicles and equipment
    - Vehicle storage
    - Management of vehicles with fluid leaks
    - Fueling areas
    - Vehicle wash waters

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete and implement within 4 years of permit effective date (by June 30, 2022); review annually and update as necessary

BMP 6-3: Facility Stormwater Pollution Prevention Plan (SWPPP)

Description:

The MS4 Permit Part 2.3.7.b stipulates that permittees must develop Stormwater Pollution Prevention Plans (SWPPPs) for permittee-owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater as determined by the permittee.

UMass Boston has assessed its campus and determined that the campus does not currently have any waste-handling facilities where pollutants are exposed to stormwater. UMass Boston will annually evaluate campus

facilities to determine whether any facilities have materials and waste storage or handling that may be exposed to stormwater.

UMass Boston will continue to implement our existing Spill Prevention, Control, and Countermeasure (SPCC) plans.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete and implement within 4 years of permit effective date (June 30, 2022)

BMP 6-4: MS4 Infrastructure Operations & Maintenance (O&M)

Description:

UMass Boston will develop a written program detailing the activities and procedures UMass Boston will implement so that the MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4. The written O&M program will include catch basin cleaning (BMP 6-5), street and parking lot sweeping (BMP 6-6), winter road maintenance (BMP 6-7), and stormwater treatment facility inspection and maintenance (BMP 6-8).

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Complete within 4 years of permit effective date (by June 30, 2022); review annually and update as necessary

BMP 6-5: Catch Basin Cleaning Program

Description:

Starting during Permit Year 2, UMass Boston will start to track catch basin sediment depth during routine catch basin cleaning. Inspectors will record sediment depth within catch basin sumps as less than half full, half full, or greater than half full. Catch basins found to have sediment depth greater than half full will be prioritized for cleaning during Permit Year 3. Following two years of data collection, UMass Boston will complete an optimization analysis to schedule routine inspections, cleaning, and maintenance of catch basins such that the following conditions are met:

- Prioritize inspection and maintenance for catch basins located near construction activities. Clean catch basins in such areas more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings.
- Establish a schedule with a goal that the frequency of routine cleaning will ensure that no catch basin at any time will be more than 50 percent full.
- If a catch basin sump is more than 50 percent full during two consecutive routine inspections/cleaning

events, document that finding, investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practicable, abate contributing sources. Describe any actions taken in annual report.

UMass Boston will report in each annual report the total number of catch basins, number inspected, number cleaned, and the total volume or mass of material removed from all catch basins.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Clean catch basins on established schedule and report number of catch basins cleaned and volume of material removed annually

BMP 6-6: Street and Parking Lot Sweeping

Description:

UMass Boston will sweep campus roads and parking lots a minimum of once per year (in the spring) and will sweep more frequently in areas with land uses that generate higher sediment loading and/or where catch basin inspections indicate higher loading rates.

Responsible Department/Parties:

- Department of Facilities

Measurable Goal(s):

- Sweep campus streets and parking lots once per year in the spring

BMP 6-7: Winter Road Maintenance

Description:

UMass Boston will establish and implement written procedures for winter road maintenance, including the use and storage of salt and sand. UMass Boston will minimize the use of sodium chloride and other salts and will evaluate opportunities for use of alternative materials. UMass Boston will also ensure that snow disposal activities do not result in disposal of snow into waters of the United States.

Responsible Department/Parties:

- Department of Facilities

Measurable Goal(s):

- Implement salt use optimization during deicing season

BMP 6-8: Inspection and Maintenance of Stormwater Treatment Structures

Description:

UMass Boston will establish and implement inspection and maintenance procedures and frequencies of stormwater treatment structures such as water quality swales, detention basins, infiltration structures, and proprietary treatment devices. UMass Boston will inspect all campus stormwater treatment structures (excluding catch basins) annually at a minimum.

Responsible Department/Parties:

- Office of Environmental Health & Safety

Measurable Goal(s):

- Inspect and maintain treatment structures at least annually

Water Quality Limited Waters

The MS4 Permit at Part 2.2 describes additional requirements for MS4s that discharge to waters that are subject to Total Maximum Daily Loads (TMDLs) and/or that discharge to certain water quality limited waters. Specific requirements are detailed in the MS4 Permit Appendix F (for TMDLs) and Appendix H (for impaired waters).

This section identifies UMass Boston's receiving waterbodies that are impaired. None of UMass Boston's receiving waterbodies are subject to TMDLs. Accordingly, this section only describes the BMPs that UMass Boston will implement to meet the MS4 Permit requirements at Part 2.2 and Appendix H.

Bacteria/Pathogens

Dorchester Bay (MA70-03) is impaired due to fecal coliform and enterococcus. Discharges to Dorchester Bay are therefore subject to the provisions of MS4 Permit Appendix H Part III. The following table summarizes the Enhanced BMPs, as described under the MCMs above, that UMass Boston will implement to meet Appendix H Part III requirements.

Requirements	Enhanced BMPs
Supplement public education program with an annual message encouraging the proper management of pet waste	BMP 1-4 Social Media Post about Dog Waste Management • UMass Boston will annually share a social media post with Think Blue Massachusetts pet waste meme, "Do your doody".
Disseminate educational materials to dog owners at the time of issuance or renewal of a dog license, or other appropriate time	This requirement is not applicable to UMass Boston, as it does not have the authority to issue dog licenses.
Provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria or pathogens	This requirement is not applicable to UMass Boston, as it does not own or operate septic systems.
Designate catchments draining to any waterbody impaired for bacteria/pathogens as either Problem Catchments or High Priority in implementation of the IDDE Program.	BMP 3-1: Written IDDE Program • UMass Boston will designate all catchments to Dorchester Bay as either Problem or High Priority.

Solids

A previous version of this SWMP included enhanced BMPs to meet MS4 Permit Appendix H Part V requirements for discharges to solids-impaired waterbodies. The final 2016 Massachusetts Integrated List of Waters removes the solids impairment for Dorchester Bay, noting that water quality standards have been achieved due to restoration activities. UMass Boston is therefore no longer subject to MS4 Permit Appendix H Part V.

Annual Evaluation

This section will be updated annually as annual reports are completed.

Year 1 Annual Report
https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2019/umass-boston-ma-ar19.pdf

Year 2 Annual Report
Document Name and/or Web Address:
https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2020/umass-boston-ma-ar20.pdf

Year 3 Annual Report
Document Name and/or Web Address:
https://www3.epa.gov/region1/npdes/stormwater/ma/reports/2021/UMASS_BOSTON_MA_AR21.pdf

Year 4 Annual Report
Document Name and/or Web Address:

Year 5 Annual Report
Document Name and/or Web Address:

Year 6 Annual Report
Document Name and/or Web Address:

Appendix A – IPaC Resource List

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Suffolk County, Massachusetts

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

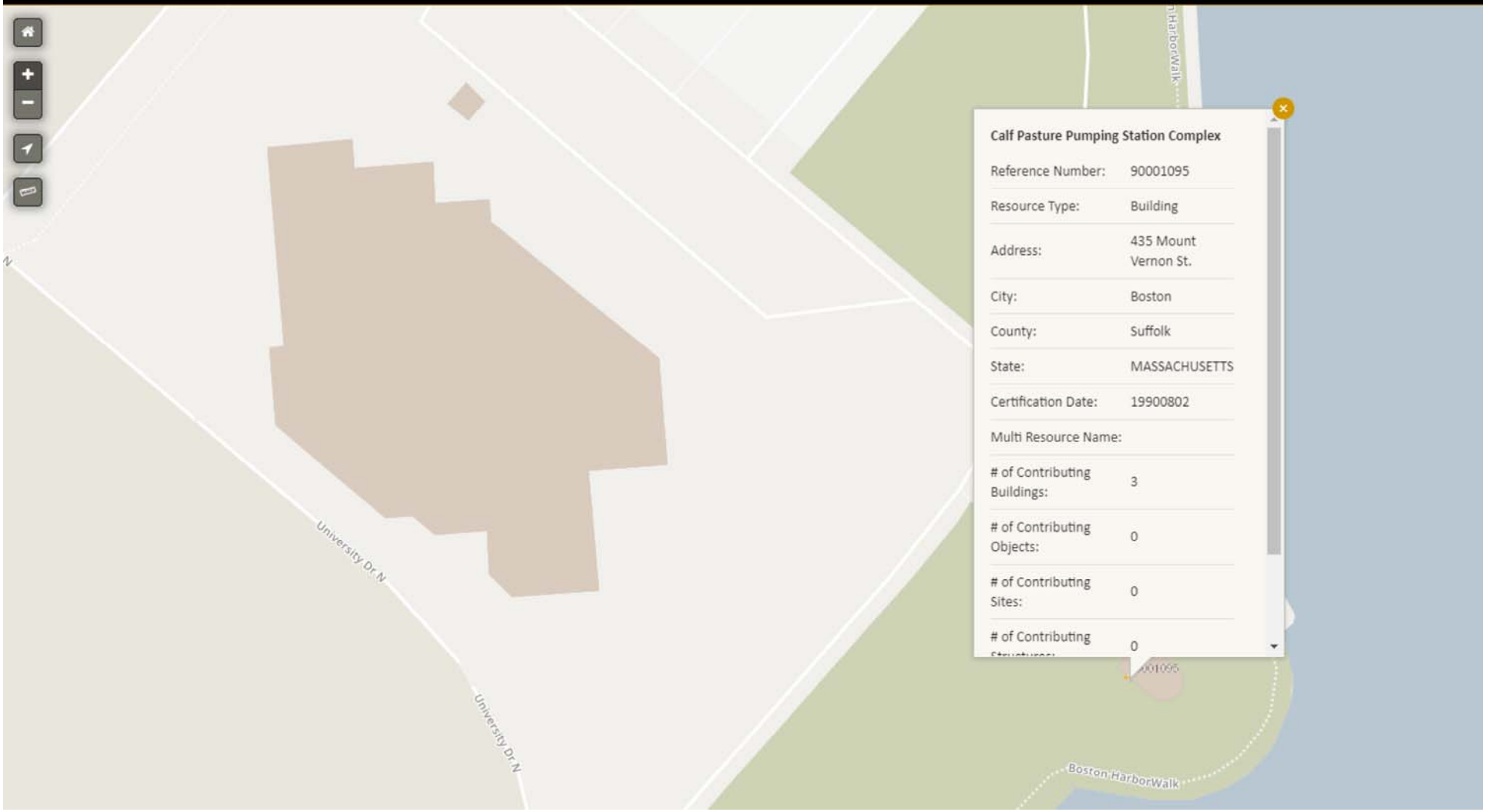
1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

THERE ARE NO ENDANGERED SPECIES EXPECTED TO OCCUR AT THIS LOCATION.

Appendix B – National Register of Historic Places Map

National Register of Historic Places

Public, non-restricted data depicting National Register spatial data processed by the Cultural Resources GIS facility. Data last updated in April, 2014.



Calf Pasture Pumping Station Complex

Reference Number:	90001095
Resource Type:	Building
Address:	435 Mount Vernon St.
City:	Boston
County:	Suffolk
State:	MASSACHUSETTS
Certification Date:	19900802
Multi Resource Name:	
# of Contributing Buildings:	3
# of Contributing Objects:	0
# of Contributing Sites:	0
# of Contributing	0

Appendix C – IDDE Plan

University of Massachusetts Boston

Illicit Discharge Detection and Elimination (IDDE) Plan

June 30, 2022

(Revised August 15, 2023)

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University of Massachusetts Boston

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1 Introduction

1.1 MS4 Program

This Illicit Discharge Detection and Elimination (IDDE) Plan has been developed by the University of Massachusetts (UMass) Boston to address the requirements of the United States Environmental Protection Agency's (USEPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit."

The 2016 Massachusetts MS4 Permit requires that each permittee, or regulated community, address six Minimum Control Measures. These measures include the following:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination Program
4. Construction Site Stormwater Runoff Control
5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management); and
6. Good Housekeeping and Pollution Prevention for Permittee Owned Operations.

Under Minimum Control Measure 3, the permittee is required to implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges. The IDDE program must also be recorded in a written (hardcopy or electronic) document. This IDDE Plan has been prepared to address this requirement.

1.2 Illicit Discharges

An "illicit discharge" is any discharge to a drainage system that is not composed entirely of stormwater, with the exception of discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire-fighting activities.

Illicit discharges may take a variety of forms. Illicit discharges may enter the drainage system through direct or indirect connections. Direct connections may be relatively obvious, such as cross-connections of sewer services to the storm drain system. Indirect illicit discharges may be more difficult to detect or address, such as failing septic systems that discharge untreated sewage to a ditch within the MS4, or a sump pump that discharges contaminated water on an intermittent basis.

Some illicit discharges are intentional, such as dumping used oil (or other pollutant) into catch basins, a contractor illegally tapping a new sewer lateral into a storm drain pipe to avoid the costs of a sewer connection fee and service, and illegal dumping of yard wastes into surface waters. Some illicit discharges are related to the unsuitability of original infrastructure to the modern regulatory environment. Examples of illicit discharges in this category include connected floor drains in old buildings, as well as sanitary sewer overflows that enter the drainage system. Sump pumps legally connected to the storm

drain system may be used inappropriately, such as for the disposal of floor washwater or old household products, in many cases due to a lack of understanding on the part of the staff or student.

Elimination of some discharges may require substantial costs and efforts, such as funding and designing a project to reconnect sanitary sewer laterals. Others, such as improving self-policing of waste management, can be accomplished by outreach and training in conjunction with commitment to properly dispose of collected waste materials on a regular basis.

Regardless of the intention, when not addressed, illicit discharges can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens to surface waters.

1.3 Allowable Non-Stormwater Discharges

The following categories of non-storm water discharges are allowed under the MS4 Permit unless the permittee, USEPA or Massachusetts Department of Environmental Protection (MassDEP) identifies any category or individual discharge of non-stormwater discharge as a significant contributor of pollutants to the MS4:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped groundwater
- Discharge from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual car washing
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

If these discharges are identified as significant contributors to the MS4, they must be considered an "illicit discharge" and addressed in the IDDE Plan (i.e., control these sources so they are no longer significant contributors of pollutants, and/or eliminate them entirely).

1.4 Receiving Waters and Impairments

Table 1-1 lists the "impaired waters" within the boundaries of UMass Boston's regulated area based on the 2018-2020 Massachusetts Integrated List of Waters produced by MassDEP every two years. Impaired waters are water bodies that do not meet water quality standards for one or more designated use(s) such as recreation or aquatic habitat.

Table 1-1. Impaired Waters

University of Massachusetts Boston

Water Body Name	Segment ID	Category	Impairment(s)	Associated Approved TMDL
Dorchester Bay	MA70-03	5	Fecal coliform, enterococcus, other (contaminants in fish and shellfish), PCB in fish tissue	N/A

Category 5 Waters – impaired water bodies that require a TMDL.
"Approved TMDLs" are those that have been approved by EPA as of the date of issuance of the 2016 MS4 Permit.

1.5 IDDE Program Goals, Framework, and Timeline

The goals of the IDDE program are to find and eliminate illicit discharges to municipal separate storm sewer system and to prevent illicit discharges from happening in the future. The program consists of the following major components as outlined in the MS4 Permit:

- University policy to prohibit illicit discharges and enforce this prohibition,
- Storm system mapping,
- Inventory and ranking of outfalls,
- Dry weather outfall screening,
- Catchment investigations,
- Identification/confirmation of illicit sources,
- Illicit discharge removal,
- Follow-up screening, and
- Employee training.

The IDDE investigation procedure framework is shown in **Figure 1-1.** The required timeline for implementing the IDDE program is shown in **Table 1-2**.

Figure 1-1. IDDE Investigation Procedure Framework

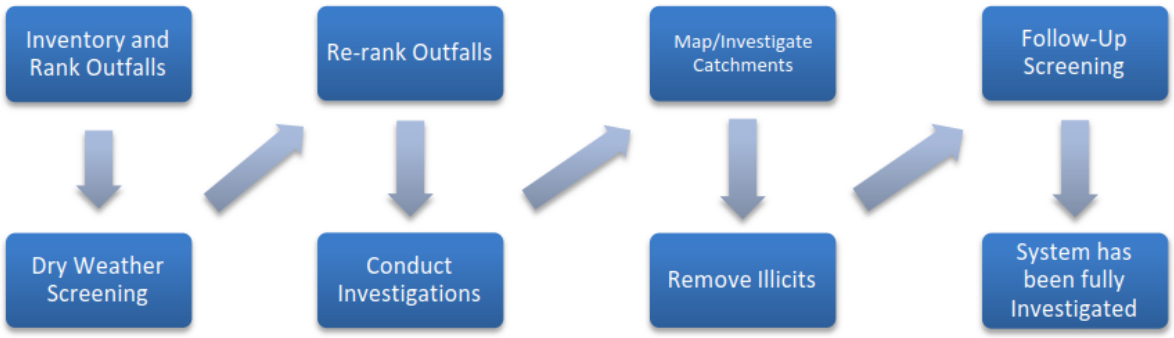


Table 1-2. IDDE Program Implementation Timeline[1]

IDDE Program Requirement	Completion Date from Effective Date of Permit						
	3 Years	4 Years	4.5 Years	5 Years	6 Years	10 Years	13 Years
Written IDDE Program Plan		X					
SSO Inventory		X					
Written Catchment Investigation Procedure			X				
Phase I Mapping				X			
Phase II Mapping							X
IDDE Regulatory Mechanism	X						
Dry Weather Outfall Screening					X		
Follow-up Ranking of Outfalls and Interconnections					X		
Catchment Investigations – Problem and Highest Priority Outfalls						X	
Catchment Investigations – all Problem, High and Low Priority Outfalls							X

[1] UMass Boston is categorized as a new permittee since it was not covered under the 2003 MS4 Permit. Per Part 1.10.3 of the MS4 Permit, the IDDE regulatory mechanism or By-Law required by Part 2.3.6 shall be completed as soon as possible, but no later than three (3) years from the permit effective date for new permittees. All other IDDE deadlines required by Part 2.3.6 shall be extended by three (3) years.

1.6 Work Completed to Date

UMass Boston is categorized as a new permittee since it was not covered under the 2003 MS4 Permit. In Permit Year 3, UMass Boston developed an Illicit Discharge Policy prohibiting discharges to the UMass Boston drainage system that are not stormwater. In Permit Year 5, UMass Boston completed Phase I mapping and initial catchment delineations of outfall catchments, and performed dry weather screening of outfalls. Phase II mapping is in progress. Dry weather screening was conducted in Permit Year 5 and results were used to re-prioritize final outfalls. Remaining dry weather screening and outfall prioritization will be completed in Permit Year 6, followed by catchment investigations as needed.

2 Authority and Statement of IDDE Responsibilities

2.1 Authority

UMass Boston is required to adopt a campus policy, to provide the University with adequate authority to prohibit illicit discharges and investigate suspected illicit discharges. In Permit Year 3 (Fiscal Year 2021), UMass Boston developed a IDDE policy in the form of a factsheet. The IDDE policy meets the requirements of the 2016 MS4 Permit, including the authorities listed above.

2.2 Statement of Responsibilities

The IDDE policy referenced above identifies the Office of Environmental Health & Safety (EHS) as responsible for implementing the IDDE program and enforcement.

3 Stormwater System Mapping

The 2016 MS4 Permit requires the storm system map to be updated in two phases as outlined below. The EHS is responsible for updating the stormwater system mapping pursuant to the 2016 MS4 Permit. UMass Boston will report on the progress towards completion of the storm system map in each annual report. Updates to the stormwater mapping will be included in the online map available at this link: https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=961f0cce1e8c4cb099789ccb2c8320a6

3.1 Phase I Mapping

Phase I mapping must be completed within five (5) years of the effective date of the permit (July 1, 2023) and include the following information:

- Outfalls and receiving waters
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- University owned stormwater treatment structures
- Water bodies identified by name and indication of all use impairments as identified on the most recent EPA approved Massachusetts Integrated List of Waters report
- Initial catchment delineations. Topographic contours and drainage system information may be used to produce initial catchment delineations.

In Permit Year 5, UMass Boston completed Phase I mapping and initial catchment delineations of outfall catchments.

3.2 Phase II Mapping

Phase II mapping is ongoing and must be completed within thirteen (13) years of the effective date of the permit (July 1, 2031). Phase II mapping includes the following information:

- Outfall spatial location (latitude and longitude with a minimum accuracy of +/-30 feet)
- Pipes
- Manholes
- Catch basins
- Refined catchment delineations. Catchment delineations must be updated to reflect information collected during catchment investigations.

UMass Boston will update its stormwater mapping by July 1, 2031 to include the remaining Phase II information.

4 Sanitary Sewer Overflows (SSOs)

The 2016 MS4 Permit requires permittees to prohibit illicit discharges, including sanitary sewer overflows (SSOs), to the separate storm sewer system. SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism.

Upon detection of an SSO, UMass Boston will eliminate it as expeditiously as possible and take interim measures to minimize the discharge of pollutants to and from its MS4 until the SSO is eliminated. Upon becoming aware of an SSO to the MS4, UMass Boston will provide oral notice to EPA within 24 hours and written notice to EPA, and MassDEP within five (5) days of becoming aware of the SSO occurrence.

The EHS office will update the SSO inventory in this Plan when new SSOs are detected. The SSO inventory will be included in the annual report, including the status of mitigation and corrective measures to address each identified SSO. There is currently no SSO inventory in this Plan as no SSOs have occurred to date.

5 Assessment and Priority Ranking of Outfalls

The 2016 MS4 Permit requires an assessment and priority ranking of outfalls in terms of their potential to have illicit discharges and SSOs and the related public health significance. The ranking helps determine the priority order for performing IDDE investigations and meeting permit milestones.

5.1 Outfall Catchment Delineations

A catchment is the area that drains to an individual outfall[2] or interconnection.[3] The catchments for each of the final MS4 outfalls (i.e., outfalls discharging directly to Dorchester Bay) will be delineated to define contributing areas for investigation of potential sources of illicit discharges. Catchments are typically delineated based on topographic contours and mapped drainage infrastructure, where available. As described in **Section 3**, initial catchment delineations were completed as part of the Phase I mapping, and refined catchment delineations will be completed as part of the Phase II mapping to reflect information collected during catchment investigations.

5.2 Outfall and Interconnection Inventory and Initial Ranking

The EHS completed an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information. The initial inventory and ranking was completed within four (4) years from the effective date of the permit.

The outfall and interconnection inventory identifies each outfall and interconnection discharging from the MS4, records its location and condition, and provides a framework for tracking inspections, screenings and other IDDE program activities.

Outfalls and interconnections are classified into one of the following categories:

1. **Problem Outfalls**: Outfalls/interconnections with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Outfalls. Dry weather screening and sampling, as described in **Section 6** of this IDDE Plan and Part 2.3.4.7.b of the MS4 Permit, is not required for Problem Outfalls.

[2] **Outfall** means a point source as defined by 40 CFR § 122.2 as the point where the municipal separate storm sewer discharges to waters of the United States. An outfall does not include open conveyances connecting two municipal separate storm sewers or pipes, tunnels or other conveyances that connect segments of the same stream or other waters of the United States and that are used to convey waters of the United States. Culverts longer than a simple road crossing shall be included in the inventory unless the permittee can confirm that they are free of any connections and simply convey waters of the United States.

[3] **Interconnection** means the point (excluding sheet flow over impervious surfaces) where the permittee's MS4 discharges to another MS4 or other storm sewer system, through which the discharge is conveyed to waters of the United States or to another storm sewer system and eventually to a water of the United States.

2. **Highest Priority Outfalls:** Outfalls/interconnections that have not been classified as Problem Outfalls but have indicated likely sewer input based on Dry Weather Sampling results and need an investigation. Likely sewer input indicators are any of the following:

    - Olfactory or visual evidence of sewage,
    - Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
    - Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

3. **High Priority Outfalls**: Outfalls/interconnections that have not been classified as Problem Outfalls and that are:

    - Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds
    - Determined by the permittee as high priority based on the characteristics listed below or other available information.

4. **Low Priority Outfalls**: Outfalls/interconnections determined by the permittee as low priority based on the characteristics listed below or other available information.

5. **Excluded outfalls**: Outfalls/interconnections with no potential for illicit discharges may be excluded from the IDDE program. This category is limited to roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage for athletic fields, parks or undeveloped green space and associated parking without services; cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

Outfalls will be ranked into the above priority categories (except for excluded outfalls, which may be excluded from the IDDE program) based on the following characteristics of the defined initial catchment areas, where information is available. Additional relevant characteristics, including location-specific characteristics, may be considered but must be documented in this IDDE Plan.

- **Past discharge complaints, reports, and screening results.**

- **Discharging to Area of Concern to Public Health** – outfalls or interconnections that discharge to public beaches, recreational areas, drinking water supplies and/or shellfish beds

- **Impaired Waterbodies –** discharges to waters impaired for bacteria according to the most recent 303(d) list.

- **TMDL Watershed** – discharges to waters with an approved TMDL where illicit discharges may contribute to the pollutant of concern.

- **Density of generating sites within Catchment** – Generating sites are those places, including institutional, municipal, commercial, or industrial sites, with a potential to generate pollutants that could contribute to illicit discharges, based on land use codes or local knowledge.

5.3 Follow-up Ranking of Outfalls and Interconnections

An updated inventory and ranking will be provided in each annual report as needed. The inventory will be updated as needed to include data collected in connection with dry weather screening and other relevant inspections. Based on guidance in the permit, the outfalls identified as Problem Outfalls in Permit Year 4 prioritization remain problem outfalls for the permit requirements.

Outfalls/interconnections where dry weather screening information was found indicating sewer input to the MS4, or sampling results indicated sewer input, will be considered likely to contain illicit discharges from sanitary sources and will be ranked at the top of the High Priority Outfalls (as Highest Priority Outfalls) category for investigation. Investigations for Highest Priority Outfalls must be completed by Permit Year 10.

Table 5-1 provides the most recent UMass Boston outfall inventory and priority ranking.

Table 5-1. Outfall Inventory and Priority Ranking Matrix

Boston, Massachusetts
Revision Date 6/30/2023
Total Outfalls in Urban Area: 9
Highest Priority Outfalls: 1
High Priority Outfalls: 8
Low Priority Outfalls: 0

Outfall ID	Receiving Water		Reports or Complaints of Potential Illicit Discharges?[1]	Discharging to Area of Concern to Public Health?[2]				Receiving Water Quality [3]	TMDL Watershed[4]	Density of Generating Sites within Catchment[5]	Outfalls with Screening Results that Indicate Likely Sewer Input[6]	Score	Priority Ranking
Information Source			Town/Agency Records	a	b	c	d	Impaired Waters List	IDDE Screening/Sampling Results	Land Use/GIS Maps	IDDE Screening/Sampling Results		
Scoring Criteria			Yes = 40 (Problem Outfall) No = 0	Yes = 6 No = 0				Bacteria = 6 Other = 2 None = 0	Yes = 2 No = 0	High = 3 Medium = 2 Low = 0	Yes = 30 No = 0		Problem = ≥50 Highest Priority = ≥ 30 High Priority = ≥6 Low Priority = <6
OF-2A	MA70-03	Dorchester Bay	0	0	0	0	0	6	0	3	30	39	**Highest Priority**
OF-1A	MA70-03	Dorchester Bay	0	0	6	0	0	6	0	3	0	15	High Priority
OF-5A	MA70-03	Dorchester Bay	0	0	6	0	0	6	0	3	0	15	High Priority
OF-6A	MA70-03	Dorchester Bay	0	0	6	0	0	6	0	3	0	15	High Priority
OF-7A	MA70-03	Dorchester Bay	0	0	6	0	0	6	0	3	0	15	High Priority
OF-8	MA70-03	Dorchester Bay	0	0	6	0	0	6	0	3	0	15	High Priority
OF-10	MA70-03	Dorchester Bay	0	0	6	0	0	6	0	3	0	15	High Priority
OF-3A	MA70-03	Dorchester Bay	0	0	0	0	0	6	0	3	0	9	High Priority
OF-4A	MA70-03	Dorchester Bay	0	0	0	0	0	6	0	3	0	9	High Priority

Scoring Criteria:

[1] Previous reports of dumping, failing septic systems, odors, or other indications of potential illicit discharges.

