# Phase 1 Meadow Walk at Sudbury: Grocery Store

PREPARED FOR

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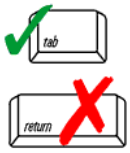
**Massachusetts Department of Environmental Protection**
Bureau of Resource Protection - Wetlands Program

# Checklist for Stormwater Report

## A. Introduction

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.




A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

**Massachusetts Department of Environmental Protection**
Bureau of Resource Protection - Wetlands Program

# Checklist for Stormwater Report

## B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

## Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature


Karen F Staffier 3/2/2016
Signature and Date

## Checklist

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

# Checklist for Stormwater Report

## Checklist (continued)

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☒ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☒ Reduced Impervious Area (Redevelopment Only)

☒ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☒ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☒ Grass Channel

☐ Green Roof

☐ Other (describe): _____

**Standard 1: No New Untreated Discharges**

☒ No new untreated discharges

☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 2: Peak Rate Attenuation**

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm. **(As presented in the Preliminary Master Drainage Study dated November 2016)**

**Standard 3: Recharge**

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☒ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 3: Recharge** (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

**Standard 4: Water Quality**

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☒ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☒ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 4: Water Quality** (continued)

☒ The BMP is sized (and calculations provided) based on:

☒ The ½" or 1" Water Quality Volume or

☒ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☒ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

**Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)**

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☒ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent. **(Deep Sump Hooded Manhole for removal of oil and sediment)**

**Standard 6: Critical Areas**

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☒ Critical areas and BMPs are identified in the Stormwater Report.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable**

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

**Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control**

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

# Checklist for Stormwater Report

## Checklist (continued)

**Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control** (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☒ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

**Standard 9: Operation and Maintenance Plan**

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

**Standard 10: Prohibition of Illicit Discharges**

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

# Stormwater Report Narrative

This Stormwater Management Report is prepared to support the first phase of redevelopment for 526-528 Boston Post Road, Sudbury, MA, which includes the construction of a grocery store and associated parking areas.

Due to the nature of the phased development on the Site, VHB developed a Preliminary Stormwater Management Master Plan for the full-build project to evaluate the existing and anticipated proposed full-build hydrologic conditions on the site. The Preliminary Master Plan demonstrates that the overall project will not increase pre-construction peak rates or volumes of stormwater discharging from the site in the 1-inch, 2-year, 10-year, 25-year and 100-year design storms.

As detailed herein, this Stormwater Management Report:

- Demonstrates compliance with the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Standards;
- Demonstrates compliance with the Town of Sudbury Article V (F) Stormwater Management Regulations;
- Confirms that Phase 1 is consistent with the overall Preliminary Stormwater Management Master Plan developed for the Project;
- Details construction-phase erosion and sedimentation controls, inspection requirements and maintenance requirements to protect downstream receiving waters; and,
- Presents a detailed long term operation and maintenance plan for the stormwater management system and the site.

## Project Description

The Applicant, BPR Development LLC, is proposing to construct Phase 1 of the Full Build Redevelopment at 526-528 Boston Post Road, Sudbury, MA (the Site). Phase 1 (The Project) involves the construction of an approximate 45,000-gsf grocery store with associated parking, access roadway, landscape, and utilities. Stormwater management BMPs and conveyances are proposed to support the grocery store construction.

## Existing Drainage Conditions

The existing conditions in the Phase 1 area of the Site consists predominately of impervious surfaces, including two large buildings with paved parking and drives. Topography is relatively flat and slopes southeasterly. Runoff from a majority of the Phase 1 area of the Site is directly tributary to the off-Site closed drainage system. The remainder of the Phase 1 Area is tributary to a centrally located retention pond via a closed drainage system or through stormwater swales and wetlands on the western perimeter of the Site. Outflows from the retention pond combine with the closed drainage system located on the southeastern portion of the Site (which collects the remaining portion of the Phase 1 Site area) through an existing piping network, which ultimately discharges to a wetland on the southern side of Boston Post Road, east of the Sudbury Plaza.

The existing Site contains a stormwater management system that was constructed prior to the current DEP Stormwater Management Standards and as such is a "grandfathered" existing condition. Raytheon recently undertook a significant maintenance effort, with approval of the Sudbury Conservation Commission, to re-establish and enhance the functional characteristics of the on-Site stormwater management system. While the system is compliant as an existing condition, the water quality treatment is not consistent with current state or local stormwater management standards.

Existing conditions drainage figures and a detailed discussion of the existing hydrologic conditions at the Site are summarized in the Preliminary Stormwater Management Master Plan dated November 2015, prepared by VHB, which is provided under separate cover.

## Proposed Drainage Conditions

Phase 1 of the redevelopment project provides opportunity to enhance the existing on-Site stormwater management system by (1) implementing a series of stormwater water quality BMPs at the Site and (2) reducing the amount of impervious cover.

The Phase 1 development (grocery store) and the layout of the proposed stormwater management system supporting this area are shown in Figure 1. In the proposed condition, runoff from the grocery store's front parking field will sheet flow to a vegetated drainage channel. The vegetated drainage channel discharges runoff to a deep-sump, hooded manhole, and then to a subsurface infiltration basin, equipped with an isolator row which will provide 25% TSS removal prior to infiltration. Runoff from the remaining parking and driveway areas will be collected in deep sump hooded catch basins. The infiltration system is sized to infiltrate the 1" water quality

volume, based on a simple dynamic sizing methodology. Flows in excess of this volume will bypass the system and combine with flows from the water quality units in the underground piping system and be discharged off-Site under Route 20 through an existing 48" pipe (Design Point 1 in the Preliminary Stormwater Management Master Plan). Runoff from the grocery store roof will be collected on the west side of the building and directed to existing drainage outfalls to Wetland 6, which flows to the existing on-Site retention pond. In the interim condition, overland runoff will also be reduced to Design Point 2, Route 20.

VHB considered a wide range of stormwater BMPs during the preliminary design of the Phase 1 development project. The topography on the site and the relatively shallow depth to groundwater are significant factors in the design. VHB is proposing the use of one subsurface infiltration basin as part of Phase 1 to provide water quality treatment but also to maximize recharge into the underlying aquifer. The use of a vegetated swale to collect the stormwater from the parking area is deliberate to provide some vegetated stormwater features but also as a way to minimize the depth of the proposed infiltration system and thereby maximize separation from groundwater. Because the proposed subsurface infiltration basin is located within an existing building footprint, further geotechnical explorations are required, following building demolition, to confirm that the required minimum 2ft of groundwater separation is provided in the design. Should the additional data indicate that the minimum separation is not available, the infiltration system will be removed from the design and runoff from the tributary impervious area will be treated by water quality unit. The use of surface BMPs were considered but are not compatible with the proposed Phase 1 use as a grocery store, topographical and existing utility constraints and the potential to limit the flexibility in future development areas to achieve Master Redevelopment Project goals. Additional surface features are anticipated to be feasible in other areas of the Site, particularly in the residential areas.

Fortunately, both in the interim and the full build conditions, impervious cover will be reduced on-Site, which in addition to the proposed stormwater management system will provide an improvement to water quality and will increase groundwater recharge on the Site, benefitting the underlying aquifer. The Phase 1 project does include drywells for the recharge of clean roof runoff, again subject to confirmation of adequate separate to groundwater. The roof runoff is piped into three (3) drywells where the runoff is infiltrated into the ground.

The comprehensive stormwater management system has been developed in accordance with the Massachusetts Stormwater Handbook. The subsurface infiltration basin, and water quality unit sizing have been sized to treat the one inch water quality volume and equivalent flow rate, respectively. Additionally, the stormwater management system provides 44% pretreatment prior to infiltration. The one inch water quality volume is required by the Town of Sudbury Stormwater Regulations, the Massachusetts DEP Zone II (a critical area) and the fact that the Phase 1 Project parking area is considered a LUHPPL.

A detailed discussion of the proposed Full Build Redevelopment hydrologic conditions are summarized in the Preliminary Stormwater Management Master Plan. Phase 1 comprises a portion of the build-out for the retail area, and in the interim condition will reflect significantly less impervious cover than is proposed at full build, as summarized in the table below. As such, there will be no increase in peak rates or volumes of runoff from the Site for the design storms.

Table 1 below summarizes the composition of the drainage areas containing the Phase 1 construction and illustrates consistency with the Preliminary Stormwater Management Master Plan.

**Table 1**
**Proposed Conditions Impervious Cover Comparison**

| *Drainage Area* | *Discharge Location* | *Design Point* | *Preliminary Master Plan Existing Impervious Area (acres)* | *Preliminary Master Plan Proposed Impervious Area (acres)* | *Phase 1 Proposed Impervious Area (acres)* |
|---|---|---|---|---|---|
| S-1A | 48" RCP Across Boston Post Road | DP-1 | 7.1 | 5.3 | 4.2 |
| S-1G | Eastern Retail Area | DP-1 | N/A | 2.3 | 1.4 |
| S-1E | Ex Pond at Center of Property | DP-1 | 3.4 | 2.3 | 1.9 |
| S-2 | Overland Flow to Boston Post Rd | DP-2 | 0.0 | 0.0 | 0.0 |

## Best Management Practices (BMPs) and Low Impact Development (LID) Techniques

The proposed stormwater management system incorporates low impact development (LID) techniques and Best Management Practices (BMPs) including a reduction of impervious area, minimized disturbance to existing trees and vegetation, and a vegetated drainage channel. The following LID techniques used in Phase 1 are described hereon.

**Vegetated Drainage Channel**
The vegetated drainage channel centrally located within the parking lot will receive sheet flow runoff from adjacent impervious areas through breaks in the curb. The channel is designed to slow runoff velocities, trap sediment and direct stormwater to the proposed subsurface infiltration basin. Vegetated drainage channels shall be cleaned annually or as needed.

**Deep Sump Hooded Catch Basins**
Catch basins at the Site are to be constructed with sumps (minimum 4-feet) and oil/debris traps to prevent the discharge of sediments and floating contaminants.

Catch Basins shall be inspected or cleaned quarterly and at the end of the foliage and snow removal seasons. Sediments shall be removed quarterly or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert to the lowest pipe in the basin.

**Subsurface Infiltration Basin**

The subsurface infiltration system consists of underground Stormtech Chambers. The system has an "Isolator Row", which is the entrance row wrapped in geosynthetic material which collects sediment and can be easily cleaned through the manhole structures located at each end. The design of the chambers includes a permeable bottom that allows for maximum exfiltration of runoff from the system to the groundwater.

**Water Quality Units**

The proposed hydrodynamic water quality units proposed on Site separate and trap trash, debris, sediment and hydrocarbons from stormwater runoff. Water quality units shall be inspected twice per year, at a minimum. The systems should be cleaned frequently during dry conditions for optimal performance, at a minimum, the system should be cleaned when the level of sediment has reached 75% capacity in the isolated sump.

**Drywell**

Three drywells are proposed on-Site to infiltrate the uncontaminated runoff from the roof of the grocery store, pending confirmation of adequate groundwater separation. Drywells shall be inspected annually and after every major storm.

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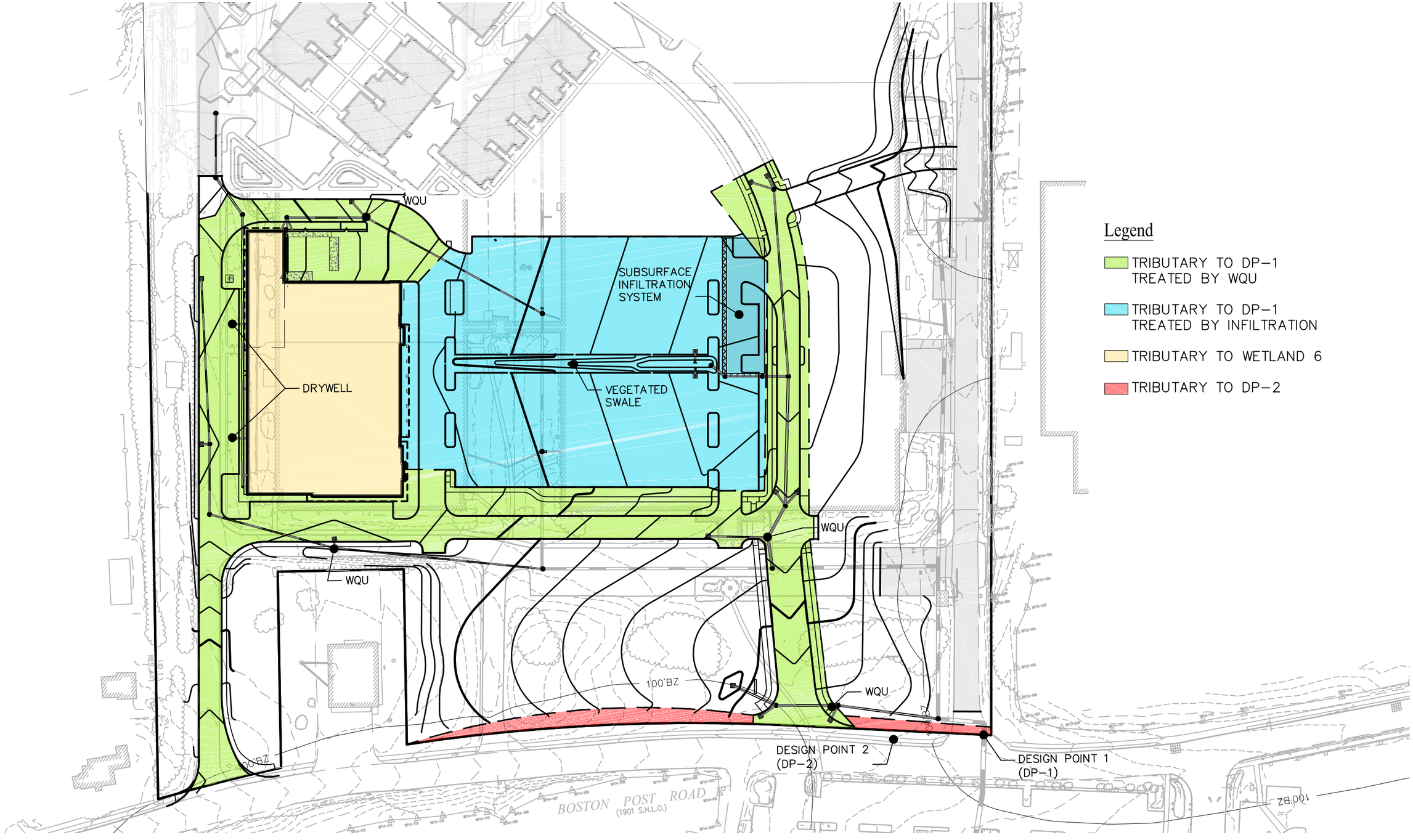



Proposed Drainage Conditions
Grocery Store
526-528 Boston Post Road
Sudbury, MA

March 2016

# Regulatory Compliance

## Massachusetts Department of Environmental Protection (DEP) - Stormwater Management Standards

### Standard 1: No New Untreated Discharges or Erosion to Wetlands

The Project has been designed to comply with Standard 1.

The Best Management Practices (BMPs) included in the proposed stormwater management system have been designed in accordance with the Massachusetts Stormwater Handbook. Supporting information and computations demonstrating that no new untreated discharges will result from the Project are presented through compliance with Standards 4 through 6.

The Project proposes to discharge all stormwater to existing closed drainage systems and does not propose any new outfalls to wetlands.

### Standard 2: Peak Rate Attenuation

The Project has been designed to comply with Standard 2.

As noted herein, Phase 1 is consistent with the Preliminary Master Hydrologic Analysis for the Project, and will not increase peak rates or total volume of runoff from the site for the design storms.

### Standard 3: Stormwater Recharge

The Project has been designed to comply with Standard 3.

As noted herein the project will result in a decrease in impervious coverage on the site, both in the interim condition and in the full-build condition, and will consequently result in an increase in recharge on the property.

## Standard 4: Water Quality

The Project has been designed to comply with Standard 4.

The proposed stormwater management system implements a treatment train of BMPs that has been designed to provide 80% TSS removal of stormwater runoff from all proposed impervious surfaces as well as 44% pretreatment prior to infiltration BMPs.

Computations and supporting information are included in Appendix B.

## Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

The Project will generate more than 1,000 vehicle trips per day and the proposed parking area is therefore considered a LUHPPL. As such, the Project stormwater management system has been designed with suitable BMPs sized to treat the one inch Water Quality Volume from all on-site impervious roadway and parking lot areas. Proposed source controls and pollution prevention measures have been identified in the Operation and Maintenance Plan included in Appendix C.

For computations and supporting information regarding the sizing of BMPs suitable for treatment of runoff from LUHPPLs, see Appendix B.

## Standard 6: Critical Areas

The Project will discharge treated storm water to a critical area and therefore has been designed with suitable BMPs sized to treat the one inch Water Quality Volume. Proposed source controls and pollution prevention measures have been identified in the Operation and Maintenance Plan included in Appendix C.

For computations and supporting information regarding the sizing of BMPs suitable for treatment of runoff near or to critical areas, see Appendix B.

## Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

The Project is a redevelopment. The Project has been designed to comply with the Stormwater Management Standards as noted above and below. As permitted for a redevelopment, the BMP selection criteria associated with standards 4, 5 and 6 are met only to the extent practical, given practical limitations associated with groundwater elevations, end-user considerations, and topographic constraints.

## Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls

The Project will disturb more than 1 acre of land and is therefore required to obtain coverage under the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit. A draft Stormwater Pollution Prevention Plan (SWPPP) has been included in Appendix E. The draft SWPPP includes recommended construction period pollution prevention and erosion and sedimentation controls.

## Standard 9: Operation and Maintenance Plan

In compliance with Standard 9, a Post Construction Stormwater Operation and Maintenance (O&M) Plan has been developed for the Project. The O&M Plan is included in Appendix C.

## Standard 10: Prohibition of Illicit Discharges

Sanitary sewer and storm drainage structures remaining from the previous development, which are part of the redevelopment area, will be removed or will be incorporated into updated sanitary sewer and separate stormwater sewer systems. The design plans submitted with this report have been designed so that the components included therein are in full compliance with current standards. No statement is made with regard to the drainage system in portions of the site not included in the redevelopment project area.

# Appendix A
# Standard 3 Computations and Supporting Information

- Groundwater Contour Plan

# Groundwater Contour Plan

NOTES:

1. THE BASE MAP WAS DRAWN FROM A PLAN ENTITLED, "EXISTING CONDITIONS PLAN OF LAND", PREPARED BY VANASSE HANGEN BRUSTLIN, INC. (VHB) OF WATERTOWN, MA, DATED OCTOBER 12, 2015 WITH AN ORIGINAL SCALE OF 1" = 40'.

2. APPROXIMATE LOCATIONS OF EXPLORATIONS ARE BASED ON PLANS BY OTHERS. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

3. APPROXIMATE ESTIMATED SEASONAL HIGH GROUNDWATER ELEVATIONS WERE CALCULATED FROM MARCH 19, 2015 GROUNDWATER DATA, COLLECTED BY GZA GEOENVIRONMENTAL, INC. (GZA), WITH AN ADDITIONAL 1.51 FEET ADDED IN ACCORDANCE WITH USGS FRIMPTER METHOD. ONLY THE EXPLORATIONS WITH GROUNDWATER DATA USED TO DEVELOP THE APPROXIMATE GROUNDWATER CONTOURS ARE SHOWN.

4. APPROXIMATE SEASONAL HIGH SURFACE WATER ELEVATIONS WERE ESTIMATED TO BE APPROXIMATELY 1 FOOT ABOVE NORMAL OBSERVED WATER LEVELS.

5. APPROXIMATE GROUNDWATER ELEVATION CONTOURS ARE INTENDED TO SHOW GENERAL TRENDS IN GROUNDWATER ELEVATION. THE CONTOURS ARE BASED ON A NETWORK OF WIDELY SPACED MONITORING WELLS AND ACTUAL CONDITIONS SHOULD BE EXPECTED TO VARY FROM THIS PLAN. CONTOURS ARE BASED ON ONE INTERPRETATION OF THE AVAILABLE GROUNDWATER ELEVATION DATA. OTHER INTERPRETATIONS OF THIS GROUNDWATER ELEVATION DATA ARE POSSIBLE. GROUNDWATER ELEVATIONS WILL VARY SEASONALLY BASED ON PRECIPITATION, TOPOGRAPHY AND OTHER SITE FEATURES.