[2] Outfalls/interconnections that discharge to or in the vicinity of (buffer of 1,000 feet used) any of the following areas, as determined via GIS evaluation of the following datalayers. Note: Discharges to an area of concern to public health will automatically be considered High Priority.

a. Public Beaches: https://www.mass.gov/info-details/massgis-data-state-designated-barrier-beaches
b. Recreational Areas (note: query layer for only PRIM_PURP = "R" to only review areas protected for recreation primarily): https://www.mass.gov/info-details/massgis-data-protected-and-recreational-openspace
c. Drinking Water Supplies: https://www.mass.gov/info-details/massgis-data-surface-water-supply-watersheds
d. Shellfish Beds: https://www.mass.gov/info-details/massgis-data-designated-shellfish-growing-areas

[3] Receiving water quality based on latest version of MassDEP Integrated List of Waters: https://www.mass.gov/lists/integrated-lists-of-waters-related-reports

- Bacteria: Discharges to waters or their tributaries listed as impaired for bacteria (Category 4a or 5 Waters). This may include waters impaired for Fecal Coliform or Escherichia coli.
  - Note: Discharges to bacteria impaired waters will automatically be considered High Priority, based on guidance provided in Appendix H of the 2016 Permit
- Other: Discharges to waters or their tributaries listed as impaired for pollutants other than bacteria (Category 4a or 5 Waters). This does not include waters impaired for non-pollutants.
- None: Discharges to waters or their tributaries with no water quality impairments (Category 2 or 3 Waters)

[4]Discharges to waters with an approved TMDL where illicit discharges have the potential to contain the pollutant identified as the cause of the impairment. Listing of approved TMDLs can be found here: https://www.mass.gov/lists/total-maximum-daily-loads-by-watershed

[5] Density of generating sites based on MassGIS Land Use layer: https://arcgisserver.digital.mass.gov/arcgisserver/rest/services/AGOL/LandCoverLandUse2016/FeatureServer/0 Note: If OF catchments contained multiple density rankings, the highest density scoring was applied.

- High Density: Catchment area contains any of the following Land Use Codes = 10, Multi-Family Residential; 11, High Density Residential; 15, Commercial; 16, Industrial; 17, Transitional; 18, Transportation; 19, Waste Disposal; 31, Urban Public/Institutional; 36, Nursery; 39, Junkyard
    - Note: Discharges with known sites with the high potential to generate pollutants that could contribute to illicit discharges within its catchment area should be included in this category. Examples include by are not limited to: car dealers, car washes, gas stations, garden centers, and industrial manufacturing areas.
- Medium Density: 50% or more of catchment area is made of up of Land Use Codes = 5, Mining; 7, Participation Recreation; 8, Spectator Recreation; 9, Water-Based Recreation; 12, Medium Density Residential; 13, Low Density Residential; 26, Golf Course; 29, Marina
- Low Density: 50% or more of catchment area is made of up of Land Use Codes = 1, Cropland; 2, Pasture; 3, Forest; 4, Non-Forested Wetland; 6, Open Land; 14, Saltwater Wetland, 20, Water; 23, Cranberry Bog; 24, Powerline/Utility; 25, Saltwater Sandy Beach; 34, Cemetery; 35, Orchard; 37, Forested Wetland; 38, Very Low Density Residential; 40, Brushland/Successional

[6] Previous screening results indicate likely sewer input if any of the following are true:

- Olfactory or visual evidence of sewage,
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine

6 Dry Weather Outfall Screening and Sampling

Dry weather flow is a common indicator of potential illicit connections. The MS4 Permit requires all final outfalls/interconnections (excluding Problem and excluded Outfalls) to be inspected for the presence of dry weather flow. The EHS is responsible for conducting dry weather outfall screening, starting with High Priority outfalls, followed by Low Priority outfalls, based on the initial priority rankings described in the previous section.

6.1 Weather Conditions

Dry weather outfall screening and sampling may occur when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring. For purposes of determining dry weather conditions, program staff will use precipitation data from the Savin Hill weather station (Station ID KMADORCH18). If Savin Hill station is not available or not reporting current weather data, then North Dorchester (Station ID KMADORCH16) will be used as a back-up. Additionally, since UMass Boston's final outfalls are tidally influenced, program staff will check tide charts to plan for the optimal time of day to conduct screening and sampling.

6.2 Dry Weather Screening/Sampling Procedure

6.2.1 General Procedure

The dry weather outfall inspection and sampling procedure consists of the following general steps:

1. Identify outfall(s) to be screened/sampled based on initial outfall inventory and priority ranking
2. Acquire the necessary staff, access to the ArcGIS Online mapping database, and field equipment (see **Table 6-1** for list of potential field equipment)
3. Conduct the outfall inspection during dry weather:
    a. Mark and photograph the outfall in the database
    b. Record the inspection information and outfall characteristics in the database (in digital form using a tablet or similar device) (see form in **Appendix A**).
    c. Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.
4. If flow is observed, sample and test the flow following the procedures described in the following sections.
5. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation, if practicable and necessary, to perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.

6. Input results from screening and sampling into database with mobile device. Include pertinent information in the outfall/interconnection inventory and priority ranking. See **Section 6.2.3.1** for additional information.
7. Include all screening data in the annual report.

6.2.2 Field Equipment

Table 6-1 lists field equipment commonly used for dry weather outfall screening and sampling. Some may be duplicative (see below).

Table 6-1. Field Equipment – Dry Weather Outfall Screening and Sampling

Equipment	Use/Notes
Clipboard	For organization of field sheets and writing surface
Field Sheets	Field sheets for both dry weather inspection and Dry weather sampling should be available with extras
Mobile Device with Collector or Field Maps, including camera and GPS	Mobile device used for conducting dry weather screening/sampling. Also used for taking photos and geospatial locating of structures.
Chain of Custody Forms	To ensure proper handling of all samples
Pens/Pencils/Permanent Markers	For proper labeling
Nitrile Gloves	To protect the sampler as well as the sample from contamination
Flashlight/headlamp w/batteries	For looking in outfalls or manholes, helpful in early mornings as well
Cooler with Ice	For transporting samples to the laboratory
Digital Camera (or tablet or mobile phone with camera)	For documenting field conditions at time of inspection
Personal Protective Equipment (PPE)	Reflective vest, Safety glasses and boots at a minimum
GPS Receiver (or tablet or mobile phone with GPS)	For taking spatial location data
Water Quality Sonde	If needed, for sampling conductivity, temperature, pH
Water Quality Meter (if needed)	Handheld meters and test kits for testing for various water quality parameters such as ammonia, surfactants, and chlorine. See Table 6-2 below for meters used.
Test Kits	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
Label Tape	For labeling sample containers
Sample Containers	Make sure all sample containers are clean. Keep extra sample containers on hand at all times. Make sure there are proper sample containers for what is being sampled for (i.e., bacteria requires sterile containers).
Pry Bar or Pick	For opening catch basins and manholes when necessary
Sandbags (if needed)	For damming low flows in order to take samples
Small Mallet or Hammer	Helping to free stuck manhole and catch basin covers
Utility Knife	Multiple uses
Measuring Tape	Measuring distances and/or depth of flow
Safety Cones	Safety

Equipment	Use/Notes
Hand Sanitizer	Disinfectant/decontaminant
Zip Ties/Duct Tape	For making field repairs
Rubber Boots/Waders	For accessing shallow streams/areas
Sampling Pole/Dipper/Sampling Cage	For accessing hard to reach outfalls and manholes

6.2.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, a sample will be collected and analyzed for the required permit parameters[4] listed in **Table 6-2**. The general procedure for collection of outfall samples is as follows:

1. At least one day prior to outfall sampling, coordinate with Alpha Analytical (716-783-9291) to schedule the laboratory analysis. This coordination will include the time of delivery and/or courier drop-off and number of samples expected to be sent for analysis. Confirm with Alpha Analytical if any anticipated hold time issues anticipated.
2. Fill out all sample information on sample bottles and field sheets (see **Appendix A** for Sample Labels and Field Sheets)
3. Put on protective gloves (nitrile/latex/other) before sampling
4. Collect sample with dipper or directly in sample containers. If possible, collect water from the flow directly in the sample bottle, or if necessary, use grab jar and pour into the lab sample bottles, so as to not disturb the preservatives in the sample bottles. Be careful not to disturb sediments.
5. If using a dipper or other device, triple rinse the device with distilled water and/or then in water to be sampled (not for bacteria sampling)
6. Use test strips, test kits, and field meters (rinse similar to dipper) for most parameters (see **Table 6-2**)
7. Place laboratory samples on ice for analysis of bacteria and pollutants of concern
8. Fill out chain-of-custody form (**Appendix A**) for laboratory samples
9. Contact Alpha Analytical for lab sample pick up
10. Dispose of used test strips and test kit ampules properly
11. Decontaminate all testing personnel and equipment

In the event that an outfall is submerged, either partially or completely, or inaccessible, field staff will proceed to the first accessible upstream manhole or structure for the observation and sampling and report the location with the screening results. As necessary, field staff will continue to the next upstream structure until there is no longer an influence from the receiving water on the visual inspection or sampling.

[4] Other potentially useful parameters, although not required by the MS4 Permit, include **fluoride** (indicator of potable water sources in areas where water supplies are fluoridated), **potassium** (high levels may indicate the presence of sanitary wastewater), and **optical brighteners** (indicative of laundry detergents).

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and any pollutants of concern. Field kits need to have appropriate detection limits and ranges. **Table 6-2** lists various field test kits and field instruments that can be used for outfall sampling associated with the 2016 MS4 Permit parameters, other than indicator bacteria and any pollutants of concern.

Table 6-2. Sampling Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia	CHEMetrics™ V-2000 Colorimeter Hach™ DR/890 Colorimeter Hach™ Pocket Colorimeter™ II	CHEMetrics™ K-1410 CHEMetrics™ K-1510 (series) Hach™ NI-SA Hach™ Ammonia Test Strips
Surfactants (Detergents)	CHEMetrics™ I-2017	CHEMetrics™ K-9400 and K-9404 Hach™ DE-2
Chlorine	CHEMetrics™ V-2000, K-2513 Hach™ DR300 Pocket Colorimeter™ II	NA
Conductivity	EXTECH EC500	NA
Temperature	EXTECH EC500	NA
Salinity	EXTECH EC500	NA
Temperature	EXTECH EC500	NA
Indicator Bacteria: *E. coli* (freshwater) or Enterococcus (saline water)	EPA certified laboratory procedure (40 CFR § 136)	NA
Pollutants of Concern[1]	EPA certified laboratory procedure (40 CFR § 136)	NA

[1] Where the discharge is directly into a water quality limited water or a water subject to an approved TMDL, the sample must be analyzed for the pollutant(s) of concern identified as the cause of the water quality impairment.

Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136.[5] Samples for laboratory analysis must also be stored and preserved in accordance with procedures found in 40 CFR § 136. **Table 6-3** lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

[5] 40 CFR § 136: http://www.ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7b0b8cd6c4304d86271b7&mc=true&node=pt40.25.136&rgn=div5

Table 6-3. Required Analytical Methods, Detection Limits, Hold Times, and Preservatives

Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Ammonia	**EPA**: 350.2, **SM**: 4500-NH3C	0.05 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2, No preservative required if analyzed immediately
Surfactants	**SM**: 5540-C	0.01 mg/L	48 hours	Cool ≤6°C
Chlorine	**SM**: 4500-Cl G	0.02 mg/L	Analyze within 15 minutes	None Required
Temperature	**SM**: 2550B	*NA*	Immediate	None Required
Specific Conductance	**EPA**: 120.1, **SM**: 2510B	0.2 µs/cm	28 days	Cool ≤6°C
Salinity	**SM**: 2520	-	28 days	Cool ≤6°C
Indicator Bacteria: *E.coli* Enterococcus	*E.coli* **EPA**: 1603 **SM**: 9221B, 9221F, 9223 B **Other**: Colilert®, Colilert-18® *Enterococcus* **EPA**: 1600 **SM**: 9230 C **Other**: Enterolert®	*E.coli* **EPA**: 1 cfu/100mL **SM**: 2 MPN/100mL **Other**: 1 MPN/100mL *Enterococcus* **EPA**: 1 cfu/100mL **SM**: 1 MPN/100mL **Other**: 1 MPN/100mL	8 hours	Cool ≤10°C, 0.0008% $Na_2S_2O_3$
Total Phosphorus	**EPA**: Manual-365.3, Automated Ascorbic acid digestion-365.1 Rev. 2, ICP/AES4-200.7 Rev. 4.4 **SM**: 4500-P E-F	**EPA**: 0.01 mg/L **SM** : 0.01 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2

SM = Standard Methods

6.2.3.1 Documents and Records

Sampling Records

All samples must be clearly labeled with a unique identifier provided for each site, the date and time of collection, and the analysis required. This information must also be listed on the chain of custody. Additionally, all samples must identify the sampler using their initials.

Field Records

Field notes will be collected using a mobile data collection application. The sampling team will record the results of the field test kit analyses for ammonia, surfactants, and chlorine and field measurements for pH, temperature, salinity, and specific conductivity. Additionally, flow velocity, approximate depth of water, water color, odor, observed floatables and sediment or debris deposits will be noted. A photo of the structure should be taken and added to the database. A chain of custody form will be filled out at the time of sampling by the field crew. A carbon copy of the chain of custody will be retained by the field crew after the samples are delivered to the laboratory.

Laboratory Records

Upon completion of laboratory analysis, the laboratory will issue a full report in an electronic format describing the results of analysis for each sample submitted. This will include; a case narrative, sample results, quality control measures taken, information on the condition of the samples upon arrival at the lab and the sampling methodologies. A copy of the chain of custody will also be included by the laboratory with the laboratory report.

All data will be evaluated to confirm that it meets the quality control goals and that it is consistent with results typical for this type of work. Additional data collection will be scheduled if multiple data points do not meet the data quality objectives.

6.2.3.2 Quality Objectives, Criteria, and Control

Data quality objectives are as follows:

- Data must have sufficient detail in order to assess water quality at each of the sampling locations.
- Data should be representative of the actual conditions at the sampling location.
- Data should be generated through accepted sampling methodologies.
- Data must be duplicable and accurate.

Precision: Precision is the ability of a measurement to be consistently reproduced. The overall sampling precision will be determined by the collection and analysis of field duplicate samples that are not identified as such to the analytical laboratory. Duplicate samples will be taken every twentieth sample and are to be collected at the same time as the parent sample and will be assigned a unique identifier. Due to the living nature of bacteria they may reproduce and die after sample collection. With this in mind, a degree of disparity that remains within the established data quality objectives, between the duplicate sample and the original sample is expected and is not necessarily reflective of sample collection or laboratory error.

Accuracy: Accuracy is the degree to which the result of a measurement, calculation, or specification conforms to its "true" value. In order to provide sufficient accuracy, minimization of false positive and false negative analytical data is attempted. The potential for false positive data values will be assessed through the analysis of laboratory blanks. All samples will be analyzed with a laboratory blank. Blank samples must have results of less than the method detection limit (MDL) or instrument detection limit. Laboratory control samples and calibration standards will be used by the laboratory, as needed.

Representativeness: Sample collection is intended to provide data representative of actual conditions at particular sampling locations. To achieve representativeness, sampling is carried out so as to eliminate, as much as possible, the possibility of cross contamination between the sampled locations and non-sampled locations as well as between multiple sampling locations. However, grab samples are only representative of a snapshot of water quality conditions at a given time. As such, they may not be representative of long-term conditions. Data collected must be evaluated with this limitation in mind.

QC Criteria: QC criteria are specified in **Table 6-4**. Data not meeting the criteria will be reviewed by the Project Manager. Data that does not meet laboratory QA/QC criteria will be flagged by the laboratory.

Instrument/Equipment Testing and Maintenance: Sampling supplies will be inspected prior to mobilization to ensure that everything is in good working order and that it is properly calibrated.

The pH, temperature, and specific conductivity measurements will be collected using an Oakton Multi-Parameter PCTSTestr 50 Series. Meters are calibrated on a monthly schedule. Calibration instructions for each parameter are below.

pH Calibration:

For best results, calibrate with certified accurate pH calibration standards (buffers). You may calibrate up to five points with the USA (1.68, 4.01, 7.00, 10.1, 12.45) or the NIST (1.68, 4.01, 6.86, 9.18, 12.45) buffer group.

1. Press ON/OFF to turn meter on and MODE ENT to select pH mode as needed.
2. Rinse the sensor with clean water. Immerse the sensor into your pH buffer and press CAL. The primary display will show the un-calibrated pH value, while the secondary display should search for and lock on the closest automatic calibration value.
3. Allow the primary display to stabilize, then press MODE ENT to confirm the calibration value. The primary value will blink briefly before the secondary value automatically scrolls through the remaining pH buffers available for calibration.
4. Repeat steps 2 & 3 with additional buffers or press CAL to return to measurement mode.

Temperature Calibration:

The factory temperature should last for the life of the original sensor since it does not normally drift. No calibration necessary.

Conductivity Calibration (Automatic):

For best results, calibrate with certified accurate conductivity calibration standards. Selection of multi-point calibration will allow up to three of the following values, while single-point calibration will allow only one; choose 84 µS, 1413 µS, or 12.88 µS.

Conductivity Range	Automatic Calibration Value	Available With
0.0 – 200.0 µS	84 µS	PCS only
201 – 2000 µS	1413 µS	PC or PCS
2.01 – 20.00 mS	12.88 mS	PC or PCS

1. Press ON/OFF to turn meter on and MODE ENT to select conductivity mode as needed.
2. Rinse the sensor with clean water. Immerse the sensor into your ▲ standard and press CAL. The primary display will show the un-calibrated value, while the secondary display should search for and lock on the closest automatic calibration value.
3. Allow the primary display to stabilize, then press MODE ENT to confirm the calibration value. The primary value will blink briefly before returning to measurement mode.
4. Repeat steps 2 & 3 with additional calibrations standards if desired.

Table 6-4 Analytical References and Quality Control Goals

Parameter	Lab/Equipment	Reporting Limits	Method	Water Quality Criteria or Guidelines	Precision	Accuracy	Completeness
pH	Oakton Multi-Parameter PCTSTestr 50	0 - 14	NA	6.5 – 8.3	0.02	+/- 0.1	90%
Temperature	Oakton Multi-Parameter PCTSTestr 50	0 – 50 °C	NA	28.3	0.1 °C	+/- 0.5 °C	90%
Specific Conductivity	Oakton Multi-Parameter PCTSTestr 50	0 – 1,999 µS/cm 2.00 to 20.00 mS/cm	NA	NA	5 µS/cm	+/- 1% F.S.	90%
Salinity	Oakton Multi-Parameter PCTSTestr 50	0 – 999 ppm 1.00 – 10.00 ppt	NA	NA	30% RPD	+/- 1% F.S.	90%
Ammonia	CHEMets Kit K-1510	0.02 mg/L	NA	0.5 mg/L	0.05 mg/L	+/- 20%	90%
Chlorine	CHEMets Kit I-2001	0.02 mg/L	NA	NA	0.02 mg/L	+/- 20%	90%
Surfactants	CHEMets Kit K-9400	0.125 mg/L	NA	0.25 mg/L	0.125 mg/L	+/- 20%	90%
E. Coli	Laboratory	>10 CFU/ 100 mL	1,603	235 CFU/100 mL	30% RPD	NA	90%
Enterococcus	Laboratory	10 CFU / 100 mL	1,600	104 CFU/100 mL	30% RPD	NA	90%

NA = Not Applicable
CFU = Colony Forming Unit
F.S. = Full scale
mL = Milliliter
mg/L = Milligrams per Liter
NTU = Nephelometric Turbidity Units
RPD = Relative Percent Difference

Each sample collected will be stored in the appropriate container for the specific parameter being analyzed. The appropriate containers for all parameters being analyzed are shown in **Table 6-5**. Each sample will be labeled with the sample ID, date and time of collection, sampler collector's initials and the parameter to be tested.

Table 6-5 Bottle List

Parameter	Lab	Bottle	Preservation
E. coli	Laboratory	120 mL sterile	Ice
Enterococci	Laboratory	120 mL sterile	Ice

A laboratory-specific chain of custody (COC) will also be completed. Each time the samples change hands (from the sampler to the courier, courier to laboratory, etc.), the sample labels will be checked against the COC to verify that all information matches. If discrepancies are found, actions will be taken to confirm the correct information is displayed and that all samples are accounted for. The laboratory will perform QA/QC procedures consistent with the standard operating procedures (SOPs) for the sampling methodology for each parameter.

Any inaccurate or incomplete field data will be discussed and re-measured before leaving the monitoring location. Inaccurate or incomplete information will be corrected before the files are finalized.

Once sampling results are distributed by the laboratory, a Project Manager will review the results to confirm that they are consistent with the quality control goals listed in **Table 6-4**. Any discrepancies will be discussed with the laboratory.

6.3 Interpreting Outfall Sampling Results

Outfall analytical data from dry weather sampling can be used to help identify the major type or source of discharge. **Table 6-6** shows values identified by the U.S. EPA and the Center for Watershed Protection as typical screening values for select parameters. These represent the typical concentration (or value) of each parameter expected to be found in stormwater. Screening values that exceed these benchmarks may be indicative of pollution and/or illicit discharges.

Table 6-6. Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	≥0.5 mg/L
Conductivity	>2,000 µS/cm
Surfactants	≥0.25 mg/L
Chlorine	≥0.02 mg/L (detectable levels per the 2016 MS4 Permit)
Indicator Bacteria[6]: *E.coli* *Enterococcus*	*E.coli*: the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 ml and no single sample taken during the bathing season shall exceed 410 colonies per 100 ml *Enterococcus:* the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 35 colonies per 100 ml and no single sample taken during the bathing season shall exceed 130 colonies per 100 ml

[6] Massachusetts Water Quality Standards: https://www.mass.gov/regulations/314-CMR-4-the-massachusetts-surface-water-quality-standards

7 Catchment Investigations

Once stormwater outfalls with evidence of illicit discharges have been identified, various methods can be used to trace the source of the potential discharge within the outfall catchment area. Catchment investigation techniques include but are not limited to review of maps, historic plans, and records; manhole observation; dry and wet weather sampling; video inspection; smoke testing; and dye testing. This section outlines a systematic procedure to investigate outfall catchments to trace the source of potential illicit discharges. All data collected as part of the catchment investigations will be recorded and reported in each annual report.

7.1 System Vulnerability Factors

The EHS will review relevant mapping and historic plans and records to identify areas within the catchment with higher potential for illicit connections. The following information will be reviewed:

- Plans related to the construction of the drainage network
- Prior work on storm drains
- Complaint records related to SSOs

Based on the review of this information, the presence of any of the following **System Vulnerability Factors (SVFs)** will be identified for each catchment:

- History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
- Any storm drain infrastructure greater than 40 years old
- Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
- History of multiple actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance).

A SVF inventory will be documented for each catchment (see **Table 7-1**), retained as part of this IDDE Plan, and included in the annual report.

Table 7-1. Outfall Catchment System Vulnerability Factor (SVF) Inventory

Boston, Massachusetts
Revision Date: TO BE UPDATED

Outfall ID	Receiving Water	1 History of SSOs	2 Storm Drain Infrastructure >40 years Old	3 Septic with Poor Soils or Water Table Separation	4 History of Actions Addressing Septic Failure
Sample 1	XYZ River	Yes/No	Yes/No	Yes/No	Yes/No

Presence/Absence Evaluation Criteria:

1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
2. Any storm drain infrastructure greater than 40 years old
3. Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
4. History of multiple actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)

7.2 Dry Weather Manhole Inspections

UMass Boston will implement a dry weather storm drain network investigation that involves systematically and progressively observing, sampling, and evaluating key junction manholes in the MS4 to determine the approximate location of suspected illicit discharges or SSOs.

The EHS will be responsible for implementing the dry weather manhole inspection program and making updates as necessary. Infrastructure information will be incorporated into the storm system map, and catchment delineations will be refined based on the field investigation, where necessary. The SVF inventory will also be updated based on information obtained during the field investigations, where necessary.

Several important terms related to the dry weather manhole inspection program are defined by the MS4 Permit as follows:

- **Junction Manhole** is a manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both are not considered junction manholes for these purposes.

- **Key Junction Manholes** are those junction manholes that can represent one or more junction manholes without compromising adequate implementation of the illicit discharge program. Adequate implementation of the illicit discharge program would not be compromised if the exclusion of a particular junction manhole as a key junction manhole would not affect the permittee's ability to determine the possible presence of an upstream illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections.

For all catchments identified for investigation, during dry weather, field crews will systematically inspect **key junction manholes** for evidence of illicit discharges. This program involves progressive inspection and sampling at manholes in the storm drain network to isolate and eliminate illicit discharges.

The manhole inspection methodology will be conducted in one of two ways (or a combination of both):

- By working progressively up from the outfall and inspecting key junction manholes along the way, or
- By working progressively down from the upper parts of the catchment toward the outfall.

For most catchments, manhole inspections will proceed from the outfall moving up into the system. However, the decision to move up or down the system depends on the nature of the drainage system and the surrounding land use and the availability of information on the catchment and drainage system. Moving up the system can begin immediately when an illicit discharge is detected at an outfall, and only a map of the storm drain system is required. Moving down the system requires more advance preparation and reliable drainage system information on the upstream segments of the storm drain system, but may be more efficient if the sources of illicit discharges are believed to be located in the upstream portions of the catchment area. Once a manhole inspection methodology has been selected, investigations will continue systematically through the catchment.

Inspection of key junction manholes will proceed as follows:

1. Manholes will be opened and inspected for visual and olfactory evidence of illicit connections. A sample field inspection form is provided in **Appendix A**.

2. If flow is observed, a sample will be collected and analyzed at a minimum for ammonia, chlorine, and surfactants. Field kits can be used for these analyses. Sampling and analysis will be in accordance with procedures outlined in **Section 6**. Additional indicator sampling may assist in determining potential sources (e.g., bacteria for sanitary flows, conductivity to detect tidal backwater, etc.).

3. Surrounding areas will be reviewed for potential overland sources of flow or pollutant inputs. Examples include PVC pipes from sump pumps, leaky dumpsters, material storage or

stockpiles, etc. If potential overland sources are identified, photographs will be taken and notes will be documented in the inspection form. If flow from an overland source is observed, a sample of the flow will be collected as close to the source as possible.

4. Where sampling results or visual or olfactory evidence indicate potential illicit discharges or SSOs, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of sources. The following conditions are used to determine if a potential illicit discharge is present.

    a. Ammonia $\geq$ 1mg/L
    b. Ammonia $\geq$ 0.5 mg/L AND surfactants $\geq$ 0.25 mg/L
    c. Ammonia > 0 mg/L AND surfactants >0 mg/L AND chlorine $\geq$ 0.02 mg/L

5. Discretionary bacteria samples may be taken if additional information is required to determine if observed flow is potentially illicit.

6. Subsequent key junction manhole inspections will proceed until the location of suspected illicit discharges or SSOs can be isolated to a pipe segment between two manholes.

7. If no evidence of an illicit discharge is found, catchment investigations will be considered complete upon completion of key junction manhole sampling.

7.3 Wet Weather Outfall Sampling

Where a minimum of one (1) System Vulnerability Factor (SVF) is identified based on previous information or the catchment investigation, a wet weather investigation must also be conducted at the associated outfall. The EHS will be responsible for implementing the wet weather outfall sampling program and making updates as necessary.

Outfalls will be inspected and sampled under wet weather conditions, to the extent necessary, to determine whether wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic systems result in discharges of sanitary flow to the MS4.

Wet weather outfall sampling will proceed as follows:

1. At least one wet weather sample will be collected at the outfall for the same parameters required during dry weather screening.

2. Wet weather sampling will occur during or after a storm event of sufficient depth or intensity to produce a stormwater discharge at the outfall. There is no specific rainfall amount that will trigger sampling. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high.

3. If wet weather outfall sampling indicates a potential illicit discharge, then additional wet weather source sampling will be performed, as warranted, or source isolation and confirmation procedures will be followed as described in **Section 7.4**.

4. If wet weather outfall sampling does not identify evidence of illicit discharges, and no evidence of an illicit discharge is found during dry weather manhole inspections, catchment investigations will be considered complete.

7.4 Source Isolation and Confirmation

Once the source of an illicit discharge is approximated between two manholes, more detailed investigation techniques will be used to isolate and confirm the source of the illicit discharge. The following methods may be used in isolating and confirming the source of illicit discharges

- Sandbagging
- Smoke Testing
- Dye Testing
- CCTV/Video Inspections
- Optical Brightener Monitoring
- IDDE Canines

These methods are described in the sections below.

Public notification is an important aspect of a detailed source investigation program. Prior to smoke testing, dye testing, or TV inspections, the EHS will notify the campus community using multiple communication channels.

7.4.1 Sandbagging

This technique can be particularly useful when attempting to isolate intermittent illicit discharges or those with very little perceptible flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within outlets to manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically left in place for 48 hours, and should only be installed when dry weather is forecast. If flow has collected behind the sandbags/barriers after 48 hours it can be assessed using visual observations or by sampling. If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge. Finding appropriate durations of dry weather and the need for multiple trips to each manhole makes this method both time-consuming and somewhat limiting.

7.4.2 Smoke Testing

Smoke testing involves injecting non-toxic smoke into drain lines and noting the emergence of smoke from sanitary sewer vents in illegally connected buildings or from cracks and leaks in the system itself. Typically a smoke bomb or smoke generator is used to inject the smoke into the system at a catch basin or manhole and air is then forced through the system. Test personnel are place in areas where there are suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm drain infrastructure). It is important when using this technique to make proper notifications to staff and students as well as local police and fire departments.

If the initial test of the storm drain system is unsuccessful then a more thorough smoke-test of the sanitary sewer lines can also be performed. Unlike storm drain smoke tests, buildings that do not emit smoke during sanitary sewer smoke tests may have problem connections and may also have sewer gas venting inside, which is hazardous.

It should be noted that smoke may cause minor irritation of respiratory passages. Staff and students with respiratory conditions may need to be monitored or evacuated from the area of testing altogether to ensure safety during testing.

7.4.3 Dye Testing

Dye testing involves flushing non-toxic dye into plumbing fixtures such as toilets, showers, and sinks and observing nearby storm drains and sewer manholes as well as stormwater outfalls for the presence of the dye. Similar to smoke testing, it is important to inform staff and students. Police, fire, and local public health staff should also be notified prior to testing in preparation of responding to citizen phone calls concerning the dye and their presence in local surface waters.

A team of two or more people is needed to perform dye testing (ideally, all with two-way radios). One person is inside the building, while the others are stationed at the appropriate storm sewer and sanitary sewer manholes (which should be opened) and/or outfalls. The person inside the building adds dye into a plumbing fixture (i.e., toilet or sink) and runs a sufficient amount of water to move the dye through the plumbing system. The person inside the building then radios to the outside crew that the dye has been dropped, and the outside crew watches for the dye in the storm sewer and sanitary sewer, recording the presence or absence of the dye.

The test can be relatively quick (about 30 minutes per test), effective (results are usually definitive), and inexpensive. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific buildings.

7.4.4 CCTV/Video Inspection

Another method of source isolation involves the use of mobile video cameras that are guided remotely through stormwater drain lines to observe possible illicit discharges. IDDE program staff can review the videos and note any visible illicit discharges. While this tool is both effective and usually definitive, it can be costly and time consuming when compared to other source isolation techniques.

7.4.5 Optical Brightener Monitoring

Optical brighteners are fluorescent dyes that are used in detergents and paper products to enhance their appearance. The presence of optical brighteners in surface waters or dry weather discharges suggests there is a possible illicit discharge or insufficient removal through adsorption in nearby septic systems or wastewater treatment. Optical brightener monitoring can be done in two ways. The most common, and least expensive, methodology involves placing a cotton pad in a wire cage and securing it in a pipe, manhole, catch basin, or inlet to capture intermittent dry weather flows. The pad is retrieved at a later date and placed under UV light to determine the presence/absence of brighteners during the monitoring period. A second methodology uses handheld fluorometers to detect optical brighteners in water sample

collected from outfalls or ambient surface waters. Use of a fluorometer, while more quantitative, is typically more costly and is not as effective at isolating intermittent discharges as other source isolation techniques.

7.4.6 IDDE Canines

Dogs specifically trained to smell human related sewage are becoming a cost-effective way to isolate and identify sources of illicit discharges. While not widespread at the moment, the use of IDDE canines is growing as is their accuracy. The use of IDDE canines is not recommended as a standalone practice for source identification; rather it is recommended as a tool to supplement other conventional methods, such as dye testing, in order to fully verify sources of illicit discharges.

7.5 Illicit Discharge Removal

When the specific source of an illicit discharge is identified, UMass Boston will exercise its authority as necessary to require its removal. The annual report will include the status of IDDE investigation and removal activities including the following information for each confirmed source:

- The location of the discharge and its source(s)
- A description of the discharge
- The method of discovery
- Date of discovery
- Date of elimination, mitigation or enforcement action OR planned corrective measures and a schedule for completing the illicit discharge removal
- Estimate of the volume of flow removed.

7.5.1 Confirmatory Outfall Screening

Within one (1) year of removal of all identified illicit discharges within a catchment area, confirmatory outfall or interconnection screening will be conducted. The confirmatory screening will be conducted in dry weather unless System Vulnerability Factors have been identified, in which case both dry weather and wet weather confirmatory screening will be conducted. If confirmatory screening indicates evidence of additional illicit discharges, the catchment will be scheduled for additional investigation.

7.6 Ongoing Screening

Upon completion of all catchment investigations and illicit discharge removal and confirmation (if necessary), each outfall or interconnection will be re-prioritized for screening and scheduled for ongoing screening once every five (5) years. Ongoing screening will consist of dry weather screening and sampling consistent with the procedures described in **Section 6** of this plan. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to System Vulnerability Factors and will be conducted in accordance with the procedures described in **Section 7.3**. All sampling results will be reported in the annual report.

8 Training

Annual IDDE training will be made available to all employees involved in the IDDE program. This training will at a minimum include information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDE program. Training records will be maintained in **Appendix B**. The frequency and type of training will be included in the annual report.

9 Progress Reporting

The progress and success of the IDDE program will be evaluated on an annual basis. The evaluation will be documented in the annual report and will include the following indicators of program progress:

- Number of SSOs and illicit discharges identified and removed
- Number and percent of total outfall catchments served by the MS4 evaluated using the catchment investigation procedure
- Number of dry weather outfall inspections/screenings
- Number of wet weather outfall inspections/sampling events
- Number of enforcement notices issued
- All dry weather and wet weather screening and sampling results
- Estimate of the volume of sewage removed, as applicable
- Number of employees trained annually.

The success of the IDDE program will be measured by the IDDE activities completed within the required permit timelines.

Appendix A

Field Forms, Sample Bottle Labels, and Chain of Custody Forms

UMass Boston Bottle Label

Water Quality Sampling Program Sample

Sample ID:_____

Laboratory Analysis: _____

Preservative: (pre-populated by lab)

Date:_____

Time:_____

Collected By: _____

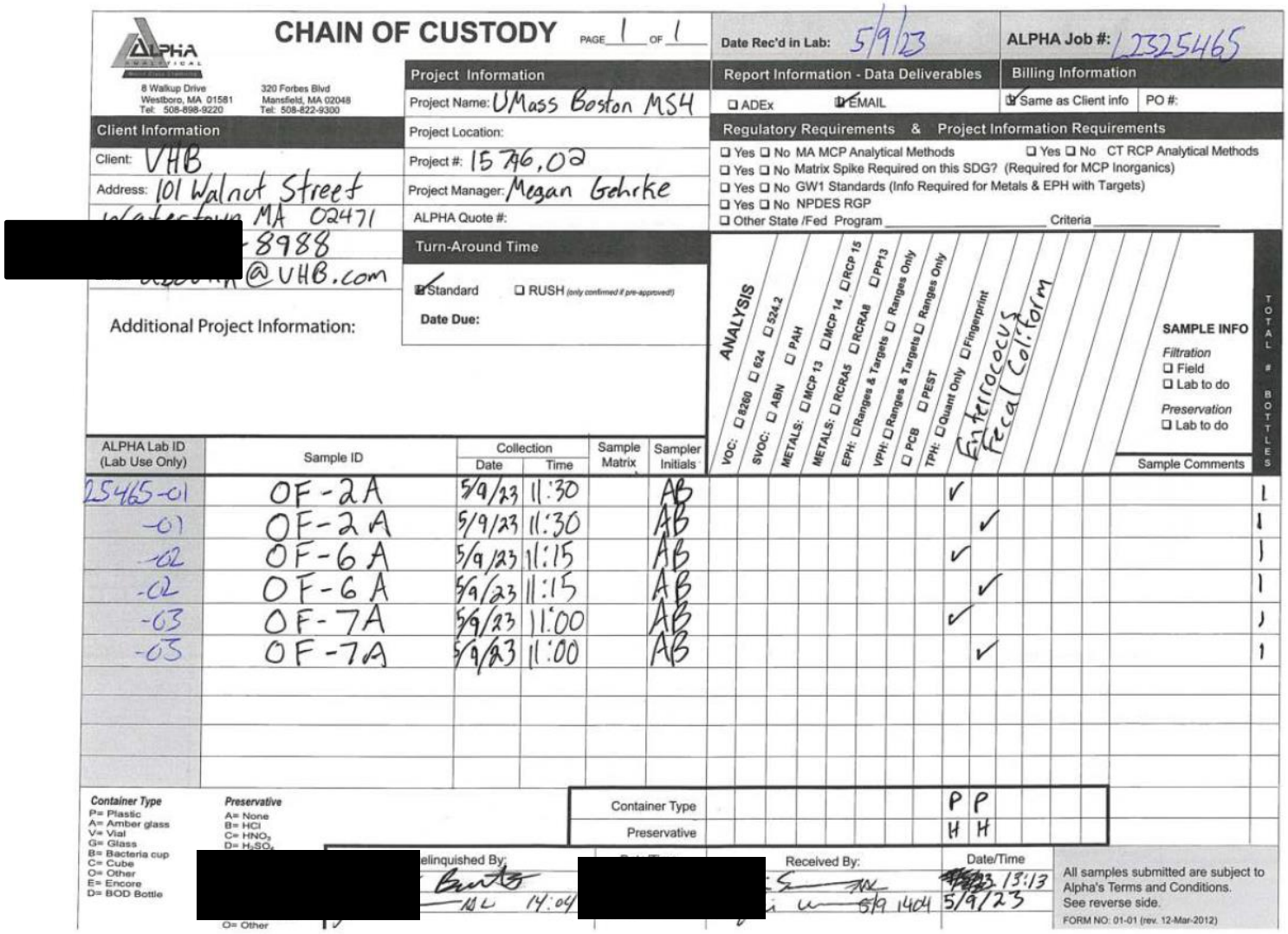
Bottle Type: (pre-populated by lab)

UMass Boston Inspection Form

IDDE Outfall Screening Form
Inspection Date:
Inspector Name:
Structure Found: ☐ Yes ☐ No
Next upstream structure visited? ☐ Yes ☐ No
Type of Inspection: ☐ Dry Weather ☐ Wet Weather
Outfall Condition:
Level of Sedimentation Accumulation: ☐ No Sedimentation ☐ Slight Sedimentation ☐ High Sedimentation
Staining: ☐ No Staining ☐ Some Staining ☐ Significant Staining
Outfall Condition: ☐ Good: Inspect Within 2 Years ☐ Fair: Inspect Within 1 Year ☐ Failing: Requires Immediate Action ☐ Poor: Requires Maintenance ☐ Unknown
Needs Repair:
Need Cleaning:
Illicit Discharge Potential: ☐ Potential ☐ Obvious ☐ Unlikely
Reason for Illicit Suspicion:
Visual Inspection:
Scour Protection Condition: ☐ Good: Inspect Within 2 Years ☐ Fair: Inspect Within 1 Year ☐ Failing: Requires Immediate Action ☐ Poor: Requires Maintenance ☐ Unknown
Flow Present?: ☐ Yes ☐ No
Flow Volume:
Date of Last Storm:
Flow Clarity: ☐ Clear ☐ Cloudy ☐ Opaque
Color of Flow: ☐ N/A ☐ Clear ☐ Tea/Coffee ☐ Clear Black ☐ Orange-Red ☐ Tan to Light Brown ☐ Milky/Dirty Dishwater Gray ☐ Milky White ☐ White Crusty Deposits ☐ Greenish-Bluish ☐ Blue ☐ Purple ☐ Dark Red ☐ Other (describe in notes)
Floatables: ☐ Yes ☐ No
Sewage, Sheens & Scum: ☐ Yes ☐ No
Visual evidence of sewage?: ☐ Yes ☐ No
Odor: ☐ None ☐ Rotten Eggs/Hydrogen Sulfide ☐ Musty Odor ☐ Sharp, Pungent ☐ Sweet, Fruit ☐ Gasoline, Petroleum ☐ Chlorine ☐ Other (describe in notes)
Water Quality Sampling
Temperature (deg C):
Conductivity (micro-Siemens/cm):
pH:
Salinity (ppm):
Ammonia (mg/L):
Chlorine (mg/L):
Surfactants (mg/L):

Dissolved Oxygen (mg/L):
Additional Parameters Screened:
Sample for Lab Collected: ☐ Yes ☐ No
Lab Sample 1 Test:
Lab Sample 1 Results:
Lab Sample 2 Test:
Lab Sample 2 Results:
Lab Sample 3 Test:
Lab Sample 3 Results:
Lab Sample 4 Test:
Lab Sample 4 Results:
Lab Sample 5 Test:
Lab Sample 5 Results:
Lab Sample 6 Test:
Lab Sample 6 Results:
Lab Sample 7 Test:
Lab Sample 7 Results:
Follow-Up Investigation Needed?
Notes:
End Time:

Example Chain of Custody Form from Alpha Analytical



CHAIN OF CUSTODY PAGE 1 OF 1

ALPHA Analytical
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 5/9/23
ALPHA Job #: L2325465

Project Information
Project Name: UMass Boston MS4
Project Location:
Project #: 15746.02
Project Manager: Megan Gehrke
ALPHA Quote #:

Report Information - Data Deliverables
☐ ADEx ☑ EMAIL

Billing Information
☑ Same as Client info PO #:

Client Information
Client: VHB
Address: 101 Walnut Street
[redacted] MA 02471
[redacted] 8988
[redacted]@VHB.com

Regulatory Requirements & Project Information Requirements
☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time
☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Additional Project Information:

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; Enterococcus; Fecal Coliform

SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Sample Comments	TOTAL # BOTTLES
25465-01	OF-2A	5/9/23	11:30		AB		1
-01	OF-2A	5/9/23	11:30		AB		1
-02	OF-6A	5/9/23	11:15		AB		1
-02	OF-6A	5/9/23	11:15		AB		1
-03	OF-7A	5/9/23	11:00		AB		1
-03	OF-7A	5/9/23	11:00		AB		1

Container Type: P P
Preservative: H H

Container Type: P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle
Preservative: A= None, B= HCl, C= HNO_3, D= H_2SO_4, O= Other

[redacted] Relinquished By: [redacted] 14:04
Received By: 5/9 1404
Date/Time: 5/9/23 13:13

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
FORM NO: 01-01 (rev. 12-Mar-2012)

Appendix B

IDDE Employee Training Record

Illicit Discharge Detection and Elimination (IDDE)
Employee Training Record

Boston, Massachusetts

Date	Title	Approximate Number of Attendees	Duration	Topics Covered
6/27/2023	UMass Boston O&M and IDDE Stormwater Training	All staff in relevant trades in the Facilities Department	1 hour	Stormwater basics, regulations, UMB's drainage system, MS4 MCMs, IDDE, good housekeeping and pollution prevention.

Appendix D – MS4 Infrastructure O&M Plan

University of Massachusetts Boston

Operations and Maintenance (O&M) Plan

For Coverage Under The

National Pollutant Discharge Elimination System (NPDES)
General Permit for Municipal Separate Storm Sewer Systems (MS4)

June 30, 2022

This document was compiled based on a template created by VHB for use by MS4 clients developed by modifying a template and standard operating procedures (SOPs) from the Central Massachusetts Regional Stormwater Coalition (CMRSWC).

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1 Introduction

This Operation and Maintenance (O+M) Plan covers University of Massachusetts (UMass) Boston facilities, infrastructure, and other assets, with chapters organized around the following categories: open space, building and facilities, vehicles and equipment, catch basins, streets and parking lots, winter road maintenance, and structural stormwater best management practices (BMPs). The O+M Plan outlines inspection and maintenance procedures for these assets and facilities. There are two appendices with additional details covering the following two topics: winter road maintenance and spill prevention and control.

This O+M Plan has been prepared by UMass Boston in part to address O+M requirements[1] of the United States Environmental Protection Agency's (USEPA) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as "the permit, "2016 Massachusetts MS4 Permit," or "MS4 Permit."

More specifically, this plan addresses Minimum Control Measure 6, Good Housekeeping and Pollution Prevention for Permittee Owned Operations, by describing the activities and procedures UMass Boston will implement so that infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4. This document fulfills the permit requirement for UMass Boston to develop an inventory and written (hardcopy or electronic) operations and maintenance procedures for open spaces, buildings and facilities, vehicles and equipment, and infrastructure within four (4) years of the effective date of the permit. These details are outlined in Section 2.3.7.A of the MS4 Permit.

Employees and contractors who conduct maintenance and operations of UMass Boston campus open space, buildings, vehicles and equipment, streets and parking lots, and stormwater infrastructure are given a copy of this plan and provided with regular training on best practices.

[1] See Part 2.3.7.a.iii of the 2016 MS4 Permit for Infrastructure Operation and Maintenance program requirements.

2 Open Space

2.1 Overview and Inventory

This section establishes procedures for operations and maintenance of campus open spaces owned and operated by UMass Boston, as required in the permit. The following MS4 Permit requirements are addressed in this section:

- Develop an inventory of all campus open space owned by the permittee;
- Evaluate lawn maintenance and landscaping activities to ensure practices are protective of water quality, including reduced mowing frequencies, proper disposal of lawn clippings, and use of alternative landscaping materials (e.g., drought resistant planting);
- Establish procedures for management of trash containers in open spaces (scheduled cleanings; sufficient number);
- Establish procedures to address the proper use, storage, and disposal of pesticides, herbicides, and fertilizers including minimizing the use of these products and using only in accordance manufacturer's instruction;
- Establish procedures to address waterfowl congregation areas where appropriate to reduce waterfowl droppings from entering the MS4; and
- Establish procedures to address erosion or poor vegetative cover when the permittee becomes aware of it; especially if the erosion is within 50 feet of a surface water.

Section 2.2 includes UMass Boston's approach to these requirements.

Table 1 lists the campus open space owned and operated by UMass Boston, to which these O+M procedures apply.

Table 1 Inventory of Parks and Open Spaces

Name	Address or Location	Size (acres)	Responsible Department	Features	Pesticides, Herbicides, and/or Fertilizer Used (Y/N)
Campus Center Quad	100 Morrissey Boulevard	~1.2	Facilities	Grassed Area in Campus Center along coast	N
Integrated Sciences Complex Lawn	100 Morrissey Boulevard	~2.0	Facilities	Grasses Area in front of building	N
Calf Pasture I	100 Morrissey Boulevard	~4.0	Facilities	Grassy and Forest Area	N
UMass Boston Softball Field	100 Morrissey Boulevard	~2.6	Facilities	Softball Field	N

2.2 O+M Procedures

Maintaining campus open space is important for the quality of life of UMass Boston's students, faculty and staff, and visitors. This section focuses on procedures to protect the water quality of waterbodies in and around the UMass Boston campus by preventing pollutants in open spaces from being carried in stormwater runoff to nearby waterbodies. UMass Boston will implement the following procedures in open spaces to reduce the discharge of pollutants from the MS4. **Table 1** describes these open spaces.

2.2.1 Mowing and Landscaping

Table 1 summarizes the spaces at UMass Boston which have lawns and landscaping. Grass clippings are left to decompose on lawns after mowing.

Under MS4 Permit requirements, UMass Boston acknowledges that blowing organic waste material (grass cuttings, leaf litter) into the waterbody is strictly prohibited.

Mowing and Landscaping Best Practices

Mowing

- Mow grass to 2-3 inches in height for water retention and weed control.
- Mow frequently, while cutting no more than one third of grass height per mowing.
- Reduce mowing frequencies wherever possible by establishing low/no-mow areas in lesser-used spaces.
- Remove debris and trash from landscaped areas prior to mowing.
- Collect grass clippings and leaves after mowing. Do not blow or wash them into the street, gutter, or storm drains.
- Keep mowing equipment in good state of repair, including sharp blades and well-oiled lawn mowers and maintain equipment over grassy areas or in contained washout areas that do not drain to MS4 or directly to surface water waters.
- Follow proper fueling procedures of equipment to guard against petroleum products from mistakenly entering the stormwater system.
- When establishing new plantings, use alternative landscaping material such as drought resistant plants, and native plants, based on site conditions (e.g., sunlight, wetness, slope, use) and to reduce the need for irrigation and fertilizers and pesticides.

Irrigation

- Only irrigate at a rate that can infiltrate into the soil to limit run-off.
- Irrigate in the early morning; use irrigation water conservatively; and direct irrigation equipment to appropriate vegetated areas, rather than sidewalks, parking lots, or driveways.
- Avoid irrigating close to impervious surfaces such as parking lots and sidewalks.
- Turn off irrigation systems during periods of adequate rainfall.
- Repair broken sprinkler heads as soon as possible

2.2.2 Trash and Trash Container Management

In open space sites which have trash and/or recycling receptacles, these receptacles are emptied and inspected weekly (more frequently, as needed). UMass Boston follows the best practices outlined in Section 3.2.2 Trash and Recyclables Management for trash receptables within campus open space. Generally, receptacles are not placed or washed in areas where they could leak or overflow directly to the MS4 or a water resource.

2.2.3 Pesticides, Herbicides, and Fertilizer Use

UMass Boston does not use pesticides, herbicides, and fertilizers at university-owned properties in an effort to protect surrounding waterbodies. If these materials were to be used, the following procedures would apply:

- Standards set forth in Massachusetts regulations on plant nutrient application (330 CMR 31.00) are followed. The state requirements for fertilizers can be found here: https://www.mass.gov/doc/330-cmr-31-plant-nutrient-application-requirements-for-agricultural-land-and-non-agricultural/download. As required by the State, only fertilizer, pesticide, and herbicide products registered with the Department of Agricultural Resources are used.
- Proper approval from the applicable Conservation Commission is obtained before applying chemicals within 25 feet of resource areas as defined in the MA Wetlands Protection Act.
- Phosphorus will only be applied in areas where a soil test indicates that it is not present in sufficient quantities. Where possible, UMass Boston will use phosphorus-free fertilizer options.
- Chemical storage follows the procedures outlined in Section 3.2.1 Use, Storage and Disposal of Potential Pollutants.

Pesticides, Herbicides, and Fertilizer Use Best Practices

General

- Avoid application over impervious surfaces.
- Clean up any spills with dry clean up methods (i.e., do not hose down a spill site).
- Do not hose down paved areas after application to a storm drain or drainage ditch.
- Read all labels and use products only as directed.
- Mix chemicals using clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate the soil.
- Spot treat infected areas instead of the entire location.
- Calibrate application equipment regularly to ensure proper application and loading rates.

Fertilizers

- Test soils before applying fertilizer to determine what nutrients need to be supplemented. Prepare and apply only as much chemical as is needed.
- Do not apply fertilizers in the following conditions:
  - Between December 1 and March 1
  - To frozen and/or snow-covered soil
  - To saturated soils or soils that are frequently flooded
  - When rain is forecast for 24 hours
- Time fertilizer application methods for maximum plant uptake, usually in the fall and spring (e.g., between April 15 and October 15). When applying at the beginning and end of planting season, take into consideration the slower uptake rate of fertilizer by plants and adjust the fertilizer application accordingly.
- Fertilizers should only be applied by properly trained personnel.
- Never apply fertilizers in quantities exceeding the manufacturer's instructions. Instead, apply small amounts throughout the growing season.

Pesticides and Herbicides

- Pesticides should only be applied by licensed or certified applicators.
- Use alternatives to pesticides and herbicides, such as manual weed control, biological controls, and Integrated Pest Management strategies (learn more at: https://www.mass.gov/files/documents/2016/08/wk/ipm-kit-for-bldg-mgrs.pdf.
- Ensure that pesticide application equipment is capable of immediate shutoff in case of emergency.
- Never apply pesticides in quantities exceeding the manufacturer's instructions.
- Apply pesticides at the life stage when the pest is most vulnerable.
- Never apply pesticides if it is raining or immediately before expected rain.
- Establish setback distances from pavement, storm drains, and waterbodies, which act as buffers from pesticide application, with disease-resistant plants and minimal mowing.
- Do not apply pesticides within 100 feet of open waters or of drainage channels.

2.2.4 Pet Waste

Dog walking is not allowed on any UMass Boston campus. UMass Boston will continue to evaluate and review applicability of the MS4 Permit requirements related to pet waste.

2.2.5 Waterfowl Congregation

Congregation of waterfowl, including Canada Geese and others, can result in large nutrient loads to surrounding waterbodies due to the volume of fecal waste produced by the waterfowl. If waterfowl cannot be deterred, drainage from congregation areas is redirected away from drainage infrastructure and waterbodies.

Best Practices to Discourage Waterfowl Congregation

- Instruct students and visitors not to feed waterfowl through signage or other public outreach methods and enforcement.
- Avoid mowing grass up to the edge of water to provide a natural vegetative buffer around a waterbody. This provides a small barrier for waterfowl to access the shoreline and provides a buffer where nutrient can be absorbed before reaching the waterbody.
- As necessary, conduct waterfowl deterrent practices such as reflective tape, strobe lights, addling eggs, harassment (human and/or dog), habitat manipulation, exclusionary fencing, and repelling devices.

2.2.6 Slope Erosion and Vegetative Cover

Ground disturbance and eroded slopes can result in moving soil, rock, or other material from up-slope areas into a waterbody, potentially transporting excess sediment, nutrients, and other contaminants. Controlling erosion by stabilizing disturbed areas and slopes can help maintain water quality.

Table 1 lists the responsible departments that conduct inspections for eroding areas during on-going operation and maintenance of open space.

Upon identification of eroding areas, measures are taken immediately to minimize erosion. These measures include installing energy dissipators, re-establishing vegetation, and installing temporary erosion controls, as needed. UMass Boston or its contractors install erosion controls during any ground disturbance within 250 feet of a water body or wetland resource or greater than 1-acre in size.

UMass Boston ensures all contractors comply with their National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit(s) for erosion control, as required. Following ground disturbance, the ground will be immediately stabilized with mulch or other practices and vegetation will be re-established as quickly as possible.

3 Buildings and Facilities

3.1 Overview and Inventory

This section covers UMass Boston's approach to maintaining its buildings and facilities. UMass Boston's MS4 Permit requires development of O+M procedures for university-owned buildings and facilities where pollutants are exposed to stormwater runoff. The buildings and facilities that these procedures apply to are listed in **Table 2**.

The goal of these procedures is to minimize the potential for sites to generate pollutants that can runoff into the drainage system or nearby waterbodies. The following MS4 Permit requirements are addressed in this section:

- Develop an inventory of all permittee-owned buildings and facilities where pollutants are exposed to stormwater runoff, including administration buildings, laboratories, and parking garages;
- Evaluate the use, storage, and disposal of petroleum products and other potential stormwater pollutants and ensure employees or contractors responsible for handling products are trained;
- Ensure Spill Prevention Plans are in place, as applicable, and coordinate with the fire department as necessary;
- Develop management procedures for dumpsters and other waste management equipment; and
- Ensure parking lots are swept and areas surrounding facilities are kept clean to reduce runoff of pollutants.

Table 2 Inventory of Buildings and Facilities

Name	Building Type	Hazardous Material Storage (Y/N)	Hazardous Material Description (flammables, coerosives, toxics etc.)	Stormwater Pollution Prevention Plan (SWPPP) Required	Parking Lot (Y/N)
Campus Center	Administrative	N		N	N
Campus Center Garage	Parking	N	-	N	Y
Clark Athletic Center	Athletic/Academic	N		N	N
Clark Lot	Parking	N	-	N	Y
Healy Library	Academic	N		N	N
Integrated Sciences Complex	Academic/Research	Y	Flammables, corrosives, toxics	N	N
McCormack Hall	Academic/Research	Y	Flammables, corrosives, toxics	N	N
Quinn Administrative Building	Admin/Academic	N		N	N
Quinn Lot	Parking	N	-	N	Y
Residence Halls: East[2]	Residential	N		N	N
Residence Halls: West	Residential	N		N	N
Service and Supply Building	Support Services	Y	Combustibles	N	N
University Hall	Academic/Chemistry Teaching Labs/Art Studios	Y	Flammables, corrosives, toxics	N	N
University Lot D	Parking	N	-	N	Y
UMass Boston Bayside Lot	Parking	N	-	N	Y
West Parking Garage	Parking	N	-	N	Y
Wheatley Hall	Academic/Bioengineering Teaching Labs	Y	Flammables, corrosives, toxics	N	N

[2] East and West Residence Halls are leased by third party and UMass Boston is not responsible for indoor operations.