6. ELEVATIONS SHOWN REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

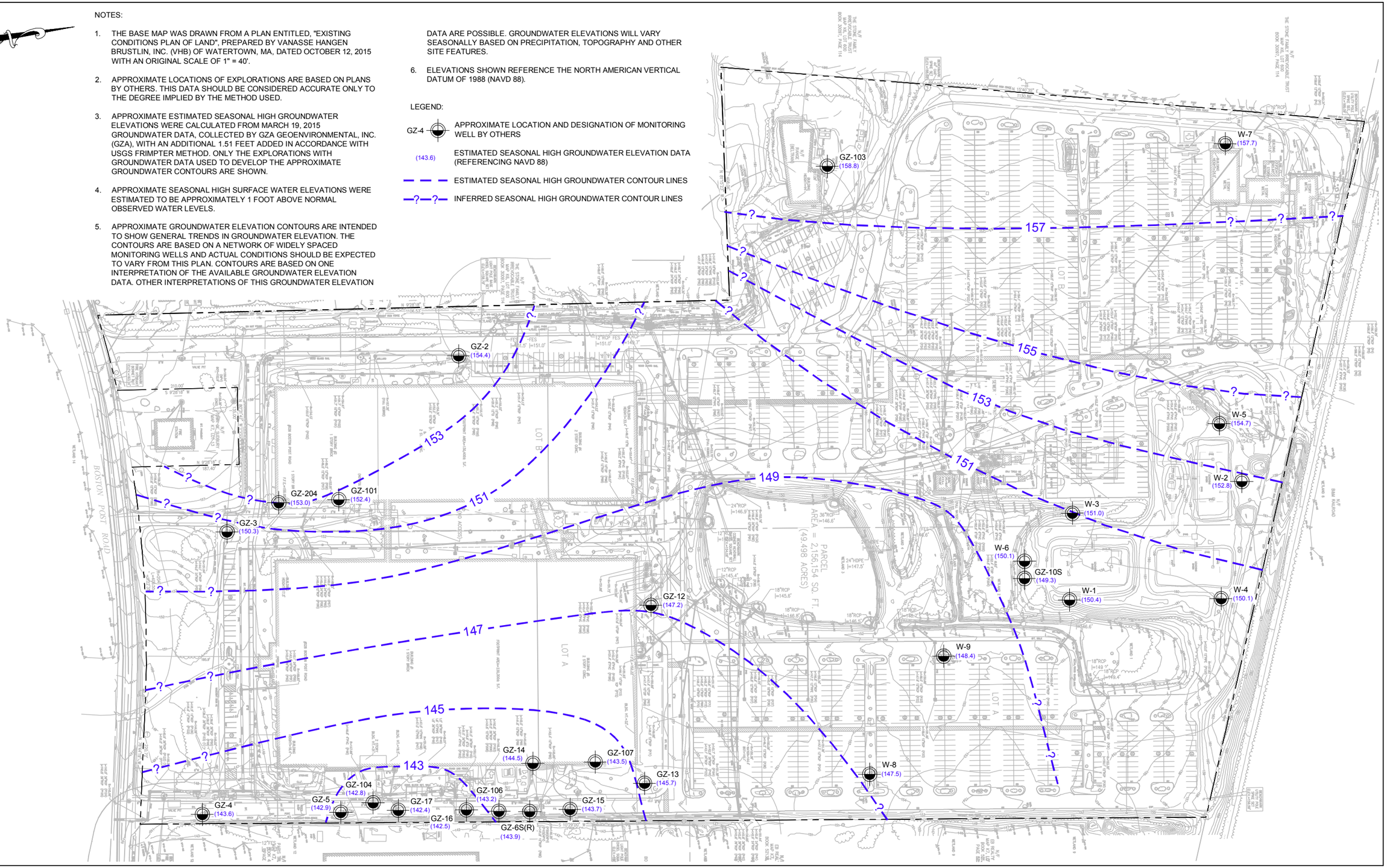
LEGEND:

GZ-4 — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL BY OTHERS

(143.6) — ESTIMATED SEASONAL HIGH GROUNDWATER ELEVATION DATA (REFERENCING NAVD 88)

— — — ESTIMATED SEASONAL HIGH GROUNDWATER CONTOUR LINES

—?—?— INFERRED SEASONAL HIGH GROUNDWATER CONTOUR LINES




SANBORN HEAD

GRAPHICAL SCALE
80' 40' 0' 80' 160'

| NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|

DRAWN BY: C.GREEN
DESIGNED BY: T.ORSZULAK/D.VOLPE
REVIEWED BY: M.HEIL
PROJECT MGR: L.NORTON
PIC: K.STETSON
DATE: NOVEMBER 2015

GEOTECHNICAL CONSULTING SERVICES
# 528 BOSTON POST ROAD
SUDBURY, MASSACHUSETTS

PROJECT NUMBER: 3888.02

# GROUNDWATER CONTOUR PLAN
(BASED ON GROUNDWATER DATA COLLECTED 3/19/15)

SHEET NUMBER: 1

# Appendix B
# Standard 4 Computations and Supporting Information

- TSS Removal Worksheets
- Subsurface Infiltration Basin Sizing Calculations
- CDS Unit Sizing Calculations
- MASTEP CDS Report

# TSS Removal Worksheets

# TSS Removal Calculation Worksheet

101 Walnut Street
Post Office Box 9151
Watertown, MA 02471
P 617.924.1770

| | | | |
|---|---|---|---|
| Project Name: | **Grocery Store at Meadow Wa** | Sheet: | **1 of 2** |
| Project Number: | **13125.00** | Date: | **5-Apr-2016** |
| Location: | **Sudbury, MA** | Computed by: | **KEJ/BMG** |
| Discharge Point: | **DP1** | Checked by: | |
| Drainage Area(s): | **S1A - Portion** | | |

## 1. Pre-Treatment prior to Infiltration

| BMP* | TSS Removal Rate* | Starting TSS Load** | Amount Removed (C*D) | Remaining Load (D-E) |
|---|---|---|---|---|
| **Deep Sump and Hooded Catch Basin** | **25%** | **100%** | **25%** | **75%** |
| **Isolator Row** | **25%** | **75%** | **19%** | **56%** |
| | **0%** | **56%** | **0%** | **56%** |
| | | **Pre-Treatment TSS Removal =** | | **44%** |

## 2. Total TSS Removal including Pretreatment 1.

| BMP* | TSS Removal Rate* | Starting TSS Load** | Amount Removed (C*D) | Remaining Load (D-E) |
|---|---|---|---|---|
| **Deep Sump and Hooded Catch Basin** | **25%** | **100%** | **25%** | **75%** |
| **Subsurface Infiltration Structure** | **80%** | **75%** | **60%** | **15%** |
| | **0%** | **15%** | **0%** | **15%** |
| | **0%** | **15%** | **0%** | **15%** |

* BMP and TSS Removal Rate Values from the MassDEP Stormwater Handbook Vol. 1.
** Equals remaining load from previous BMP (E)

**Treatment Train TSS Removal =** **85%**

# TSS Removal Calculation Worksheet

VHB, Inc..
101 Walnut Street
Post Office Box 9151
Watertown, MA 02471
P 617.924.1770

| | | | |
|---|---|---|---|
| Project Name: | Grocery Store at Meadow Wa | Sheet: | 2 of 2 |
| Project Number: | 13125.00 | Date: | 23-Feb-2016 |
| Location: | Sudbury, MA | Computed by: | KEJ/BMG |
| Discharge Point: | DP1 | Checked by: | |
| Drainage Area(s): | S1A - Portion | | |

| A | B | C | D | E |
|---|---|---|---|---|
| BMP* | TSS Removal Rate* | Starting TSS Load** | Amount Removed (C*D) | Remaining Load (D E) |
| **Deep Sump and Hooded Catch Basin** | **25%** | **1.00** | **0.25** | **0.75** |
| **Water Quality Unit** | **74%** | **0.75** | **0.55** | **0.20** |
| | **0%** | **0.20** | **0.00** | **0.20** |
| | **0%** | **0.20** | **0.00** | **0.20** |
| | **0%** | **0.20** | **0.00** | **0.20** |

* BMP and TSS Removal Rate Values from the MassDEP Stormwater Handbook Vol. 1.
Removal rates for proprietary devices are from approved studies and/or manufacturer data.

** Equals remaining load from previous BMP (E)

**Treatment Train TSS Removal =** **80%**

# Subsurface Infiltration Basin Sizing Calculations

## Summary for Pond 3P: Subsurface Infiltration System

[82] Warning: Early inflow requires earlier time span

Inflow Area = 2.0 ac,100.00% Impervious, Inflow Depth > 1.0" for WQV-DYN event
Inflow = 4.2 cfs @ 12.07 hrs, Volume= 0.2 af
Outflow = 0.1 cfs @ 11.16 hrs, Volume= 0.0 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.1 cfs @ 11.16 hrs, Volume= 0.0 af
Primary = 0.0 cfs @ 11.00 hrs, Volume= 0.0 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 150.76' @ 13.00 hrs Surf.Area= 6,023 sf Storage= 6,385 cf

Plug-Flow detention time= 39.2 min calculated for 0.0 af (13% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 149.00' | 4,190 cf | **41.50'W x 144.84'L x 2.33'H Field A**<br>14,025 cf Overall - 3,549 cf Embedded = 10,476 cf x 40.0% Voids |
| #2A | 149.50' | 3,549 cf | **ADS_StormTech SC-310** x 240 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>Row Length Adjustment= +0.44' x 2.07 sf x 12 rows |
| #3 | 149.00' | 63 cf | **4.00'D x 5.00'H Vertical Cone/Cylinder** |
| | | 7,802 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 149.00' | **1.020 in/hr Exfiltration over Surface area** |
| #2 | Device 3 | 150.80' | **4.0' long x 2.50' rise Sharp-Crested Rectangular Weir**<br>0 End Contraction(s) 3.5' Crest Height |
| #3 | Primary | 145.40' | **12.0" Round Culvert** L= 90.0' Ke= 0.500<br>Inlet / Outlet Invert= 145.40' / 144.90' S= 0.0056 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Discarded OutFlow** Max=0.1 cfs @ 11.16 hrs HW=149.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

**Primary OutFlow** Max=0.0 cfs @ 11.00 hrs HW=149.00' (Free Discharge)
└**3=Culvert** (Passes 0.0 cfs of 5.9 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** ( Controls 0.0 cfs)

## Pond 3P: Subsurface Infiltration System - Chamber Wizard Field A

**Chamber Model = ADS_StormTechSC-310 (ADS StormTech® SC-310)**
Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 2.07 sf x 12 rows

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

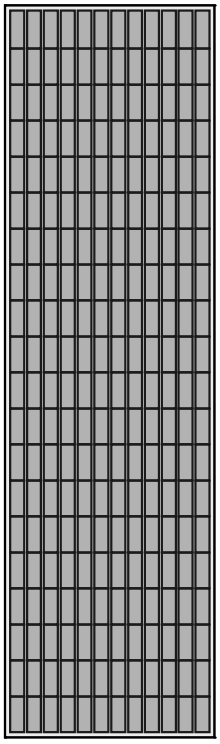
20 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 142.84' Row Length +12.0" End Stone x 2 = 144.84' Base Length
12 Rows x 34.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 41.50' Base Width
6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

240 Chambers x 14.7 cf +0.44' Row Adjustment x 2.07 sf x 12 Rows = 3,549.0 cf Chamber Storage

14,025.2 cf Field - 3,549.0 cf Chambers = 10,476.2 cf Stone x 40.0% Voids = 4,190.5 cf Stone Storage

Chamber Storage + Stone Storage = 7,739.4 cf = 0.2 af
Overall Storage Efficiency = 55.2%

240 Chambers
519.5 cy Field
388.0 cy Stone



## Hydrograph for Pond 3P: Subsurface Infiltration System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | **0.0** |
| 2.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 4.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 6.00 | 0.0 | 6 | 149.00 | 0.0 | 0.0 | 0.0 |
| 8.00 | 0.0 | 18 | 149.01 | 0.0 | 0.0 | 0.0 |
| 10.00 | 0.1 | 50 | 149.02 | **0.1** | **0.1** | 0.0 |
| 12.00 | **1.2** | **751** | **149.31** | **0.1** | **0.1** | 0.0 |
| 14.00 | **0.1** | **2,260** | **149.72** | 0.1 | 0.1 | 0.0 |
| 16.00 | 0.1 | 1,773 | 149.62 | 0.1 | 0.1 | 0.0 |
| 18.00 | 0.0 | 1,049 | 149.43 | 0.1 | 0.1 | 0.0 |
| 20.00 | 0.0 | 231 | 149.10 | 0.1 | 0.1 | 0.0 |
| 22.00 | 0.0 | 19 | 149.01 | 0.0 | 0.0 | 0.0 |
| 24.00 | 0.0 | 15 | 149.01 | 0.0 | 0.0 | 0.0 |
| 26.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 28.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 30.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 32.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 34.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 36.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 38.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 40.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 42.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 44.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 46.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 48.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 50.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 52.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 54.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 56.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 58.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 60.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 62.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 64.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 66.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 68.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 70.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |
| 72.00 | 0.0 | 0 | 149.00 | 0.0 | 0.0 | 0.0 |

# CDS Unit Sizing Calculations

**Project: Grocery Store at Meadow Walk**
**Location: Sudbury, MA**
**Prepared For: Brittany Gesner, VHB**

**Purpose:** To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1.0" of runoff.

**Reference:** Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

**Given:**

| Structure Name | Impv. (acres) | A ($miles^2$) | $t_c$ (min) | $t_c$ (hr) | WQV (in) |
|---|---|---|---|---|---|
| WQU1 | 0.30 | 0.0004688 | 5.0 | 0.083 | 1.00 |
| WQU2 | 0.70 | 0.0010938 | 5.0 | 0.083 | 1.00 |
| WQU3 | 0.70 | 0.0010938 | 5.0 | 0.083 | 1.00 |
| WQU4 | 1.20 | 0.0018750 | 5.0 | 0.083 | 1.00 |

**Procedure:**

Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the tc, read the unit peak discharge (qu) from Figure 1 or Table in Figure 2. qu is expressed in the following units: cfs/$mi^2$/watershed inches (csm/in).

| Structure Name | qu (csm/in.) |
|---|---|
| WQU1 | 795.00 |
| WQU2 | 795.00 |
| WQU3 | 795.00 |
| WQU4 | 795.00 |

1. Compute Q Rate using the following equation:

$$Q_1 = (qu)\ (A)\ (WQV)$$

where:

$Q_1$ = flow fate associated with first 1.0" of runoff
qu = the unit peak discharge, in csm/in.
A = impervious surface drainage area (in square miles)
WQV = water quality volume in watershed inches (1.0" in this case)

| Structure Name | $Q_1$ (cfs) | $Q_{25}$ (cfs) |
|---|---|---|
| WQU1 | 0.37 | 2 |
| WQU2 | 0.87 | 4 |
| WQU3 | 0.87 | 19.9 |
| WQU4 | 1.49 | 9.3 |

## CDS ESTIMATED NET ANNUAL TSS REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

## GROCERY STORE AT MEADOW WALK
## SUDBURY, MA
## for SYSTEM: WQU-1

| | | | | |
|---|---|---|---|---|
| Area | 0.3 | acres | CDS Model | |
| Weighted C | 0.90 | | 2015-4 | |
| Tc | 5 | minutes | CDS Treatment Capacity | |
| | | | 1.4 | cfs |

| Rainfall Intensity[1] (in/hr) | Percent Rainfall Volume[1] | Cumulative Rainfall Volume | Total Flowrate (cfs) | Treated Flowrate (cfs) | Removal Efficiency (%) | Incremental Removal (%) |
|---|---|---|---|---|---|---|
| 0.02 | 10.2% | 10.2% | 0.01 | 0.01 | 97.0 | 9.9 |
| 0.04 | 9.6% | 19.8% | 0.01 | 0.01 | 96.7 | 9.3 |
| 0.06 | 9.4% | 29.3% | 0.02 | 0.02 | 96.4 | 9.1 |
| 0.08 | 7.7% | 37.0% | 0.02 | 0.02 | 96.2 | 7.4 |
| 0.10 | 8.6% | 45.6% | 0.03 | 0.03 | 95.9 | 8.2 |
| 0.12 | 6.3% | 51.9% | 0.03 | 0.03 | 95.6 | 6.0 |
| 0.14 | 4.7% | 56.5% | 0.04 | 0.04 | 95.4 | 4.4 |
| 0.16 | 4.6% | 61.2% | 0.04 | 0.04 | 95.1 | 4.4 |
| 0.18 | 3.5% | 64.7% | 0.05 | 0.05 | 94.9 | 3.4 |
| 0.20 | 4.3% | 69.1% | 0.05 | 0.05 | 94.6 | 4.1 |
| 0.25 | 8.0% | 77.1% | 0.07 | 0.07 | 93.9 | 7.5 |
| 0.30 | 5.6% | 82.7% | 0.08 | 0.08 | 93.3 | 5.2 |
| 0.35 | 4.4% | 87.0% | 0.09 | 0.09 | 92.6 | 4.0 |
| 0.40 | 2.5% | 89.5% | 0.11 | 0.11 | 92.0 | 2.3 |
| 0.45 | 2.5% | 92.1% | 0.12 | 0.12 | 91.3 | 2.3 |
| 0.50 | 1.4% | 93.5% | 0.14 | 0.14 | 90.6 | 1.3 |
| 0.75 | 5.0% | 98.5% | 0.20 | 0.20 | 87.4 | 4.4 |
| 1.00 | 1.0% | 99.5% | 0.27 | 0.27 | 84.1 | 0.9 |
| 1.50 | 0.0% | 99.5% | 0.41 | 0.41 | 77.5 | 0.0 |
| 2.00 | 0.0% | 99.5% | 0.54 | 0.54 | 70.9 | 0.0 |
| 3.00 | 0.5% | 100.0% | 0.81 | 0.81 | 57.8 | 0.3 |
| | | | | | | 94.5 |
| | | | | | Removal Efficiency Adjustment[2] = | 6.5% |
| | | | | | Predicted % Annual Rainfall Treated = | 93.5% |
| | | | | | **Predicted Net Annual Load Removal Efficiency =** | **88.1%** |

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

## CDS ESTIMATED NET ANNUAL TSS REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

## GROCERY STORE AT MEADOW WALK
## SUDBURY, MA
## for SYSTEM: WQU-2

| | | | | |
|---|---|---|---|---|
| Area | 0.7 | acres | CDS Model | |
| Weighted C | 0.90 | | 2015-4 | |
| Tc | 5 | minutes | CDS Treatment Capacity | |
| | | | 1.4 | cfs |

| Rainfall Intensity[1] (in/hr) | Percent Rainfall Volume[1] | Cumulative Rainfall Volume | Total Flowrate (cfs) | Treated Flowrate (cfs) | Removal Efficiency (%) | Incremental Removal (%) |
|---|---|---|---|---|---|---|
| 0.02 | 10.2% | 10.2% | 0.01 | 0.01 | 96.6 | 9.8 |
| 0.04 | 9.6% | 19.8% | 0.03 | 0.03 | 96.0 | 9.3 |
| 0.06 | 9.4% | 29.3% | 0.04 | 0.04 | 95.4 | 9.0 |
| 0.08 | 7.7% | 37.0% | 0.05 | 0.05 | 94.8 | 7.3 |
| 0.10 | 8.6% | 45.6% | 0.06 | 0.06 | 94.2 | 8.1 |
| 0.12 | 6.3% | 51.9% | 0.08 | 0.08 | 93.5 | 5.9 |
| 0.14 | 4.7% | 56.5% | 0.09 | 0.09 | 92.9 | 4.3 |
| 0.16 | 4.6% | 61.2% | 0.10 | 0.10 | 92.3 | 4.3 |
| 0.18 | 3.5% | 64.7% | 0.11 | 0.11 | 91.7 | 3.2 |
| 0.20 | 4.3% | 69.1% | 0.13 | 0.13 | 91.1 | 4.0 |
| 0.25 | 8.0% | 77.1% | 0.16 | 0.16 | 89.6 | 7.2 |
| 0.30 | 5.6% | 82.7% | 0.19 | 0.19 | 88.0 | 4.9 |
| 0.35 | 4.4% | 87.0% | 0.22 | 0.22 | 86.5 | 3.8 |
| 0.40 | 2.5% | 89.5% | 0.25 | 0.25 | 85.0 | 2.2 |
| 0.45 | 2.5% | 92.1% | 0.28 | 0.28 | 83.4 | 2.1 |
| 0.50 | 1.4% | 93.5% | 0.32 | 0.32 | 81.9 | 1.1 |
| 0.75 | 5.0% | 98.5% | 0.47 | 0.47 | 74.2 | 3.7 |
| 1.00 | 1.0% | 99.5% | 0.63 | 0.63 | 66.6 | 0.7 |
| 1.50 | 0.0% | 99.5% | 0.95 | 0.95 | 51.2 | 0.0 |
| 2.00 | 0.0% | 99.5% | 1.26 | 1.26 | 35.9 | 0.0 |
| 3.00 | 0.5% | 100.0% | 1.89 | 1.40 | 21.6 | 0.1 |
| | | | | | | 91.0 |
| | | | | | Removal Efficiency Adjustment[2] = | 6.5% |
| | | | | | Predicted % Annual Rainfall Treated = | 93.4% |
| | | | | | **Predicted Net Annual Load Removal Efficiency =** | **84.5%** |

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

## CDS ESTIMATED NET ANNUAL TSS REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

## GROCERY STORE AT MEADOW WALK
## SUDBURY, MA
## for SYSTEM: WQU-3

| | | | | |
|---|---|---|---|---|
| Area | 0.7 | acres | CDS Model | |
| Weighted C | 0.90 | | 2015-5 | |
| Tc | 5 | minutes | CDS Treatment Capacity | |
| | | | 1.4 | cfs |

| Rainfall Intensity[1] (in/hr) | Percent Rainfall Volume[1] | Cumulative Rainfall Volume | Total Flowrate (cfs) | Treated Flowrate (cfs) | Removal Efficiency (%) | Incremental Removal (%) |
|---|---|---|---|---|---|---|
| 0.02 | 10.2% | 10.2% | 0.01 | 0.01 | 96.6 | 9.8 |
| 0.04 | 9.6% | 19.8% | 0.03 | 0.03 | 96.0 | 9.3 |
| 0.06 | 9.4% | 29.3% | 0.04 | 0.04 | 95.4 | 9.0 |
| 0.08 | 7.7% | 37.0% | 0.05 | 0.05 | 94.8 | 7.3 |
| 0.10 | 8.6% | 45.6% | 0.06 | 0.06 | 94.2 | 8.1 |
| 0.12 | 6.3% | 51.9% | 0.08 | 0.08 | 93.5 | 5.9 |
| 0.14 | 4.7% | 56.5% | 0.09 | 0.09 | 92.9 | 4.3 |
| 0.16 | 4.6% | 61.2% | 0.10 | 0.10 | 92.3 | 4.3 |
| 0.18 | 3.5% | 64.7% | 0.11 | 0.11 | 91.7 | 3.2 |
| 0.20 | 4.3% | 69.1% | 0.13 | 0.13 | 91.1 | 4.0 |
| 0.25 | 8.0% | 77.1% | 0.16 | 0.16 | 89.6 | 7.2 |
| 0.30 | 5.6% | 82.7% | 0.19 | 0.19 | 88.0 | 4.9 |
| 0.35 | 4.4% | 87.0% | 0.22 | 0.22 | 86.5 | 3.8 |
| 0.40 | 2.5% | 89.5% | 0.25 | 0.25 | 85.0 | 2.2 |
| 0.45 | 2.5% | 92.1% | 0.28 | 0.28 | 83.4 | 2.1 |
| 0.50 | 1.4% | 93.5% | 0.32 | 0.32 | 81.9 | 1.1 |
| 0.75 | 5.0% | 98.5% | 0.47 | 0.47 | 74.2 | 3.7 |
| 1.00 | 1.0% | 99.5% | 0.63 | 0.63 | 66.6 | 0.7 |
| 1.50 | 0.0% | 99.5% | 0.95 | 0.95 | 51.2 | 0.0 |
| 2.00 | 0.0% | 99.5% | 1.26 | 1.26 | 35.9 | 0.0 |
| 3.00 | 0.5% | 100.0% | 1.89 | 1.40 | 21.6 | 0.1 |
| | | | | | | 91.0 |

| | |
|---|---|
| Removal Efficiency Adjustment[2] = | 6.5% |
| Predicted % Annual Rainfall Treated = | 93.4% |
| **Predicted Net Annual Load Removal Efficiency =** | **84.5%** |