3.2 O+M Procedures

UMass Boston values the maintenance and upkeep of buildings and facilities to ensure the comfort and safety of students, employees, and visitors, while also preventing stormwater issues associated with these facilities and ensuring that these facilities perform at high levels. UMass Boston employees participate in training on buildings and facilities to ensure best practices and skills are kept up to date.

The buildings and facilities O+M topics listed below are of particular concern under permit requirements.

3.2.1 Use, Storage and Disposal of Potential Pollutants

Potential pollutants stored at campus facilities include, but are not limited to, oil, gasoline, antifreeze, fertilizers, pesticides, and de-icing agents and additives. Minimizing or eliminating contact of materials containing potential pollutants with stormwater can significantly reduce pollution of receiving waters. Proper material handling and storage also contributes to employee health, an organized workplace, and efficient operations.

Spill prevention plans are put in place where applicable, based on inventories of material storage and potential pollutants. The attached Spill Prevention Control and Countermeasure (SPCC) Plan (**Appendix A**) applies to the facilities in **Table 2** where hazardous material occurs. The SPCC Plan has been reviewed with the Boston Fire Department. Employees and contractors who are responsible for material use are trained on the SPCC plan and the guidelines below.

Best Practices for the Use, Storage, and Disposal of Potential Pollutants

- Follow manufacturer's guidance on proper storage, disposal, and use.
- Store chemicals under cover in an enclosed controlled, ventilated, well-lit, high and dry area that is cool and insulated to protect against temperature extremes. Ensure storage areas were constructed in accordance with local fire codes for storing flammable or combustible materials.
- Confine material storage indoors whenever possible. Plug or disconnect floor drains that lead to the stormwater system.
- Confine outdoor material storage to designated areas that are covered, on impervious surfaces, away from high traffic areas, and outside of drainage pathways.
- Equip storage areas with easily accessible spill cleanup materials and portable firefighting equipment. Emergency eyewash stations and emergency drench showers should be located near the storage area.
- Storage cabinets are locked with a weather proof sign that warns of the existence and danger of the materials inside visible at a distance of 25 feet, as appropriate.
- Include material safety data sheets (MSDS) in an accessible location(s).
- Keep materials in their original containers.
- If materials are not in their original containers, clearly label all storage containers with the name of the chemical, the expiration date, and handling instructions.

- Maintain an inventory of all raw and waste materials to identify leakage. Order new materials only when needed.
- Provide secondary containment for storage tanks and drums with sufficient volume to store 110 percent of the volume of the material.
- Inspect storage areas for spills or leaks and containment units for corrosion or other failures.
- Ensure that contaminated waste materials are kept in designated containers and stored in labeled, designated, covered, and contained areas.
- Dispose of excess or obsolete materials and associated waste materials in accordance with the manufacturer's specification and all applicable regulations.

3.2.2 Trash and Recyclables Management

All liquid and solid waste must be disposed of properly. Some of the most common sources of pollution at campus facilities are a result of littering, improper collection of debris, and improper disposal of waste. The campus community can report trash container or dumpster issues through the Facilities Department by calling 617-287-5450.

Best Practices for Waste Management

- Ensure a sufficient number of waste receptacles are in place, where appropriate. Additional receptacles will be placed in high traffic areas based on observation.
- All waste and recycling receptacles must be leak-tight with tight-fitting lids or covers.
- Keep lids on dumpsters and containers closed at all times unless adding or removing material. If using an open-top roll-off dumpster, cover it and tie it down with a tarp unless adding materials.
- Place waste or recycling receptacles indoors or under a roof or overhang whenever possible.
- Locate dumpsters on a flat, paved surface not over or adjacent to catch basins and install berms or curbs around the storage area to prevent run-on and run-off.
- Arrange for waste or recycling to be picked up regularly and disposed of at approved disposal facilities. Prior to transporting waste, trash, or recycling, ensure that containers are not leaking (double bag if needed) and properly secure containers to the vehicle.
- Never place hazardous materials, liquids, or liquid-containing wastes in a dumpster or recycling or trash container.
- Do not wash trash or recycling containers outdoors or in parking lots.
- Conduct periodic inspections and clean and sweep solid and liquid waste storage areas. Clean up any liquid leaks or spills with dry cleanup methods.
- In dumpster areas, regularly pick up surrounding trash and debris and regularly sweep the area.

3.2.3 General Maintenance

The following best practices are applied when conducting general maintenance at university facilities. These practices apply to all facilities listed in **Tables 1 and 2.**

- When power washing buildings and facilities, ensure that the washwater does not flow into the storm system. Containment or filtering systems should be provided.
- When sanding, painting, power washing, etc., ensure that sites are properly prepared (e.g., use tarps) and cleaned (e.g., use dry cleaning methods) especially if they are near storm drains. Protect catch basins when maintenance work is conducted upgradient of them. Do not conduct when it is raining or prior to expected rain.
- When painting, use a drop cloth and clean up any spills immediately.
- Do not leave open containers on the ground where they may accidentally tip over.
- Buildings should be routinely inspected for areas of potential leaks.
- Do not discharge chlorinated pool water into the stormwater system. Water must be properly dechlorinated and tested before it is discharged.
- Streets and parking lots surrounding buildings and facilities should be swept and kept clean to reduce runoff of pollutants and debris to the stormwater system.

4 Vehicles and Equipment

4.1 Overview and Inventory

This section covers UMass Boston's approach to maintaining its vehicles and equipment. UMass Boston's MS4 permit requires the University to establish procedures for the storage and maintenance of university-owned vehicles and equipment, so as to minimize their contribution of pollution to waterbodies. This section addresses the following MS4 Permit requirements:

- Develop an inventory of permittee-owned vehicles and equipment;
- Establish procedures for the storage of vehicles.;
- Evaluate fueling areas owned or operated by the permittee; and
- Establish procedures to ensure vehicle wash waters are not discharged into the municipal storm sewer system or surface waters.

An inventory of these assets is included in **Table 3** below.

Table 3 Inventory of Vehicles and Equipment

Facility	On-Site Storage Location(s)	Vehicle and Equipment Type and Quantity Stored
Facilities Parking Lot	Outdoor parking lot	Vans (4), pickup trucks (3), backhoe (1), crew cab dump truck (1), police explorer SUV (1), police cars (7), police explorer autos (2), police cruisers (3), utility vehicle (1)
West Garage Office	Garage	Vans (5)
West Garage	Garage	SUV (1), pickup truck (1)
Nantucket Field Station	Outdoor parking lot	Tractor (1), boat trailer (1), SUVs (2), pickup truck (1), utility trailer (1), van (1)
Service and Supply	Outdoor parking lot	Utility vehicle (1), lift (1), pickup trucks (2), freightliner truck (1)
Quinn Administration	Outdoor parking lot	Police car (1)
McCormack Receiving Dock	Outdoors	Pickup truck (1)
Clark Athletic Center	Outdoor parking lot	Boat trailer (1), zambonis (2)
Deployed in Field	Outdoors	Boat trailer (1)
Wheatley Dock	Outdoors	Tow trailer (1)

4.2 O+M Procedures

UMass Boston strives to maintain its vehicles and equipment in good working order so as to provide high quality services and ensure the safety of students, employees, and visitors, all while preventing stormwater pollution from vehicles and equipment.

UMass Boston follows the following procedures for vehicles and equipment:

- Fleet and equipment are inspected before each use, and managers ensure that leaking vehicles or equipment are not used.
- Vehicles with fluid leaks are stored indoors or containment is otherwise provided until repaired.
- Vehicles and equipment are fueled at the Maintenance Garage. Fueling areas include spill containment measures in order to minimize exposure.
- Routine maintenance is conducted at the Maintenance Garage.
- Vehicles and equipment are rinsed at the Maintenance Garage (no soap), which includes containment and spill prevention measures. Police vehicles are washed off-site.
- Materials used for maintaining and/or washing vehicles and equipment are used, stored, and disposed of in accordance with Section 3.2.1 Use, Storage and Disposal of Potential Pollutants.
- No wash water from vehicle and equipment maintenance areas is disposed of into the drainage system or allowed to flow overland off-site.

4.2.1 Vehicle and Equipment Maintenance

UMass Boston vehicles and equipment are inspected on a regular basis, and managers ensure that leaking vehicles or equipment are not used. Vehicles with fluid leaks are stored indoors or containment is otherwise provided until repaired. The following best practices are followed for vehicle and equipment storage, maintenance, and fueling.

Best Practices for Vehicle and Equipment Storage, Maintenance, and Fueling

Vehicle Storage

- Monitor vehicles and equipment for leaks and use drip pans as needed until repairs can be performed.
- When drip pans are used, avoid overtopping.
- Drain fluids from leaking or wrecked vehicles and parts as soon as possible. Dispose of fluids properly.
- Store and park vehicles on impervious surfaces and/or under cover or indoors whenever possible.

Vehicle Maintenance

- Conduct routine inspections of

heavy equipment and vehicles to proactively identify maintenance needs or potential leaks.

- Perform routine preventive maintenance to ensure heavy equipment and vehicles are operating optimally.
- Recycle or dispose of waste properly and promptly.
- Sweep and pick up trash and debris as needed.
- Do not dump any liquids or other materials outside, especially near or in storm drains or ditches.

Body Repair and Painting

- Conduct all body repair and painting work indoors.
- Minimize waste from paints and thinners. Calculate paint needs based on surface area.
- Use dry cleanup methods (vacuum, sweep) to clean up metal filings and dust and paint chips from grinding, shaving and sanding. Sweep debris from wet sanding after allowing it to dry overnight on the shop floor. Dispose of waste properly; never dump waste into storm or sanitary sewers.
- Use sanding tools equipped with vacuum capability to pick up debris and dust.
- Store all chemicals in accordance with Section 3.2.1 Use, Storage and Disposal of Potential Pollutants.

Fueling

- Fueling areas owned or operated by UMass Boston should be covered.
- Fueling areas should be evaluated to ensure that pollutants (e.g., gasoline or oil) do not enter the MS4.
- Follow procedures in Section 4.2.3 Fuel and Oil Handling.

4.2.2 Vehicle Washing Procedures

UMass Boston conducts vehicle washing (rinsing) at the Maintenance Garage, which includes containment and spill prevention meaures. Outdoor washing of UMass Boston vehicles only uses water since wash water is not contained in a tight tank or similar structure. Where no alternate wash system is available, and full containment of wash water cannot be achieved, the procedures in the following sections shall be followed.

Best Practices for Vehicle Washing

General

- Bring smaller vehicles to commercial washing stations.
- Where use of detergent cannot be avoided, use products that do not contain regulated contaminants. Use of a biodegradable, phosphate-free detergent is preferred.
- Maintain absorbent pads and drip pans to capture and collect spills or noticeable leaks observed during washing activities. Clean up any spills using the procedures described in the SPCC provided in Appendix A.
- Avoid discharge of any wash water directly to a surface water (e.g., stream, pond, drainage swale, etc.)

- Minimize use of water to the extent practical.
- Solids and particulate accumulation from the washing area shall be completed through periodic sweeping and/or cleaning.
- Designate separate areas for routine maintenance and vehicle cleaning. This helps prevent contamination of wash water by motor oils, hydraulic lubricants, greases, etc.
- Store all chemicals in accordance with Section 3.2.1 Use, Storage and Disposal of Potential Pollutants.

Outdoor Vehicle Washing

- Do not use solvents except in dedicated solvent parts washer systems or in areas not connected to a sanitary sewer.
- Do not power wash, steam clean or perform engine cleaning or undercarriage cleaning.
- Grassy and pervious (porous) surfaces may be used to promote direct infiltration of wash water, providing treatment before recharging groundwater and minimizing runoff to an adjacent stormwater system. Pervious surfaces or other infiltration-based systems shall not be used within wellhead protection areas or within other protected resources.
- Impervious surfaces discharging to engineered storm drain systems shall not discharge directly to a surface water unless treatment is provided. Treatment can include a compost-filled sock designed specifically for removal of petroleum and nutrients, such as the Filtrexx™ FilterSoxx product, or equal. The treatment device shall be positioned such that all drainage must flow through the device, preventing bypassing or short-circuiting.
- All adjacent engineered storm drain system catch basins shall have a sump. These structures shall be cleaned periodically.
- Heavily soiled vehicles or vehicles dirtied from salting or snow removal efforts shall not be washed outside, without exception.

Indoor Vehicle Washing Procedures

- Detergents shall not be used in areas where oil/water separators provide pre-treatment of drainage.
- Floor drains shall be connected to a sanitary sewer or tight tank. Floor drains discharging to adjacent surface water bodies or engineered storm drain systems shall be permanently plugged or otherwise abandoned before any vehicle wash activities are completed.
- Dry clean-up methods, such as sweeping and vacuuming, are recommended within garage facilities. Do not wash down floors and work areas with water.

Engine Washing and Steam Washing Procedures

- Do not wash parts outdoors.
- Maintain drip pans and smaller containers to contain motor oils, hydraulic lubricants, greases, etc. and to capture and collect spills or noticeable leaks observed during washing activities, to the extent practicable. Clean up any spills using the procedures described in the SPCC provided in **Appendix A**.

- Avoid cleaning with solvents except in dedicated solvent parts washer systems. Make use of pressure washing and steam cleaning.
- Recycle clean solutions and rinse water to the extent practicable.
- Wash water shall discharge to a tight tank or a sanitary sewer via an oil/water separator. Detergents shall not be used in areas where oil/water separators provide pre-treatment of drainage.

4.2.3 Fuel and Oil Handling

Spills, leaks, and overfilling can occur during handling of fuels and petroleum-based materials, representing a potential source of stormwater pollution, even in small volumes. This section provides guidance to UMass Boston staff on a variety of ways by which fuels and petroleum-based materials can be delivered, as well as steps to be taken when petroleum products (such as waste oil) are loaded onto vehicles for offsite disposal or recycling.

Best Practices for Fuel and Oil Handling

General

- There is no smoking while fuel handling is in process or underway. Sources of flame are kept away while fuel handling is being completed. This includes smoking, lighting matches, carrying any flame, or carrying a lighted cigar, pipe, or cigarette.
- The delivery or pickup truck driver should check in with the facility upon arrival.
- The facility representative should ensure that the appropriate spill cleanup and response equipment and personal protective equipment are readily available and easily accessible. Refer to the SPCC in Appendix A for examples of spill cleanup and response materials.
- The delivery vehicle's hand brake is set, and wheels are chocked while the activity is being completed.
- Catch basins and drain manholes are adequately protected.
- No tools are to be used that could damage fuel or oil containers or the delivery vehicle.
- No flammable liquid should be unloaded from any motor vehicle while the engine is operating, unless the engine of the motor vehicle is required to be used for the operation of a pump.
- Ensure that local traffic does not interfere with fuel transfer operations. If it does, make appropriate accommodations.
- The attending persons should watch for any leaks or spills. Any small leaks or spills should be immediately stopped, and spilled materials absorbed and disposed of properly. Follow the procedures in the SPCC in **Appendix A**.
- In the event of a large spill or one that discharges to surface waters or an engineered storm drain system, the facility representative should activate the facility's Stormwater Pollution Prevention Plan (SWPPP) and report the incident as specified in the document.

Delivery of Bulk Fuel

- The facility representative should

check to ensure that the amount of delivery does not exceed the available capacity of the tank.

- A level gauge can be used to verify the level in the tank.
- If a level gauge is not functioning or is not present on the tank, the tank should be stick tested prior to filling.
- The truck driver and the facility representative should both remain with the vehicle during the delivery process.
- The truck driver and the facility representative should inspect all visible lines, connections, and valves for leaks.
- When delivery is complete and the hoses are removed, buckets should be placed underneath connection points to catch drippings.
- The delivery vehicle should be inspected prior to departure to ensure that the hose is disconnected from the tank.
- The facility representative should inspect the fuel tank to verify that no leaks have occurred, or that any leaked or spilled material has been cleaned and disposed of properly.
- The facility representative should gauge tank levels to ensure that the proper amount of fuel is delivered and collect a receipt from the truck driver.

Delivery of Drummed Materials

- If damaged drums are found, they should be closely inspected for leaks or punctures.
- Breached drums should be removed to a dry, well-ventilated area and the contents transferred to other suitable containers.
- Drums should be disposed of in accordance with all applicable regulations.
- Drummed materials should not be unloaded outdoors during wet weather events.
- The truck driver and the facility representative should both remain with the vehicle during the delivery process.
- Drums should be handled and unloaded carefully to prevent damage.
- Upon completion of unloading, the facility representative should inspect the unloading point and the drums to verify that no leaks have occurred, that any leaked or spilled material has been cleaned up and disposed of properly, and that the unloaded drums are not leaking.
- The facility representative should check to ensure that the proper amount of fuel or other material is delivered and collect a receipt from the truck driver.

Removal of Waste Oil

- The truck driver and the facility representative should both remain with the vehicle during the tank draining process.
- When draining is complete and the hoses are removed, buckets should be placed underneath connection points to catch drippings.
- The facility representative should inspect the loading point and the tank to verify that no leaks have occurred, or that any leaked or spilled material has been cleaned up and disposed of properly.
- The facility representative should collect a receipt from the truck driver.
- When draining bulk oil tanks:
- The facility representative should verify that the volume of waste oil in the tank does not exceed the available capacity of the disposal hauler's vehicle.

- The disposal hauler vehicle should be inspected prior to departure to ensure that the hose is disconnected from the tank.

5 Catch Basins

5.2 Overview and Inventory

This section covers UMass Boston's approach to maintaining its catch basins. Maintaining catch basins in good working order is an important best practice and MS4 Permit requirement. The Office of Environmental Health & Safety performs routine inspections, cleaning, and maintenance of the approximately 130 catch basins that are located within the MS4 regulated area.

This section addresses the following MS4 Permit requirements:

- Establish a schedule with a goal that the frequency of routine cleaning will ensure that no catch basin at any time will be more than 50% full.
- Document in each annual report the following information:
    - Any action taken in response to excessive sediment or debris loadings
        - Total number of catch basins
        - Number of catch basins inspected
        - Number of catch basins cleaned
        - Total volume or mass of material removed from catch basins.

Catch basin locations are provided on the University's stormwater map at the following link: https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=961f0cce1e8c4cb099789ccb2c8320a6

5.2 O+M Procedures

UMass Boston will implement the following catch basin inspection and cleaning procedures to reduce the discharge of pollutants from the MS4:

- Catch basins will be cleaned such that they are no more than 50 percent full[3] at any time.
- If a catch basin sump is more than 50 percent full during two consecutive routine inspections or cleaning events, the finding will be documented, the contributing drainage area will be investigated for sources of excessive sediment loading, and to the extent practicable, contributing sources will be addressed. If no contributing sources are found, the inspection and cleaning frequency will be increased.
- Catch basins located near construction activities are inspected and cleaned more frequently if inspection and maintenance activities indicate excessive sediment or debris loadings (i.e., catch basins more than 50 percent full). Priority will also be given to catch basins that discharge to impaired waters.
- Properly dispose of collected sediments and catch basin cleanings (solid material, such as leaves, sand, and twigs removed from stormwater collection systems during cleaning operations).
- Cleanings from stormwater-only drainage systems may be disposed at any landfill that is permitted by MassDEP to accept solid waste. MassDEP does not routinely require stormwater-only catch basin cleanings to be tested before disposal, unless there is evidence that they have been contaminated by a spill or some other means.
- Screenings may need to be placed in a drying bed to allow water to evaporate before proper disposal. In this case, ensure that the screenings are managed properly to prevent pollution.
- Catch basin cleanings must be handled and disposed in accordance with compliance with the applicable MassDEP regulations, policies, and guidance (https://www.mass.gov/files/documents/2018/03/09/catch-basins.pdf).
- Collect data on the condition of the physical basin structure, its frame, and the grate, as well as on the quality of stormwater conveyed by the structure during inspections and cleanings.
- Make note of any potential pollutants or non-stormwater flows within the catch basin. Observations of oil sheen, discoloration, and/or trash and debris can indicate sources of pollution within the storm drain system. Observations of the following can indicate a potential connection of a sanitary sewer to the storm drain system: fecal matter, sewage odors, foaming (such as from detergent), optical enhancers (such as fluorescent dye added to laundry detergent).
- If any if signs of pollution and/or sanitary sewer connections are present, notify Office of Environmental Health & Safety.

[3] 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

6 Streets and Parking Lots

6.1 Overview and Inventory

This section covers UMass Boston's approach to maintaining its streets and parking lots. As impervious surfaces, streets and parking lots can contribute to stormwater pollution. The following MS4 Permit requirements are covered in this section:

- Establish and implement procedures for sweeping and/or cleaning streets and permittee-owned parking lots.
- Document in each annual report the following information:
    - Number of miles cleaned, volume of material removed, or weight of material removed,
    - Street sweeping schedule to target areas with high pollutant loads.

UMass Boston owns and maintains the following roads and parking lots. Each of these properties is swept following the procedures outlined below.

- University Drive N
- University Drive S
- University Drive E
- University Drive W
- Quinn Roadway
- Columbia Point
- Bianculli Blvd
- Beacons Lot
- Clark Lot
- Quinn Lot
- Short Term Parking Lot
- University Lot D
- UMass Boston Bayside Lot

6.2 O+M Procedures

All streets and University-owned parking lots will be swept and/or cleaned a minimum of once per year in the spring (following winter activities such as salting).

Street sweeping operations are performed by a third party and sweeping debris are not stored on campus.

UMass Boston will implement the following street and parking lot sweeping procedures to reduce the discharge of pollutants from the MS4:

Sweeping

- Street sweeping will be conducted in dry weather. Sweeping will not be conducted during or immediately after rain storms.
- Dry cleaning methods will be used whenever possible, with the exception of very fine water spray for dust control. Avoid wet cleaning or flushing of the pavement.
- When necessary, parking bans will be enacted to facilitate sweeping on busy streets.
- Sweeping will be conducted in a manner that avoids depositing debris into storm drains.
- Sweeping equipment (mechanical, regenerative air, vacuum filter, tandem sweeping) will be selected depending on the level of debris. Brush alignment, sweeper speed, rotation rate, and sweeping pattern will be set to optimal levels to manage debris.
- Sweeping equipment will be routinely inspected and maintained to reduce the potential for leaks

Disposal

- The reuse of sweepings is recommended by MassDEP. If street sweepings are reused (e.g., as anti-skid material or fill in parking lots), they will be properly filtered to remove solid waste, such as paper or trash, in accordance with their intended reuse. All reuse and/or disposal of street sweepings will be managed in accordance with current MassDEP policies and regulations (https://www.mass.gov/doc/street-sweepings-reuse-disposal-policy-baw-18-001/download)
- Sweepings intended for reuse can be stored for up to one year in approved temporary storage areas. Storage areas will be protected to prevent erosion and runoff and should be located away from wetland resource areas and buffer zones, surface water, or groundwater.
- Sweepings are classified as solid waste. If not reused, they will be disposed of at solid waste disposal sites.

7 Winter Road Maintenance

7.1 Overview

UMass Boston performs a variety of maintenance activities to ensure safe winter driving conditions on its roads and parking lots. This section addresses the following MS4 Permit requirements:

- Establish and implement procedures for winter road maintenance including
    - Use and storage of salt
    - Minimize the use of sodium chloride and other salts
    - Evaluate opportunities for use of alternative materials
- Ensure snow disposal activities do not result in disposal of snow into waters of the United States.

7.2 O+M Procedures

UMass Boston understands that winter road operations can impact water quality. As a result, UMass Boston will implement the following winter maintenance procedures to reduce the discharge of pollutants from the MS4:

- Minimize the use and optimize the application of sodium chloride and other salt[4] (while maintaining public safety) and consider opportunities for use of alternative materials.
- Optimize chemical application rates through the use, where practicable, of automated application equipment (e.g., zero velocity spreaders), anti-icing and pre-wetting techniques, implementation of pavement management systems, and alternate chemicals. Maintain records of the application of anti-icing and/or de-icing chemicals to document the reduction of chemicals to meet established goals.
- Prevent exposure of deicing product (salt or alternative products) storage piles to precipitation by enclosing or covering the storage piles. Implement good housekeeping, diversions, containment or other measures to minimize exposure resulting from adding to or removing materials from the pile. Store piles in such a manner as not to impact surface water resources, groundwater resources, recharge areas, and wells.
- UMass Boston uses salt on roadways and sodium chloride pellets on walkways as deicing materials for winter road maintenance.
- UMass Boston stores their deicing materials in covered bins in the Service Supply Parking Lot.

[4] For purposes of the MS4 Permit, salt means any chloride-containing material used to treat paved surfaces for deicing, including sodium chloride, calcium chloride, magnesium chloride, and brine solutions.

- The MS4 Permit prohibits snow disposal into waters of the United States. Snow disposal activities, including selection of appropriate snow disposal sites, will adhere to the Massachusetts Department of Environmental Protection Snow Disposal Guidance, Guideline No. BWR G2015-01 (Effective Date: December 21, 2015), located at: http://www.mass.gov/eea/agencies/massdep/water/regulations/snow-disposal-guidance.html

Additional details on best practices are included in **Appendix B**.

8 Structural Stormwater BMPs

8.1 Overview and Inventory

Structural stormwater Best Management Practices (BMPs) are structural controls that are designed, built, and maintained to treat stormwater prior to being discharged to the drainage system or waterbody. BMPs often retain or infiltrate stormwater, allowing natural processes like settling, vegetation uptake, and filtration to remove pollutants from runoff. Examples include infiltration structures or swales, bioretention systems (e.g., rain gardens), wet ponds, detention basins, and infiltration/leaching basins or chambers.

An inventory of structural stormwater BMPs owned and/or maintained by UMass Boston is provided on the stormwater map at the following link:

https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=961f0cce1e8c4cb099789ccb2c8320a6

Best practices for maintenance procedures are included below.

8.2 O+M Procedures

UMass Boston understands that in order to function properly and provide associated stormwater benefits, structural stormwater BMPs must be kept in good working order.

8.2.1 Inspections

Structural stormwater BMPs will be inspected annually at a minimum.

During inspections, the following BMP components will be reviewed for signs of potential issues, as listed below.

- **Inlet and Outlet Structures**
    - Blocked flow paths
    - Inlet is functioning as expected and flow from the contributing area is reaching the BMP
    - Outlet is performing as expected and flow is leaving the BMP appropriately
    - Structural damage
    - Vegetation is well established and there are no signs of erosion
    - Evaluate level of sedimentation and trash accumulation
- **BMP Treatment Areas**
    - Flow is dispersed evenly throughout the BMP
    - Erosion and rutting on the side slopes
    - Vegetation is well established, and invasive species are not present

    - For infiltration-type BMPs, review to evaluate whether standing water exists 72 hours after a rain event
    - Identify any signs of illicit discharges or vandalism
    - Evaluate level of sedimentation and trash accumulation
- **Underground Components**
    - Evaluate level of sedimentation and trash accumulation
    - Structural damage
    - Access to components are not compromised
    - Inspect dry wells after every major storm for the first 3 months once construction is complete and annually thereafter

During inspection, UMass Boston will assign a level of service to each item reviewed. Areas where follow up maintenance is warranted will be indicated. The following maintenance activities will occur at structural BMPs based on condition determined during annual inspections:

- Repair structural damage
- Remove excess sediment, trash, and debris
- Re-establish vegetation
- Remove invasive vegetation
- Re-grade areas, as necessary to ensure proper flow patterns
- Stabilize eroded areas via vegetation establishment, placement of stone, or other energy dissipation measures

UMass Boston maintains records of annual inspections and maintenance actions performed for each structural BMP using Esri's ArcCollector mobile app.

8.2.2 Maintenance

Regular maintenance is important to prevent against premature failure of BMPs. **Table 5** outlines the maintenance schedule in general and for specific BMP types.

Table 5 BMP Maintenance Schedule

Activity	Time of Year	Frequency
General		
Mow	Spring through Fall	As needed, Annually minimum
Remove dead or invasive vegetation	Fall and spring	Bi-annually
Prune	Spring or fall	Annually
If identified during inspections as needed		
Replace dead vegetation	Spring	As Needed
Stabilize eroded areas	Spring through Fall	As Needed
Re-grade areas to ensure proper flow patterns	Spring through Fall	As Needed
Remove excess sediment, trash, and debris	Spring through Fall	As Needed
Repair structural damage	Spring through Fall	As Needed
Bioretention Areas and Rain Gardens		
Mulch void areas	Spring	Annually
Replace all media and vegetation and repair structural damage as needed	Late spring/early summer	As needed
Extended Dry Detention Basin and Wet Basin		
Mow upper stage, side slopes, embankment and emergency spillway	Spring through Fall	Bi-annually
Remove sediment from basin	Year round	As required, at least once every 5 years
Remove sediment, trash and debris	Spring through Fall	Bi-annually (Minimum)
Dry Well		
Inspect dry wells	Spring through Fall	After every major storm for the first 3 months after construction completion. Annually thereafter
Infiltration Basin		
Mow/rake buffer area, side slopes, and basin bottom	Spring and fall	Bi-annually
Remove trash, debris and organic matter	Spring and fall	Bi-annually

Appendix A: Spill Prevention Control and Countermeasure (SPCC) Plan

SPILL PREVENTION, CONTROL & COUNTERMEASURE (SPCC) PLAN

PREPARED FOR:

UMASS BOSTON
UNIVERSITY OF MASSACHUSETTS BOSTON

UNIVERSITY OF MASSACHUSETTS BOSTON
100 MORRISSEY BOULEVARD
BOSTON, MASSACHUSETTS 02125-3393

PREPARED BY:

GZA GeoEnvironmental, Inc.
Proactive by Design

GZA GEOENVIRONMENTAL, INC.
249 VANDERBILT AVENUE
NORWOOD, MASSACHUSETTS 02062

REVISION: JUNE 2019
FILE NO: 01.0171873.00

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

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UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

EMERGENCY CONTACT LIST

EMERGENCY CONTACT LIST	
Internal Contacts	
University of Massachusetts Boston Public Safety Office	Emergency: 911 Non-Emergency: (617) 287-7777
Spill Prevention Coordinator / Deputy Director of EH&S *Zehra Schneider Graham*	On-Campus: 7-5444 24-hour: (617) 293-6840
Alternate Spill Prevention Coordinator / Assistant Director of EH&S *Lalitha Adusumilli*	On-Campus: 7-5497 24-hour: (617) 938-4193
Environmental Health & Safety Office	(617)287-5445
Facilities Administration	On-Campus 7-5580 Work Order Control
External Agencies	
Boston Fire Department / Police Department / Ambulance	911
Massachusetts DEP Spill Hotline	(888) 304-1133
National Response Center	(800) 424-8802
U.S. EPA Region 1	(888) 372-7341
CHEMTREC	(800) 424-9300
Boston Medical Center	(617) 638-8000
Boston Water & Sewer Department	(617) 989-7000
Boston Department of Public Health	(617) 624-6000
Boston Local Emergency Planning Committee (LEPC)	(617) 343-2051
Massachusetts Water Resource Authority	(617) 305-5940
Massachusetts State Emergency Response Commission (SERC)	(508) 820-2010
Massachusetts DEP Northeast Regional Office	(978) 694-3200
Massachusetts Emergency Management Agency (MEMA)	(978) 328-1500
Commonwealth Tank Incorporated (CommTank)	(800) 628-8260 or (781) 224-1021
Spill Response Contractors	
Clean Harbors Environmental Services	(800) 645-8265 or (781) 803-4100

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

SPILL/RELEASE REPORTING QUICK REFERENCE SUMMARY

SPILL/RELEASE REPORTING QUICK REFERENCE SUMMARY		
Type of Spill	**Who to Call**	**Time Frame**
Any spill	SPCC Coordinator	Immediate
Oil spills greater than 10 gallons to land and oil spills that cause a sheen on waters of the state and/or U.S.	MassDEP Boston Fire Department Boston Police Department	Within 2 hours
Oil spills that cause a film or sheen on waters of the U.S.	National Response Center	Immediately
Threats of Release	MassDEP	Within 2 hours

Massachusetts Reportable Releases

A release of any quantity of oil to navigable waters or to a storm drain that discharges to navigable waters must be reported within 2 hours to the MassDEP. A release of 10 gallons or more of oil to the environment must be reported to the MassDEP within 2 hours.

Federal Reportable Releases

A release of any quantity of oil to navigable waters or to a storm drain that discharges to navigable waters must be reported immediately to the NRC.

Notes:

1. A release to a containment structure is not considered a release to the environment.

2. Threat of release means a substantial likelihood of a release of oil and/or hazardous material which requires action to prevent or mitigate damage to health, safety, public welfare or the environment which may result from the release. A threat of release includes situations where a release is likely to occur, where the quantity of the release, if it occurred, would be equal to or greater than the applicable Reportable Quantity.

UMASS BOSTON
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RECORD OF PERIODIC PLAN REVIEW

RECORD OF PERIODIC PLAN REVIEW	
Date of Review	**Statement of Review**
7/1/2020	I have completed review and evaluation of the SPCC Plan and will ☐ / will not ☒ amend the plan as a result. Name: Zehra Schneider Graham Signature:
7/1/2022	I have completed review and evaluation of the SPCC Plan and will ☐ / will not ☒ amend the plan as a result. Name: Zehra Schneider Graham Signature:
	I have completed review and evaluation of the SPCC Plan and will ☐ / will not ☐ amend the plan as a result. Name: Signature:
	I have completed review and evaluation of the SPCC Plan and will ☐ / will not ☐ amend the plan as a result. Name: Signature:
	I have completed review and evaluation of the SPCC Plan and will ☐ / will not ☐ amend the plan as a result. Name: Signature:
	I have completed review and evaluation of the SPCC Plan and will ☐ / will not ☐ amend the plan as a result. Name: Signature:
	I have completed review and evaluation of the SPCC Plan and will ☐ / will not ☐ amend the plan as a result. Name: Signature:

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

RECORD OF PLAN REVISIONS

RECORD OF PLAN REVISIONS		
Date of Revision	**Description of Revision**	**PE Certification Required (Y/N)**
April 26, 2002	Initial Development of SPCC Plan.	Yes
June 12, 2008	Revisions to format, regulatory updates, and campus modifications.	Yes
June 6, 2014	Revisions to format, emergency personnel, and campus modifications.	Yes
June 18, 2019	Revisions to format, emergency personnel, and campus modifications.	Yes

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

PLAN DISTRIBUTION LIST

PLAN DISTRIBUTION LIST		
Plan #	**Title**	**EH&S Personnel**
1	SPCC Coordinator	Zehra Schneider Graham
2	Alternate SPCC Coordinator	Lalitha Adusumilli

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

SECTION 1.0 - GENERAL INFORMATION

1.1 INTRODUCTION

This Spill Prevention, Control, and Countermeasure (SPCC) Plan has been prepared for the University of Massachusetts Boston (UMass Boston) campus located at 100 Morrissey Boulevard in Boston, Massachusetts pursuant to the United States Environmental Protection Agency's (USEPA's) Oil Pollution Prevention Regulations (40 CFR 112). This Plan establishes preparedness, prevention, planning, spill response, and spill notification procedures as set forth 40 CFR 112. This plan complies with the Spill Prevention Control and Countermeasure (SPCC) Program developed by UMass Boston Integrated Defense Systems Environmental Health and Safety Department.

This Plan has been compiled by GZA GeoEnvironmental, Inc. and UMass Boston. The Plan has been reviewed and certified by a Registered Professional Engineer.

1.1.1 Plan Outline

This Plan contains three main sections: 1) General Information, 2) Spill/Release Prevention Procedures, and 3) Spill Contingency Plan.

Section 1.0 – General Information describes the UMass Boston campus and the administration of this Plan including procedures for the distribution, periodic review, and amendment of the Plan.

Section 2.0 – Spill/Release Prevention identifies and establishes policies and procedures to be implemented with the goal of reducing the potential of a spill/release, including: a detailed description of areas of the facility where oil is used and stored; the associated containment systems; a description of the potential environmental receptors that may be affected; procedures for inspecting storage areas or equipment containing oil; a description of UMass Boston's training program; delivery/storage procedures; and a discussion and assessment of the potential spill/release scenarios.

Section 3.0 – Spill Contingency Plan identifies and establishes the response and notification procedures to be used in the event of a spill/release of oil including: steps to be taken when a spill/release is discovered; how to report a spill/release; and guidance on mitigation and cleanup of a spill/release and disposal of related waste.

1.1.2 Plan Review/Amendments

As set forth in 40 CFR 112.4 and 112.5, this SPCC Plan shall be amended and recertified whenever required by the Regional Administrator of the USEPA, whenever applicable regulations are revised or added, or whenever there is a change in facility design, construction, operation, or maintenance which materially affects the facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines.

Examples of changes that may require amendment of the Plan may include, but are not limited to: commissioning or decommissioning containers; replacement, reconstruction or movement of containers;

reconstruction, replacement, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes of product or service; or revision of standard operation or maintenance procedures at the facility. Such amendments are considered technical amendments. Technical amendments made to this Plan shall only be effective, and satisfy the requirements of 40 CFR Part 112, if certified by a Registered Professional Engineer. Administrative changes, such as a change of phone numbers, do not require certification by a Registered Professional Engineer.

In addition, the Plan shall be reviewed and evaluated at least once every five years. As a result of this review, the Plan must be amended to include more effective prevention and control technology if the technology is field-proven at the time of the review and will significantly reduce the likelihood of a discharge from the facility.

Any amendment made to this Plan must be prepared and implemented no later than six months from the date of the facility change requiring the amendment. All Plan reviews will be documented using the Record of Periodic Plan Review on Page iii of this Plan. Should any revisions to the Plan be required, such revisions will be documented on the Record of Plan Revisions on Page iv of this Plan. The current revision date of the Plan is indicated in the lower left corner of each page.

1.1.3 Plan Distribution

This Plan will be distributed in accordance with the Plan Distribution List on Page v of this Plan.

1.1.4 Certification of Substantial Harm Determination

As required by 40 CFR Part 112, included as Appendix A is a completed Certification of Substantial Harm Determination Form which demonstrates that the UMass Boston campus does not meet the criteria for posing a risk of substantial harm to the environment, and is therefore not a covered facility.

1.1.5 Regulatory Cross Reference

40 CFR Part 112 requires that any SPCC Plan that does not specifically follow the regulatory format include a cross-reference of the Plan with the guidelines presented in Part 112. Accordingly, a regulatory cross reference is included as Appendix D to this Plan.

1.2 PURPOSE AND SCOPE

The purpose of this SPCC Plan is to establish preparedness, prevention, planning, spill response, and spill notification procedures as set forth in the applicable state and federal regulations related to oil management. This Plan identifies the procedures and equipment implemented and maintained by UMass Boston to prevent and to minimize hazards to public health, safety, or welfare of the environment from fires, explosions, or any other unplanned sudden or non-sudden release of oil to air, soil, surface water or groundwater, and activities and guidelines to be implemented to mitigate these situations should they occur. The Plan also details the procedures implemented to prevent spills/releases of oil that violate applicable water quality standards, cause a sheen upon or discoloration of the surface of navigable waters or adjoining shorelines, or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

This SPCC Plan has been prepared pursuant to regulations set forth in 40 CFR Part 112, which state that any facility that has an aggregate oil storage capacity of 42,000-gallons below ground or 1,320-gallons aboveground and could reasonably be expected to discharge oil in harmful quantities into navigable waters of the United States must prepare and implement an SPCC Plan. Completely buried storage tanks subject to all of the technical requirements of the applicable underground storage tanks regulations, and containers with storage capacities less than 55-gallons, are not considered in this determination, nor are they subject to the requirements of 40 CFR Part 112. Oil is defined in 40 CFR 112.2 as "oil of any kind or in any form, including, but not limited to: fats, oils, or greases of animals, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils an greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredges spoil." The UMass Boston campus exceeds the aboveground storage threshold quantities established in the regulations, and includes oil and petroleum products stored in tanks, containers and equipment. Oil-Containing equipment and containers with storage capacities less than 55-gallons are not addressed by this SPCC Plan.

1.2.1 UMass Boston General Information

The UMass Boston campus is an urban public educational and research institution consisting of numerous buildings (see table below) situated on 175.25 acres on Columbia Point and a growing student body of more than 16,000 undergraduate and graduate students.

In 2009, the University of Massachusetts Boston unveiled a 25-year Master Plan, which outlines the development that will transform the campus to meet the university's strategic vision: becoming a model student-centered, urban public research university of the 21st century. Reinventing the 1970s campus, the plan calls for new buildings, landscapes, circulation corridors, and utilities. Already underway in design and construction, the first phase of the master plan (2008 through 2017) includes the university's first new academic buildings since its inception, rerouting the roads and utilities creating a safer and efficient campus, and a new stretch of the HarborWalk path that runs along the waterfront.

Building No.	Building Type	Building Name	Building Function
010	Academic	Wheatley Hall	Faculty Offices, Classrooms, Laboratories
020	Academic	McCormick Hall	Faculty Offices, Classrooms, Laboratories
030	Academic	University Hall	Faculty Offices, Classrooms, Laboratories
050	Administration	Campus Center	Student Services

Building No.	Building Type	Building Name	Building Function
060	Academic	Integrated Sciences Complex	Faculty Offices, Classrooms, Laboratories
090	Academic	Healey Library	Faculty Offices, Student Research Facility
110	Administration	Quinn Administration Building	Campus Administration
120	Athletics	Clark Athletic Center	Student Athletics Complex
150	Operations	Service and Supply	Essential Services and Utilities
160	Operations	Utility Plant	Essential Services and Utilities
N/A	Operations	Pump House	Essential Services and Utilities
N/A	Operations	Boat Dock	Water Access

The site is bordered by Savin Hill Cove, the Massachusetts State Archives, the John F. Kennedy Library and Boston College High School. Figure 1 depicts a Site Location Map and Figure 2 depicts a Campus Map showing the location of all the buildings described above. General site topography slopes gradually towards the bay, in a southeasterly direction. Facility-specific information is listed below:

Facility Name:	University of Massachusetts Boston
Facility Address:	100 Morrissey Boulevard, Boston, Massachusetts 02125-3393
Main Phone Number:	(617) 287-5000
County:	Middlesex
Latitude / Longitude:	42° 22' 11" N / -71° 14' 37" W

1.2.2 UMass Boston Oil Storage Overview

Oil storage at the UMass Boston campus subject to the requirements of this Plan includes aboveground oil storage tanks, oil storage containers, oil stored in electrical transformers and oil stored in hydraulic elevator systems. Specific information for each oil storage location at the UMass Boston campus is included in Table 1 in the Tables Section of this Plan. The location of each oil storage tank, container, and equipment is depicted on Figure 3 in the Figures Section of this Plan.

The UMass Boston campus utilizes the following types of oil and petroleum products:

- Diesel Fuel;
- No. 2 Fuel Oil;
- Machine Lube Oil;
- Transformer Oil, and
- Hydraulic Fluid.

The oils and petroleum products listed above are used in the following types of applications:

- Emergency Power Generation;
- Electrical Transformers;
- Hydraulic Elevators; and
- Equipment Lubrication.

These oil and petroleum products are stored in:

- Aboveground storage tanks;
- Miscellaneous storage containers (e.g., 55-gallon drums);
- Electrical Transformers; and
- Hydraulic Elevator System Reservoirs.

1.2.3 Spill Prevention Coordinator

As required by 40 CFR Part 112, UMass Boston has designated personnel accountable for discharge prevention and who reports to campus management. For the purposes of this Plan, these individuals are identified as the Spill Prevention Coordinators (SPCC Coordinators). These individuals also serve as Emergency Coordinators for the campus, as described in Section 1.2.4 below. The SPCC Coordinators are directly responsible for the implementation of this Plan and all policies and procedures described in this Plan. Specific responsibilities of the SPCC Coordinators include:

- coordinating the amendment and distribution of the Plan;
- conducting the training program; and
- ensuring that tank and equipment inspections are properly implemented.

1.2.4 Emergency Coordinators

To ensure the expeditious and effective response to releases at the campus, UMass Boston has designated both Primary and Alternate Emergency Coordinators for the campus. For the purposes of this plan, these individuals also serve as the SPCC Coordinators for the facility, as described in Section 1.2.3 above. The Primary SPCC Coordinator is directly responsible for the implementation of the emergency response procedures described in this Plan. The SPCC Coordinator and Alternate SPCC Coordinators have been authorized by UMass Boston to implement this Plan and utilize any resources described within this Plan to minimize the hazards to human health or the environment from a spill/release of oil. The Alternate SPCC Coordinator (or designee) assumes the responsibilities of the Primary SPCC Coordinator in his/her absence. The Primary and Alternate SPCC Coordinators for the campus, and their respective phone numbers and addresses, are identified on the Emergency Contact List on Page i of this Plan. Specific responsibilities of the Primary and Alternate SPCC Coordinators include:

- directing response efforts;
- assess human health and environmental hazards and impacts;
- assess spill/release to determine if external reporting is required and/or if spill contractor is needed;
- initiating/coordinating incident response and communicating required follow-up actions;
- conducting follow-up notifications with outside agencies;
- initiate/coordinate sustained actions;
- initiate/coordinate termination and follow-up actions; and
- implementing identified corrective actions.

Updated and complete copies of the Plan will be maintained on-site in the SPCC Coordinator's Office. The Plan will be made available upon request for on-site review during normal business.

1.3 CONFORMANCE WITH STATE REQUIREMENTS

As required by 40 CFR 112, preparation of this SPCC Plan considered the requirements contained in the Code of Massachusetts Regulations (CMR) listed below:

- 310 CMR 30.000 Hazardous Waste
- 310 CMR 40.0000 Massachusetts Contingency Plan (MCP)
- 527 CMR 9.00 Massachusetts Tanks and Containers Regulations

1.3.1 Massachusetts Hazardous Waste Regulation Conformance

The management of hazardous waste in Massachusetts is governed by 310 CMR 30.000. Particular to SPCC planning, these regulations include sections regarding the management of waste oil and waste oil containers, including labeling, and handling practices. Under current operations, UMass Boston may periodically generate waste oil at the Boston campus. Accordingly, any waste oil generated by UMass Boston will be managed in accordance with the applicable sections of 310 CMR 30.000.

1.3.2 Massachusetts Contingency Plan Regulation Conformance

The requirements associated with responding to, reporting, and cleaning up spills and/or releases or threats of release of hazardous materials in Massachusetts are governed by the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000). Particular to SPCC planning, hazardous materials include oils. In the event of a release or threat of release at UMass Boston, the SPCC Coordinator will ensure that the release will be appropriately handled in accordance with the specific requirements of the MCP.

1.3.3 Massachusetts Tanks and Containers Regulation Conformance

The Massachusetts Tanks and Containers Regulations apply to the design, construction, installation, testing, and maintenance of tanks and containers. The intent is to protect the public safety and welfare from the dangers of fire and/or explosion due to tank or container leakage of flammable and combustible liquids. The aboveground storage tanks at the UMass Boston campus have been constructed and installed in accordance with these requirements. Furthermore, UMass Boston will ensure the tanks are appropriately maintained in accordance with the application requirements of 527 CMR 9.00.

1.4 QUALIFIED FACILITY

In December 2006, portions of 40 CFR Part 112 were modified to allow a "*qualified facility*" to self-certify the SPCC Plan. A *qualified facility* is defined in 40 CFR 112.3(g) as a facility which has an aggregate aboveground storage capacity of 10,000 gallons or less; and which has had no single discharge exceeding 1,000 gallons or no two discharges exceeding 42 gallons within any twelve month period in the three years prior to the SPCC Plan self-certification date, or since becoming subject to the SPCC rule if the facility has been in operation for less than three years. Furthermore, a qualified facility must not rely on *Environmentally Equivalent* measures to satisfy the objectives of 40 CFR Part 112.

The UMass Boston campus has an aggregate aboveground oil storage capacity of greater than 10,000 gallons and has had no discharges in excess of the thresholds described above. The UMass Boston campus has implemented *Environmentally Equivalent* measures to comply with certain requirements of 40 CFR 112, which are required to be certified by a Registered Professional Engineer. These measures are described in detail in Section 1.5 of this Plan. Therefore, the UMass Boston campus is not a qualified facility.

1.5 PLAN DEVIATIONS

In preparing an SPCC Plan, owners and operators are allowed to deviate from certain sections of 40 CFR Part 112, but must explain reasons for nonconformance and provide equivalent environmental protection. After performing an analysis of the UMass Boston campus, the SPCC Plan includes the following deviations (as noted in this section) from 40 CFR Part 112.

1.5.1 Environmental Equivalence – General

The environmental equivalence provision, contained in 40 CFR 112.7(a)(2), allows for deviations from specific requirements of 40 CFR 112, as long as alternative measures are implemented which provide equivalent environmental protection. The environmental equivalence provision is a key mechanism of the performance-based 40 CFR 112 rule. This flexibility enables facilities to achieve environmental protection in a manner that fits their unique circumstances. It also allows facilities to adopt more protective industry practices and technologies as they become available. In the 40 CFR 112 context, equivalent environmental protection can be defined as an equal level of protection of navigable waters and adjoining shorelines from oil pollution.

1.5.2 Environmental Equivalence – Integrity Testing

The UMass Boston campus deviates from the integrity testing provision of 40 CFR 112.8(c)(6) for the aboveground oil storage tanks located at the campus. This decision is based on an evaluation of good engineering practices after considering the tank installation and operations procedures and alternative measures implemented by the campus and described herein.

The tanks are located in areas of the campus which will provide for secondary containment of the tanks, and are situated in a manner which allows for thorough visual inspections of the outer wall of the tanks, which are conducted on a monthly basis, or more frequently as determined by the SPCC Coordinator. The personnel performing periodic inspections of storage tanks are knowledgeable of tank operations, characteristics of the oil stored, and the type of the storage tank and its associated components. The routine inspections focus specifically on detecting any change in conditions or signs of product leakage from the tanks and their associated piping. If signs of leakage or deterioration from the tank or piping are observed by UMass Boston personnel, the situation is reported to the SPCC Coordinator, who determines the appropriate course of action for further evaluation or response activities.

The systems and measures implemented by the UMass Boston campus and described above are considered to provide equivalent environmental protection for the aboveground storage tanks and the non-destructive shell evaluation component of integrity testing required under 40 CFR 112.8(c)(6), since it provides an appropriate and effective means of assessing the condition of the tank and its suitability for continued service.

If, during a visual inspection, evidence is found that a tank may have been damaged or if the structural integrity of a tank may have been compromised in some manner, integrity testing methods may be employed to evaluate the tank. Any such testing will be conducted in accordance with generally accepted industry standards and will employ such methods as tightness testing, hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or another system of non-destructive shell testing. Records of all such testing, including comparison testing, will be maintained by UMass Boston.

1.5.3 Environmental Equivalence – Campus Security

40 CFR 112.7(g) requires sites to fully fence handling, processing, or oil storage, and lock and/or guard entrance gates when the facility is not in production or unattended. The UMass Boston campus is located in a well-lit urban environment and access is restricted to employees, students and visitors. The University Public Safety Office is operational 24-hours a day and its police officers and security staff provide regular patrols to insure the safety of personnel and University facilities including the oil storage areas. Direct access to a majority of the aboveground tanks and drums is restricted to authorized Facilities. The campus operates two temporary storage tanks located in the maintenance area at the campus. These tanks are located in a well-lite area and are surrounded by concrete jersey barriers. Administration personnel or other specially trained or authorized personnel. The electrical transformers are located indoors

There are no accessible master flow or drain valves that would permit direct outward flow of the bulk tank contents to the surface. The oil transfer pumps throughout the campus are located inside rooms accessible only to authorized personnel. All piping and connections at this facility are in service, and should not be capped or blank flanged. The facility lighting is commensurate with the type and location of the facility. It is sufficiently lit to enable the discovery of spills during hours of darkness, both by operating personnel and by non-operating personnel, and is sufficiently lit to prevent spills occurring through acts of vandalism. Therefore, the UMass Boston campus does not need to demonstrate that environmental equivalent measures are in place.

1.6 APPROVAL AND CERTIFICATION

This Plan has been reviewed and approved by a representative of UMass Boston with the authority to commit the necessary resources for implementing this Plan, and by a registered Professional Engineer as required by 40 CFR Part 112.

1.6.1 Management Approval

This Plan has been reviewed and approved by a UMass Boston representative with the authority to commit necessary resources for implementing the Plan. The programs and procedures outlined in this Plan will be implemented and periodically reviewed and updated in accordance with 40 CFR Part 112, as amended, and applicable state and local requirements. Additionally, in the event of a spill or release of oil, the necessary manpower, equipment and materials will be made available to expeditiously control and remove any harmful quantity of oil discharged.

Responsible Person	Title	Signature	Date
Zehra Schneider Graham	Director, Environmental, Health and Safety		6/18/19
Lalitha Adusumilli	Associate Director, Environmental Health and Safety		6/18/19

1.6.2 Professional Engineer Certification

I, being familiar with the provisions of 40 CFR Part 112, have reviewed the SPCC Plan for the UMass Boston campus described herein. I, or my representative, have visited and examined the facility located at the address above. This Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of 40 CFR Part 112. The Plan outlines procedures for required inspections and testing, and is adequate for the facility listed above.

This certification shall in no way relieve the owner or operator of their duty to implement this SPCC Plan in accordance with 40 CFR Part 112. Further, this certification is no longer valid when any planned or unplanned change takes place at the facility that can increase the potential for a discharge of oil to Waters of the United States or when the regulations imposing SPCC Plan requirements change or after the deadline to review the continued applicability of this Plan has passed. Certain information was provided by UMass Boston. It is understood that UMass Boston also certifies that the information provided is true and accurate.

Professional Engineer	Registration Number / State	Signature	Date
Matthew M. Smith, P.E.	41356 / Massachusetts		06/18/19

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

SECTION 2.0 - SPILL/RELEASE PREVENTION

This section describes the storage of oil at the UMass Boston campus and the spill/release prevention equipment and procedures implemented at the UMass Boston campus, including secondary containment structures, oil handling, tank fueling procedures, and personnel training.

Described below is the system of structural and non-structural controls that will be used to prevent a discharge or minimize the potential for a discharge of oil in harmful quantities into or onto the navigable waters of the United States and their adjoining shoreline. In general, the system will consist of:

- spill containment structures;
- operating procedures that are specifically designed to minimize the potential for a release of oil;
- personnel training regarding the facilities available and the procedures established to prevent oil spills and subsequent discharges;
- campus security measures;
- routine inspections and record keeping; and
- routine SPCC Plan effectiveness reviews and amendments.

The guidelines for the preparation and implementation of an SPCC Plan (40 CFR 112.7(c)) require the use of "appropriate containment and/or diversionary structures or equipment" to prevent an oil discharge. At a minimum, one of the following structural controls (or its equivalent) must be used for onshore facilities:

- dikes, berms or retaining walls;
- curbing;
- culverting, gutters or other drainage systems;
- weirs, booms or other barriers;
- spill diversion ponds;
- retention ponds; or
- sorbent material.

Structural controls will be used as part of the discharge prevention system for the UMass Boston campus oil handling activities as described below.

Non-structural controls can be just as effective as structural controls in spill prevention. Several non-structural controls will be used at the UMass Boston campus. They include:

- campus security;
- personnel training;
- routine inspections;
- preventive maintenance; and
- standard operating procedures (SOPs).

Some of these non-structural controls are discussed below, while other additional controls are discussed on a campus-wide basis in the following sections.

In addition to this system of structural and non-structural controls, UMass Boston has also provided a written commitment of manpower, equipment and materials required to expeditiously control and remove any harmful quantity of discharged oil (see Section 1.6).

2.1 FACILITY STORAGE OF OIL, CONTAINMENT SYSTEMS, CORROSION AND OVERFILL PROTECTION

This section describes the oil storage, tank containment systems, corrosion protection, and overfill protection systems that are in place at the UMass Boston campus.

2.1.1 Oil Storage Tanks

UMass Boston stores #2 diesel fuel for on-site emergency generators and fuel dispensing operations in sixteen aboveground storage tanks (ASTs) and one underground storage tank (UST) at the campus. UMass The emergency generator bulk tanks range from 80 to 1,500 gallons and supply day tanks situated at strategic locations throughout the campus. The day tanks for this tank range in size from 10 to 80 gallons. In addition to the emergency generators, a 1,000- gallon bulk tank in Building #160 (Utility Plant) supplies fuel to two fire pumps. Two temporary 500-gallon bulk ASTs and one 5,000-gallon UST supply fuel to maintenance and construction-related vehicles and public safety vehicles., The capacity of all bulk and day tanks combined is approximately 12,645 gallons. The daily throughput is negligible because the emergency generators are only run once a week (for maintenance purposes) or when there is a power outage and the fire pumps only run in the event of a fire or during testing.