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

## CDS ESTIMATED NET ANNUAL TSS REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

## GROCERY STORE AT MEADOW WALK
## SUDBURY, MA
## for SYSTEM: WQU-4

| | | | | |
|---|---|---|---|---|
| Area | 1.2 | acres | CDS Model | |
| Weighted C | 0.90 | | 2020-5 | |
| Tc | 5 | minutes | CDS Treatment Capacity | |
| | | | 2.2 | cfs |

| Rainfall Intensity[1] (in/hr) | Percent Rainfall Volume[1] | Cumulative Rainfall Volume | Total Flowrate (cfs) | Treated Flowrate (cfs) | Removal Efficiency (%) | Incremental Removal (%) |
|---|---|---|---|---|---|---|
| 0.02 | 10.2% | 10.2% | 0.02 | 0.02 | 96.5 | 9.8 |
| 0.04 | 9.6% | 19.8% | 0.04 | 0.04 | 95.9 | 9.3 |
| 0.06 | 9.4% | 29.3% | 0.06 | 0.06 | 95.2 | 9.0 |
| 0.08 | 7.7% | 37.0% | 0.09 | 0.09 | 94.5 | 7.3 |
| 0.10 | 8.6% | 45.6% | 0.11 | 0.11 | 93.9 | 8.0 |
| 0.12 | 6.3% | 51.9% | 0.13 | 0.13 | 93.2 | 5.9 |
| 0.14 | 4.7% | 56.5% | 0.15 | 0.15 | 92.5 | 4.3 |
| 0.16 | 4.6% | 61.2% | 0.17 | 0.17 | 91.9 | 4.3 |
| 0.18 | 3.5% | 64.7% | 0.19 | 0.19 | 91.2 | 3.2 |
| 0.20 | 4.3% | 69.1% | 0.22 | 0.22 | 90.5 | 3.9 |
| 0.25 | 8.0% | 77.1% | 0.27 | 0.27 | 88.9 | 7.1 |
| 0.30 | 5.6% | 82.7% | 0.32 | 0.32 | 87.2 | 4.9 |
| 0.35 | 4.4% | 87.0% | 0.38 | 0.38 | 85.5 | 3.7 |
| 0.40 | 2.5% | 89.5% | 0.43 | 0.43 | 83.8 | 2.1 |
| 0.45 | 2.5% | 92.1% | 0.49 | 0.49 | 82.2 | 2.1 |
| 0.50 | 1.4% | 93.5% | 0.54 | 0.54 | 80.5 | 1.1 |
| 0.75 | 5.0% | 98.5% | 0.81 | 0.81 | 72.1 | 3.6 |
| 1.00 | 1.0% | 99.5% | 1.08 | 1.08 | 63.8 | 0.6 |
| 1.50 | 0.0% | 99.5% | 1.62 | 1.62 | 47.1 | 0.0 |
| 2.00 | 0.0% | 99.5% | 2.16 | 2.16 | 30.3 | 0.0 |
| 3.00 | 0.5% | 100.0% | 3.24 | 2.20 | 19.8 | 0.1 |
| | | | | | | 90.4 |
| | | | | | Removal Efficiency Adjustment[2] = | 6.5% |
| | | | | | Predicted % Annual Rainfall Treated = | 93.4% |
| | | | | | **Predicted Net Annual Load Removal Efficiency =** | **84.0%** |

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

# CDS Unit Sizing Calculations
## (Alternate Design if Subsurface Infiltration System is Infeasible)

**Project: Grocery Store at Meadow Walk**
**Location: Sudbury, MA**
**Prepared For: Brittany Gesner, VHB**

**Purpose:** To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1.0" of runoff.

**Reference:** Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

**Given:**

| Structure Name | Impv. (acres) | A ($miles^2$) | $t_c$ (min) | $t_c$ (hr) | WQV (in) |
|---|---|---|---|---|---|
| WQU1 | 0.30 | 0.0004688 | 5.0 | 0.083 | 1.00 |
| WQU2 | 0.70 | 0.0010938 | 5.0 | 0.083 | 1.00 |
| WQU3 | 2.70 | 0.0042188 | 5.0 | 0.083 | 1.00 |
| WQU4 | 1.20 | 0.0018750 | 5.0 | 0.083 | 1.00 |

ALTERNATE WQU#3 SIZING IF INFILTRATION SYSTEM IS INFEASIBLE / ELIMINATED

**Procedure:**

Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the tc, read the unit peak discharge (qu) from Figure 1 or Table in Figure 2. qu is expressed in the following units: cfs/$mi^2$/watershed inches (csm/in).

| Structure Name | qu (csm/in.) |
|---|---|
| WQU1 | 795.00 |
| WQU2 | 795.00 |
| WQU3 | 795.00 |
| WQU4 | 795.00 |

1. Compute Q Rate using the following equation:

$$Q_1 = (qu)\ (A)\ (WQV)$$

where:

$Q_1$ = flow fate associated with first 1.0" of runoff
qu = the unit peak discharge, in csm/in.
A = impervious surface drainage area (in square miles)
WQV = water quality volume in watershed inches (1.0" in this case)

| Structure Name | $Q_1$ (cfs) | $Q_{25}$ (cfs) |
|---|---|---|
| WQU1 | 0.37 | 2 |
| WQU2 | 0.87 | 4 |
| WQU3 | 3.35 | 19.9 |
| WQU4 | 1.49 | 9.3 |

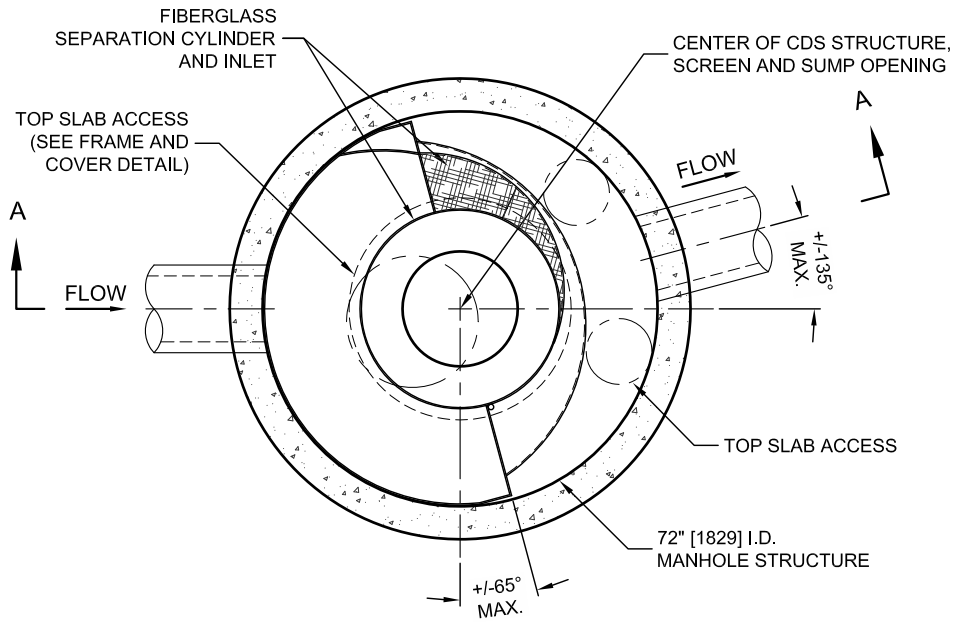
## CDS ESTIMATED NET ANNUAL TSS REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

## GROCERY STORE AT MEADOW WALK
## SUDBURY, MA
## for SYSTEM: WQU-3

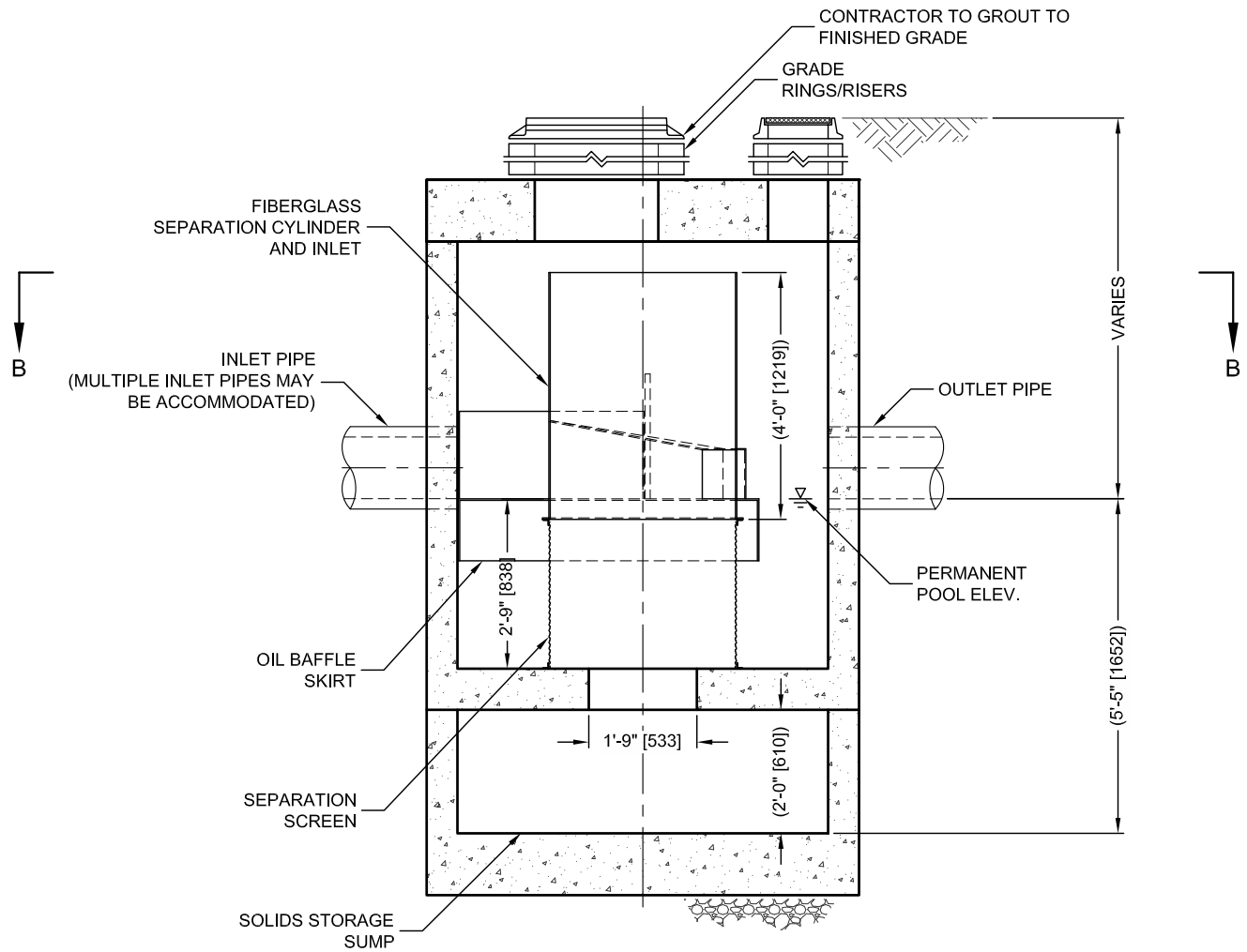
| | | | | |
|---|---|---|---|---|
| Area | 2.7 | acres | CDS Model | |
| Weighted C | 0.90 | | 3020-6 | |
| Tc | 5 | minutes | CDS Treatment Capacity | |
| | | | 3.9 | cfs |

| Rainfall Intensity[1] (in/hr) | Percent Rainfall Volume[1] | Cumulative Rainfall Volume | Total Flowrate (cfs) | Treated Flowrate (cfs) | Removal Efficiency (%) | Incremental Removal (%) |
|---|---|---|---|---|---|---|
| 0.02 | 10.2% | 10.2% | 0.05 | 0.05 | 96.4 | 9.8 |
| 0.04 | 9.6% | 19.8% | 0.10 | 0.10 | 95.6 | 9.2 |
| 0.06 | 9.4% | 29.3% | 0.15 | 0.15 | 94.7 | 8.9 |
| 0.08 | 7.7% | 37.0% | 0.19 | 0.19 | 93.9 | 7.3 |
| 0.10 | 8.6% | 45.6% | 0.24 | 0.24 | 93.1 | 8.0 |
| 0.12 | 6.3% | 51.9% | 0.29 | 0.29 | 92.3 | 5.8 |
| 0.14 | 4.7% | 56.5% | 0.34 | 0.34 | 91.4 | 4.3 |
| 0.16 | 4.6% | 61.2% | 0.39 | 0.39 | 90.6 | 4.2 |
| 0.18 | 3.5% | 64.7% | 0.44 | 0.44 | 89.8 | 3.2 |
| 0.20 | 4.3% | 69.1% | 0.49 | 0.49 | 88.9 | 3.9 |
| 0.25 | 8.0% | 77.1% | 0.61 | 0.61 | 86.9 | 6.9 |
| 0.30 | 5.6% | 82.7% | 0.73 | 0.73 | 84.8 | 4.7 |
| 0.35 | 4.4% | 87.0% | 0.85 | 0.85 | 82.7 | 3.6 |
| 0.40 | 2.5% | 89.5% | 0.97 | 0.97 | 80.7 | 2.0 |
| 0.45 | 2.5% | 92.1% | 1.09 | 1.09 | 78.6 | 2.0 |
| 0.50 | 1.4% | 93.5% | 1.22 | 1.22 | 76.5 | 1.1 |
| 0.75 | 5.0% | 98.5% | 1.82 | 1.82 | 66.2 | 3.3 |
| 1.00 | 1.0% | 99.5% | 2.43 | 2.43 | 55.8 | 0.6 |
| 1.50 | 0.0% | 99.5% | 3.65 | 3.65 | 35.1 | 0.0 |
| 2.00 | 0.0% | 99.5% | 4.86 | 3.90 | 24.7 | 0.0 |
| 3.00 | 0.5% | 100.0% | 7.29 | 3.90 | 16.5 | 0.1 |
| | | | | | | 88.9 |
| | | | | | Removal Efficiency Adjustment[2] = | 6.5% |
| | | | | | Predicted % Annual Rainfall Treated = | 93.3% |
| | | | | | **Predicted Net Annual Load Removal Efficiency =** | **82.5%** |

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.




## PLAN VIEW B-B
N.T.S.




## ELEVATION A-A
N.T.S.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,782; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

## CDS3020-6-C DESIGN NOTES

CDS3020-6-C RATED TREATMENT CAPACITY IS 3.9 CFS, OR PER LOCAL REGULATIONS.

THE STANDARD CDS3020-6-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

| CONFIGURATION DESCRIPTION |
|---|
| GRATED INLET ONLY (NO INLET PIPE) |
| GRATED INLET WITH INLET PIPE OR PIPES |
| CURB INLET ONLY (NO INLET PIPE) |
| CURB INLET WITH INLET PIPE OR PIPES |
| SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION) |
| SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS |


## FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

## SITE SPECIFIC DATA REQUIREMENTS

| | |
|---|---|
| STRUCTURE ID | |
| WATER QUALITY FLOW RATE (CFS OR L/s) | * |
| PEAK FLOW RATE (CFS OR L/s) | * |
| RETURN PERIOD OF PEAK FLOW (YRS) | * |
| SCREEN APERTURE (2400 OR 4700) | * |

| PIPE DATA: | I.E. | MATERIAL | DIAMETER |
|---|---|---|---|
| INLET PIPE 1 | * | * | * |
| INLET PIPE 2 | * | * | * |
| OUTLET PIPE | * | * | * |

| | |
|---|---|
| RIM ELEVATION | * |

| ANTI-FLOTATION BALLAST | WIDTH | HEIGHT |
|---|---|---|
| | * | * |

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH CONSTRUCTION PRODUCTS REPRESENTATIVE. www.contech-cpi.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH®
CONSTRUCTION PRODUCTS INC.
www.contech-cpi.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

# CDS3020-6-C
# INLINE CDS
# STANDARD DETAIL

# MASTEP CDS Report

## Test Report Details

Back to Summary Page | Back to Profile

**CDS Inline Unit :: A product from CONTECH STORMWATER SOLUTIONS, INC. ::**

**General Information:**

This report describes a laboratory study that evaluated the performance of a CDS model PMSU20_20_6 with a special configuration, involving an enlarged pipe diameter and a sediment weir. This is an inverted oil baffle that extends several inches above the outlet invert. This reconfigured unit is sold in NJ and NY. Anyone considering this unit with expectations of sediment removal performance comparable to this study should ensure that a unit with the sediment weir, and with a 2400 micron screen is obtained. A 4700 screen is also available – solids removal would be adversely affected with the larger mesh screen. A particularly fine sediment mix (Sil-Col-Sil 106, pre-washed to remove all particles > 100 microns), which created rigorous testing conditions for sediment removal. It tested a rather narrow range of influent sediment concentration (164 – 203 mg/l, average 184), but this is within the NJDEP-recommended 100-300 mg/l range. For the most part, the study tested NJ-recommended operating rates; except that no tests at 125% operating rate were conducted. 0% credit for sediment removal at this rate was given when calculating the overall performance of 73.7% removal. The report states that this figure may be conservative because of the 0% credit at 125% operating rate. However, this assertion cannot be substantiated, because no scour tests were conducted. No discussion of quality control. MASTEP Rating 3: This study has some scientific merit. Significant caveats exist regarding use of the study information.

| Report title | Author | Agency conducting study | Funding source for study |
|---|---|---|---|
| NJCAT Technology Verification Addendum Report High Efficiency Continuous Deflective Separators | - | Portland State U, for NJCAT | - |

| Report date | Date system installed | Study start date | Study end date |
|---|---|---|---|
| 12/01/2004 | - | - | - |

| Name, location of test site | Watershed where test site exists | % impervious surface in test watershed | Size of BMP drainage area (acres) |
|---|---|---|---|
| - | - | - | - |

**Performance claims statement used for this study:**

A 500 GPM unit (Model PMSU20_20_5) with a 2400 micron screen opening and a reconfigured outlet for best sediment control, operating with an average influent TSS concentration of 184 mg/L and zero initial sediment loading, has been shown to have a total mass TSS removal efficiency of 73.7% (per NJDEP treatment efficiency calculation methodology) for silica sand particles < 100 microns (d50 particle size of 63 microns) in laboratory studies using simulated stormwater.

**Rating /Verification given by agency conducting study:**

Based on the evaluation of the results from the Portland State University sub-100 micron particle testing studies, sufficient data is available to support the CDS Technologies Claim: A 500 GPM unit (Model PMSU20_20_5) with a 2400 micron screen opening and a reconfigured outlet for best sediment control, operating with an average influent TSS concentration of 184mg/l and zero initial sediment loading, has been shown to have a total mass TSS removal efficiency of 73.7% (per NJDEP treatment efficiency calculation methodology) for silica sand particles <100 microns (d50 particle size of 63 microns) in laboratory studies using simulated stormwater.

| Average annual number of storms in test watershed | Average annual rainfall at test site (inches) | Average monthly rainfall during test period (inches) |
|---|---|---|
| - | - | - |

| % of total annual rainfall monitored during study | Number of storms that occurred during study period | Number of storm events that were monitored during the study |
|---|---|---|

| | | |
|---|---|---|
| - | - | - |

| Dates, precipitation amounts of storm events occurring during study | Dates of storm events that were monitored during study |
|---|---|
| - | - |

| Qualifying event minimum storm depth (inches) | Maximum event recurrence interval (years) | Was bypass monitored? |
|---|---|---|
| - | - | No |

| Type of samples collected | Parameters measured | Analytical methods used | Statistical methods used | Pollution removal efficiency calculation methods |
|---|---|---|---|---|
| - | - | - | - | 9 |

Return to the Home Page

# Appendix C
# Stormwater Management System Operation and Maintenance Manual

# Phase 1 Meadow Walk at Sudbury: Grocery Store

## Sudbury, Massachusetts

PREPARED FOR

BPR Development LLC
c/o National Development
2310 Washington Street
Newton Lower Falls, MA 02462

PREPARED BY

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

Issued: March 2016
Revised: April 2016

# Table of Contents

## Operations & Maintenance Manual Introduction

This Stormwater Management Operations and Maintenance Manual (O&M Manual) has been prepared to support the first phase of the multi-phase "Meadow Walk at Sudbury" development. The first phase of development includes a proposed grocery store and associated parking areas. Existing paved parking areas in the northern portion of the site will remain in place until future phases of redevelopment on the site are constructed. This O&M Manual incorporates stormwater management features both proposed as part of the first phase of redevelopment and existing stormwater management features which are to remain. This O&M Manual reflects the requirements incorporated for the site in the "Operations and Maintenance Plan" dated July 20, 2012 prepared by Paul Finger Associates, approved as part of the Order of Conditions MassDEP File #301-1083 issued on August 21, 2012.

## Project Information

### Site

Grocery Store at Meadow Walk Sudbury
526-528 Boston Post Road
Sudbury, Massachusetts

### Developer

BPR Development LLC
c/o National Development
2310 Washington Street
Newton Lower Falls, MA 02462

### Site Supervisor

TBD

### Site Contact

Name: _____

Telephone: _____

Cell phone: _____

Email: _____

# Section A - Source Control

## A. Source Control

A comprehensive source control program will be implemented at The Site, which includes the following components:

- Regular pavement sweeping
- Catch basin cleaning
- Clearing litter from the parking area, islands, and perimeter landscape areas
- Enclosure and regular maintenance of all dumpsters
- Spill Prevention training

# Section B - Spill Prevention

## B. Spill Prevention

Spill prevention equipment and training will be provided by the property management company.