The tanks are composed of single-wall and double-wall steel construction. The tanks and their associated piping are adequately protected from corrosion and are fully compatible with their respective contents in the manner in which they are stored. All AST systems are clearly labeled to indicate contents, capacity, and associated hazards using the HMIS system or equivalent. Each of the tanks is also equipped with visual site gauges to minimize the likelihood of a release during fuel deliveries. All aboveground piping is located in a manner which it is not likely to be damaged by vehicles at the campus.

A majority of the bulk tanks and day tanks that contain #2 diesel fuel oil for the emergency generators and two fire pumps are located within mechanical rooms. In some cases, a 4-inch sill has been installed across the door opening to provide containment within the room. In most other cases, the sill is actually a foundation wall that provides several feet of containment height. In mechanical rooms where no sill is provided, the floor is sloped away from the doorway and the floor area is large enough that the room itself would contain the volume of oil stored in the event of a spill. As an additional means of preventing a release of oil to the environment, every drain from every mechanical room is tied into an oil/water separator that would trap any oil prior to discharge.

The discharge from the oil/water separators (except for the one I the Integrated Sciences Complex – which goes to sanitary sewer) is to Savin Hill Cove. All the catch basins in the underground parking garage are also tied into this system. The concrete floors of all the mechanical rooms are sufficiently impervious to contain spilled oil. In the event of a release from the 1,000-gallon tank (located in Building #160, Utilities Plant) with discharge to the floor drain system, the sewage lift station that serves the utility plant restroom, locker room, shower, sinks, floor drain (with oil/water separator) would be shut off to confine oil to the building. In addition to the containment and diversionary structures described above, absorbent materials are on hand and readily available to contain and remove minor spills.

The two generators for the Science Building IT room are located in the Beacons Parking lot. They are both surrounded by a locked chain link fence. Additionally, the campus operates two temporary storage tanks located in the maintenance area at the campus. These tanks are equipped with dedicated secondary containment and are surrounded by concrete jersey barriers.

The 5,000 gallon gasoline UST was installed in December 1996, and includes a VeederRoot monitoring system that continually monitors the system for leaks, limiting the chance of undetected leak or spill event. The tank was designed and installed in accordance with all applicable codes and regulations. The tank is a UL listed, double wall steel tank, complete with leak detection and overfill protection. The short run of underground piping between the tank and the dispensing pump is a double wall containment piping system. The materials of construction of the tank and associated piping are both sufficiently impervious to contain spilled gasoline.

Specific information related to individual oil storage tanks at the UMass Boston campus, including oil capacity, construction type, and other specific details are included in Table 1 of this Plan.

2.1.2 Oil Storage Containers

UMass Boston currently stores virgin oils and accumulates waste oil associated with equipment operation, maintenance activities, and kitchen cooking activities in 55-gallon containers in various locations at the UMass Boston campus. The number of containers in each area can vary based on current waste generation levels and virgin materials storage inventories, but are typically limited to one or two containers in a particular area. The containers are stored indoors, generally in areas with intact concrete floors with no nearby floor drains. Containers are also provided with secondary containment in the form drum tray dollies that provide containment for small spills and overfill. A major failure of a 55-gallon drum would not be contained by a drum tray dolly. Therefore, all satellite collection drums remain within the mechanical rooms they serve. The containers are periodically removed and replaced and are either polyethylene or steel and are fully compatible with the oil being accumulated. Containment and diversionary structures employed within the mechanical rooms is discussed at the end of this section.

The 55-gallon waste oil collection drums in the service garage of Building #150 are located on drum tray dollies that would provide containment for minor spills and overfills. Should spilled oil ever spill out of the dolly, it would flow towards the entrance to the garage, where it would flow into a trench drain that is located across the overhead door openings. The trench drains are connected to an oil water separator that would trap the spilled oil; water leaving the oil water separator discharges into Savin Hill Cove.

Overfill protection for oil storage containers is typically accomplished through oil handling procedures and not through the use of any mechanical overfill protection devices. Drums of virgin oil do not have oil added at the campus and therefore do not require overfill protection. Waste oil drums are protected from overfilling by the manner in which the containers are filled. Maintenance personnel working in the campus typically add oil to the waste oil drums by manually pouring waste oil from maintenance activities into the drums through a plastic funnel. Typically, no more than one or two gallons of oil are added to the containers at one time. The individual adding oil to the containers evaluates the capacity of the container prior to adding the oil. As a Large Quantity Generator, all waste oil is shipped off-site within 90 days.

Specific information related to individual oil storage containers at the UMass Boston campus, including oil capacity, construction type, and other specific details is included in Table 1 this Plan.

2.1.3 Electrical Transformers

The UMass Boston campus's electrical transformers are situated within dedicated secondary concrete containment system vaults that provide containment in the case of a spill event. All 29 oil- or silicone-filled transformers at the UMass Boston campus are installed within concrete vaults that provide

containment in the case of a spill event. In addition, floor drains within each of the transformer vaults are hard piped to a "backup" containment tank/vault, located away from the transformer itself. These secondary containment structures are located in the underground parking garage mechanical rooms, and one is located underground. The concrete and CMU construction of the transformer vaults and secondary containment structures are sufficiently impervious to contain spilled oil.

UMass Boston also employs other methods for minimizing the likelihood that a release from a transformer would adversely impact the environment, including frequent inspections and readily available spill/release response equipment. Overfill protection for the electrical transformers at the UMass Boston campus are typically not required due to the fact that oil is not routinely added to the equipment. The transformers are closed units and would not generally lose oil, except in the unlikely event of a release. The transformers are also painted to minimize the corrosive effects of contact with precipitation and are situated on a concrete pad rather than in direct contact with soil.

Specific information related to the electrical transformers at the UMass Boston campus is included in Table 1 of this Plan.

2.1.4 Oil-Containing Operational Equipment

The UMass Boston campus's hydraulic elevators are located within various campus buildings in areas where the building and the elevator pit would likely contain the contents of the system in the event of a release. Oil-filled operational equipment means equipment that includes an oil storage container (or multiple containers) in which the oil is present solely to support the function of the apparatus or the device. Oil-filled operational equipment is not considered a bulk storage container, and does not include oil-filled manufacturing equipment. A facility with oil-filled operational equipment which meets the applicability criteria of 40 CFR 112.7(k)(1) may choose to implement alternate requirements for the qualified equipment in lieu of general secondary containment required by 40 CFR 112.7(c). Specifically, the facility is required to establish and document the procedures for inspections or a monitoring program to detect equipment failure and/or a discharge; prepare a written oil spill contingency plan; and provide a written commitment of resources, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful. Oil-containing equipment at the UMass Boston campus meets the definition of qualified equipment, and as such, this equipment is not provided with dedicated secondary containment systems. Instead, UMass Boston has implemented the necessary procedures and programs for qualified equipment, as required by 40 CFR 112.7(k)(1).

Overfill protection for oil-containing equipment at the UMass Boston campus is typically not required due to the fact that oil is not routinely added to the equipment. The hydraulic elevator is not a sealed unit, but also does not typically require oil to be added, unless oil was lost during a release. The hydraulic elevators at the UMass Boston campus is protected from corrosion and located indoors in an area where it will not come in contact with precipitation.

Specific information related to the hydraulic elevator at the UMass Boston campus is included in Table 1 of this Plan.

2.2 FIELD-CONSTRUCTED CONTAINER EVALUATION

The UMass Boston campus does not maintain any field-constructed aboveground containers[1]. If the campus plans to install a field-constructed aboveground container, the container must be evaluated for risk of discharge or failure due to brittle fracture or other catastrophe and take any action, as necessary. In such an event, this SPCC Plan's conformance with 40 CFR Part 112 would require updating.

[1] A "field-constructed aboveground container" is one that is assembled or reassembled outside the factory at the location of intended use.

2.3 ASSESSMENT OF SPILL/RELEASE SCENARIOS

Although oil and petroleum product storage at the UMass Boston campus is carefully contained and managed, UMass Boston has considered the potential environmental spill release scenarios associated with each storage location at the campus. As required by 40 CFR Part 112, this SPCC Plan includes a prediction of the direction, rate of flow, and total quantity of oil which could be discharged from the campus as a result of each type of major equipment failure.

In general, oil storage at UMass Boston is well contained and managed as described above. Potential environmental receptors include the local sanitary sewer system, catch basins leading to an oil/water separator system, Savin Hill Cove, and areas of exposed soil, and landscaped areas at the campus.

With the exception of the electrical transformers, all tanks and oil containing equipment at the UMass Boston campus are located indoors. A spill or release of oil from the tanks, containers, or equipment has the potential to migrate outside the building, entering a storm drain which discharges to Savin Hill Cove. A spill or release from the oil-containing transformer located outdoors, or a spill during refueling operations has the potential to enter a storm drain directly or contaminate surface or subsurface soil or groundwater. Typical potential spill scenarios at the UMass Boston campus, as well as potential environmental receptors existing safeguards are summarized below. Specific details related to potential spill scenarios for each oil storage tank, container, and equipment, as well potential environmental receptors, and predictions for direction and rates of flow are identified in Table 1 of this Plan.

Additionally, a detailed facility diagram is included in the Figures Section of this Plan which indicates the location of oil containing tanks, containers and equipment at the campus and the proximity of these devices to various potential environmental receptors.

2.3.1 Bulk Oil Deliveries

Tank trucks delivering oil to the campus generally vary in capacity from 3,000 to 4,500 gallons. Releases from these vehicles could occur during the delivery process and would vary from small releases to catastrophic failures of a tank, fueling hose, or the delivery vehicle. To minimize the likelihood of a release occurring during bulk oil deliveries, UMass Boston has implemented procedures described in Section 2.9.2 of this Plan.

As indicated in Section 2.4, migration pathways for releases from the oil storage tanks include surface and subsurface soils, groundwater, immediate areas of pavement, and downgradient stormwater catch basins which flow through an oil/water separator system and ultimately discharge to Savin Hill Cove. However, because deliveries of oil to the tanks at the campus are infrequent, and because of the precautionary measures employed to minimize the likelihood of a discharge entering the storm water collection system, the likelihood of a release occurring which migrates to nearby water bodies is considered unlikely. Should a release occur during a bulk oil delivery the direction and rate of the flow of the released material to a nearby storm drain catch basin or navigable water would be dependent on the location of the release, the quantity of oil released, and the weather conditions at the time of the incident. The rate of flow could vary greatly, ranging from a release which does not migrate beyond the immediate release area, to one which travels at several feet per second. Should a release occur during a bulk oil delivery, the most likely discharge would involve a leak or rupture from a delivery hose, resulting in no more than 25 to 30 gallons of oil being released. Outdoor paved areas of the campus convey storm water to a series of catch basins that discharge to an oil/water separator system prior to reaching Savin Hill Cove. In order to minimize the impact on the environment from spills associated with bulk oil deliveries, UMass Boston maintains a

variety of spill/release response equipment at the campus. These measures allow for sufficient containment oil released during the spill scenarios most likely to occur from tank fueling activities.

2.3.2 Oil Storage Tanks and Associated Piping

The UMass Boston campus operates 16 aboveground storage tanks located throughout the campus. Releases could occur from the tanks or their associated piping and pumping systems due to operator error or due to the mechanical or structural failure of some component of the tank system. Releases due to operator error, such as inadvertently spilling oil while dispensing product from a tank are likely to result in a small release, which would likely be immediately contained by campus personnel. Releases due to some form of mechanical or structural failure would likely involve larger quantities of oil being released, potentially event the entire contents of an AST.

A majority of the bulk tanks and day tanks storing #2 diesel fuel oil are within mechanical rooms located throughout the campus. For tanks located in mechanical rooms, a failure of any one of these tanks, or the connected piping would first result in a flow of oil onto the floor of the mechanical room. The campus operates two two temporary storage tanks located outdoors, in the maintenance area at the campus. These tanks are equipped with dedicated secondary containment and are surrounded by concrete jersey barriers.

Depending on the type and magnitude of failure, there is also the possibility of oil filling up the vent lines of the systems and discharging out into the environment. The maximum volume of spilled oil would be limited to the size of the bulk or day tank. Overall facility drainage follows the topographical elevation of the ground surface that lead to storm drains that collect and discharge stormwater into Savin Hill Cove.

Every bulk fuel oil tank is equipped with an audible vent alarm that whistles while the tank is being filled by the oil driver. The audible alarm sounds once the fuel level reaches the top of the storage tank, alerting the driver that the tank is full. Fueling of the University's research vessels is only performed by qualified personnel and in accordance with the procedure described below to reduce the likelihood of a spill event. Fuel deliveries are only made at the request of University Marine Operations personnel, and are scheduled to fuel both vessels during the same delivery, thus reducing the number of fueling operations. All deliveries are made during daylight hours, and preferably at high tide. Marine Operations personnel first manually stick the fuel tanks to verify the existing fuel level in each tank. From that information, the volume of fuel to be added to the tank is calculated and this information is relayed to the delivery truck operator. The delivery truck operator remains by the truck, while the University employee dispenses the fuel at the fill connection (s) of each vessel. The truck operator and the University employee are in constant visual and audible contact during the operation, monitoring the volume of fuel going into the tank (by the delivery truck driver) and the fuel level in the tank itself (by the University employee). Once the tanks approach their fill level, the fueling operation is stopped. The research vessels currently have 3M pads on board which they use to absorb small drips should they occur during the fueling operation. The University stores emergency spill response materials including a larger supply of 3M pads and absorbent "sausage" boom in the shed on the dock to better handle a larger spill of oil. A spill kit is also located on the dock. A phone is located at the dock, and employees have radios/cell phones that enable them to call for assistance should an accident occur.

Should a release occur from the primary storage vessel of the tank, it is likely that the released material would be contained indoors within the dedicated secondary containment structure for the tank. Such structures would provide for adequate containment until such time as the release could be properly mitigated. If a release were to occur from a tank system’s piping or other associated equipment, it is

possible that the release would not be contained within the containment structure, but instead would be discharged to the ground surface. The specific scenario would depend on the location of the failure and the quantity of material released. The direction and rate of the flow of the released material to a nearby storm drain or navigable water would be dependent on the location of the release, the quantity of oil released, and the weather conditions at the time of the incident. The rate of flow could vary greatly, ranging from a release which does not migrate beyond the immediate release area, to one which travels at several feet per second. Migration pathways for releases from the oil storage tanks include surface and subsurface soils, groundwater, immediate areas of pavement, downgradient stormwater catch basins which flow through an oil/water separator system and ultimately discharge to Savin Hill Cove. Aboveground storage tanks at the UMass Boston campus are equipped with dedicated secondary containment systems, or are located within a building which would provide sufficient containment for the contents of the tank. Additionally, to minimize the impact on the environment from spills associated with tank refueling and vehicle/equipment fueling activities, UMass Boston maintains a variety of spill/release response equipment at the campus. These measures allow for sufficient containment of oil released during the spill scenarios most likely to occur.

Specific information regarding the direction and proximity of each oil storage tank to nearby storm water catch basins and to Savin Hill Cove is included on Table 1 in the Tables Section of this Plan.

2.3.3 Oil Storage Containers

Currently, UMass Boston stores and accumulates virgin oil and waste oil associated with equipment operation and maintenance activities in 55-gallon drums at the UMass Boston campus. Potential spill scenarios that may involve these containers include: a spill/release from a failure of an oil storage container, a spill during manual pouring/pumping of oil into or from the containers, or a spill/release during transfer of the containers to or from a contractor vehicle.

Migration pathways for releases from the oil storage containers include immediate areas of pavement and downgradient stormwater catch basins which flow through an oil/water separator system and ultimately discharge to Savin Hill Cove. The oil storage containers at the UMass Boston campus are stored indoors on drum tray dollies, which are polyethylene octagon shape tubs with castors. Should a spill or release occur from an oil storage container due to a container failure or leak, or during the process of adding or removing oil to/from the containers, the spilled material would typically be contained by the drum tray dolly containment structure or by the building. Transfer of the containers to or from a contractor vehicle, would only be conducted by, or in the presence of, trained personnel familiar with the spill response procedures identified in this Plan. Accordingly, a spill/release which occurs during these activities would likely be contained within the immediate area by spill/release response equipment immediately available to these individuals. These measures allow for sufficient containment of oil released during the spill scenarios most likely to occur.

Specific information regarding the direction and proximity of each transformer to nearby storm water catch basins and to Savin Hill Cove is included on Table 1 in the Tables Section of this Plan.

2.3.4 Electrical Transformers

Releases could occur from oil-filled electrical transformers located at the campus. Such releases could include minor releases of oil from small leaks in the transformer carcasses. Due to the frequent inspections conducted at the campus, this type of release is likely to be minor in nature, with released material not likely to migrate beyond the immediate area of the transformers. Major releases from a

transformer would likely involve a catastrophic failure of a transformer from a power surge, lightning strike, or other event. Such a release would likely result in the entire contents of a transformer being released to the environment, immediately or in a very short period of time. The direction and rate of the flow of the released material to a nearby storm drain or navigable water would be dependent on the location of the release, the quantity of oil released, and the weather conditions at the time of the incident. The rate of flow could vary greatly, ranging from a release which does not migrate beyond the immediate release area, to one which travels at several feet per second. A spill/release from the transformer located outside would likely be contained by the associated secondary containment concrete vault structures currently in place. These scenarios would likely result in a power failure, which would trigger an immediate response and investigation by campus personnel trained in SPCC requirements. Additionally, the transformers are located in areas with relatively high visibility where a release of oil would be readily apparent. These measures allow for sufficient containment of oil released during the spill scenarios most likely to occur.

Specific information regarding the direction and proximity of each transformer to nearby storm water catch basins and to Savin Hill Cove is included on Table 1 in the Tables Section of this Plan.

2.3.5 Oil-Containing Operational Equipment

Releases could occur from hydraulic elevators located at the campus. Such releases could include minor releases of oil from small leaks in the equipment. Releases from a hydraulic elevator system would likely have an adverse effect on the operation of the elevator system and would likely be detected reasonably quickly. Major releases from an elevator could occur from a catastrophic failure of the equipment. Such a failure is considered unlikely. Because releases from hydraulic elevators would be indoors they would not be influenced by weather conditions. Additionally, because elevator systems are located indoors, the likelihood of a release from an elevator system reaching a navigable water is considered remote. Instead, releases from elevators are more likely to impact the subsurface environment, and could also potentially enter a building floor drain, ultimately discharging to the local sanitary sewer system. These measures allow for sufficient containment of oil released during the spill scenarios most likely to occur.

Specific information regarding the direction and proximity of each elevator to nearby receptors is included on Table 1 in the Tables Section of this Plan.

2.3.6 Campus Maintenance Activities

The normal maintenance activities conducted at the campus on transfer lines, pumps and other operating equipment have the possibility of creating discharges resulting from spills or leaks. However, campus personnel conducting such activities are properly trained on the safe handling and management of oil and the procedures contained in this Plan. Should a release occur during campus maintenance activities procedures put in place for isolating transfer lines, pumps, valves and/or instrumentation that is undergoing preventative maintenance or repair should minimize the likelihood of any spills or leaks occurring. These measures allow for sufficient containment of oil released during the spill scenarios most likely to occur.

2.4 CAMPUS DRAINAGE

A majority of the UMass Boston campus is characterized by impervious areas and pavement, as well as areas of exposed soil and landscaped areas. Storm water at the site typically travels via overland sheet flow, following general site topography in a southwesterly direction. Campus areas drain via a series of catch basins to Savin Hill Cove.

2.4.1 Drainage from Diked Storage Areas

All diked storage areas (i.e., secondary containment structures) at the UMass Boston campus are located indoors and not likely to accumulate any precipitation due to rain or snow. Additionally, the indoor diked storage areas present at the UMass Boston campus are not equipped with any drains, valves, pumps, or ejectors which would permit the outward flow of any accumulated material collected from within the structures. In the event of a release from a tank, any material captured within a secondary containment structure would be removed from the containment structure by trained and qualified personnel at the direction of the SPCC Coordinator.

2.4.2 Drainage from Undiked Areas with Potential for Discharge

Undiked areas of the campus with a potential for discharge include areas where oil containing equipment is located outdoors, areas where tank trucks are positioned during bulk oil deliveries, and from the outdoor oil containing transformer. As indicated in Section 2.4 above, outdoor areas of the campus discharge via storm water catch basins to Savin Hill Cove. The drainage controls for these structures described in Section 2.4 above, and the operational procedures described in Section 2.9 of this Plan, minimize the likelihood of a release occurring from activities in these areas, and minimize the likelihood of released material from migrating beyond the immediate area should one occur. These measures allow for sufficient containment of oil released during the spill scenarios most likely to occur.

2.4.3 Drainage from Indoor Areas

In the event of an indoor oil spill, it is unlikely oil would escape the building to navigable water due to the configuration of the building's drainage system. Indoor areas of the campus with oil containing operational equipment are not equipped with floor drains.

2.5 INSPECTION PROCEDURES

In accordance with 40 CFR Part 112, UMass Boston personnel conduct periodic visual inspections of the tanks and equipment as part of routine operation and preventative maintenance procedures. These inspections are conducted to identify malfunctions, deterioration, operator error, and discharge which may cause or lead to spills/releases. The SPCC Coordinator will ensure that inspections occur of tanks and equipment at the campus. Inspections of tanks and equipment at the campus are performed monthly by appropriately trained individuals, or more frequently as determined by the SPCC Coordinator. These inspections are documented using the Inspection Forms found in Appendix C of this Plan. Additionally inspections of the elevator system are conducted annually as part of routine maintenance by a qualified maintenance contractor. These inspections are documented via maintenance records issued by the contractor. Inspections will address the following items:

- All storage tanks, containers, and equipment will be examined for leaks from seams, rivets and bolts, where applicable, and gaskets and for signs of deterioration (e.g., discoloration, corrosion, chipped paint, cracks) of the vessel, aboveground foundation and tank structure supports.
- All associated piping will be checked for dripping, loose joints, damage to supports, and pipe deflection.
- All connections will be checked for leakage, drainage, tightness, and appropriate capping;
- All pumps will be checked for evidence of leakage, proper operation, and damage;
- All storage areas and containment systems will be inspected for integrity and the accumulation of stored product or evidence of leaks. If oil is observed in the containment system, the source of the oil will be determined; and
- The security of the tanks/areas/equipment will be checked (i.e., tank valves and equipment locked and secured, doors to tank and storage areas locked).

If a problem is detected during an inspection, notification will be made to the SPCC Coordinator, who will be responsible for initiating and implementing the corrective action to mitigate the problem. If the inspection reveals a release or threat of release, the spill/release response procedures in Section 3 of this Plan will be implemented.

2.6 INTEGRITY TESTING

This section describes the integrity testing program, developed and implemented by UMass Boston as required by 40 CFR Part 112. UMass Boston deviates from the integrity testing requirements of 40 CFR Part 112. The deviation from this requirement is described below and also discussed in Section 1.5.2 - Environmental Equivalence- Integrity Testing.

2.6.1 Oil Storage Tanks

The UMass Boston campus deviates from the integrity testing provision of 40 CFR 112.8(c)(6) for the aboveground oil storage tank located at the campus. This decision is based on an evaluation of good engineering practices after considering the tank installation and operations procedures and alternative measures implemented by the campus and described herein.

The bulk storage tanks and piping systems are all visually inspected at least once per month by facility personnel for signs of deterioration and leaks which might cause a spill and for accumulation of oil on the floor of the mechanical rooms. In addition, the tanks are not in direct contact with soil and are not likely to be subject to significant corrosion due to exposure to precipitation. The systems and measures implemented by the UMass Boston campus and described above are considered to provide equivalent environmental protection for the 60-gallon aboveground storage tank and the non-destructive shell evaluation component of integrity testing required under 40 CFR 112.8(c)(6), since it provides an appropriate and effective means of assessing the condition of the tank and its suitability for continued service.

If, during a visual inspection, evidence is found that a tank may have been damaged or if the structural integrity of a tank may have been compromised in some manner, integrity testing methods may be employed to evaluate the tank. Any such testing will be conducted in accordance with generally accepted industry standards and will employ such methods as tightness testing, hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or another system of non-destructive shell testing. Records of all such testing, including comparison testing, will be maintained by UMass Boston.

2.6.2 Oil Storage Containers

Currently, UMass Boston stores and accumulates virgin oil and waste oil associated with equipment operation, maintenance activities, and kitchen-related cooking activities in 55-gallon drums at the UMass Boston campus. While the containers are at the UMass Boston campus they are stored within dedicated secondary containment structures or within indoor areas of the campus with concrete floors and no floor drains, which would contain any spilled material in the event of a failure of the containers, and which protects the containers from contact with water or other corrosive conditions and from physical or mechanical damage. Additionally, these containers typically do not remain on-site for more than 1-year. Accordingly, UMass Boston does not conduct periodic integrity testing of the oil storage containers at the campus.

2.6.3 Electrical Transformers

The UMass Boston campus owns 29 electrical transformers. 40 CFR Part 112 requires integrity testing for bulk storage containers, defined as any container used to store oil. Operational equipment, such as oil filled electrical equipment, is specifically excluded from this definition and is not subject to the periodic integrity testing requirements of 40 CFR 112. Accordingly, UMass Boston does not conduct periodic

integrity testing of its electrical transformers. However, equipment integrity at the UMass Boston campus is very important; therefore transformers are inspected on a monthly basis.

2.6.4 Oil-Containing Equipment

Oil containing equipment at the UMass Boston campus consists of several hydraulic elevator systems. 40 CFR Part 112 requires integrity testing for bulk storage containers, defined as any container used to store oil. Operational equipment such as oil filled electrical, operating, or manufacturing equipment, is specifically excluded from this definition and is not subject to the periodic integrity testing requirements of 40 CFR Part 112. Accordingly, UMass Boston does not conduct periodic integrity testing of its oil containing equipment.

2.7 TRAINING

The following sections describe the SPCC training program at UMass Boston.

2.7.1 UMass Boston Personnel

The following UMass Boston personnel will participate in initial and annual SPCC training:

- personnel whose job description requires them to work with oil;
- personnel who could reasonably be expected to respond in the event of a spill or release of petroleum products or hazardous waste; and
- any other personnel at the discretion of the SPCC Coordinator.

SPCC training is conducted in accordance with the requirements of 40 CFR Part 112 and is designed to ensure employees can successfully perform their job responsibilities and that campus personnel are able to effectively respond to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems. These training elements include:

- operation and maintenance of equipment to prevent discharges;
- discharge procedure protocols;
- applicable pollution control laws, rules and regulations;
- general campus operations; and
- contents of the SPCC Plan.

New employees that meet the above listed criteria, or employees that assume job responsibilities meeting the above listed criteria, will receive initial training within six months of being hired and/or prior to working unsupervised. Additionally, all personnel with job responsibilities meeting the above criteria will receive annual refresher training. The type of training provided to each employee varies depending on the area of the campus the employee works in, and the individual employee's level of responsibility with respect to oil management.

Training at the UMass Boston campus is either conducted internally as on the job training or by competent outside agencies in a formal classroom setting. SPCC Training is typically conducted as a component of a broader-based environmental health and safety (EHS) training program. All training is documented using appropriate forms, or an electronic tracking system, as determined by the SPCC Coordinator, identifying the type of training provided, the date of the training, the name of the employee(s) trained, and the name of the instructor providing the training. These records are retained for at least three years from the date the training was conducted.

2.7.2 Fuel Delivery Truck Drivers

UMass Boston requires that vendors delivering bulk oil products ensure that their drivers have been familiarized with the applicable portions of 40 CFR 112 and the spill response/reporting obligations required by this Plan. This information is communicated to tank truck drivers via the Tank Truck Unloading Procedures posted at tank locations at the UMass Boston campus.

2.7.3 Waste Disposal Contractors

UMass Boston periodically retains the services of a licensed waste disposal contractor to remove waste oil from the campus. These contractors typically train their employees in accordance with applicable regulations related to spill response/clean-up activities. Additionally, UMass Boston personnel familiar with the requirements of this Plan are present while these contractors are at the campus conducting their waste removal activities. Accordingly, UMass Boston does not require specific documentation indicating the current training status of these individuals.

2.8 SECURITY AND LIGHTING

40 CFR 112.7(g) requires sites to fully fence handling, processing, or oil storage, and lock and/or guard entrance gates when the facility is not in production or unattended. The UMass Boston campus is located in a well-lit urban environment and is staffed during normal business hours. With the exception of the electrical transformers, a majority of the oil-containing equipment at the UMass Boston campus is located indoors in areas which are not accessible to the general public or to unauthorized personnel. The campus operates two temporary storage tanks located in the maintenance area at the campus. These tanks are located in a well-lite area and are surrounded by concrete jersey barriers.