### B.1 Initial Notification

In the event of a spill the facility and/or construction manager or supervisor will be notified immediately.

Facility Manager (name): _____

Facility Manager (phone): _____

Construction Manager (name) : _____

Construction Manager (phone): _____

The supervisor will first contact the Fire Department and then notify the Police Department, the Public Health Commission and the Conservation Commission. The Fire Department is ultimately responsible for matters of public health and safety and should be notified immediately.

### B.2 Further Notification

Based on the assessment from the Fire Chief, additional notification to a cleanup contractor may be made. The Massachusetts Department of Environmental Protection (DEP) and the EPA may be notified depending upon the nature and severity of the spill. The Fire Chief will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the main construction/facility office and readily accessible to all employees. A hazardous waste spill report shall be completed as necessary using the attached form.

## Emergency Notification Phone Numbers

| | | |
|---|---|---|
| 1. | FACILITY MANAGER<br>NAME: _____<br><br>ALTERNATE CONTACT:<br>NAME: _____ | PHONE: _____<br>BEEPER/CELL: _____, _____<br>HOME PHONE: _____<br><br>PHONE: _____<br>BEEPER/CELL: _____, _____<br>HOME PHONE: _____ |
| 2. | FIRE & POLICE DEPARTMENT | EMERGENCY: **911** |
| 3. | CLEANUP CONTRACTOR:<br>_____<br>ADDRESS:<br>_____<br>_____ | PHONE: _____ |
| 4. | MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) | EMERGENCY PHONE: **(888) 304-1133** |
| 5. | NATIONAL RESPONSE CENTER<br><br>ALTERNATE: U.S. ENVIRONMENTAL PROTECTION AGENCY | PHONE: (800) 424-8802<br><br>EMERGENCY: (800) 424-8802<br>BUSINESS: (888) 372-7341 |
| 6. | SUDBURY HEALTH DEPARTMENT | PHONE: (978) 440-5479 |
| SUDBURY CONSERVATION COMMISSION: | | PHONE: (978) 440-5471 |

## Hazardous Waste / Oil Spill Report

Date: ____/____/_____ Time: _____ AM / PM

Exact location _____

Type of equipment:_____ Make:_____ Size:_____

License or S/N:_____ Weather Conditions:_____

On or near water · Yes If yes, name of body of water:_____

· No

Type of chemical / oil spilled: _____

Amount of chemical / oil spilled: _____

Cause of spill: _____

_____

Measures taken to contain or clean up spill: _____

_____

_____

Amount of chemical / oil recovered: _____ Method:_____

Material collected as a result of clean up

_____ drums containing: _____

_____ drums containing: _____

_____ drums containing: _____

Location and method of debris disposal:_____

Name and address of any person, firm, or corporation suffering damages:_____

_____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring: :_____

_____

Spill reported to General Office by:_____Time: _____AM / PM

Spill reported to DEP / National Response Center by:_____

DEP Date: ____/_____/_____ Time:_____AM / PM Inspector:_____

NRC Date: ____/_____/_____ Time:_____AM / PM Inspector: _____

Additional comments: _____

_____

## B.3 Assessment - Initial Containment

The supervisor or manager will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. A list of recommended spill equipment to be kept on site is included on the following page.

| | |
|---|---|
| **Fire / Police Department:** | **911** |
| **Sudbury Health Department:** | **(978) 440-5479** |
| **Sudbury Conservation Commission:** | **(978) 440-5471** |

## Emergency Response Equipment

The following equipment and materials shall be maintained at all times and stored in a secure area for long-term emergency response need.

| Supplies | | Recommended Suppliers |
|---|---|---|
| ➢ SORBENT PILLOWS/"PIGS" | **2** | http://www.newpig.com |
| ➢ SORBENT BOOM/SOCK | **25 FEET** | Item # KIT276 — mobile container with two pigs, 26 |
| ➢ SORBENT PADS | **50** | feet of sock, 50 pads, and five pounds of absorbent |
| ➢ LITE-DRI® ABSORBENT | **5 POUNDS** | (or equivalent) |
| ➢ SHOVEL | **1** | http://www.forestry-suppliers.com |
| ➢ PRY BAR | **1** | Item # 43210 — Manhole cover pick (or equivalent) |
| ➢ GOGGLES | **1 PAIR** | Item # 33934 — Shovel (or equivalent) |
| ➢ GLOVES – HEAVY | **1 PAIR** | Item # 90926 — Gloves (or equivalent) |
| | | Item # 23334 — Goggles (or equivalent) |

# Section C - Snow Management

## C. Snow Management

Snow storage areas are shown on Figure B-1 included herein.

- Snow storage areas will be managed to prevent blockage of storm drain catch basins, stormwater drainage channels, and on-street parking. Snow combined with sand and debris may block a storm drainage system, diminishing the infiltration capacity of the system and causing localized flooding.
- Sand and debris deposited on vegetated or paved areas shall be cleared from the site and properly disposed of at the end of the snow season, no later than May 15.
- Snow shall not be dumped into any waterbody, pond, or wetland resource area. All sand shall be removed from the top of bank and on the banks of all wetlands immediately following spring snow melt each year.
- Only calcium or magnesium-based de-icing chemicals shall be used on surfaces where runoff/drainage will discharge into any wetland resources, or the 100' adjacent upland resource area.

# Section D - Maintenance of Stormwater Management Systems

# Maintenance of Stormwater Management Systems

## D.1 Pavement Systems

### D.1.1 Standard Asphalt Pavement

- Sweep or vacuum standard asphalt pavement areas at least two times per year with a rotary brush sweeper and properly dispose of removed material.
- Recommended sweeping schedule:
  - Oct/Nov
  - Apr/May
  - More frequent sweeping of paved surfaces will result in less accumulation in catch basins, less cleaning of subsurface structures, and less disposal costs.
- Check loading docks and dumpster areas frequently for spillage and/or pavement staining and clean as necessary.
- No coal-tar, petroleum-based, or other parking lot "sealants" are permitted to be used on-site. Normal maintenance activities intended to extend the life expectancy of the pavement surfaces including the use of bitumen asphalt to seal developing cracks, asphalt repair are not subject to this special condition.

## D.2 Structural Stormwater Management Devices

### D.2.1 Catch Basins and Trench Drains

The proper removal of sediments and associated pollutants and trash occurs only when catch basin inlets and sumps and trench drains are cleaned out regularly. The more frequent the cleaning, the less likely sediments will be re-suspended and subsequently discharged. In addition, frequent cleaning also results in more volume available for future deposition and enhances the overall performance. As noted in the pavement Operation and Maintenance (O&M) section, more frequent sweeping of paved surfaces will result in less accumulation in catch basins, less cleaning of subsurface structures, and less disposal costs.

Catch basins installed as part of Phase 1 are constructed with sumps (minimum 4 feet) and hooded outlets to trap debris, sediments, and floating contaminants. Disposal of sediments from all catch basins must be in accordance with applicable local, state, and federal guidelines. Catch basin and trench drain locations are shown on Figure A-1 included herein.

**Inspections and Cleaning**

- Catch basins with hoods shall be cleaned and inspected according to manufacturer recommendations.
- All catch basins shall be inspected at least four times per year and cleaned a minimum of at least once per year.
- Sediment (if more than six inches deep) and/or floatable pollutants shall be pumped from the basin and disposed of at an approved offsite facility in accordance with all applicable regulations.
- Any structural damage or other indication of malfunction will be reported to the site manager and repaired as necessary
- During colder periods, the catch basin grates must be kept free of snow and ice.
- During warmer periods, the catch basin grates must be kept free of leaves, litter, sand, and debris.

### D.2.2 Structural Water Quality Devices

The stormwater drainage system includes structural water quality devices. They are Contech CDS units, which efficiently remove sediment and hydrocarbons from stormwater runoff. The locations of the water quality devices are shown on Figure A-1 included herein.

- Inspect devices monthly for the first three months after construction.
- After initial three month period, all water quality units are to be inspected at least four times per year and cleaned a minimum of at least once per year or when sediment reaches 75% of the sump depth (18"), whichever occurs sooner.
- Remove oil and sediment through manhole access cover.
- Follow manufacturer instructions and contact manufacturer if system is malfunctioning. Manufacturer's inspection and maintenance instructions are included in Section F - Project Literature.

### D.2.3 Subsurface Infiltration Basins

The subsurface infiltration/detention basins are used to detain and infiltrate roadway and rooftop runoff. The Project proposes to install Stormtech subsurface infiltration chambers comprised of SC-310-sized chambers. The subsurface basin has a water quality pre-treatment device in the form of a sediment removal row to protect the infiltration bed from clogging. The sediment removal row is an integral part of the underground infiltration system. The location of the subsurface infiltration system is shown on Figure A-1 included herein.

**Inspections and Cleaning**

- The subsurface infiltration system will be inspected at least once each year by removing the manhole/access port covers and determining the thickness of sediment that has accumulated in the sediment removal row.

- If sediment is more than six inches deep, it must be suspended via flushing with clean water and removed using a vactor truck.
- Manufacturer's specifications and instructions for cleaning the sediment removal row are provided in Section G – Project Literature.
- Emergency overflow pipes will be examined at least once each year and verified that no blockage has occurred.
- System will be observed after rainfalls to see if it is properly draining.

### D.2.4 Stormwater Outfalls, Filter Berms and Sediment Forebays

The stormwater drainage system contains many outfall locations, where treated stormwater is discharged to surface wetlands or existing drainage pipes. Outfall locations are shown on Figure A-1 included herein.

- Inspect outfall locations monthly for the first three months after construction to ensure proper functioning and correct any areas that have settled or experienced washouts.
- Inspect outfalls annually after initial three month period.
- At a minimum, inspect sediment forebays quarterly and clean them out annually. When mowing grasses, keep the grass height no greater than 6-inches. Set mower blades no lower than 3 to 4 inches. Annual inspections should be supplemented after large storms, when washouts may occur.
- Maintain vegetation around outfalls to prevent blockages at the outfall.
- Maintain rip rap pad below each outfall and replace any washouts.
- Remove and dispose of any trash or debris at the outfall.
- Replace vegetation damaged during the clean-out by either reseeding or resodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure no scour occurs in the forebay, while the seeds germinate and develop roots

### D.2.5 Drywells

Drywells on site are used to infiltrate clean runoff.

**Inspections and Cleaning**

- Inspect after every major storm in the first few months
- Inspect and clean annually thereafter.
- Sediment (if more than six inches deep) and/or floatable pollutants shall be pumped from the basin and disposed of at an approved offsite facility in accordance with all applicable regulations.

### D.2.6 Roof Drain Leaders

Roof runoff from the grocery store is directed to the closed drainage system via roof drain leaders.

**Inspections and Cleaning**

- Perform routine roof inspections quarterly.
- Keep roofs clean and free of debris.
- Keep roof drainage systems clear.
- Keep roof access limited to authorized personnel.
- Clean inlets twice per year.

## D.3 Vegetated Stormwater Management Devices

### D.3.1 Vegetated Channels

The vegetated channels proposed as part of this grocery store project are designed to treat and capture runoff. Each channel has a catch basin at the end, connecting it to the subsurface drainage system. Vegetated channel locations are shown on Figure A-1 included herein.

Vegetated channels require routine maintenance (similar to conventional landscaping maintenance) to ensure that the system functions well as a stormwater management practice while also maintaining an aesthetic quality compatible with the surrounding land uses.

**Initial Post-Construction Inspection**

- During the initial period of vegetation establishment pruning and weeding are required twice in first year by contractor.
- Any dead vegetation found after the first year must be replaced.
- Re-seed bare areas; install appropriate erosion control measures when native soil is exposed or erosion channels are forming.

**Long-Term Maintenance**

- Weeds and invasive plant species shall be removed by hand.
- Leaf litter and other detritus shall be removed twice per year.
- If needed to maintain aesthetic appearance, perennial plantings may be trimmed at the end of the growing season.
- The grass vegetation should be cut to a height between three and four inches; Remove grass clippings to encourage healthy growth, and filtering and infiltration of stormwater.
- Trees and shrubs should be inspected twice per year to evaluate health and attended to as necessary.

- Fertilizers should not be used in the vegetated channels, as excessive nutrients in the topsoil may migrate to the subsoil and be discharged to adjacent surface waters.

**Inspections and Cleaning**

- Vegetated channels shall be inspected twice during for the first year and annually thereafter for sediment buildup, erosion, vegetative conditions, etc. If sediment build-up is found, core aeration or cultivating of un-vegetated areas may be required to ensure adequate filtration.
- The inflow location should be inspected annually for clogging. Sediment build up is a common problem where runoff leaves an impervious surface and enters a vegetative or earthen surface. Any built-up sediment should be removed to prevent runoff from bypassing the facility.
- The overflow structure should be inspected annually to ensure that it is properly functioning.
- Inspect vegetated channels after a large storm event to ensure that proper drainage is occurring. Water that remains ponded on the surface of the channel after 72 hours of dry weather could indicate a problem with the infiltrative/conveyance capacity of the channel, and maintenance should be scheduled.

### D.3.2 Vegetated Drainage System

The Retention Basin (Constructed Stormwater Wetland) shall be inspected annually. All sediment and debris shall be removed and disposed according to local, state, and federal regulations.

- Inspect planted areas on a semi-annual basis and remove any litter.
- Regular maintenance includes mowing of channels at least once per year (keeping the grass no shorter than 3 to 4 inches and no larger than 6-inches.
- Vegetated drainage systems shall be inspected at regular intervals and record specific information:
    - Notable changes in general extent of standing water
    - Stability of embankments, channels, and outfall areas
    - Accumulation of sediment

### D.3.3 Vegetated Areas Maintenance

Although not a structural component of the drainage system, the maintenance of vegetated areas may affect the functioning of the stormwater management system. This includes the health/density of vegetative cover and activities such as the application and disposal of lawn and garden care products, disposal of leaves and yard trimmings and proper aeration of soils.

- Inspect planted areas on a semi-annual basis and remove any litter.
- Maintain planted areas adjacent to pavement to prevent soil washout.
- Immediately clean any soil deposited on pavement.
- Re-seed bare areas; install appropriate erosion control measures when native soil is exposed or erosion channels are forming.
- Plant alternative mixture of grass species in the event of unsuccessful establishment.
- The grass vegetation should be cut to a height between three and four inches.
- Pesticide/Herbicide Usage – No pesticides are to be used unless a single spot treatment is required for a specific control application.
- No pesticides or herbicides are allowed within the 100' adjacent upland resource area property without prior approval of the Conservation Commission.
- Fertilizer usage should be avoided. If deemed necessary, fertilizer may only be of the low nitrogen and phosphorous variety. Fertilizer may be used to begin the establishment of vegetation in bare or damaged areas, but should not be applied on a regular basis unless necessary.
- Fertilizer applications shall be limited to the spring and early fall, and applied per the manufacturers' specifications. Nitrogen content shall not exceed 25% with ratios for Nitrogen, Phosphorus, and Potassium at 3-1-2 or 3-1-1. It is also recommended at least 30%-50% of total nitrogen be slow release.
- Annual application of compost amendments and aeration are recommended.

# Section E - Operations and Maintenance Summary

# Operations & Maintenance Plan Summary

This Operation and Maintenance Plan has been prepared in accordance with the Stormwater Management Policy developed by the DEP and local regulations. It specifies operational practices and drainage system maintenance requirements for the Grocery Store at Meadow Walk Sudbury as part of the Mixed-Use Redevelopment. Requirements should be adjusted by the site manager as necessary to ensure successful functioning of system components.

## E.1 Routine Maintenance Checklists

Routine required maintenance is described in Sections A – D. The following checklists are to be used by the property manager to implement and document the required maintenance and inspection tasks.

## E.2 Reporting and Documentation

The site supervisor shall be responsible for ensuring that the scheduled tasks as described in this plan are appropriately completed and recorded in the Maintenance Log. Accurate records of all inspections, routine maintenance and repairs shall be documented and these records shall be available for inspection by members of the Sudbury Conservation Commission, or their designated agent, upon request.

The Maintenance Log shall:

- Document the completion of required maintenance tasks.
- Identify the person responsible for the completion of tasks.
- Identify any outstanding problems, malfunctions or inconsistencies identified during the course of routine maintenance.
- Document specific repairs or replacements.

## E.3a Construction Practices Maintenance/ Evaluation Checklist

### Grocery Store at Meadow Walk Sudbury – Sudbury, Massachusetts

| Best Management Practice | Inspection Frequency | Date Inspected | Inspector Initials | Minimum Maintenance and Key Items to Check | Cleaning or Repair Needed Yes/No (List Items) | Date of Cleaning or Repair | Performed by: |
|---|---|---|---|---|---|---|---|
| Hay Bales/Silt Fencing | Weekly or bi-weekly and after a ¼" rainfall event | / / | | Sediment build up, broken bales or stakes | | | |
| Gravel Construction Entrance | Weekly or bi-weekly and after a ¼" rainfall event | / / | | Filled voids, runoff/sediments into street | | | |
| Catch Basin Protection | Weekly or bi-weekly and after a ¼" rainfall event | / / | | Clogged or sediment build-up at surface or in basin | | | |
| Diversion Channels | Weekly or bi-weekly and after a ¼" rainfall event | / / | | Maintained, moved as necessary to correct locations, Check for erosion or breakout | | | |
| Temporary Sedimentation Basins | Weekly or bi-weekly and after a ¼" rainfall event | / / | | Cracking, erosion, breakout, sediment buildup, contaminants | | | |

Date of Inspection: _____
Stormwater Control Manager: _____
Inspector (list title/qualifications):_____
Weather: _____ Weather since last inspection: _____
Comments:_____
_____
_____

## E.3b Construction Stormwater Management System Evaluation Checklist

## Grocery Store at Meadow Walk Sudbury – Sudbury, Massachusetts

Date:_____

Name:_____ Title/Qualifications:_____

Stormwater Management Component/Location Evaluated:_____

Notes (Please note any variations from approved construction specifications; compliance with construction plans; violations, etc):

_____

_____

_____

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## E.3 Long Term Maintenance/ Evaluation Checklist

### Grocery Store at Meadow Walk Sudbury – Sudbury, Massachusetts

These checklists are provided for the maintenance crew to photocopy and use when conducting inspections and cleaning activities to the stormwater management systems.

Date:_____Name of Inspector:_____

**Catch Basins, Inlets, and Trench Drains – Inspect 4 times per year, clean when sediment depth >6 inches or at least once per year**

| Structure | Inspected (Y/N) | Sediment Depth (inches) | Cleaning needed (Y/N) | Date Cleaned | Comments (Trash, Oil, Pet Waste, Lawn Debris, Damaged) |
|---|---|---|---|---|---|
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Date: _____Name of Inspector: _____

| **Water Quality/Pretreatment Devices – Inspect 4 times per year, clean at least once per year or when sediment reaches a depth of 75% of the sump (18 inches)** | | | | | |
|---|---|---|---|---|---|
| Device | Inspected (Y/N) | Sediment Depth (inches) (18"Max.) | Cleaning needed (Y/N) | Date Cleaned | Comments |
| **WQU-** | | | | / / | |
| Manhole baffle intact? | | | | / / | |
| **WQU-** | | | | / / | |
| Manhole baffle intact? | | | | / / | |
| **WQU-** | | | | / / | |
| Manhole baffle intact? | | | | / / | |
| **WQU-** | | | | / / | |
| Manhole baffle intact? | | | | / / | |
| **WQU-** | | | | / / | |
| Manhole baffle intact? | | | | / / | |
| **WQU-** | | | | / / | |
| Manhole baffle intact? | | | | / / | |

Date: _____Name of Inspector: _____

| **Drywells – Inspect once per year, clean when sediment depth >6 inches or at least once per year** | | | | | |
|---|---|---|---|---|---|
| Drywell Number | Inspected (Y/N) | Sediment Depth (inches) | Cleaning needed (Y/N) | Date Cleaned | Comments (Trash, Oil, Pet waste, Lawn Debris, Damage) |
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Date: _____Name of Inspector: _____

| **Vegetated Channels – Inspect once per year. If sediment build-up is found, core aeration or cultivating of unvegetated areas may be required to ensure adequate filtration.** | | | | | |
|---|---|---|---|---|---|
| Vegetated Channel | Inspected (Y/N) | Sediment Depth (inches) | Cleaning needed (Y/N) | Date Cleaned | Comments (Trash, Oil, Pet waste, Lawn Debris, Damage) |
| **SW** | | | | / / | |
| Sediment buildup and erosion | | | | / / | |
| Monthly trash/debris removal | | | | / / | |
| Bi-annual leaf litter removal | | | | / / | |
| Major rainfall inspection | | | | / / | |
| Inflow location inspection | | | | / / | |
| Grass mowing | | | | / / | |
| Other maintenance as necessary | | | | / / | |
| **SW** | | | | / / | |
| Sediment buildup and erosion | | | | / / | |
| Monthly trash/debris removal | | | | / / | |
| Bi-annual leaf litter removal | | | | / / | |
| Major rainfall inspection | | | | / / | |
| Inflow location inspection | | | | / / | |
| Grass mowing | | | | / / | |
| Other maintenance as necessary | | | | / / | |

Date: _____Name of Inspector: _____

| **Stormwater Outfalls – Inspect outfalls once per year, clean as needed.** | | | | | |
|---|---|---|---|---|---|
| Outfall | Inspected (Y/N) | Sediment Depth (inches) | Cleaning needed (Y/N) | Date Cleaned | Comments (Trash, Oil, Pet waste, Lawn Debris, Damage) |
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Date: _____Name of Inspector: _____

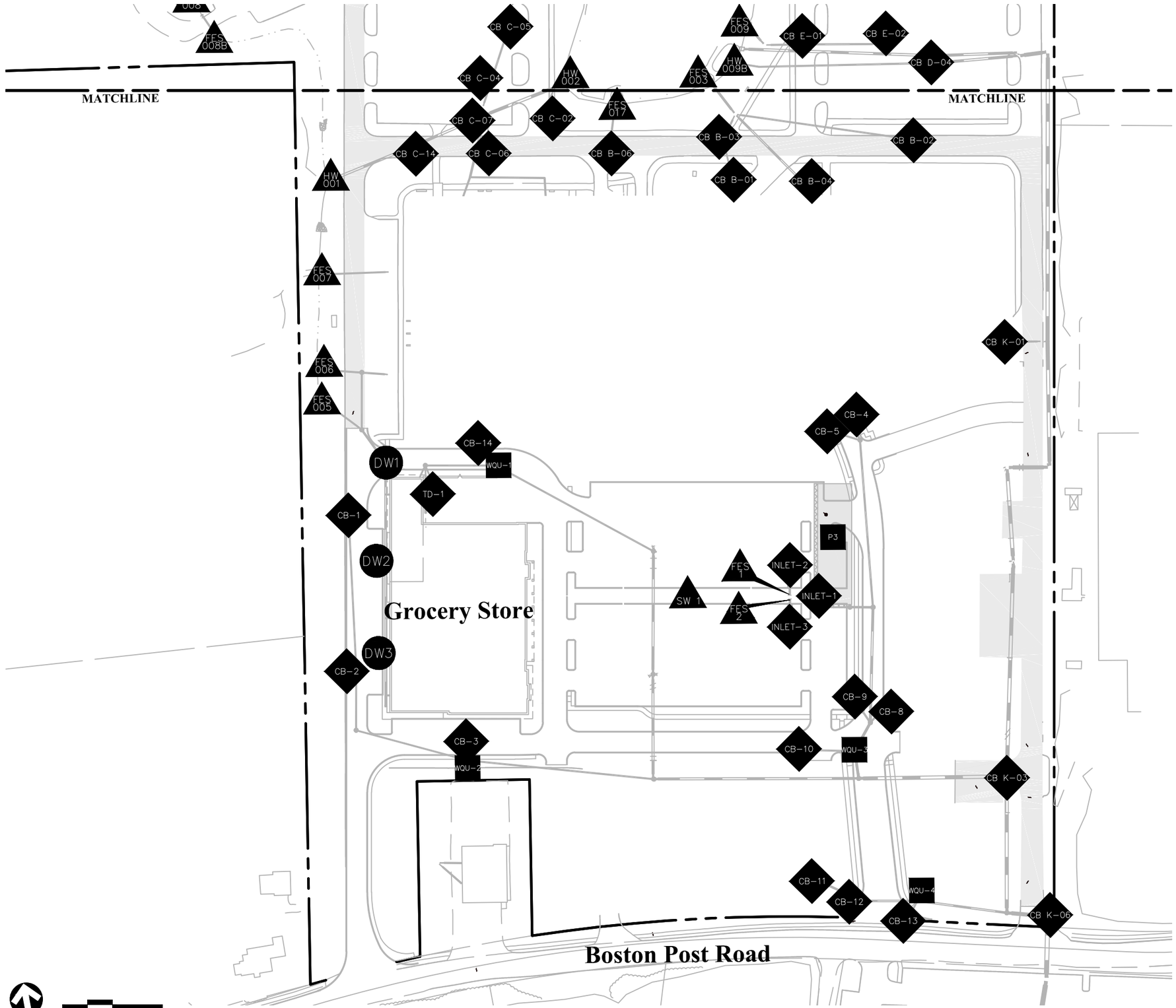
| Subsurface Infiltration Systems – Inspect twice per year | | | | | |
|---|---|---|---|---|---|
| System/Inspection Item | Inspected (Y/N) | Sediment Depth (inches) | Cleaning needed (Y/N) | Date Cleaned | Comments |
| **P** | | | | / / | |
| Proper drainage/ function | | | | / / | |
| Sediment carryover | | | | / / | |
| Major rainfall inspection | | | | / / | |
| Immediate oil/hazardous material removal | | | | / / | |
| Integrity/ function of structures | | | | / / | |
| Other maintenance as necessary | | | | / / | |
| **P** | | | | / / | |
| Proper drainage/ function | | | | / / | |
| Sediment carryover | | | | / / | |
| Major rainfall inspection | | | | / / | |
| Immediate oil/hazardous material removal | | | | / / | |
| Integrity/ function of structures | | | | / / | |
| Other maintenance as necessary | | | | / / | |

Date: _____Name of Inspector: _____

| **Surface Infiltration/Detention Basins – Inspect twice per year. If sediment build-up is found, core aeration or cultivating of unvegetated areas may be required to ensure adequate filtration.** | | | | | |
|---|---|---|---|---|---|
| Surface Infiltration/Detention Basin | Inspected (Y/N) | Sediment Depth (inches) | Cleaning needed (Y/N) | Date Cleaned | Comments (Trash, Oil, Pet waste, Lawn Debris, Damage) |
| **P** | | | | / / | |
| Sediment buildup and erosion | | | | / / | |
| Monthly trash/debris removal | | | | / / | |
| Bi-annual pruning and vegetation maintenance | | | | / / | |
| Major rainfall inspection | | | | / / | |
| Immediate oil/hazardous material removal | | | | / / | |
| Integrity/function of structures | | | | / / | |
| Other maintenance as necessary | | | | / / | |
| **P** | | | | / / | |
| Sediment buildup and erosion | | | | / / | |
| Monthly trash/debris removal | | | | / / | |
| Bi-annual pruning and vegetation maintenance | | | | / / | |
| Major rainfall inspection | | | | / / | |
| Immediate oil/hazardous material removal | | | | / / | |
| Integrity/function of structures | | | | / / | |
| Other maintenance as necessary | | | | / / | |

# Figure A-1 – Device Location Map

\\vhb\proj\Wat-LD\13125.00\cad\ld\Eng\StormwaterO&MFigs\13125.00 - Drainage Device Location Map.dwg




## LEGEND

- CB#: Catch Basin (CB), Double Catch Basin (DCB), Area Drain (AD), or Trench Drain (TD)
- WQU#: Water Quality Unit
- P#: Subsurface Infiltration System
- DW#: Drywell
- #: Stormwater Headwall/FES
- SW#: Vegetated Swale

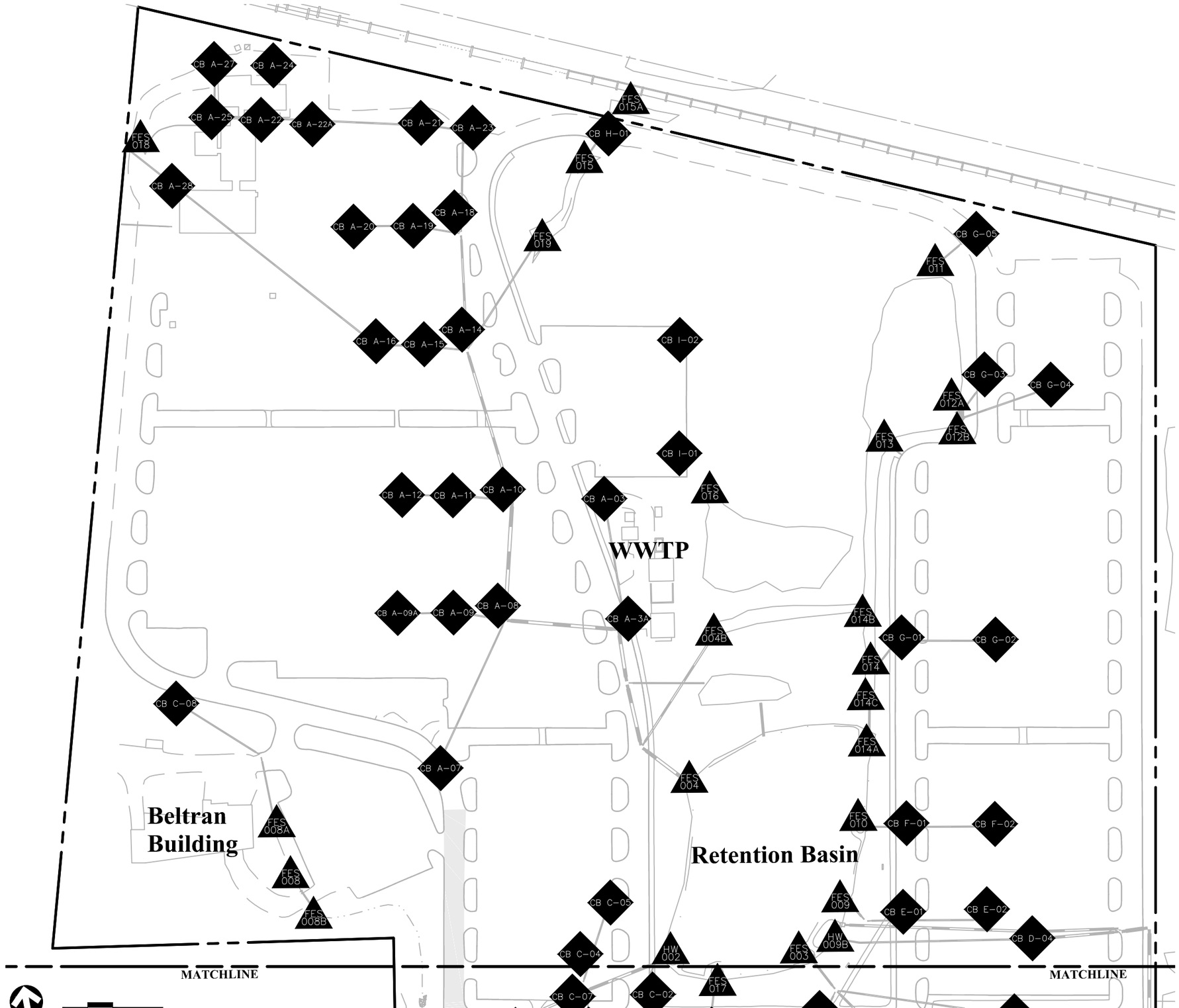
0 60 120 Feet

Drainage Device Location Map
Meadow Walk
Sudbury, MA

**Figure A-1A**

March 2016

\\vhb\proj\Wat-LD\13125.00\cad\ld\Eng\StormwaterO&MFigs\13125.00 - Drainage Device Location Map.dwg




## LEGEND

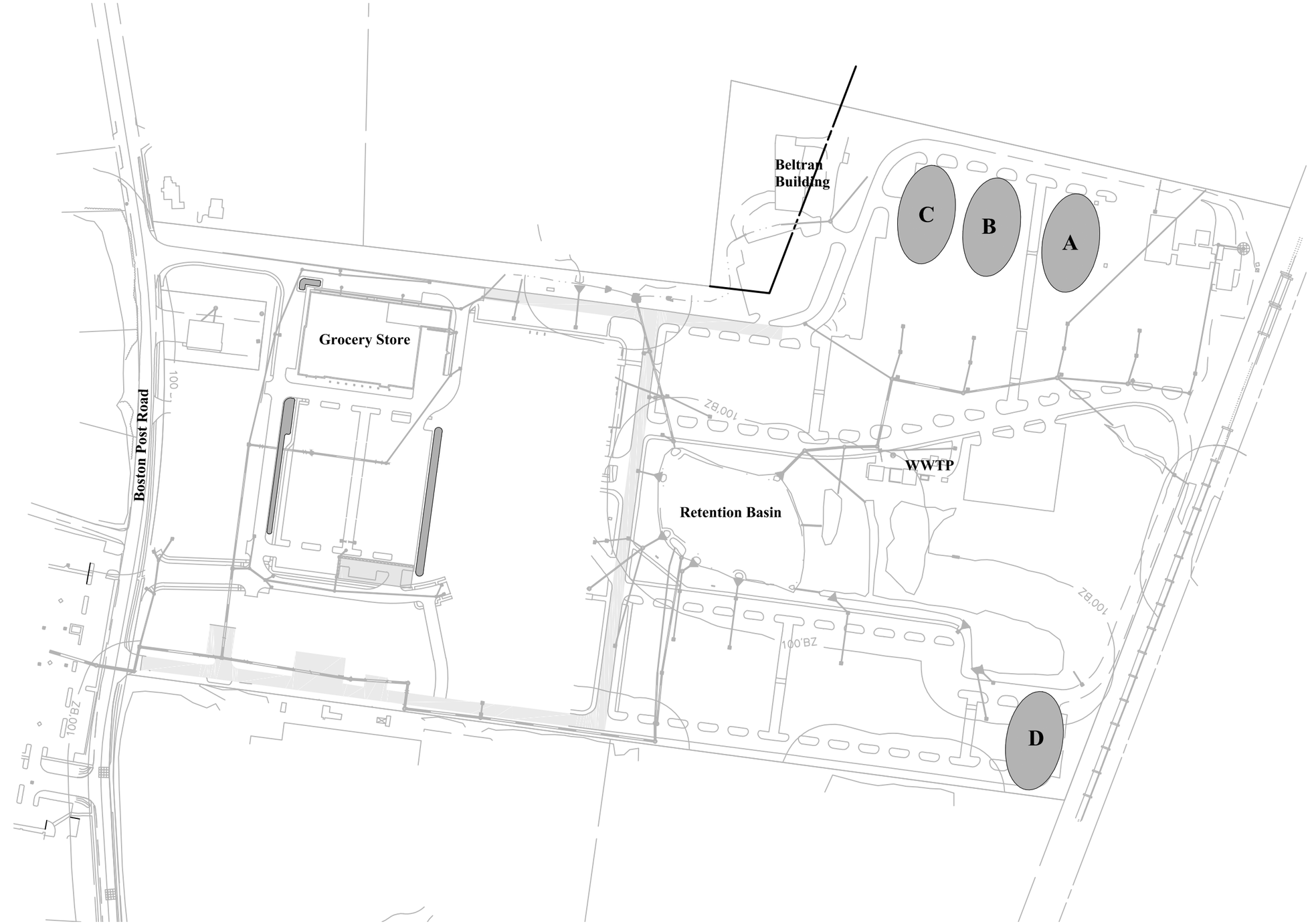
- CB# — Catch Basin (CB), Double Catch Basin (DCB), Area Drain (AD), or Trench Drain (TD)
- WQU# — Water Quality Unit
- P# — Subsurface Infiltration System
- DW# — Drywell
- # — Stormwater Headwall/FES
- SW# — Vegetated Swale

Drainage Device Location Map
Meadow Walk
Sudbury, MA

**Figure A-1B**

March 2016

# Figure B-1 – Snow Storage Plan




# Legend

Approximate Snow Storage Area

# Notes

1. The plan assumes that the grocery store area includes approximately 4.8 acres of roadway, parking lots, and sidewalks. The plan does not include snow storage for the roof or pervious areas.

2. The plan depicts approximately 7,000 SF of area available for snow storage within the grocery store area. This area is estimated to accommodate an approximate 4" snowfall, assuming 5:1 compaction and an average snow pile height of 2'. Additional snow storage required beyond this will be provided by using excess parking spaces, using on-site snow storage areas 'A' through 'D', or by trucking snow off site.

3. Outside the grocery store area, snow shall be stockpiled in Area 'A' at the commencement of the plow season. When area 'A' becomes full, stockpiling shall move to area 'B', and so on to area 'D'.

4. Install silt sacks in catch basins that capture snow storage melt.

5. Under no circumstance shall snow be stored in any wetland resource area or proposed stormwater best management practice.

6. Snow storage areas are designated to avoid hydrants, fences, landscaping, and other permanent features.

vhb

Snow Storage Plan
Meadow Walk
Sudbury, MA

**Figure B-1**

March 2016

# Section F – MA Stormwater Handbook BMP and Product Literature

CONTECH®
ENGINEERED SOLUTIONS

# CDS® Inspection and Maintenance Guide


CDS TECHNOLOGIES

## Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

## Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

## Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.

| CDS Model | Diameter | | Distance from Water Surface to Top of Sediment Pile | | Sediment Storage Capacity | |
|---|---|---|---|---|---|---|
| | ft | m | ft | m | yd3 | m3 |
| CDS2015-4 | 4 | 1.2 | 3.0 | 0.9 | 0.9 | 0.7 |
| CDS2015 | 5 | 1.5 | 3.0 | 0.9 | 1.3 | 1.0 |
| CDS2020 | 5 | 1.5 | 3.5 | 1.1 | 1.3 | 1.0 |
| CDS2025 | 5 | 1.5 | 4.0 | 1.2 | 1.3 | 1.0 |
| CDS3020 | 6 | 1.8 | 4.0 | 1.2 | 2.1 | 1.6 |
| CDS3030 | 6 | 1.8 | 4.6 | 1.4 | 2.1 | 1.6 |
| CDS3035 | 6 | 1.8 | 5.0 | 1.5 | 2.1 | 1.6 |
| CDS4030 | 8 | 2.4 | 4.6 | 1.4 | 5.6 | 4.3 |
| CDS4040 | 8 | 2.4 | 5.7 | 1.7 | 5.6 | 4.3 |
| CDS4045 | 8 | 2.4 | 6.2 | 1.9 | 5.6 | 4.3 |
| CDS5640 | 10 | 3.0 | 6.3 | 1.9 | 8.7 | 6.7 |
| CDS5653 | 10 | 3.0 | 7.7 | 2.3 | 8.7 | 6.7 |
| CDS5668 | 10 | 3.0 | 9.3 | 2.8 | 8.7 | 6.7 |
| CDS5678 | 10 | 3.0 | 10.3 | 3.1 | 8.7 | 6.7 |

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

**Support**

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.



Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, earth stabilization and wastewater treament products. For information, visit www.ContechES.com or call 800.338.1122





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# CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

| Date | Water depth to sediment[1] | Floatable Layer Thickness[2] | Describe Maintenance Performed | Maintenance Personnel | Comments |
|---|---|---|---|---|---|
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1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

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## Save Valuable Land and Protect Water Resources

# Isolator® Row O&M Manual

StormTech® Chamber System for Stormwater Management

# 1.0 The Isolator® Row

## 1.1 INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a patented technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

*Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.*

## 1.2 THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC-310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

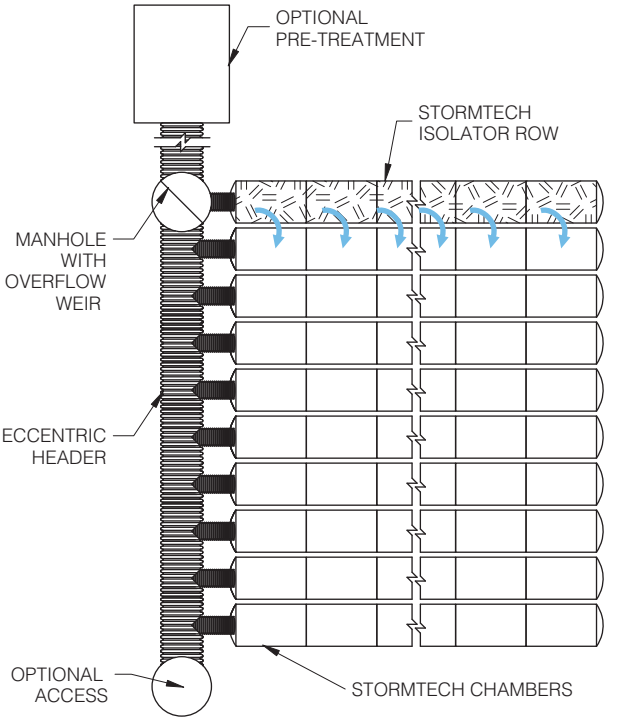
Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the "first flush" and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

*Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.*

**StormTech Isolator Row with Overflow Spillway**
(not to scale)



# 2.0 Isolator Row Inspection/Maintenance

## 2.1 INSPECTION

The frequency of Inspection and Maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

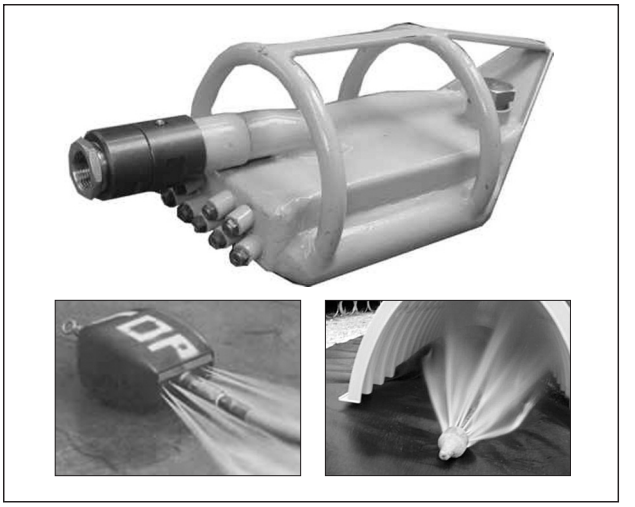
At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

## 2.2 MAINTENANCE

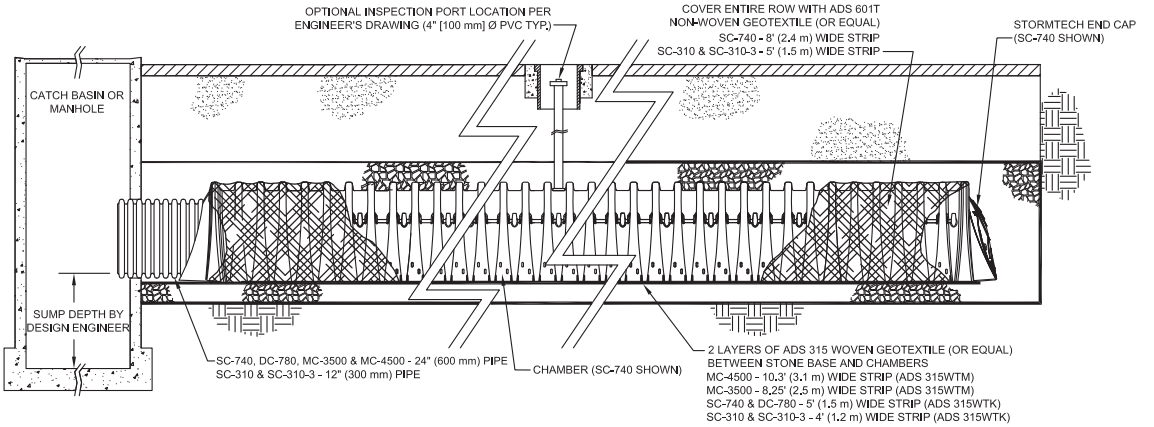
The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.