Indoor areas of the campus with oil storage tanks, containers and equipment, as well as the areas near the outdoor oil containing transformer, are appropriately lit for the type and location of storage to assist in the discovery of a spill during hours of darkness, and to minimize the likelihood of discharges occurring through acts of vandalism.

None of the oil containing tanks, containers, or equipment at the UMass Boston campus, or the associated secondary containment structures, are equipped with master flow or drain valves which would permit the outward flow of oil form the equipment.

2.9 HANDLING AND VEHICLE LOADING/UNLOADING PROCEDURES

The following sections describe the general oil handling, tank fueling, and vehicle loading and unloading procedures to be followed at the UMass Boston campus.

2.9.1 General Oil Handling Procedures

Activities requiring oil usage at the UMass Boston campus are conducted by qualified personnel familiar with the requirements of this SPCC Plan and typically involve building/equipment maintenance activities. The activities requiring the use of oil are typically conducted indoors, generally in areas not equipped with floor drains. If floor drains are present, extra care is taken to ensure that should any material be spilled it will not enter a building floor drain.

2.9.2 Storage Tank Fueling Procedures

UMass Boston does not operate a tank truck loading/unloading rack as defined in 40 CFR Part 112. Instead, the individual tanks are equipped with independent filling locations. However, UMass Boston has developed procedures for the fueling tanks at the UMass Boston campus to minimize the likelihood of spills/releases occurring during the fueling of these tanks. The procedures require that drivers supervise the entire delivery process, that deliveries only take place during normal working hours, that the delivery vehicle is parked as close as practical to the tank to be filled to minimize delivery hose length, and that personnel from UMass Boston familiar with the procedures in this Plan be present for the delivery process. The procedures for fuel deliveries are as follows:

- Shut off engine.
- Drivers will ensure that the wheels of the delivery truck are blocked and that oil absorbent pads are placed beneath all hose connections that may be prone to leakage
- NO SMOKING while unloading
- Delivery truck driver must remain with vehicle at all times while unloading
- Deliveries will be supervised by a UMass Boston employee. During filling, drivers will pay close attention to the pump and the UMass Boston employee will monitor the tank.
- Unloading operations are to take place in designated unloading areas only.
- Unloading operations should not commence until the volume in the bulk tank is checked and verified that the tank has sufficient volume available to receive the volume of fuel to be transferred.
- Before disconnecting the unloading line, the drain valve on the truck is to be closed and drained back to the tank.
- Prior to departure of the delivery truck, the lower most drain and all outlets are closely examined for leakage, and if necessary, tightened, adjusted or replaced to prevent liquid leakage while in transit.
- Immediately report any leakage or spillage, including quantity, to the UMass Boston Public Safety office (617-287-7777).

2.9.3 Warning or Barrier System for Vehicles

As noted above, the Campus will follow standard operating procedures to assure fuel delivery trucks do not depart without assuring all hose connections have been disconnected. UMass Boston will require trucks to employ wheel chocks during tank fueling operations and the fuel delivery, including the lowermost valve on the vehicle, will be inspected prior to hose disconnection and vehicle departure.

2.9.4 Oil Storage Container Handling Procedures

Oil storage containers (i.e., drums) are periodically moved from the Boiler Room and Machinery Room to the hazardous waste storage area for temporary storage and disposal through UMass Boston's hazardous waste disposal contractor. UMass Boston personnel that are properly trained on waste and materials handling practices handle the drums of waste oil. The personnel have also been trained on the appropriate spill response procedures described herein. Further, all oil containers are handled in a manner intended to ensure they do not rupture or release. Should a release occur during these activities, campus personnel as well as the contractor personnel are instructed to follow the procedures outlined in this Plan to contain/clean-up the spilled material. Containers of virgin oil being delivered to the campus are handled in the same manner.

SECTION 3.0 - SPILL CONTINGENCY PLAN

The following sections describe the spill/release response procedures to be implemented in the event of a spill/release of oil or hazardous materials at the UMass Boston campus.

3.1 REGULATORY BACKGROUND

USEPA regulations define a spill event as the discharge of oil, in harmful quantities, into or upon the navigable waters of the United States or adjoining shorelines. Harmful quantities are defined as a discharge that violates applicable water quality standards or causes a sheen upon, or discoloration of, the surface of the water or the adjoining shorelines. Contaminated groundwater may also have the potential to seep, leach, or flow into navigable waters, which would be included in this definition. The term "navigable waters" of the United States means "navigable waters" as defined in section 502(7) of the FWPCA, and includes:

- all navigable waters of the United States, as defined in judicial decisions prior to the passage of the 1972 Amendments of the Federal Water Pollution Control Act, (FWPCA) (Pub. L. 92-500) also known as the Clean Water Act (CWA), and tributaries of such waters as;
- interstate waters;
- intrastate lakes, rivers, and streams which are utilized by interstate travelers for recreational or other purposes;
- intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce; and
- storm sewers and storm drains are considered to fall under the definition of a navigable water since most storm sewers and drains discharge into a navigable water.

Accordingly, any spill at the UMass Boston campus, which enters Savin Hill Cove or the local storm water collection system, must be considered subject to these regulations.

In addition, the Environmental Protection Agency has established release reporting/mitigation requirements for certain hazardous materials. According to 40 CFR 302 and 40 CFR 355, a quantity of hazardous material released to the environment in excess of its designated reportable quantity (RQ) requires the notification to EPA. Lists of these hazardous materials and their respective RQs can be found in the federal regulations at 40 CFR 302.4 and Appendix A of 40 CFR 355. According to the Massachusetts Contingency Plan (310 CMR 40.000), a quantity of hazardous material released to the environment in a 24-hour period that exceeds its designated reportable quantity (RQ) requires notification to MADEP.

3.2 DISCOVERY OF A SPILL/RELEASE, INTERNAL NOTIFICATION AND IMMEDIATE ACTIONS

3.2.1 Initial Actions

The person(s) discovering a spill/release plays a critical role in determining the appropriate immediate actions to ensure for their safety and the safety of others, as well as the protection of the environment. These immediate actions are based on various factors, including the nature of the release, the quantity of material released, the location of the release, etc. The person discovering a spill/release should attempt to contain the situation by evacuating the area and/or restricting access to the area, and isolating potential environmental discharge points, if possible, and provided such measures can be done safely. Spilled/released materials should be contained with absorbent materials or containment booms to prevent the material from spreading beyond the immediate area of release. The person discovering the release should then initiate the notification procedures described in Section 3.2.2 below.

An important facet to consider in responding to and mitigating a spill/release is to contain and minimize pathways to the environment. Every effort should be made to contain spills at the source rather than resort to separation of the material from the environment or downstream waters. This can be accomplished by isolating sumps, floor and roof drains, and building berms around potential environmental receptors using absorbent booms. In the event of a spill that occurs outside of secondary containment or escapes secondary containment, priority must be given to protecting pathways to the surface and subsurface water runoff collection system.

3.2.2 Internal Notification

Concurrent with the measures described in Section 3.2.1 above, the person(s) discovering a spill/release must immediately report the situation by calling the Primary or Alternate SPCC Coordinator. The person making the notification should provide as much information regarding the release as possible. Where possible, the person making the notification should attempt to provide the following:

- Location of spill;
- Date and time discovered;
- Name of material spilled;
- Amount spilled and source of spill;
- Associated hazards;
- Location and description of potential and actual environmental receptors (e.g., storm drains, water bodies, etc.) if applicable;
- Actions being used to stop, remove, and/or mitigate the effects of the spill; and
- Description of any damages or personnel injuries.

The SPCC Coordinator will evaluate the situation to determine immediate actions required and the need for a spill response contractor to clean-up the spill, if necessary. Once the SPCC Coordinator has been notified of any emergency incident, the SPCC Coordinator will conduct an immediate hazard assessment to determine the appropriate course of action for addressing the release. If it is determined that that spill/release can be safely addressed by on-site personnel, the SPCC Coordinator may direct personnel to initiate appropriate clean up actions. For spills/releases which cannot be readily managed by on-site personnel, the SPCC Coordinator may contact an appropriately qualified spill cleanup contractor to provide assistance.

If there is an immediate threat to human life (e.g., a fire in progress or fumes overcoming personnel) or if there is a threat of a release, the SPCC Coordinator will immediately notify the Boston Fire Department

(in addition to the notifications described above). A "Threat of Release" is defined as a substantial likelihood of a release of oil and/or hazardous material which requires action to prevent or mitigate damage to health, safety, public welfare or the environment which may result from the release. If an uncontrollable spill/release has occurred and/or if the spill/release has migrated beyond UMass Boston property, the SPCC Coordinator may request the assistance of the Boston Fire Department and a spill response contractor. Phone numbers for these emergency contacts are identified on the SPCC Contact List on Page i of this Plan. After the incident, EHS will document the spill using our EHS Incident Report form.

3.3 EXTERNAL NOTIFICATIONS

The SPCC Coordinator will determine if a reportable release has occurred and will perform notification to outside agencies if necessary. If the spill exceeds the Reportable Quantity (RQ) specified under the Massachusetts Contingency Plan, enters the environment, threatens or contacts a navigable waterway, or poses any risk of injury to health or the environment, the SPCC Coordinator will conduct reporting to outside agencies in accordance with the following sections.

3.3.1 State and Local Reporting Requirements

If a spill/release exceeds the applicable RQ and enters the environment, the spill must be reported to MADEP within 2 hours of discovery the spill/release. If there is an existing threat of release, the situation must also be reported to MADEP within 2 hours. A Threat of Release is defined as a substantial likelihood of a release of oil and/or hazardous material which requires action to prevent or mitigate damage to health, safety, public welfare of the environment which may result from the release. In addition, a spill/release that migrates off of the site and/or results in personal injury, and all fires or explosions, must be reported to the Boston Police and Fire Departments. Additionally, a spill/release that enters the sanitary sewer system should be reported to the MWRA. In the event personnel at the campus are injured, local emergency services should be notified immediately. A list of appropriate state and local contacts, and their respective phone numbers are identified on the Emergency Contact List on Page i of this Plan.

3.3.2 Federal Reporting Requirements

If a spill/release causes a sheen or discoloration of navigable waters or adjoining shorelines, the spill must be immediately reported to the National Response Center (NRC). The NRC will notify the EPA. Although not required, EPA Region I may be notified directly in addition to notifying the NRC. In addition, the spill/release should also be reported, if required by SARA Title III/Emergency Planning and Community Right-To-Know Act, to the State Emergency Response Commission and Local Emergency Planning Committee. The contact numbers for each of these agencies are identified on the Emergency Contact List on Page i of this Plan.

3.3.3 Oil Pollution Prevention Regulations Reporting Requirements

In addition to the reporting requirements discussed above, any single discharge of 1,000-gallons or more of oil, or any two discharges of oil in excess of 42-gallons each within one twelve month period, must be reported to the Regional Administrator of EPA within 60-days. The following information must be submitted:

- facility name and location;
- maximum storage capacity of the facility and normal daily throughput;
- an adequate description of the facility including maps, flow diagrams and topographic maps, as necessary;
- the cause of the discharge(s), including an analysis of what caused the discharge;
- corrective actions that have been taken, including descriptions of equipment repairs and replacement;
- preventive measures taken to prevent a recurrence; and
- any other information requested by EPA.

3.4 FOLLOW-UP ACTIONS

3.4.1 Clean Up of Spill and Spill Area

At the conclusion of spill response activities, campus personnel (or the emergency response contractor) will begin decontamination of equipment and affected site areas. Surfaces that are contaminated by the spill/release shall be cleaned by the use of an appropriate cleaning substance. All materials used in the clean-up, including aqueous cleaning substances, must be minimized, contained and properly disposed. Occasionally, porous materials (such as wood, soil, or sorbent) may be contaminated; such materials will require special handling for disposal. All tools and equipment that have been used during a spill response or clean-up effort must be thoroughly decontaminated.

3.4.2 Recovery and Disposal of Spilled Material

All spill cleanup material shall be recovered into appropriate containers (e.g., 1-gallon metal containers, open-top 55-gallon drums; or, if the size of the spill warrants, into a roll-off container(s)). Care must be taken when cleaning up spills in order to minimize the generation of additional waste. When containers are filled after a clean-up, the container's top shall be secured and the container shall be appropriately labeled and managed in accordance with the requirements of 310 CMR 30.000, if applicable.

3.4.3 Restock Emergency Response Equipment

Subsequent to any spill/release response activities, emergency response equipment used during the response effort shall be replaced and restocked as necessary to ensure the availability of such equipment for future incidents. The SPCC Coordinator will ensure that this activity is conducted.

3.4.4 Incident Documentation

All reported spills/releases shall be documented using the Incident Report Form contained in Appendix B, or a similar form which facilitates the collection of the appropriate relevant information. The report shall be prepared by the SPCC Coordinator or designee. At a minimum, the report should document the following items:

- location of spill;
- date, time, and duration of release;
- name of the material released;
- source and total volume of the release;
- the cause of the release;
- actions or clean-up procedures used to stop, remove, and/or mitigate the effects of the release;
- preventive measures taken to prevent a recurrence;
- corrective actions that have been taken, including descriptions of equipment repairs and replacement;
- a description of all affected environmental receptors or media;
- personnel who discovered and/or participated in the spill remediation;
- equipment used during the clean-up;
- waste quantity and disposal method (e.g., transporter, TSDF, etc.);
- description of any damages or personnel injuries;
- name of any organizations contacted including the applicable agency report numbers;
- name, address and phone number of responsible party (e.g., owner of a private vehicle leaking fuel in a parking lot); and

- tag number and owner if a motor vehicle is involved.

The SPCC Coordinator will ensure that appropriate follow-up notifications are conducted in accordance with applicable regulations. Furthermore, the SPCC Coordinator will retain the information regarding the release for a minimum of five years from the date of release.

3.4.5 Remediation and Corrective Action

The SPCC Coordinators are responsible for implementation of appropriate corrective measures to minimize the potential for reoccurrence of a release. Examples of corrective action measures include the purchase of equipment, the upgrade or reengineering of equipment, installation of secondary containment or leak alarms, increased personnel training, etc. Incidents which require continued remediation/clean-up will be the responsibility of the SPCC Coordinator.

3.5 EMERGENCY RESPONSE EQUIPMENT

3.5.1 On-Site Spill Response Equipment

UMass Boston maintains various spill response equipment at the site, including storm drain covers, brooms, shovels, dust pans, absorbent and absorbent booms. These materials are for use in responding to small spills/releases of oil at the campus and are generally sufficient for addressing small releases of materials such as would be encountered from a minor leak from a container, tank, or piece of equipment. These materials are fully compatible with the oils stored at the site. All emergency response equipment at the site is properly maintained and periodically inspected as part of routine activities at the site. A detailed list of the equipment maintained at the campus is included in Appendix E of this Plan.

3.5.2 Communications Systems

UMass Boston operates various communications systems at the campus which can be employed during an emergency at the campus. Communications systems at the campus include land-line telephones, cellular phones, fire alarms, and radio systems. All personnel working at the UMass Boston campus have continuous access to one or more of these systems in the event of an emergency at the site.

3.5.3 Emergency Spill Response Contractor Equipment

In addition to the spill equipment maintained on-site, UMass Boston will retain the services of an appropriately qualified spill response contractor if necessary. Spill response contractors typically maintain a wide range of response equipment capable of handling the types of releases which could occur at the site.

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

TABLES

Table 1 Oil Storage Tanks, Containers, and Equipment Inventory

Table 1 - Oil Storage Tanks, Containers, and Equipment Inventory

ID #	BUILDING NUMBER	BUILDING NAME	LOCATION	SUPPORTED PROCESS	DATE OF INSTALLATION	CONSTRUCTION	CAPACITY (Gallons)	CONTENTS	OVERFILL PROTECTION	CORROSION PROTECTION	DISCHARGE PREVENTION & CONTAINMENT	CONTAINMENT CAPACITY (GALLONS)	NEAREST POTENTIAL RECEPTOR	DISTANCE/DIRECTION TO RECEPTOR (APPROXIMATE)
Underground Storage Tanks														
UST	150	Service and Supply Building	Outside Service Bay Doors	Gasoline Dispensing Pump	December 1996	UL Listed Double-Wall Steel	5,000	Gasoline		Cathodic Protection	Veeder-Root Leak Detection System	5,500	Savin Hill Cove	1,000 Feet Southwest
Aboveground Storage Tanks														
010/LL	010	Wheatley Hall Garage	Mechanical Room	Emergency Generator Bulk Tank		Steel	500	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	550	Savin Hill Cove	300 Feet Southwest
010/UL	010	Wheatley Hall	Mechanical Room	Emergency Generator Bulk Tank		Steel	80	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	88	Savin Hill Cove	300 Feet Southwest
020/LL	020	McCormack Hall Garage	Mechanical Room	Emergency Generator Bulk Tank		Steel	250	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	275	Savin Hill Cove	300 Feet Southwest
020/LL	020	McCormack Hall Garage	Mechanical Room	Emergency Generator Bulk Tank		Steel	250	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	275	Savin Hill Cove	300 Feet Southwest

Table 1 - Oil Storage Tanks, Containers, and Equipment Inventory

ID #	BUILDING NUMBER	BUILDING NAME	LOCATION	SUPPORTED PROCESS	DATE OF INSTALLATION	CONSTRUCTION	CAPACITY (Gallons)	CONTENTS	OVERFILL PROTECTION	CORROSION PROTECTION	DISCHARGE PREVENTION & CONTAINMENT	CONTAINMENT CAPACITY (GALLONS)	NEAREST POTENTIAL RECEPTOR	DISTANCE/DIRECTION TO RECEPTOR (APPROXIMATE)
020/ UL	020	McCormack Hall	Mechanical Room	Emergency Generator Bulk Tank		Steel	275	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	302.5	Savin Hill Cove	300 Feet Southwest
090/ LL	090	Healey Library	Mechanical Room	Emergency Generator Bulk Tank		Steel	500	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	550	Savin Hill Cove	500 Feet Southwest
110/ UL	110	Quinn Administration Building	Mechanical Room	Emergency Generator Bulk Tank		Steel	115	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	126.5	Savin Hill Cove	1,000 Feet Southwest
120/ LL	120	Clark Athletic Center	Mechanical Room	Emergency Generator Bulk Tank		Steel	275	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	302.5	Savin Hill Cove	1,200 Feet Southwest
160/ SLL	160	Utility Plant	Mechanical Room	Emergency Generator and Fire Pump Bulk Tank		Steel	1,000	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	1,100	Savin Hill Cove	1,000 Feet Southwest

Table 1 - Oil Storage Tanks, Containers, and Equipment Inventory

ID #	BUILDING NUMBER	BUILDING NAME	LOCATION	SUPPORTED PROCESS	DATE OF INSTALLATION	CONSTRUCTION	CAPACITY (Gallons)	CONTENTS	OVERFILL PROTECTION	CORROSION PROTECTION	DISCHARGE PREVENTION & CONTAINMENT	CONTAINMENT CAPACITY (GALLONS)	NEAREST POTENTIAL RECEPTOR	DISTANCE/DIRECTION TO RECEPTOR (APPROXIMATE)
050/LL	050	Campus Center	Mechanical Room	Emergency Generator Bulk Tank		Double-Wall Steel	400	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge Alarm System	Indoors	Room Design for Containment Oil/Water Separator	440	Savin Hill Cove	300 Feet Southeast
150		Service and Supply Building	Outdoors	Emergency Generator Bulk Tank		Steel	500	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	550	Savin Hill Cove	400 Feet Southwest
060/1		Integrated Sciences Complex	Data Center	Emergency Generator Bulk Tank		Steel	1,500	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Indoors	Room Design for Containment Oil/Water Separator	1,650	Savin Hill Cove	400 Feet Southwest
110/UL	110	Quinn Administration Building	Outdoors	Diesel Fuel Dispensing Pump	2013 (Temporary)	Steel	500	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Painted	Double-Walled Tank Oil/Water Separator	550	Savin Hill Cove	1,000 Feet Southwest
110/UL	110	Quinn Administration Building	Outdoors	Diesel Fuel Dispensing Pump	2013 (Temporary)	Steel	500	Diesel Fuel, No. 2	Audible Air Vent Visible Tank Gauge	Painted	Steel Containment Dike Oil/Water Separator	550	Savin Hill Cove	1,000 Feet Southwest
Mobile Containers (Drums and Totes)														

Table 1 - Oil Storage Tanks, Containers, and Equipment Inventory

ID #	BUILDING NUMBER	BUILDING NAME	LOCATION	SUPPORTED PROCESS	DATE OF INSTALLATION	CONSTRUCTION	CAPACITY (Gallons)	CONTENTS	OVERFILL PROTECTION	CORROSION PROTECTION	DISCHARGE PREVENTION & CONTAINMENT	CONTAINMENT CAPACITY (GALLONS)	NEAREST POTENTIAL RECEPTOR	DISTANCE/DIRECTION TO RECEPTOR (APPROXIMATE)
WD-010	010	Quinn Administration Building	Mechanical Room	Maintenance	N/A	Single-Wall Steel	1 x 55	Waste Oil	Manual Filling of Containers	Indoors	Drum Tray Dolly Room Design for Containment Oil/Water Separator	> 65	Savin Hill Cove	1,000 Feet Southwest
WD-150	150	Service and Supply Building	Mechanical Room	Maintenance	N/A	Single-Wall Steel	4 x 55	Waste Oil	Manual Filling of Containers	Indoors	Drum Tray Dolly Room Design for Containment Oil/Water Separator	> 65	Savin Hill Cove	1,000 Feet Southwest
WD-160	160	Utility Plant	Accumulation Area	90-Day Haz Waste Storage Area	N/A	Single-Wall Steel	4 x 55	Waste Oil	Manual Filling of Containers	Indoors	Spill Skid Room Design for Containment Oil/Water Separator	> 65	Savin Hill Cove	300 Feet Southeast
	050	Campus Center	Loading Dock Storage Closet		N/A	Single-Wall Steel	4 x 55	Waste Oil/Grease from Kitchen	Manual Filling of Containers	Indoors	Spill Skid Room Design for Containment Oil/Water Separator	> 65	Savin Hill Cove	300 Feet Southeast
Electrical Transformers														

Table 1 - Oil Storage Tanks, Containers, and Equipment Inventory

ID #	BUILDING NUMBER	BUILDING NAME	LOCATION	SUPPORTED PROCESS	DATE OF INSTALLATION	CONSTRUCTION	CAPACITY (Gallons)	CONTENTS	OVERFILL PROTECTION	CORROSION PROTECTION	DISCHARGE PREVENTION & CONTAINMENT	CONTAINMENT CAPACITY (GALLONS)	NEAREST POTENTIAL RECEPTOR	DISTANCE/DIRECTION TO RECEPTOR (APPROXIMATE)
511-1	150	Service and Supply Building	Outdoors	Transformer	12/11/1972	Single-Wall Steel	440	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-2	110	Quinn Administration Building	Outdoors	Transformer	12/11/1972	Single-Wall Steel	550	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-3	90	Healey Library	Outdoors	Transformer	12/11/1972	Single-Wall Steel	350	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	500 Feet Southwest
511-3	90	Healey Library	Outdoors	Transformer	12/11/1972	Single-Wall Steel	440	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	500 Feet Southwest
511-3	90	Healey Library	Outdoors	Transformer	12/11/1972	Single-Wall Steel	440	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	500 Feet Southwest
511-4	80	Science Center	Outdoors	Transformer	12/11/1972	Single-Wall Steel	175	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-5	10	Wheatley Hall	Outdoors	Transformer	12/11/1972	Single-Wall Steel	444	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	300 Feet Southwest
511-5	10	Wheatley Hall	Outdoors	Transformer	12/11/1972	Single-Wall Steel	520	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	300 Feet Southwest
511-5	10	Wheatley Hall	Outdoors	Transformer	12/11/1972	Single-Wall Steel	520	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-6	20	McCormack Hall	Outdoors	Transformer	Nov-97	Single-Wall Steel	411	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	300 Feet Southwest
511-6	20	McCormack Hall	Outdoors	Transformer	Oct-98	Single-Wall Steel	413	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	300 Feet Southwest
511-6	20	McCormack Hall	Outdoors	Transformer	12/11/1972	Single-Wall Steel	520	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	300 Feet Southwest
511-6	20	McCormack Hall	Outdoors	Transformer	12/11/1972	Single-Wall Steel	520	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	300 Feet Southwest

Table 1 - Oil Storage Tanks, Containers, and Equipment Inventory

ID #	BUILDING NUMBER	BUILDING NAME	LOCATION	SUPPORTED PROCESS	DATE OF INSTALLATION	CONSTRUCTION	CAPACITY (Gallons)	CONTENTS	OVERFILL PROTECTION	CORROSION PROTECTION	DISCHARGE PREVENTION & CONTAINMENT	CONTAINMENT CAPACITY (GALLONS)	NEAREST POTENTIAL RECEPTOR	DISTANCE/DIRECTION TO RECEPTOR (APPROXIMATE)
511-7	N/A	Pump House	Outdoors	Transformer	12/11/1972	Single-Wall Steel	350	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-9	160	Utility Plant	Outdoors	Transformer	Early 1985	Single-Wall Steel	800	Silicone	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-9	160	Utility Plant	Outdoors	Transformer	Early 1985	Single-Wall Steel	800	Silicone	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-13	160	Utility Plant	Outdoors	Transformer	12/11/1972	Single-Wall Steel	450	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-10	80	Science Center	Outdoors	Transformer	12/11/1972	Single-Wall Steel	175	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-10	80	Science Center	Outdoors	Transformer	12/11/1972	Single-Wall Steel	440	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-12	10	Wheatley Hall	Outdoors	Transformer	12/11/1972	Single-Wall Steel	555	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,000 Feet Southwest
511-14	120	Clark Athletic Center	Outdoors	Transformer	1978	Single-Wall Steel	225	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,200 Feet Southwest
511-14	120	Clark Athletic Center	Outdoors	Transformer	1978	Single-Wall Steel	440	Oil	N/A	Painted	Concrete Vault	N/A	Savin Hill Cove	1,200 Feet Southwest
Operational Equipment														
1-F-1182	150	Service & Supply Building	Indoors	Hydraulic Elevator	Unknown	Single-Wall Steel	100	Hydraulic Oil	N/A	None Required	Building	N/A	Savin Hill Cove	1,000 Feet Southwest
1-P-1183	120	Clark Athletic Center	Indoors	Hydraulic Elevator	Unknown	Single-Wall Steel	100	Hydraulic Oil	N/A	None Required	Building	N/A	Savin Hill Cove	1,200 Feet Southwest

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

FIGURES

Figure 1 Site Location Map

Figure 2 Campus Map

Figure 3 SPCC Facility Diagram

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

APPENDIX A

Certification of Substantial Harm Determination Form

CERTIFICATION OF SUBSTANTIAL HARM DETERMINATION FORM

Facility Name: University of Massachusetts Boston

Facility Address: 100 Morrissey Boulevard, Boston, Massachusetts

1. Does the facility have a maximum storage capacity greater than or equal to 42,000 gallons of oil and do the operations include over water transfers of oil to or from vessels?

   Yes_____ No__X__

2. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons of oil and does the facility lack secondary containment that is sufficiently large enough to contain the capacity of the largest aboveground storage tank plus sufficient freeboard to allow for precipitation within any aboveground storage tank area?

   Yes_____ No__X__

3. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons of oil and is the facility located at a distance such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments as defined in 40 CFR Part 112?

   Yes_____ No__X__

4. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons of oil and is the facility located at a distance such that a discharge from the facility would shut down a public drinking water intake?

   Yes_____ No__X__

5. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons of oil and within the past 5 years, has the facility experienced a reportable spill in any amount greater than or equal to 10,000 gallons?