*Examples of culvert cleaning nozzles appropriate for Isolator Row maintenance. (These are not StormTech products.)*

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

**StormTech Isolator Row** (not to scale)




**NOTE:** NON-WOVEN FABRIC IS ONLY REQUIRED OVER THE INLET PIPE CONNECTION INTO THE END CAP FOR DC-780, MC-3500 AND MC-4500 CHAMBER MODELS AND IS NOT REQUIRED OVER THE ENTIRE ISOLATOR ROW.

# 3.0 Isolator Row Step By Step Maintenance Procedures

**Step 1)** Inspect Isolator Row for sediment

A) Inspection ports (if present)

i. Remove lid from floor box frame

ii. Remove cap from inspection riser

iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.

iv. If sediment is at, or above, 3 inch depth proceed to Step 2. If not proceed to step 3.

B) All Isolator Rows

i. Remove cover from manhole at upstream end of Isolator Row

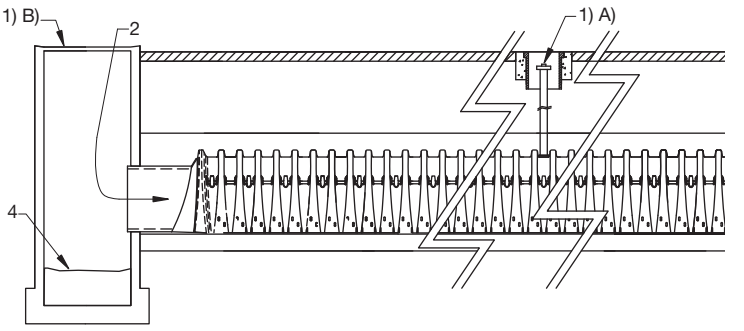
ii. Using a flashlight, inspect down Isolator Row through outlet pipe

1. Mirrors on poles or cameras may be used to avoid a confined space entry

2. Follow OSHA regulations for confined space entry if entering manhole

iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches) proceed to Step 2. If not proceed to Step 3.

**StormTech Isolator Row** (not to scale)




**Step 2)** Clean out Isolator Row using the JetVac process

A) A fixed culvert cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable

B) Apply multiple passes of JetVac until backflush water is clean

C) Vacuum manhole sump as required

**Step 3)** Replace all caps, lids and covers, record observations and actions

**Step 4)** Inspect & clean catch basins and manholes upstream of the StormTech system

**Sample Maintenance Log**

| Date | Stadia Rod Readings | | Sediment Depth (1) - (2) | Observations/Actions | Inspector |
|---|---|---|---|---|---|
| | Fixed point to chamber bottom (1) | Fixed point to top of sediment (2) | | | |
| 3/15/01 | 6.3 ft. | none | | New installation. Fixed point is CI frame at grade | djm |
| 9/24/01 | | 6.2 | 0.1 ft. | Some grit felt | sm |
| 6/20/03 | | 5.8 | 0.5 ft. | Mucky feel, debris visible in manhole and in Isolator row, maintenance due | rv |
| 7/7/03 | 6.3 ft. | | 0 | System jetted and vacuumed | djm |

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# Deep Sump Catch Basin

***Description***: Deep sump catch basins, also known as oil and grease or hooded catch basins, are underground retention systems designed to remove trash, debris, and coarse sediment from stormwater runoff, and serve as temporary spill containment devices for floatables such as oils and greases.

## Ability to meet specific standards

| Standard | Description |
|---|---|
| 2 - Peak Flow | Provides no peak flow attenuation |
| 3 - Recharge | Provides no groundwater recharge |
| 4 - TSS Removal | 25% TSS removal credit when used for pretreatment. Because of their limited effectiveness and storage capacity, deep sump catch basins receive credit for removing TSS only if they are used for pretreatment and designed as off-line systems. |
| 5 - Higher Pollutant Loading | Recommended as pretreatment BMP. Although provides some spill control capability, a deep sump catch basin may not be used in place of an oil grit separator or sand filter for land uses that have the potential to generate runoff with high concentrations of oil and grease such as: high-intensity-use parking lots, gas stations, fleet storage areas, vehicle and/or equipment maintenance and service areas. |
| 6 - Discharges near or to Critical Areas | May be used as pretreatment BMP. not an adequate spill control device for discharges near or to critical areas. |
| **7 - Redevelopment** | Highly suitable. |

**Advantages/Benefits:**

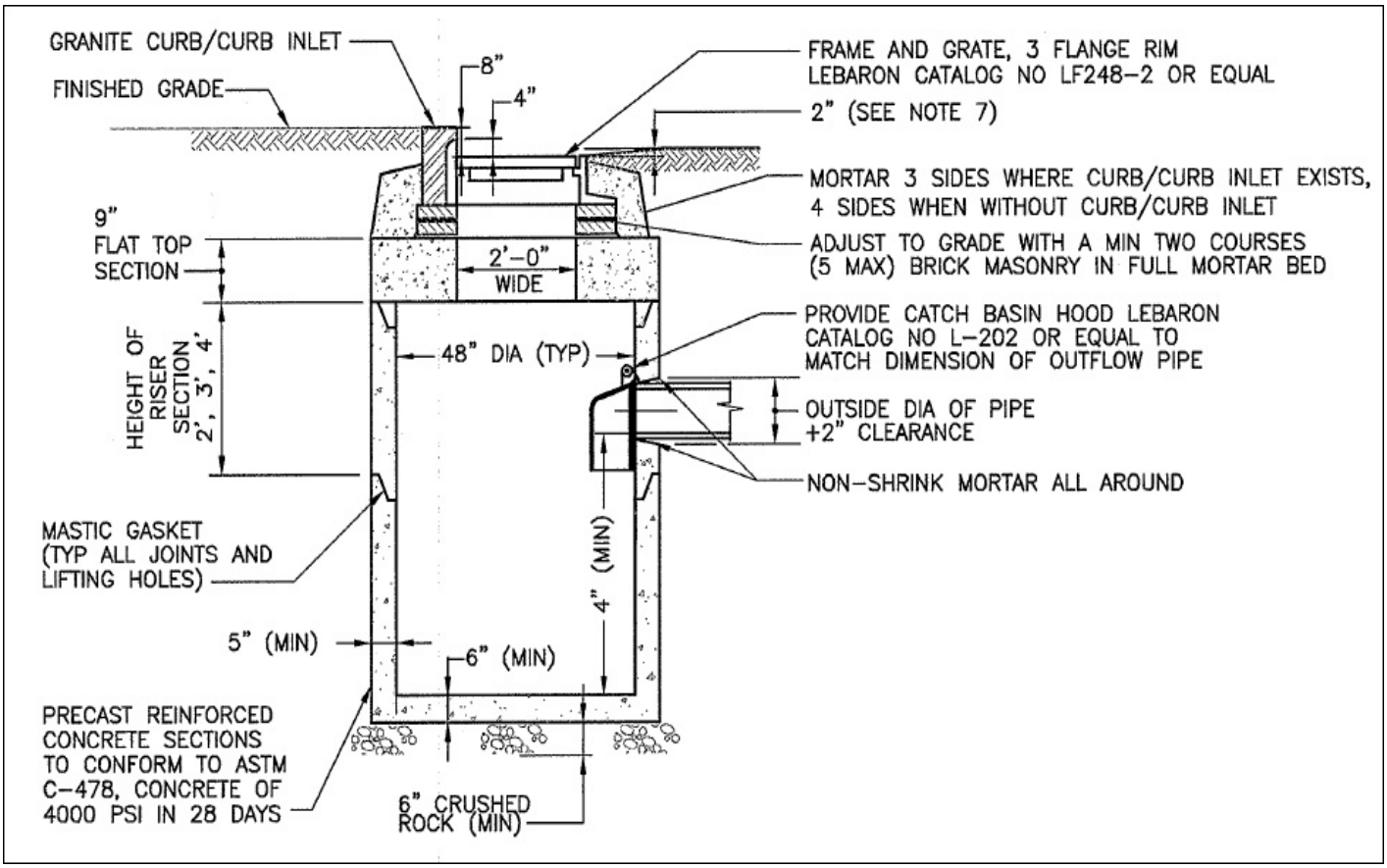
- Located underground, so limited lot size is not a deterrent.
- Compatible with subsurface storm drain systems.
- Can be used for retrofitting small urban lots where larger BMPs are not feasible.
- Provide pretreatment of runoff before it is delivered to other BMPs.
- Easily accessed for maintenance.
- Longevity is high with proper maintenance.

**Disadvantages/Limitations:**

- Limited pollutant removal.
- Expensive to install and maintain, resulting in high cost per unit area treated.
- No ability to control volume of stormwater
- Frequent maintenance is essential
- Requires proper disposal of trapped sediment and oil and grease
- Entrapment hazard for amphibians and other small animals

**Pollutant Removal Efficiencies**

- Total Suspended Solids (TSS) - 25% (for regulatory purposes)
- Nutrients (Nitrogen, phosphorus) - Insufficient data
- Metals (copper, lead, zinc, cadmium) - Insufficient data
- Pathogens (coliform, e coli) - Insufficient data




*adapted from the University of New Hampshire*

## Maintenance

| Activity | Frequency |
|---|---|
| Inspect units | Four times per year |
| Clean units | Four times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin. |

## Special Features

All deep sump catch basins must include hoods. For MassHighway projects, consult the Stormwater Handbook for Highways and Bridges for hood requirements.

## LID Alternative

Reduce Impervious Surface
Disconnect rooftop and non-rooftop runoff
Vegetated Filter Strip

# Deep Sump Catch Basin

### Suitable Applications

- Pretreatment
- Residential subdivisions
- Office
- Retail

### Design Considerations

- The contributing drainage area to any deep sump catch basin should not exceed ¼ acre of impervious cover.
- Design and construct deep sump catch basins as off-line systems.
- Size the drainage area so that the flow rate does not exceed the capacity of the inlet grate.
- Divert excess flows to another BMP intended to meet the water quantity requirements (peak rate attenuation) or to a storm drain system. An off-line design enhances pollutant removal efficiency, because it prevents the resuspension of sediments in large storms.

Make the sump depth (distance from the bottom of the outlet pipe to the bottom of the basin) at least four feet times the diameter of the outlet pipe and more if the contributing drainage area has a high sediment load. The minimum sump depth is 4 feet. Double catch basins, those with 2 inlet grates, may require deeper sumps. Install the invert of the outlet pipe at least 4 feet from the bottom of the catch basin grate.

The inlet grate serves to prevent larger debris from entering the sump. To be effective, the grate must have a separation between the grates of one square inch or less. The inlet openings must not allow flows greater than 3 cfs to enter the deep sump catch basin. If the inlet grate is designed with a curb cut, the grate must reach the back of the curb cut to prevent bypassing. The inlet grate must be constructed of a durable material and fit tightly into the frame so it won't be dislodged by automobile traffic. The inlet grate must not be welded to the frame so that sediments may be easily removed. To facilitate maintenance, the inlet grate must be placed along the road shoulder or curb line rather than a traffic lane.

Note that within parking garages, the State Plumbing Code regulates inlet grates and other stormwater management controls. Inlet grates inside parking garages are currently required to have much smaller openings than those described herein.

To receive the 25% removal credit, hoods must be used in deep sump catch basins. Hoods also help contain oil spills. MassHighway may install catch basins without hoods provided they are designed, constructed, operated, and maintained in accordance with the Mass Highway Stormwater Handbook.

Install the weep hole above the outlet pipe. Never install the weep hole in the bottom of the catch basin barrel.

### Site Constraints

A proponent may not be able to install a deep sump catch basin because of:

- Depth to bedrock;
- High groundwater;
- Presence of utilities; or
- Other site conditions that limit depth of excavation because of stability.

### Maintenance

Regular maintenance is essential. Deep sump catch basins remain effective at removing pollutants only if they are cleaned out frequently. One study found that once 50% of the sump volume is filled, the catch basin is not able to retain additional sediments.

Inspect or clean deep sump basins at least four times per year and at the end of the foliage and snow-removal seasons. Sediments must also be removed four times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin. If handling runoff from land uses with higher potential pollutant loads or discharging runoff near or to a critical area, more frequent cleaning may be necessary.

Clamshell buckets are typically used to remove sediment in Massachusetts. However, vacuum trucks are preferable, because they remove more trapped sediment and supernatant than clamshells. Vacuuming is also a speedier process and is less likely to snap the cast iron hood within the deep sump catch basin.

Always consider the safety of the staff cleaning deep sump catch basins. Cleaning a deep sump catch basin within a road with active traffic or even within a parking lot is dangerous, and a police detail may be necessary to safeguard workers.

Although catch basin debris often contains concentrations of oil and hazardous materials such as petroleum hydrocarbons and metals, MassDEP classifies them as solid waste. Unless there is evidence that they have been contaminated by a spill or other means, MassDEP does not routinely require catch basin cleanings to be tested before disposal. Contaminated catch basin cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

In the absence of evidence of contamination, catch basin cleanings may be taken to a landfill or other facility permitted by MassDEP to accept solid waste, without any prior approval by MassDEP. However, some landfills require catch basin cleanings to be tested before they are accepted.

With prior MassDEP approval, catch basin cleanings may be used as grading and shaping materials at landfills undergoing closure (see Revised Guidelines for Determining Closure Activities at Inactive Unlined Landfill Sites) or as daily cover at active landfills. MassDEP also encourages the beneficial reuse of catch basin cleanings whenever possible. A Beneficial Reuse Determination is required for such use.

MassDEP regulations prohibit landfills from accepting materials that contain free-draining liquids. One way to remove liquids is to use a hydraulic lift truck during cleaning operations so that the material can be decanted at the site. After loading material from several catch basins into a truck, elevate the truck so that any free-draining liquid can flow back into the structure. If there is no free water in the truck, the material may be deemed to be sufficiently dry. Otherwise the catch basin cleanings must undergo a Paint Filter Liquids Test. Go to www. Mass.gov/dep/recycle/laws/cafacts.doc for information on all of the MassDEP requirements pertaining to the disposal of catch basin cleanings.

# Proprietary Separators

***Description***: A proprietary separator is a flow-through structure with a settling or separation unit to remove sediments and other pollutants. They typically use the power of swirling or flowing water to separate floatables and coarser sediments, are typically designed and manufactured by private businesses, and come in different sizes to accommodate different design storms and flow conditions. Some rely solely on gravity separation and contain no swirl chamber. Since proprietary separators can be placed in almost any location on a site, they are particularly useful when either site constraints prevent the use of other stormwater techniques or as part of a larger treatment train. The effectiveness of proprietary separators varies greatly by size and design, so make sure that the units are sized correctly for the site's soil conditions and flow profiles, otherwise the unit will not work as designed.

## Ability to meet specific standards

| Standard | Description |
|---|---|
| **2 - Peak Flow** | Provides no peak flow attenuation |
| **3 - Recharge** | Provides no groundwater recharge |
| **4 - TSS Removal** | Varies by unit. Must be used for pretreatment and be placed first in the treatment train to receive TSS removal credit. Follow procedures described in Chapter 4 to determine TSS credit. |
| **5 - Higher Pollutant Loading** | Suitable as pretreatment device. |
| **6 - Discharges near or to Critical Areas** | Suitable as pretreatment device or potentially a spill control device |
| **7 - Redevelopment** | Suitable as pretreatment device or treatment device if it is not possible to provide other BMPs. |

**Advantages/Benefits:**

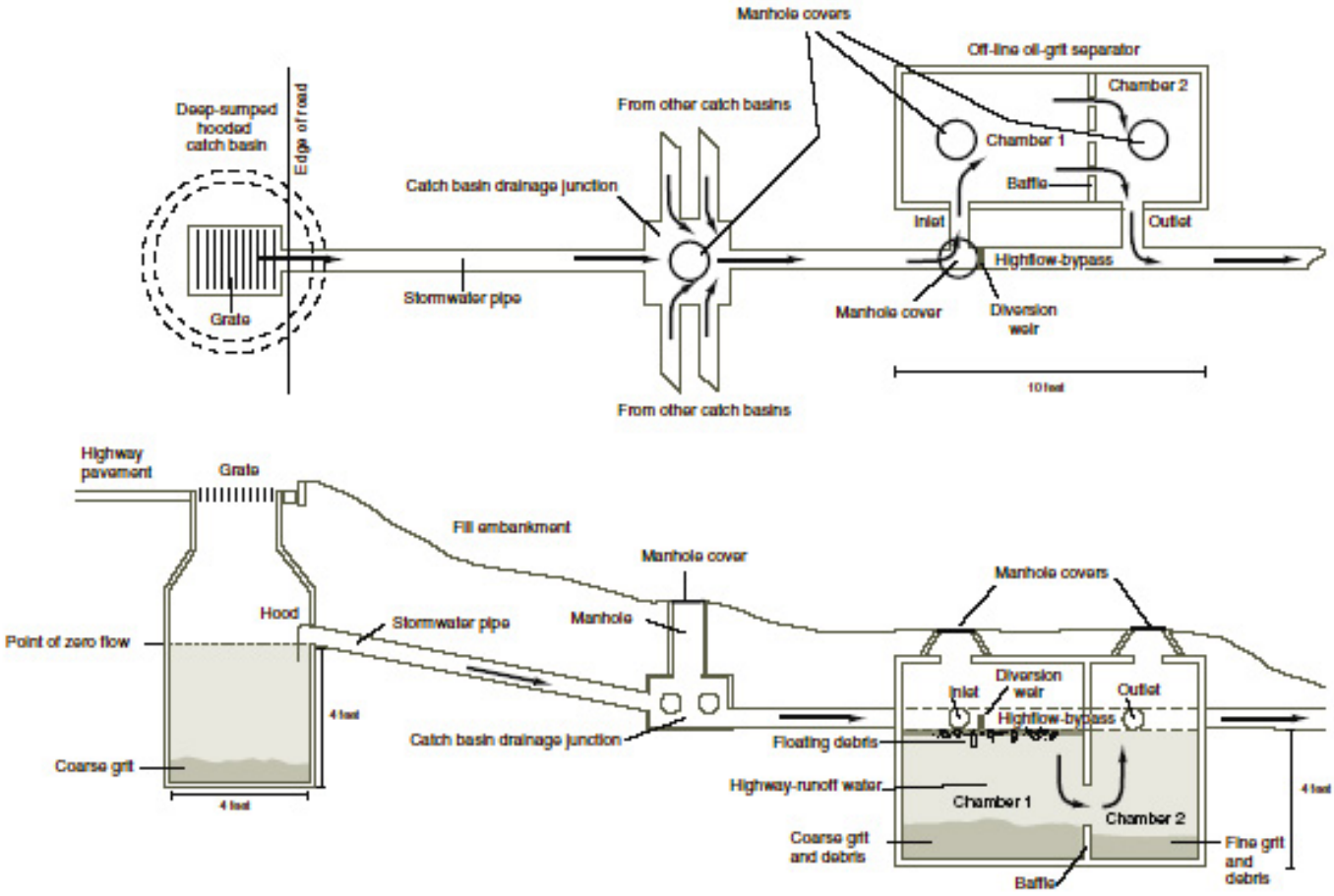
- Removes coarser sediment.
- Useful on constrained sites.
- Can be custom-designed to fit specific needs of a specific site.

**Disadvantages/Limitations:**

- Removes only coarse sediment fractions
- Provides no recharge to groundwater
- No control of the volume of runoff
- Frequent maintenance is essential

**Pollutant Removal Efficiencies**

- Total Suspended Solids (TSS) - Varies.
- Nutrients (Nitrogen, phosphorus) - Insufficient data
- Metals (copper, lead, zinc, cadmium) - Insufficient data
- Pathogens (coliform, e coli) - Insufficient data




Schematic section of a deep-sump hooded catch basin and a 1,500-gallon off-line water quality inlet.

*adapted from the MassHighway Storm Water Handbook for Highways*

## Maintenance

| Activity | Frequency |
|---|---|
| Inspect in accordance with manufacturer requirements, but no less than twice a year following installation, and no less than once a year thereafter. | See activity |
| Remove sediment and other trapped pollutants at frequency or level specified by manufacturer. | See manufacturer information |

## Special Features

Can be custom-designed to fit specific needs at a specific site.

## LID Alternative

Reduce impervious surfaces
Disconnect runoff from non-metal roofs, roadways, and driveways

# Proprietary Separators

### Applicability

Because they have limited pollutant removal and storage capacity, proprietary separators must be used for pretreatment only. Because they are placed underground, proprietary separators may be the only structural pretreatment BMPs feasible on certain constrained redevelopment sites where space or storage is not available for more effective BMPs. They may be especially useful in ultra-urban settings such as Boston or Worcester. Some proprietary separators may be used for spill control.

### Effectiveness

Proprietary separators have a wide range of TSS efficiencies. To assess the ability of proprietary separators to remove TSS and other pollutants, a proponent should follow the procedures set forth in Chapter 4. The specific units proposed for a particular project cannot be effective unless they are sized correctly. Proprietary separators are usually sized based on flow rate. A proprietary separator must be sized to treat the required water quality volume. To be effective at removing TSS and other pollutants the system must be designed, constructed, and maintained in accordance with the manufacturer's specifications and the specifications in this Handbook.

### Planning Considerations

To receive TSS removal credit, proprietary separators must be used for pretreatment and placed at the beginning of a stormwater treatment train. They can be configured either in-line or if subject to higher flows, off-line to reduce scouring. They must be sized in accordance with the manufacturer's specifications and the specifications in this Handbook. Proprietary separators used as spill control devices may have to be sized differently than those used for TSS removal.

### Design

The design of proprietary separators varies by manufacturer. Units are typically precast concrete, but larger systems may be cast in place. Units may have baffles or other devices to direct incoming water into and through a series of chambers, slowing the water down to allow sediment to drop out into internal storage areas, then directing this pre-treated water to exit to other treatment or infiltration devices. In some cases, flow will be introduced tangentially, to induce swirl or vortex. Units may include skirts or weirs, to keep trapped sediments from becoming re-entrained. Some units combine a catch basin with the treatment function, providing off-line rather than in-line treatment.

Generally they are placed below ground on a gravel or stone base. Make sure all units contain inspection and access ports so that they may be inspected and cleaned. During design, take care to place the inspection and access ports where they will be accessible. Do not place the ports in locations such as travel lanes of roadways/highways and parking stalls.

### Construction

Install construction barriers around the excavation area to prevent access by pedestrians. Use diversions and other soil erosion practices up-slope of the proprietary separator to prevent runoff from entering the site before construction of the units is complete. Implement practices to prevent construction period runoff from being discharged to the units until construction is complete and the soil is stabilized. Stabilize all surrounding area and any established outlets. Remove temporary structures after vegetation is established.

### Maintenance

Inspect and clean these units in strict accordance with manufacturers' recommendations and requirements. Clean the units using the method specified by the manufacturer. Vactor trucks are typically used to clean these units. Clamshell buckets typically used for cleaning catch basins are almost never allowed by manufacturers. Sometimes it will be necessary to remove sediment manually.

*Adapted from:*
*MassHighway. Storm Water Handbook for Highways and Bridges. May 2004.*

# Sediment Forebays

**Description:** A sediment forebay is a post-construction practice consisting of an excavated pit, bermed area, or cast structure combined with a weir, designed to slow incoming stormwater runoff and facilitating the gravity separation of suspended solids. This practice is different from a sediment trap used as a construction period BMP.

## Ability to meet specific standards

| Standard | Description |
|---|---|
| 2 - Peak Flow | Provides no peak flow attenuation |
| 3 - Recharge | Provides no groundwater recharge |
| 4 - TSS Removal | MassDEP requires a sediment forebay as pretreatment before stormwater is discharged to an extended dry detention basin, wet basin, constructed stormwater wetland or infiltration basin. No separate credit is given for the sediment forebay. For example, extended dry detention basins with sediment forebays receive a credit for 50% TSS removal. Wet basins and constructed stormwater wetlands with sediment forebays receive a credit for 80% TSS removal. When they provide pretreatment for other BMPs, sediment forebays receive a 25% TSS removal credit. |
| 5 - Higher Pollutant Loading | Recommended as a pretreatment BMP |
| 6 - Discharges near or to Critical Areas | Recommended as a pretreatment BMP |
| 7 - Redevelopment | Usually not suitable due to land use constraints |

## Advantages/Benefits:

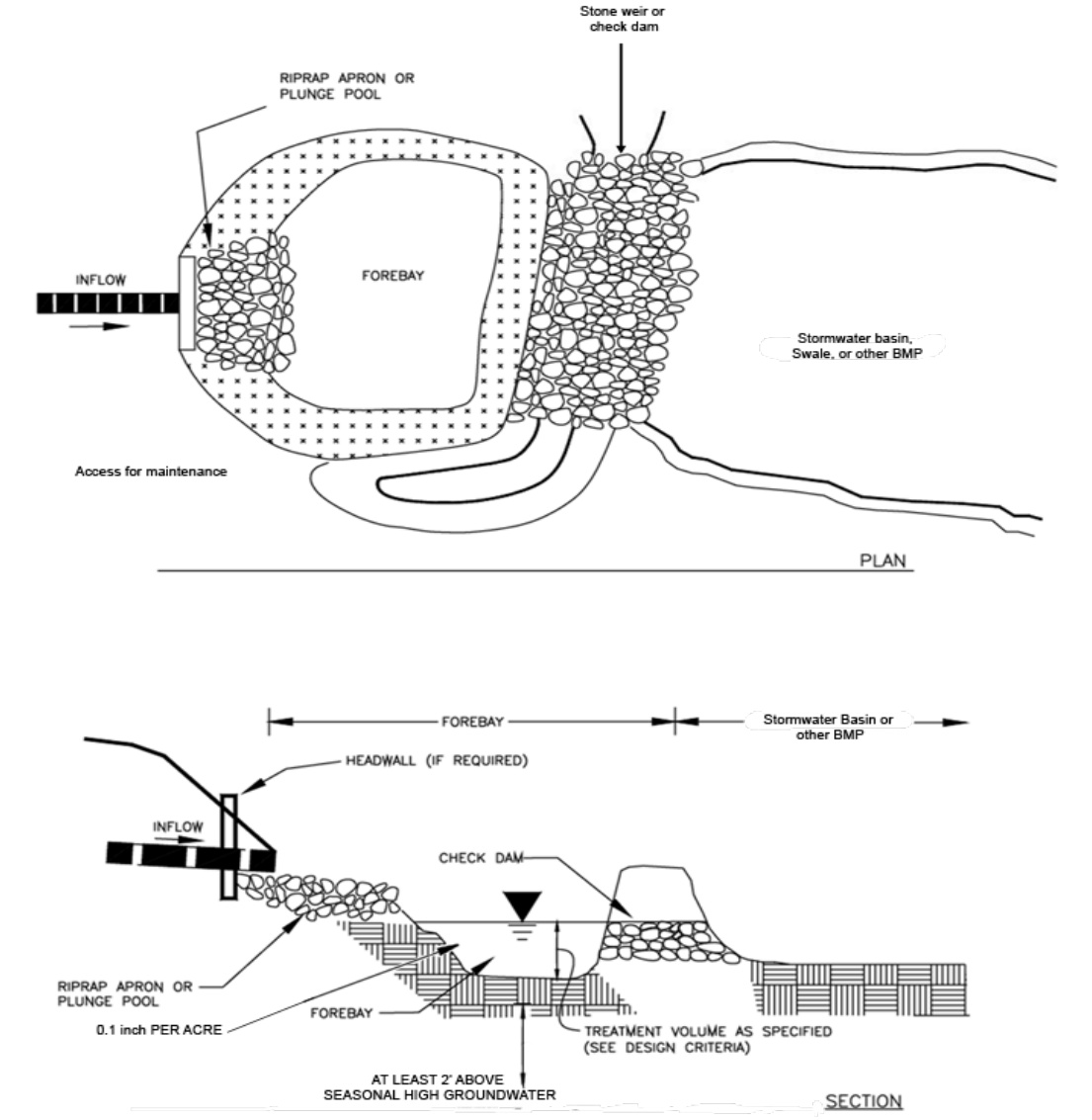
- Provides pretreatment of runoff before delivery to other BMPs.
- Slows velocities of incoming stormwater
- Easily accessed for sediment removal
- Longevity is high with proper maintenance
- Relatively inexpensive compared to other BMPs
- Greater detention time than proprietary separators

## Disadvantages/Limitations:

- Removes only coarse sediment fractions
- No removal of soluble pollutants
- Provides no recharge to groundwater
- No control of the volume of runoff
- Frequent maintenance is essential

## Pollutant Removal Efficiencies

- Total Suspended Solids (TSS) - 25%
- Nutrients (Nitrogen, phosphorus) - Insufficient data
- Metals (copper, lead, zinc, cadmium) - Insufficient data
- Pathogens (coliform, e coli) - Insufficient data




*adapted from the Vermont Stormwater Handbook*

## Maintenance

| Activity | Frequency |
|---|---|
| Inspect sediment forebays | Monthly |
| Clean sediment forebays | Four times per year and when sediment depth is between 3 to 6 feet. |

## Special Features

MassDEP requires a sediment forebay as pretreatment before discharging to a dry extended detention basin, wet basin, constructed stormwater wetland, or infiltration basin.

MassDEP uses the term sediment forebay for BMPs used to pretreat stormwater after construction is complete and the site is stabilized. MassDEP uses the term sediment trap to refer to BMPs used for erosion and sedimentation control during construction. For information on the design and construction of sediment traps used during construction, consult the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers and Municipal Officials.

# Sediment Forebays

## Design

Sediment forebays are typically on-line units, designed to slow stormwater runoff and settle out sediment.

At a minimum, size the volume of the sediment forebay to hold 0.1-inch/impervious acre to pretreat the water quality volume.

When routing the 2-year and 10-year storms through the sediment forebay, design the forebay to withstand anticipated velocities without scouring.

A typical forebay is excavated below grade with earthen sides and a stone check dam.

Design elevated embankments to meet applicable safety standards.

Stabilize earth slopes and bottoms using grass seed mixes recommended by the NRCS and capable of resisting the anticipated shearing forces associated with velocities to be routed through the forebay. Use only grasses. Using other vegetation will reduce the storage volume in the forebay. Make sure that the selected grasses are able to withstand periodic inundation under water, and drought- tolerant during the summer. MassDEP recommends using a mix of grasses rather than relying upon a single grass species.

Alternatively, the bottom floor may be stabilized with concrete or stone to aid maintenance. Concrete floors or pads, or any hard bottom floor, greatly facilitate the removal of accumulated sediment.

When the bottom floor is vegetated, it may be necessary to remove accumulated sediment by hand, along with re-seeding or re-sodding grasses removed during maintenance.

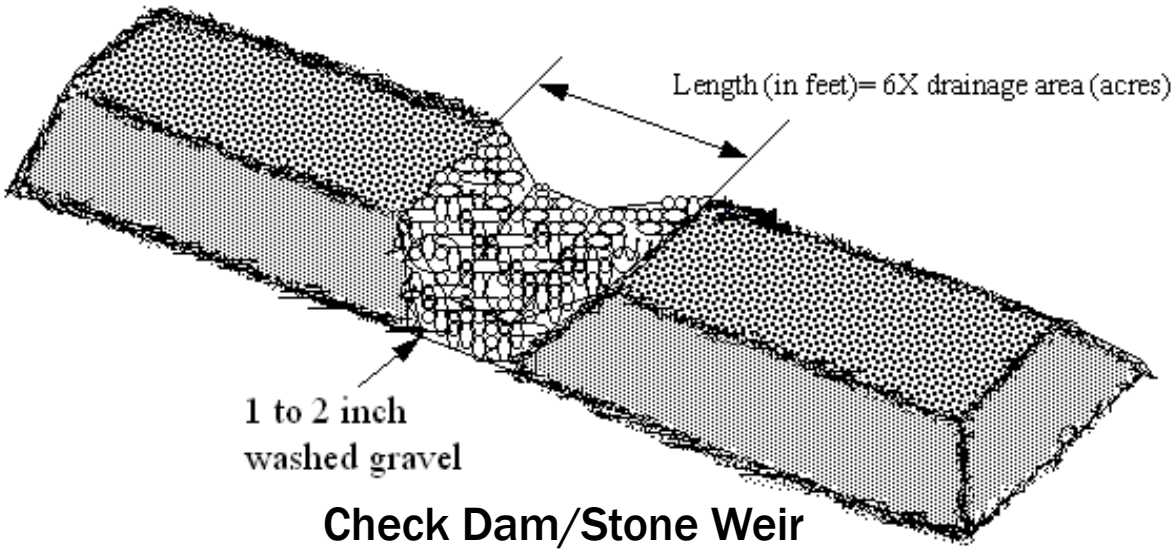
Design sediment forebays to make maintenance accessible and easy. If machinery is required to remove the sediment, carefully incorporate equipment access in the design. Sediment forebays may require excavation so concrete flooring may not always be appropriate.

Include sediment depth markers to simplify inspections. Sediment markers make it easy to determine when the sediment depth is between 3 and 6 feet and needs to be removed. Make the side slopes of sediment forebays no steeper than 3:1. Design the sediment forebay so that the discharge or outflow velocity can control the 2-year peak discharge without scour. Design the channel geometry to prevent erosion from the 2-year peak discharge.

Do not confuse post-construction sediment forebays with the sediment traps used as a construction-period control. Construction-period sediment control traps are sized larger than forebays, because there is a greater amount of suspended solids in construction period runoff. Construction-period sediment traps are sized based on drainage area and not impervious acre. Never use a construction-period sediment trap for post-construction drainage purposes unless it is first brought off-line, thoroughly cleaned (including check dam), and stabilized before being made re-operational.

Refer to the section of this chapter for information on the design of the check dam component of the sediment forebay. Set the minimum elevation of the check dam to hold a volume of 0.1-inch of runoff/ impervious acre. Check dam elevations may be uniform or they may contain a weir (e.g., when the top of the check dam is set to the 2-year or 10-year storm, and the bottom of the weir is set to the top of the 0.1-inch/impervious acre volume). When a weir is included in a stone berm, make sure that the weir is able to hold its shape. Fabric or wire may be required.

Unless part of a wet basin, post construction sediment forebays must be designed to dewater between storms. Set the bottom of the forebay at a minimum of 2 feet above seasonal high groundwater, and place pervious material on the bottom floor to facilitate dewatering between storms. For design purposes, use 72 hours to evaluate dewatering, using the storm that produces either the ½ inch or 1-inch of runoff (water quality volume) in a 24-hour period. A stone check dam can act as a filter berm, allowing water to percolate through the check dam. Depending on the head differential, a stone check dam may allow greater dewatering than an earthen berm.




**Check Dam/Stone Weir**

*MassDEP Stormwater Handbook, 1996*

## Maintenance

Sediments and associated pollutants are removed only when sediment forebays are actually cleaned out, so regular maintenance is essential. Frequently removing accumulated sediments will make it less likely that sediments will be resuspended. At a minimum, inspect sediment forebays monthly and clean them out at least four times per year. Stabilize the floor and sidewalls of the sediment forebay before making it operational, otherwise the practice will discharge excess amounts of suspended sediments. When mowing grasses, keep the grass height no greater than 6 inches. Set mower blades no lower than 3 to 4 inches. Check for signs of rilling and gullying and repair as needed. After removing the sediment, replace any vegetation damaged during the clean-out by either reseeding or re-sodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure that no scour occurs in the forebay, while the seeds germinate and develop roots.

# Drainage Channels

***Description***: Drainage channels are traditional vegetated open channels that are designed to provide for non-erosive conveyance. They receive no infiltration or TSS removal credit (Standards 3 and 4).

## Ability to meet specific standards

| Standard | Description |
|---|---|
| **2 - Peak Flow** | Provides no peak flow attenuation |
| **3 - Recharge** | Provides negligible groundwater recharge. |
| **4 - TSS Removal** | 0% TSS removal credit. |
| **5 - Higher Pollutant Loading** | Use as conveyance. |
| **6 - Discharges near or to Critical Areas** | May be used to achieve temperature reduction for runoff discharging to cold-water fisheries. |
| **7 - Redevelopment** | Limited applicability |

**Advantages/Benefits:**

- Conveys stormwater
- Generally less expensive than curb and gutter systems.
- Accents natural landscape.
- Compatible with LID design practices
- Roadside channels reduce driving hazards by keeping stormwater flows away from street surfaces during storms

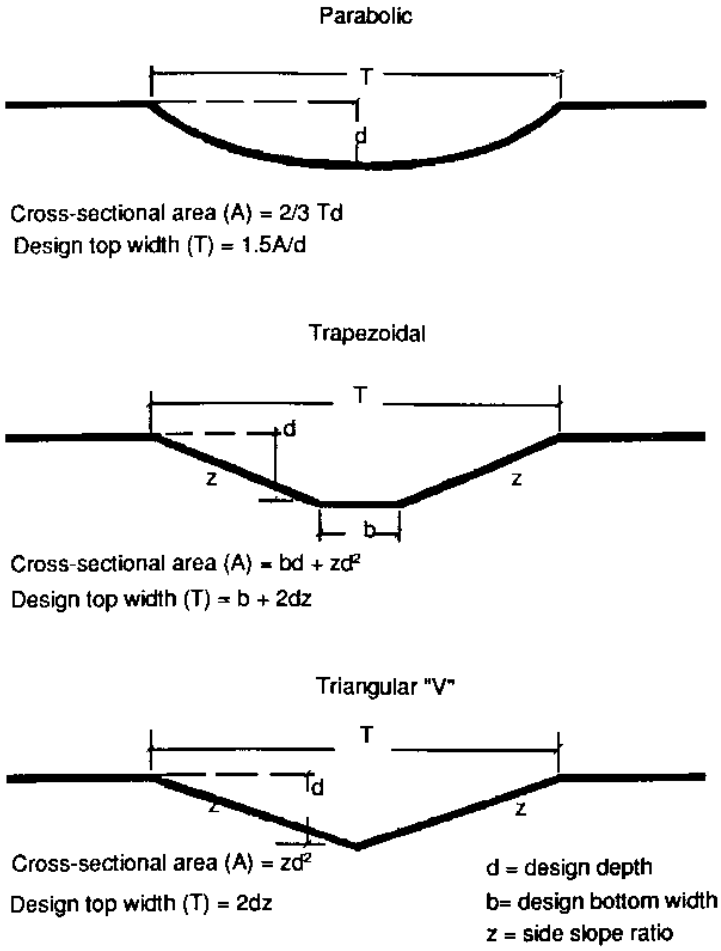
**Disadvantages/Limitations:**

- Higher degree of maintenance required than for curb and gutter systems.
- Roadside channels are subject to damage from off-street parking and snow removal.
- Provides limited pollutant removal compared to water quality swales
- May be impractical in areas with flat grades, steep topography or poorly drained soils
- Large area requirements for highly impervious sites.

**Pollutant Removal Efficiencies**

- Total Suspended Solids (TSS) - 0%
- Nutrients (Nitrogen, phosphorus) - Insufficient data
- Metals (copper, lead, zinc, cadmium) - Insufficient data
- Pathogens (coliform, e coli) - Insufficient data

**Figure DC 1**




*adapted from the University of New Hampshire*

## Maintenance

| Activity | Frequency |
|---|---|
| Inspect channels to make sure vegetation is adequate and for signs of rilling and gullying. Repair any rills or gullies. Replace dead vegetation. | The first few months after construction and twice a year thereafter. |
| Mow | As necessary. Grass height shall not exceed 6 inches. |
| Remove sediment and debris manually | At least once a year |
| Reseed | As necessary. Use of road salt or other deicers during the winter will necessitate yearly reseeding in the spring. |

## Special Features

Drainage channels cannot be used to meet the Stormwater Management Standards. They are a component of a larger stormwater management system and serve to convey runoff from impervious surfaces to or from stormwater treatment BMPs.

# Drainage Channels

### Drainage Channels versus Water Quality Swales

The distinction between drainage channels and water quality swales lies in the design and planned use of the open channel conveyance. Drainage channels are designed to have sufficient capacity to convey runoff safely during large storm events without causing erosion. Drainage channels typically have a cross-section with sufficient hydraulic capacity to handle the peak discharge for the 10-year storm. The dimensions (slope and bottom width) of a drainage channel must not exceed a critical erosive velocity during the peak discharge. They must be vegetated with grasses to maintain bank and slope integrity. Other than basic channel size and geometry, there are no other design modifications to enhance pollutant removal capabilities. Therefore, pollutant removal efficiency is typically low for drainage channels.

Water quality swales and grass channels, on the other hand, are designed for the required water quality volume and incorporate specific features to enhance their stormwater pollutant removal effectiveness. Pollutant removal rates are significantly higher for water quality swales and grass channels. A water quality swale or grass channel must be used in place of the drainage channel when a water quality treatment credit is sought.

### Applicability

Drainage channels are suitable for residential and institutional areas of low to moderate density. The percentage of impervious cover in the contributing areas must be relatively small. Drainage channels can also be used in parking lots to break up areas of impervious cover.

Along the edge of roadways, drainage channels can be used in place of curb and gutter systems. However, the effectiveness of drainage channels may decrease as the number of driveway culverts increases. They are also generally not compatible with extensive sidewalk systems. When using drainage channels in combination with roadways and sidewalks, it is most appropriate to place the channel between the two impervious covers (e.g., between the sidewalk and roadway).

The topography of the site should allow for the design of a drainage channel with sufficient slope and cross-sectional area to maintain non-erosive flow velocities. The longitudinal slope of the swale should be as close to zero as possible and not greater than 5%.

### Planning Considerations

The two primary considerations when designing a drainage channel are maximizing channel capacity and minimizing erosion. Use the maximum expected retardance when checking drainage channel capacity. Usually the greatest flow retardance occurs when vegetation is at its maximum growth for the year. This usually occurs during the early growing season and dormant periods.

Other factors to be considered when planning for the drainage channel are land availability, maintenance requirements and soil characteristics. The topography of the site should allow for the design of a drainage channel with sufficient slope and cross-sectional area to maintain a non-erosive flow velocity, generally less than five feet per second.

The shape of the cross-sectional channel is also an important planning consideration. Figure DC 1 shows three different design shapes. The V-shaped or triangular cross-section can result in higher velocities than other shapes, especially when combined with steeper side slopes, so use this design only if the quantity of flow is relatively small. The parabolic cross-section results in a wide shallow channel that is suited to handling larger flows and blends in well with natural settings. Use trapezoidal channels when deeper channels are needed to carry larger flows and conditions require relatively high velocities. Select a grass type for the channel lining that is appropriate for site conditions, including one that is able to resist shear from the design flow, is shade tolerant, is drainage tolerant, and has low maintenance requirements. Use vegetation that is water tolerant and has a dense root system. Alternatively, the drainage channel may be lined with stone.

### Design

See the following for complete design references: Site Planning for Urban Stream Protection. 1995. Schueler. Center for Watershed Protection.

The length of the drainage channel depends on the slope, contributing impervious surface area, and runoff volume. Because drainage channels with low velocities can act as sediment traps, add extra capacity to address sediment accumulation without reducing design capacity. Add an extra 0.3 to 0.5

feet of freeboard depth, if sediment accumulation is expected. Use side slopes of 3:1 or flatter to prevent side slope erosion. Make the longitudinal slope of the channel as flat as possible and not greater than 5%.

Install check dams in drainage channels when necessary to achieve velocities of 5 feet per second or less. Do not use earthen check dams because they tend to erode on the downstream side, and it is difficult to establish and maintain grass on the dams. The maximum ponding time behind the check dam should not exceed 24 hours. Use outlet protection at discharge points from a drainage channel to prevent scour at the outlet.

The design for the drainage channel must include access for maintenance. When located along a highway, provide a breakdown lane with a width of 15 feet. When located along a street, off-street parking can be doubled up as the access, provided signs are posted indicating no parking is allowed during maintenance periods. When locating drainage channels adjacent to pervious surfaces, include a 15-foot wide grass strip to provide access for maintenance trucks.

### Construction

Use temporary erosion and sediment controls during construction. Soil amendments, such as aged compost that contains no biosolids, may be needed to encourage vegetation growth. Select a vegetation mix that suits the characteristics of the site. Seeding will require mulching with appropriate materials, such as mulch matting, straw, wood chips, other natural blankets, or synthetic blankets. Anchor blanket immediately after seeding. Provide new seedlings with adequate water until they are well established. Refer to the "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials" for information regarding seeding, mulching, and use of blankets.