   Yes_____ No__X__

FACILITY REPRESENTATIVE CERTIFICATION

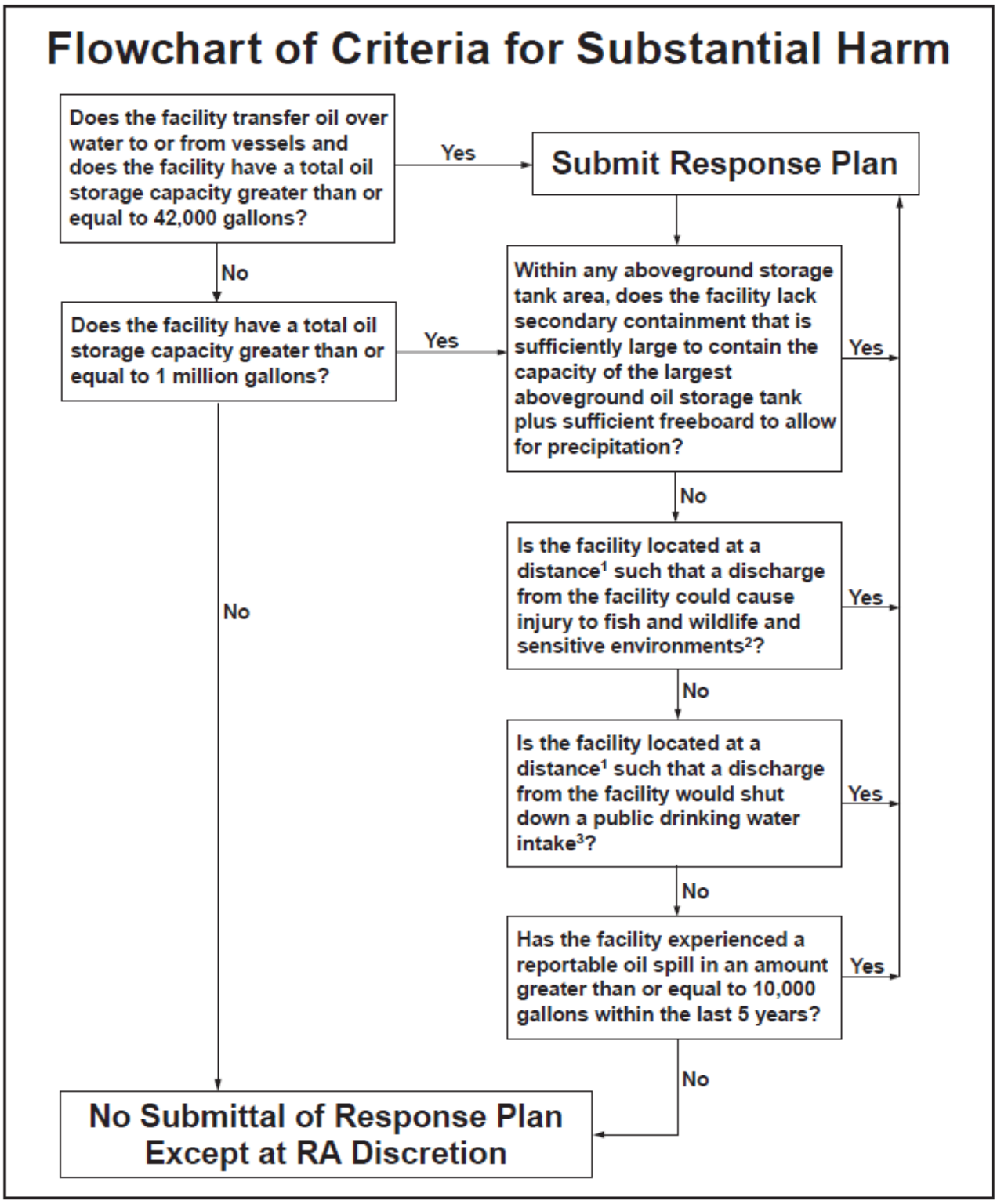
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true accurate and complete.

_____ _____

(Signature) *(Name)*

_____ _____

(Title) *(Date)*



[1] Calculated using the appropriate formulas in Attachment C-III to this appendix or a comparable formula.

[2] For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (59 FR 14713, March 29, 1994) and the applicable Area Contingency Plan.

[3] Public drinking water intakes are analogous to public water systems as described at 40 CFR 143.2(c).

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

APPENDIX B

Incident Report Form

The University of Massachusetts Boston
Environmental Health and Safety
Incident Report

Type of Incident:

Incident #

Date:

Time:

Location:

Report Revision Date:

Incident Description

Incident Response

Root Cause

Preventive Measures and Corrective Actions

- Prepared by

cc:

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

APPENDIX C

Inspection Forms

University of Massachusetts
Boston
Diesel P.M. Run Record

Day : _____ Date: _____

BLDG: _____ Unit: _____

Inspector Name: _____

Fuel Level: _____

Engine Coolant Level: _____ Full _____ Low _____

Belts: _____

Block Heater: _____ Full _____ Low _____

Battery Cell Level: _____ Full _____ Low _____

Manual NO Load Test: _____

Auto load Test: _____

Voltage Output: _____

Frequency: _____

Amps. Start: _____

Amps. Stop: _____

Hot OIL Pressure: _____

Run Hour Meter @ Completion _____hrs. _____mins.

Check if Applicable:
Diesel Storage Tank Visual O.K. _____
Diesel Day Storage Tank Visual O.K. _____
Waste Oil Drum Closed _____ (If full move to 160 BLDG)

Problems and Conditions: _____

COMMENTS/MAINTENANCE:

ENVIRONMENTAL HEALTH & SAFETY

WEEKLY WASTE OIL CONTAINER INSPECTION SHEET

Location:_____

Last Waste Oil Pickup:_____

DATE	INITIALS

CONTAINER INSPECTION LIST

1. ARE CONTAINERS LABELED PROPERLY?

SAY "HAZARDOUS WASTE"
SAY WASTE TYPE IN WORDS
INDICATE ASSOCIATED HAZARD (IGNITABLE, CORROSIVE, REACTIVE, TOXIC)
INDICATE ACCUMULATION END DATE
INDICATE GENERATOR AND LOCATION

2. ARE CONTAINERS PROPERLY CLOSED?

3. ARE CONTAINERS IN GOOD CONDITION?

4. IS THE HAZARDOUS WASTE COMPATIBLE WITH THE CONTAINER?

5. ARE INCOMPATIBLE WASTES SEPARATED PROPERLY?

6. ARE CONTAINERS STORED ON IMPERVIOUS SURFACES?

7. ONLY ONE CONTAINER PER WASTE STREAM

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

APPENDIX D

Regulatory Cross Reference

REGULATORY CROSS REFERENCE	
US EPA OIL POLLUTION PREVENTION REGULATIONS	
Regulatory Citation	**Plan Reference**
40 CFR 112.1(a)	Section 1.2
40 CFR 112.1(b)	Section 1.2
40 CFR 112.1(c)	Not Applicable
40 CFR 112.1(d)	Section 1.2
40 CFR 112.1(e)	Sections 1.1 and 1.2
40 CFR 112.1(f)	Not Applicable
40 CFR 112.3(a)	Section 1.1.2, Record of Review and Revisions
40 CFR 112.3(b)	Not Applicable
40 CFR 112.3(c)	Not Applicable
40 CFR 112.3(d)	Sections 1.1.2 and 1.6.3
40 CFR 112.3(e)	Section 1.1
40 CFR 112.3(f)	Not Applicable
40 CFR 112.3(g)	Section 1.4
40 CFR 112.4(a)	Section 3.3.3
40 CFR 112.4(b)	Section 3.3.3
40 CFR 112.4(c)	Section 3.3.3
40 CFR 112.4(d)	Section 1.1.2
40 CFR 112.4(e)	Section 1.1.2
40 CFR 112.4(f)	Not Applicable
40 CFR 112.5(a)	Section 1.1.2
40 CFR 112.5(b)	Section 1.1.2, Record of Review and Revisions
40 CFR 112.5(c)	Section 1.1.2 and 1.6.3
40 CFR 112.6	Section 1.4
40 CFR 112.7(a)(1)	Entire Plan
40 CFR 112.7(a)(2)	Sections 1.2 and 1.5
40 CFR 112.7(a)(3)	Section 2.1, Figure 1
40 CFR 112.7(a)(4)	Sections 3.2 and 3.4, Appendix B
40 CFR 112.7(a)(5)	Section 3.0 (Entire Section)

REGULATORY CROSS REFERENCE	
US EPA OIL POLLUTION PREVENTION REGULATIONS	
Regulatory Citation	**Plan Reference**
40 CFR 112.7(b)	Section 2.3, Table 1
40 CFR 112.7(c)	Section 2.1
40 CFR 112.7(d)	Not Applicable
40 CFR 112.7(e)	Section 2.5, Appendix C
40 CFR 112.7(f)(1)	Section 2.7
40 CFR 112.7(f)(2)	Section 1.2.3
40 CFR 112.7(f)(3)	Section 2.7
40 CFR 112.7(g)	Section 2.8
40 CFR 112.7(h)	Section 2.9
40 CFR 112.7(i)	Section 2.2
40 CFR 112.7(j)	Sections 1.3 and 2.0 (Entire Section)
40 CFR 112.7(k)	Section 2.1.3
40 CFR 112.8(a)	Entire Plan
40 CFR 112.8(b)	Section 2.4
40 CFR 112.8(c)(1)	Section 2.1
40 CFR 112.8(c)(2)	Section 2.1, Table 1
40 CFR 112.8(c)(3)	Section 2.4
40 CFR 112.8(c)(4)	Section 2.1.1
40 CFR 112.8(c)(5)	Section 2.1.1
40 CFR 112.8(c)(6)	Section 2.6
40 CFR 112.8(c)(7)	Section 2.1.1
40 CFR 112.8(c)(8)	Sections 2.1 and 2.9
40 CFR 112.8(c)(9)	Section 2.4
40 CFR 112.8(c)(10)	Section 2.5, Appendix C
40 CFR 112.8(c)(11)	Section 2.1.2
40 CFR 112.8(d)(1)	Section 2.1.1
40 CFR 112.8(d)(2)	Section 2.1.1
40 CFR 112.8(d)(3)	Section 2.1.1

REGULATORY CROSS REFERENCE	
US EPA OIL POLLUTION PREVENTION REGULATIONS	
Regulatory Citation	**Plan Reference**
40 CFR 112.8(d)(4)	Section 2.5, Appendix C
40 CFR 112.8(d)(5)	Sections 2.9.2 and 2.9.3
40 CFR 112.9	Not Applicable
40 CFR 112.10	Not Applicable
40 CFR 112.11	Not Applicable
40 CFR 112.12	Not Applicable
40 CFR 112.20	Not Applicable
40 CFR 112.21	Not Applicable
40 CFR 112, Appendix A	Not Applicable
40 CFR 112, Appendix B	Not Applicable
40 CFR 112, Appendix C	1.1.4, Appendix A
40 CFR 112, Appendix D	Not Applicable
40 CFR 112, Appendix E	Not Applicable
40 CFR 112, Appendix F	Not Applicable

UMASS BOSTON
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

APPENDIX E

Spill Equipment Inventory

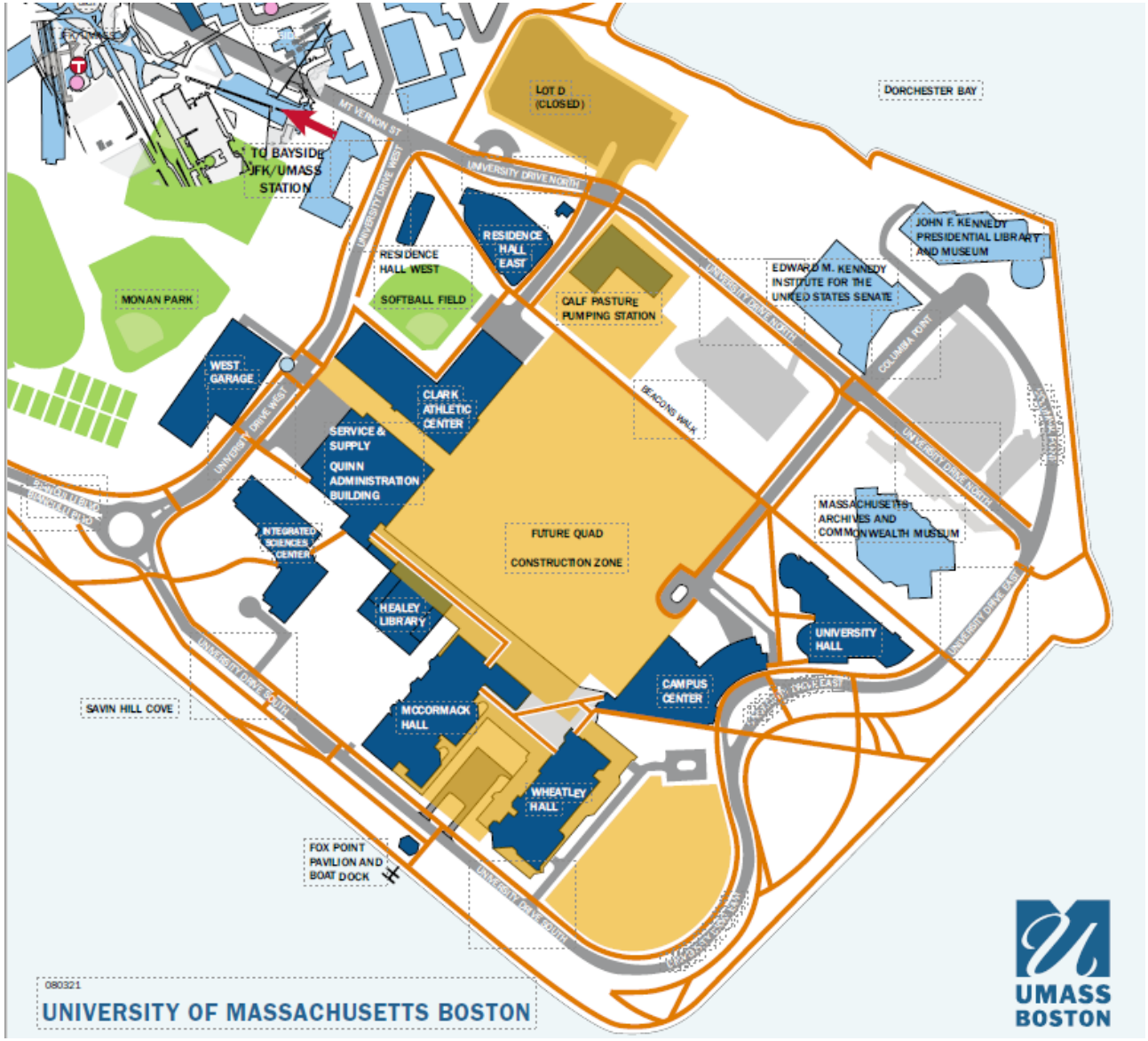
SPILL EQUIPMENT INVENTORY

UMass Boston maintains an adequate supply of spill control materials in strategically located emergency spill kits to respond to onsite emergencies. This equipment is located in close proximity to the fuel delivery and storage areas. Those areas are: the Maintenance Garage in Service and Supply, Grounds, the Utility Plant, EHS hazardous materials storage area in Wheatley, Marine Operations at the Fox Point Dock and the EHS hazardous materials storage area in the Integrated Sciences Complex. The purpose of this equipment is to handle small spills on the pavement, within the secondary containment areas, or to provide diversionary containment for larger spills of materials. The following spill response equipment is stored onsite:

Oil Spill Kit

- Oil absorbent
- Oil absorbent pads
- Oil spill booms
- Safety glasses / Face shields
- Neoprene aprons
- Heavy-duty rubber gloves
- Rubber boot covers
- Broom / Shovel

The equipment listed above is compatible with the materials stored and handled on-site, and is capable of addressing releases which are reasonably expected to occur at the facility. Should additional materials be required, UMass Boston has contractual relationships with outside spill response contractors to provide emergency response services.


LOT D (CLOSED)
DORCHESTER BAY
MT VERNON ST
UNIVERSITY DRIVE WEST
UNIVERSITY DRIVE NORTH
TO BAYSIDE JFK/UMASS STATION
RESIDENCE HALL EAST
RESIDENCE HALL WEST
SOFTBALL FIELD
MONAN PARK
CALF PASTURE PUMPING STATION
JOHN F. KENNEDY PRESIDENTIAL LIBRARY AND MUSEUM
EDWARD M. KENNEDY INSTITUTE FOR THE UNITED STATES SENATE
COLUMBIA POINT
WEST GARAGE
CLARK ATHLETIC CENTER
SERVICE & SUPPLY
QUINN ADMINISTRATION BUILDING
BEACONS WALK
UNIVERSITY DRIVE EAST
INTEGRATED SCIENCES CENTER
FUTURE QUAD
CONSTRUCTION ZONE
MASSACHUSETTS ARCHIVES AND COMMONWEALTH MUSEUM
HEALEY LIBRARY
UNIVERSITY HALL
CAMPUS CENTER
SAVIN HILL COVE
MCCORMACK HALL
WHEATLEY HALL
FOX POINT PAVILION AND BOAT DOCK
080321
UNIVERSITY OF MASSACHUSETTS BOSTON
UMASS BOSTON

Appendix B: Winter Road Maintenance Best Practices Details

Equipment and Maintenance

UMass Boston will implement the following winter maintenance procedures to reduce the discharge of pollutants from the MS4:

- Calibrate equipment to reduce and optimize salt use and ensure deicing agents are being used efficiently. Provide employee training on proper calibration procedures.
- Do not overfill trucks with deicing materials as it may lead to spills.
- Optimize chemical application rates through the use, where practicable, of automated application equipment (e.g., zero velocity spreaders), anti-icing and pre-wetting techniques, implementation of pavement management systems, and alternate chemicals.
- When possible, retrofit vehicles to include equipment such as on-board application regulators, temperature sensors for air and pavement, and anti-icing and pre-wetting equipment.
- Wash equipment using proper procedures to prevent pollutants from entering the stormwater system. Dry cleanup procedures should be used when possible. Vehicles dirtied from salt application should be washed according to procedures in Section 4. Vehicles and Equipment.
- Regularly inspect and maintain equipment to reduce the potential for leaks. See Section 4. Vehicles and Equipment.

Anti-icing and Deicing

- Minimize the use and optimize the application of sodium chloride and other salts[5] (while maintaining public safety) and consider opportunities for use of alternative materials (e.g., calcium magnesium acetate, magnesium chloride, or calcium chloride).
- Remove as much snow as possible using mechanical means like plowing, blowing, or shoveling before deicing to reduce the need for road salt or other deicing chemicals.
- When possible, use anti-icing practices to prevent ice formation and reduce the need for deicers. Apply anti-icing agents 1-2 hours before winter weather events to ensure optimal performance (can be applied up to 24 prior).
- Only apply road salt when the pavement temperature is above 15° F.
- When using deicers, use pre-wetting agents (e.g., salt brine) to help them work more efficiently and to reduce road salt scatter and bounce.

[5] For purposes of the MS4 Permit, salt means any chloride-containing material used to treat paved surfaces for deicing, including sodium chloride, calcium chloride, magnesium chloride, and brine solutions.

- Salt brine solution used for anti-icing and pre-wetting can be stored for up to a year –concentration should be tested before use. If temperatures fall below 0° F, use a circulator pump to prevent the brine from freezing.
- Avoid mixing road salt and sand. Doing so makes both the salt and sand work less efficiently and leads to over-application.
- Only apply enough deicer so that plows can remove the snow and ice. Adjust the application rate of deicers based on the type of storm, type of agent used, and anti-icing and pre-wetting techniques used.
- Track the amount of deicer used and maintain records of the application of anti-icing and/or de-icing chemicals to document the reduction of chemicals to meet established goals.

Storage of Deicing Materials

- Prevent exposure of deicing product (salt or alternative products) storage piles to precipitation by enclosing or covering the storage piles. Implement good housekeeping, diversions, containment or other measures to minimize exposure resulting from adding to or removing materials from the pile. Store piles in such a manner as not to impact surface water resources, groundwater resources, recharge areas, and wells.
- Store materials under covered or enclosed areas and on impervious surfaces.
- Ensure that there are adequate drainage controls in storage areas to prevent runoff from entering the stormwater system.
- Perform unloading/loading of trucks on impervious surfaces whenever possible. These areas should be frequently cleaned and swept to reduce the tracking and runoff of salt and to capture any spills.
- For liquid deicing chemicals, provide secondary storage containment.
- Do not store road salt near drinking water supplies, surface water resources, groundwater resources, recharge areas, and wells. Follow proper storage guidelines from MassDEP (https://www.mass.gov/guides/guidelines-on-road-salt-storage).

Snow Storage and Disposal

- The MS4 Permit prohibits snow disposal into waters of the United States. Snow disposal and storage activities, including selection of appropriate snow disposal sites, will adhere to the MassDEP Snow Disposal Guidance, Guideline No. BWR G2015-01 (http://www.mass.gov/eea/agencies/massdep/water/regulations/snow-disposal-guidance.html).
- Snow should not be pushed or dumped into waterbodies or wetlands, into stormwater drainage swales or ditches, or on top of catch basins.
- Snow should not be stored near drinking water areas, waterbodies, or wetlands.

UMass Boston currently disposes of snow on pervious, landscaped areas in compliance with MS4 regulations.

Appendix E – Stormwater Management for UMass Boston Projects

DID YOU KNOW?

Stormwater Management for UMass Boston Projects

UMass Boston has adopted new stormwater management requirements for new development/redevelopment projects to meet the NPDES Municipal Separate Storm Sewer System (MS4) permit.

Review criteria below to determine if your project is subject to these requirements and if so, how to meet them.

Is your project exempt?

Projects that are exclusively limited to maintenance and improvement of existing roadways are exempt from the MS4 Permit's more stringent water quality requirements discussed below but **must improve existing conditions unless infeasible.**

EXEMPTIONS

Roadway projects included in this exemption: widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving projects

Does your project disturb one or more acres of land?

- Continue to design in accordance with MA Stormwater Handbook, but also meet the MS4 Permit's more stringent water quality requirements for new development and redevelopment projects.
- Incorporate low impact development site planning and design strategies, unless infeasible.

Is your project defined as new development under the MS4 permit?

NEW DEVELOPMENT

Any construction activities or land alteration resulting in total earth disturbances greater than 1 acre (or activities that are part of a larger common plan of development disturbing greater than 1 acre) on an area that has not previously been developed to include impervious cover.

- Design BMPs to provide treatment for the site's total post-construction impervious area. Treatment must provide an average annual pollutant removal equivalent to 90% of the average annual load of Total Suspended Solids (TSS) and 60% of the average annual load of Total Phosphorus (TP).
- Achieve that pollutant removal through one of the following methods:
  1. Design/install BMPs that together meet site TSS and TP pollutant removal requirements based on the guidance in the MS4 Permit; or
  2. Retain the volume of runoff equivalent to, or greater than, one (1.0) inch multiplied by the total post-construction impervious surface area on the new development site; or
  3. Provide a combination of retention and treatment; or
  4. Utilize offsite mitigation that meets the above standards within the same USGS HUC12 as your site.

Last revised: May 2021

DID YOU KNOW?

Stormwater Management for UMass Boston Projects

Is your project defined as redevelopment under the MS4 permit?

REDEVELOPMENT

Any construction, land alteration, or improvement of impervious surfaces resulting in total earth disturbances greater than 1 acre (or activities that are part of a larger common plan of development disturbing greater than 1 acre) that does not meet the definition of new development.

» Design BMPs to provide treatment for the site's total post-construction impervious area. Treatment must provide an average annual pollutant removal equivalent to 80% of the average annual load of TSS and 50% of the average annual load of TP.

» Achieve that pollutant removal through one of the following methods:

1. Design/install BMPs that together meet site TSS and TP pollutant removal requirements based on the guidance in the MS4 Permit; or
2. Retain the volume of runoff equivalent to, or greater than, 0.8 inches multiplied by the total post-construction impervious surface area on the redevelopment site; or
3. Provide a combination of retention and treatment; or
4. Utilize offsite mitigation that meets the above standards within the same USGS HUC12 as your site.

Provide documentation to UMass Boston

» Pollutant calculations in accordance with the MS4 Permit:

- TSS and TP loading for the overall project site and to each BMP.
- TSS and TP removal for the overall project site and to each BMP (both percent reduction and annual load reduction in lb/yr) calculated for the post-construction impervious area using the BMP storage volume and pollutant removal curves (i.e., percentages) consistent with MS4 permit guidance.

» As-built drawings depicting all BMPs, both structural and non-structural, designed to manage the stormwater associated with the completed site.

SITE

The extent of construction activities, including but not limited to the creation of new impervious cover and improvement of existing impervious cover.

References

Massachusetts Small MS4 General Permit
https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit

BMP Pollutant Removal Tools and Information
https://www.epa.gov/npdes-permits/stormwater-tools-new-england#swbmp

Last revised: May 2021

Appendix F – Construction Site Runoff Control for UMass Boston Projects

DID YOU KNOW?

Construction Site Runoff Control for UMass Boston Projects

UMass Boston has erosion and sediment control requirements for projects under construction to meet the NPDES Municipal Separate Storm Sewer System (MS4) Permit. Review criteria below to determine if your project is subject to these requirements, and if so, how to meet them.

UMASS BOSTON MS4 CONSTRUCTION SITE RUNOFF CONTROL POLICY

For all projects disturbing one or more acres, UMass Boston requires the use of sediment and erosion control practices at construction sites. UMass Boston requires proper control and disposal of construction related wastes and prohibits the discharge of such wastes to UMass Boston' stormwater drainage system.

If your project disturbs one or more acres, you must ensure site erosion and sediment control is performed in accordance with this policy and the procedures discussed below.

This policy is in addition to EPA's stormwater Construction General Permit (CGP) program. While this policy does not create additional requirements for the contractor beyond obtaining and complying with EPA's stormwater CGP, UMass Boston will be performing reviews and inspections as required to report compliance annually to EPA on this provision of UMass Boston' MS4 permit.

UMass Boston MS4 Construction Site Runoff Control Program

The purpose of UMass Boston' MS4 Construction Site Runoff Control Program is to minimize or eliminate erosion and maintain sediment on site so that sediment is not transported in stormwater to downstream receiving waterbodies.

UMass Boston ensures construction site stormwater management through compliance with the EPA's stormwater CGP. UMass Boston includes a bid item and special provisions on construction contracts which exceed the one-acre land disturbance threshold. The bid item and special provisions require preparation of a Stormwater Pollution Prevention Plan (SWPPP) by the contractor in accordance with EPA's stormwater CGP.

The SWPPP is a dynamic document that will be updated continually by the operators throughout construction. Generally, the SWPPP will outline and detail the required erosion and sediment controls and best practices for pollution prevention. Additional documentation included in the SWPPP includes:

- ✓ Contact information for responsible parties, the stormwater team, personnel responsible for inspections, and personnel responsible for completing corrective actions;
- ✓ Details regarding Project site information, receiving waters, any impairments or Total Maximum Daily Loads (TMDLs) associated with receiving waters;
- ✓ Project description and site maps;

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Construction Site Runoff Control for UMass Boston Projects

- ✓ Construction activities sequencing and logging;
- ✓ Allowable non-stormwater discharges;
- ✓ Documentation of inspection schedule, corrective action directives, and processes for amending the SWPPP;
- ✓ Details about required training for the stormwater team, inspectors, and operators;
- ✓ Discussion of the required erosion and sediment controls (including natural buffers, perimeter controls, sediment track-out, controls for stockpiled sediment or soil, minimizing dust, minimizing disturbance of steep slopes, topsoil controls, soil compaction, storm drain inlet protection, constructed stormwater conveyance channels, sediment basins, chemical treatment, site stabilization, and dewatering practices);
- ✓ Best practices for pollution prevention (including identifying potential sources of pollution, fueling and maintenance of equipment or vehicles, washing of equipment and vehicles, storage handling and disposal of construction products materials and wastes, washing of applicators and containers used for paint concrete or other materials, fertilizers, pavement sweeping, and spill prevention and response); and
- ✓ Compliance with other regulations including endangered species, historic preservation, and the Safe Drinking Water Act.

Site Plan Reviews

UMass Boston performs internal reviews of project design to ensure projects include appropriate erosion and sediment control practices, consider potential water quality impacts, and evaluate Low Impact Development (LID) in site planning and design strategies. UMass Boston will review capital project designs by other public agencies (UMass Building Authority, DCAMM) for the UMass Boston campus. UMass Boston reviews construction SWPPPs for all projects before construction begins to ensure adequate best management practices (BMPs) are planned for both during and after the construction phase of the project.

Site Inspections and Enforcement Procedures

UMass Boston requires contractors to perform site inspections in accordance with EPA's stormwater CGP requirements. In addition, UMass Boston' Resident Engineer will perform inspections of erosion and sediment controls on construction projects. UMass Building Authority will ensure compliance for projects under its oversight.

Erosion and sediment control measures must be installed in accordance with the SWPPP before any land disturbance begins for the Project and must remain in place for the duration of the Project. For permanent BMPs, UMass Boston' requires inspections to occur both during and after construction to ensure BMPs are functioning as designed.

UMass Boston prohibits the discharge of demolition debris, such as discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes to UMass Boston' stormwater drainage system. These wastes must be controlled on-site until they can be properly disposed of in accordance with the project's SWPPP.