### Maintenance

The maintenance and inspection schedule should take into consideration the effectiveness of the drainage channel. Inspect drainage channels the first few months after construction to make sure that there is no rilling or gullying, and that vegetation in the channels is adequate. Thereafter, inspect the channel twice a year for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sediment accumulation.

Regular maintenance tasks include mowing, fertilizing, liming, watering, pruning, weeding, and pest control. Mow channels at least once per year. Do not cut the grass shorter than three to four inches. Keep grass height under 6 inches to maintain the design depth necessary to serve as a conveyance. Do not mow excessively, because it may increase the design flow velocity.

Remove sediment and debris manually at least once per year. Re-seed periodically to maintain the dense growth of grass vegetation. Take care to protect drainage channels from snow removal procedures and off-street parking. When drainage channels are located on private residential property, the operation and maintenance plan must clearly specify the private property owner who is responsible for carrying out the required maintenance. If the operation and maintenance plan calls for maintenance of drainage channels on private properties to be performed by a public entity or an association (e.g. homeowners association), maintenance easements must be obtained.

# Appendix D
# StormCAD

- 25-year Storm Drain Calculations

# 25-Year Storm Drain Calculations

Project: Meadow Walk at Sudbury | Project #: 13125.00
Location: Sudbury, MA | Sheet: 1 of 1
Calculated By: BMG/KEJ | Date: 3/30/2016
Title: 25-Year Storm Drain Calculations per Stormcad Model

| Start Node | Stop Node | Upstream Invert (ft) | Downstream Invert (ft) | Slope (ft/ft) | Manning's n | Diameter (in) | Length (ft) | System Intensity (in/hr) | Upstream Inlet Area (sf) | Upstream Inlet C (acres) | Flow (cfs) | Capacity (cfs) | Average Velocity (ft/s) | Elevation Ground Start (ft) | Cover Start (ft) | Elevation Ground Stop (ft) | Cover Stop (ft) | Hydraulic Grade Line In (ft) | Hydraulic Grade Line Out (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CB-1 | DMH-1 | 152.3 | 151.4 | 0.005 | 0.012 | 12 | 177.6 | 6 | 13,070 | 0.798 | 1.45 | 2.74 | 3.06 | 155.3 | 2 | 155.8 | 3.4 | 152.82 | 152.07 |
| CB-10 | WQU-3 | 148.0 | 145.5 | 0.039 | 0.013 | 12 | 64.5 | 6 | 31,533 | 0.76 | 3.3 | 7.0 | 4.6 | 152.0 | 3.0 | 151.3 | 4.8 | 148.8 | 146.9 |
| CB-11 | DMH-14 | 143.5 | 143.0 | 0.010 | 0.012 | 18 | 50.9 | 6 | 73,116 | 0.76 | 7.8 | 11.3 | 5.6 | 149.5 | 4.5 | 148.3 | 3.8 | 144.6 | 144.1 |
| CB-12 | DMH-14 | 144.0 | 143.5 | 0.025 | 0.013 | 12 | 20.1 | 6 | 7,212 | 0.90 | 0.9 | 5.6 | 2.5 | 148.0 | 3.0 | 148.3 | 3.8 | 144.4 | 144.1 |
| CB-13 | WQU-4 | 143.0 | 142.5 | 0.029 | 0.013 | 12 | 17.5 | 6 | 7,106 | 0.80 | 0.8 | 6.1 | 1.8 | 148.0 | 4.0 | 148.5 | 5.0 | 143.4 | 143.5 |
| CB-14 | WQU-1 | 150.7 | 149.6 | 0.05 | 0.013 | 12 | 21.6 | 6 | 12,175 | 0.67 | 1.13 | 7.97 | 5.16 | 153.7 | 2 | 155.5 | 4.9 | 151.15 | 149.86 |
| CB-2 | DMH-1 | 152.7 | 152.6 | 0.011 | 0.012 | 12 | 9.5 | 6 | 10,968 | 0.85 | 1.3 | 4.1 | 3.9 | 155.7 | 2.0 | 155.8 | 2.2 | 153.2 | 153.0 |
| CB-3 | WQU-2 | 150.4 | 150 | 0.044 | 0.012 | 12 | 9.2 | 6 | 12,510 | 0.875 | 1.5 | 8.1 | 3.6 | 155.6 | 4.2 | 156.0 | 5.0 | 150.9 | 150.6 |
| CB-4 | DMH-8 | 148.8 | 148.6 | 0.015 | 0.013 | 12 | 13.0 | 6 | 9,200 | (N/A) | 1.2 | 4.4 | 2.6 | 151.8 | 2.0 | 152.3 | 2.7 | 149.3 | 149.3 |
| CB-5 | DMH-8 | 148.8 | 148.6 | 0.011 | 0.013 | 12 | 19.0 | 6 | 55,500 | (N/A) | 2.9 | 3.7 | 5.0 | 151.8 | 2.0 | 152.3 | 2.7 | 149.5 | 149.3 |
| CB-8 | DMH-12 | 148.9 | 148.7 | 0.011 | 0.012 | 12 | 18.3 | 6 | 3,196 | 0.90 | 0.4 | 4.1 | 2.9 | 151.9 | 2.0 | 151.8 | 2.1 | 149.2 | 148.9 |
| CB-9 | DMH-12 | 148.9 | 148.7 | 0.011 | 0.012 | 12 | 17.7 | 6 | 3,592 | 0.60 | 0.3 | 4.1 | 2.6 | 151.9 | 2.0 | 151.8 | 2.1 | 149.1 | 148.9 |
| CO-1 | DRYW-1 | 153.5 | 152.1 | 0.005 | 0.012 | 18 | 291.1 | 6 | 40,000 | 0.9 | 5 | 7.89 | 4.75 | 156.9 | 1.9 | 156.5 | 2.9 | 154.37 | 152.96 |
| DMH-1 | DMH-2 | 151.3 | 150.9 | 0.005 | 0.012 | 12 | 75.2 | 5.806 | (N/A) | (N/A) | 2.7 | 2.8 | 4.3 | 155.8 | 3.5 | 156.5 | 4.6 | 152.1 | 151.6 |
| DMH-11 | DMH-12 | 146.9 | 145.9 | 0.007 | 0.012 | 24 | 137.7 | 5.818 | (N/A) | (N/A) | 16.1 | 20.9 | 7.0 | 153.6 | 4.7 | 151.8 | 3.9 | 148.4 | 147.2 |
| DMH-12 | WQU-3 | 145.8 | 145.5 | 0.008 | 0.012 | 24 | 39.4 | 5.752 | (N/A) | (N/A) | 16.69 | 21.49 | 7.09 | 151.8 | 4 | 151.3 | 3.8 | 147.27 | 146.84 |
| DMH-14 | WQU-4 | 142.9 | 142.5 | 0.006 | 0.012 | 18 | 67.5 | 5.97 | (N/A) | (N/A) | 8.6 | 8.8 | 5.8 | 148.3 | 3.9 | 148.5 | 4.5 | 144.1 | 143.6 |
| DMH-2 | WQU-2 | 150.8 | 150.0 | 0.006 | 0.013 | 12 | 138.2 | 5.748 | (N/A) | (N/A) | 2.6 | 2.7 | 4.2 | 156.5 | 4.7 | 156.0 | 5.0 | 151.6 | 150.7 |
| DMH-4 | DMH-5 | 151.6 | 151.3 | 0.004 | 0.012 | 12 | 68.9 | 5.762 | (N/A) | (N/A) | 2.4 | 2.5 | 3.4 | 157.1 | 4.5 | 155.2 | 2.9 | 152.4 | 152.2 |
| DMH-4 | EX-FES-1 | 151.6 | 151.5 | 0.002 | 0.013 | 12 | 62.2 | 5.762 | (N/A) | (N/A) | 2.5 | 1.4 | 3.8 | 157.1 | 4.5 | 155.0 | 2.5 | 152.6 | 152.2 |
| DMH-5 | EX-FES-2 | 151.15 | 151 | 0.003 | 0.013 | 12 | 44.2 | 5.694 | (N/A) | (N/A) | 2.37 | 2.08 | 3.02 | 155.2 | 3.05 | 155 | 3 | 152.2 | 152 |
| DMH-6 | WQU-1 | 150.5 | 149.6 | 0.011 | 0.012 | 12 | 85.1 | 5.984 | (N/A) | (N/A) | 0.8 | 4.0 | 3.0 | 156.9 | 5.4 | 155.5 | 4.9 | 150.9 | 150.0 |
| DMH-8 | DMH-11 | 148.5 | 147 | 0.007 | 0.013 | 15 | 202.3 | 5.983 | (N/A) | (N/A) | 4.08 | 5.57 | 4.06 | 152.3 | 2.55 | 153.6 | 5.35 | 149.32 | 148.35 |
| DRYW-1 | DMH-4 | 152 | 151.7 | 0.006 | 0.012 | 18 | 49 | 5.796 | (N/A) | (N/A) | 4.83 | 8.9 | 4.92 | 156.5 | 3 | 157.1 | 3.9 | 152.84 | 152.49 |
| EX-STRUCTURE-2 | EX-STRUCTURE-3 | 145.8 | 144.8 | 0.007 | 0.013 | 24 | 147.7 | 5.694 | (N/A) | (N/A) | 1.9 | 18.6 | 2.7 | 154.8 | 7.0 | 154.9 | 8.1 | 146.3 | 145.5 |
| EX-STRUCTURE-3 | OF-1 | 145 | 144 | 0.008 | 0.013 | 24 | 126 | 5.508 | (N/A) | (N/A) | 1.8 | 20.2 | 3.6 | 154.9 | 7.9 | 154.5 | 8.5 | 145.5 | 144.4 |
| IN-1 | OF-23 | 151 | 150.8 | 0.011 | 0.012 | 18 | 18.6 | 6 | 29,683 | 0.756 | 3.1 | 11.7 | 4.7 | 153.6 | 1.1 | 152.4 | 0.1 | 151.7 | 151.4 |
| IN-2 | FES-1 | 151.2 | 151.1 | 0.01 | 0.013 | 18 | 9.7 | 6 | 32,711 | 0.883 | 4.01 | 10.5 | 4.81 | 152.7 | 0 | 152.6 | 0 | 151.97 | 151.78 |
| IN-3 | FES-2 | 151.2 | 151.1 | 0.012 | 0.013 | 18 | 7.5 | 6 | 33,879 | 0.878 | 4.13 | 11.74 | 4.93 | 152.7 | 0 | 152.6 | 0 | 151.98 | 151.77 |
| OCS-1 | DMH-11 | 149.0 | 147.0 | 0.074 | 0.013 | 18 | 27.3 | 6 | (N/A) | (N/A) | 12.1 | 28.6 | 7.3 | 153.6 | 3.1 | 153.6 | 5.1 | 150.3 | 148.4 |
| TRENCH DRAIN | DMH-6 | 151.4 | 151.0 | 0.019 | 0.012 | 8 | 20.7 | 6 | 6,758 | 0.90 | 0.8 | 1.8 | 4.2 | 152.5 | 0.4 | 156.9 | 5.2 | 151.8 | 151.3 |
| WQU-1 | EX-STRUCTURE-2 | 149.3 | 148.5 | 0.004 | 0.012 | 12 | 214.8 | 5.889 | (N/A) | (N/A) | 1.94 | 2.35 | 3.67 | 155.5 | 5.2 | 154.8 | 5.3 | 149.99 | 149.09 |
| WQU-2 | OF-1 | 149.7 | 146.0 | 0.016 | 0.013 | 12 | 225.2 | 5.639 | (N/A) | (N/A) | 4.0 | 4.6 | 6.1 | 156.0 | 5.3 | 154.5 | 7.5 | 150.6 | 146.7 |
| WQU-3 | OF-26 | 145.3 | 145 | 0.009 | 0.012 | 24 | 33.1 | 5.733 | (N/A) | (N/A) | 19.85 | 23.37 | 7.75 | 151.3 | 4 | 150.9 | 3.9 | 146.9 | 146.45 |
| WQU-4 | OF-27 | 142.3 | 141.1 | 0.011 | 0.012 | 18 | 107.4 | 5.932 | (N/A) | (N/A) | 9.33 | 12.05 | 6.89 | 148.5 | 4.7 | 146.5 | 3.9 | 143.48 | 142.09 |

# Appendix E
# Construction Phase Erosion and Sedimentation Control Draft SWPPP

# Grocery Store at Meadow Walk Sudbury

## 526-528 Boston Post Road
## Sudbury, Massachusetts

CONSTRUCTION ACTIVITIES AT:
526-528 Boston Post Road
Sudbury, Massachusetts

PROPERTY OWNER:
BPR Sudbury Development LLC
c/o National Development
2310 Washington Street
Newton Lower Falls, MA 02462

PREPARED ON BEHALF OF:
BPR Development LLC
c/o National Development
2310 Washington Street
Newton Lower Falls, MA 02462

PREPARED BY:
**Vanasse Hangen Brustlin, Inc.**
101 Walnut Street
Watertown, Massachusetts 02471
T (617) 924-1770

**SWPPP Preparation Date:** March 2016
**Revised:** April 2016
**Estimated Project Start Date:**
**Estimated Project End Date:**

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# Table of Contents

# List of Attachments

# List of Tables

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# Introduction and Instruction to Contractor

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the guidelines for the National Pollutant Discharge Elimination System (NPDES) Construction General Permit for Stormwater Discharges from Construction Activity (2012, USEPA).

A copy of the Construction General Permit (CGP) for which this SWPPP was prepared is attached hereto. The CGP authorizes the discharge of stormwater from construction activities in accordance with specified terms and conditions. All construction projects that propose to disturb one (1) or more acres of land must comply with the CGP. A construction project that is part of a larger common plan that will ultimately disturb one or more acres of land must also comply.

Compliance with the CGP is achieved by:

- Developing and implementing a SWPPP;
- Completing, certifying and submitting a Notice of Intent (NOI) to the Environmental Protection Agency (EPA); and
- Reading and complying with the requirements contained in the CGP and the Order of Conditions.

Compliance with the CGP and its Standard Permit Conditions is the responsibility of the site Operator. An Operator is any party associated with a construction project that meets either of the following two criteria:

- The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- The party has day-to-day operational control of those activities at a project, which are necessary to ensure compliance with a SWPPP for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions).

The Operators have been identified under Section 1.1 Operator(s) / Subcontractor(s). Each Operator shall identify at least one person from each respective organization that will be responsible for complying with the CGP and SWPPP.

The NPDES CGP, SWPPP, and the EPA-issued authorization must be kept on file at the Project field office. The SWPPP shall be kept current and shall be amended according to the conditions described in the CGP.

This manual provides the following information, as required by the NPDES Permit:

- Contact Information and Responsible Parties
- Site Evaluation, Assessment, and Planning
  - Site Description
  - Development Description
  - Wetland Characteristics
  - Drainage Characteristics
  - Rare and Endangered Species Data
  - Historic Preservation Data
- Documentation of Compliance with Other Federal Reglulations
- Erosion and Sediment Controls
- Pollution Prevention Standards
- Inspections and Corrective Actions
- Training
- Certifications and Notification
- Site Plans
- The text of the 2012 CGP
- The EPA-issued authorization
- Underground Injection Control Forms

The SWPPP must be prepared prior to filing of the Notice of Intent (NOI). The NOI must be filed electronically, on the U.S. EPA website (www.epa.gov) at least fourteen (14) days prior to the start of construction.

In order to complete the pre-construction SWPPP, the General Contractor must complete the following to finalize the SWPPP:

- Certify that they have read and understand the terms of the NPDES Permit. (Attachment H).
- Review this manual, fill out relevant information in the spaces provided (or attach additional pages as necessary) and update and/or revise as necessary.
- Provide the names and contact information for all parties responsible for preparing, finalizing, amending, and implementing the SWPPP (Section 1).

- Install a sign or other notice posted conspicuously at a safe, publicly accessible location, in close proximity to the project site. At a minimum, the notice shall include the NPDES Permit tracking number and a contact name and phone number for obtaining additional project information.
- Review local by-laws or ordinances.

The SWPPP is a dynamic document, and must be continually updated by the contractor throughout construction. However, this manual does not comprise a complete SWPPP. It is the responsibility of the contractor to update and complete this manual by including the following information (and additional information, if necessary) as required by the terms of the CGP:

- Designate and Provide Contact Information for the Responsible Parties. See Section 1. Also see Attachments H, J, and K.
- Provide documentation confirming EPA authorization of the Project. Insert into Attachment D.
- Provide documentation of correspondence with Massachusets Historical Commission. Submit the Project Notification Form (PNF) (See Attachment L) to Massachusetts Historic Commission and fill out Section 3.2.
- Document compliance with DEP regulations 310 CMR 27.00. See Section 3.3.
- Provide a construction schedule including dates of major earthwork, stabilization and/or erosion control installations. See Table 5 and Appendix I.
- Document the installation and maintenance of Erosion and Sediment Controls. Update location and types of sedimentation and erosion control materials as necessary. See Section 4.
- Identify any chemical treatments that may be applied to the site and describe dosage, application techniques, and training for personnel. See Section 4.12, Section 7 and Attachment J.
- Identify potential sources of pollution. See Section 5.1 and Table 8.
- Provide information for Spill Notification Procedures. See Section 5.2 and Attachment N.
- Identify personnel responsible for Inspections and Corrective Actions. See Section 6, Attachment F.
- Provide an inspection Schedule. See Section 6.1.
- Document any spills and incorporate documentation into the SWPPP .
- Document off-site sedimentation resulting from this construction.

The contractor-completed SWPPP must be updated throughout construction, until a Notice of Termination (NOT) Form has been submitted to the EPA. From the date of

submital of the NOT form, the SWPPP documents must be maintained by the Site operator for a period of three years.

# 1

# Contact Information and Responsible Parties



## 1.1 Operator(s) / Subcontractor(s)

**Operator(s):**

Company or Organization Name: _____

Name: _____

Address: _____

City, State, Zip: _____

Telephone: _____

Fax/Email: _____

Area of responsibility: _____

## Subcontractor(s):

Company or Organization Name: _____

Name: _____

Address: _____

City, State, Zip: _____

Telephone: _____

Fax/Email: _____

Area of responsibility: _____

*Insert pages for additional subcontractors as necessary.*

## Emergency 24-hour Contact:

Company or Organization Name: _____

Name: _____

Address: _____

City, State, Zip: _____

Telephone: _____

Email: _____

## 1.2 Stormwater Team

The duties of these personnel include one or more of the following:

1. Prepare the Draft SWPPP
2. Finalize the SWPPP
3. Implement the SWPPP
4. Oversee maintenance practices identified as BMPs in the SWPPP
5. Conduct or provide for inspection and monitoring activities
6. Identify other potential pollutant sources and make sure that they are added to the plan
7. Identify any amendments to the SWPPP necessitated by field conditions and make sure they are implemented
8. Ensure that any design changes during construction are addressed in the SWPPP

| | |
|---|---|
| **Role or Responsibility:** | 1 |
| **Company:** | Vanasse Hangen Brustlin, Inc. (VHB)<br>101 Walnut Street, Watertown, MA 02471 |
| **Name:** | Karen Staffier, P.E. |
| **Telephone:** | (617) 607.0088 |
| **Email:** | karenstaffier@vhb.com |

| | |
|---|---|
| **Role or Responsibility:** | 2, 3, 4, 5, 6, 7, 8 |
| **Company:** | |
| **Name:** | |
| **Telephone:** | |
| **Fax/Email:** | |

**Role or Responsibility:** _____

**Position:** _____

**Name:** _____

**Telephone:** _____

**Fax/Email:** _____

**Role or Responsibility:** _____

**Position:** _____

**Name:** _____

**Telephone:** _____

**Fax/Email:** _____

**Additional information if necessary**

# 2

# Site Evaluation, Assessment and Planning



## 2.1 Project/Site Information

**Project Name and Address**

| | |
|---|---|
| Project/Site Name: | **Grocery Store at Meadow Walk Sudbury** |
| Project Street/Location: | 526-528 Boston Post Road |
| City: | Sudbury |
| State: | Massachusetts |
| Zip Code: | 01776 |
| County | Middlesex County |

### Project Latitude/Longitude

**Latitude:**

1. _ _ _ _ ' _ _" N (degrees, minutes, seconds)
2. _ _ º _ _ . _ _' N (degrees, minutes, decimal)
3. 42.360492º N (decimal)

**Longitude:**

1. _ _ _ _ ' _ _" W (degrees, minutes, seconds)
2. _ _ º _ _ . _ _' W (degrees, minutes, decimal)
3. 71.429708º W (decimal)

**Method for determining latitude/longitude:**

☐ USGS topographic map (specify scale: _____)

☐ EPA Web site

☐ GPS

☒ Other (please specify): Maps.google.com

**Horizontal Reference Datum:**

☐ NAD 27 ☐ NAD 83 or WGS 84 ☒ Unknown

If you used a U.S.G.S topographic map, what was the scale?

_____

## Additional Project Information

| | |
|---|---|
| Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe? | ☐ Yes ☒ No |
| *Contractor must submit a Project Notification Form to Massachusetts Historic Commission to confirm. See Attachment L for documentation. | |
| If yes, provide the name of the Indian tribe associated with the area of Indian country (including the name of Indian reservation if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property: | n/a |
| If you are conducting earth-disturbing activities in response to a public emergency, document the cause of the public emergency *(e.g., natural disaster, extreme flooding conditions)*, information substantiating its occurrence *(e.g., state disaster declaration)*, and a description of the construction necessary to reestablish effective public services: | n/a |
| Are you applying for permit coverage as a "federal operator" as defined in Appendix A of the 2012 CGP? | ☐ Yes ☒ No |

## 2.2 Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? ☐ Yes ☒ No

Are there any surface waters that are located within 50 feet of your construction disturbances? ☒ Yes ☐ No

### Table 1. Names of Receiving Waters

Name(s) of the first surface water that receives stormwater directly from your site and/or from the MS4 (note: multiple rows provided where your site has more than one point of discharge that flows to different surface waters)

1. On-site unnamed wetlands
2. Off-site unnamed wetlands, tributary to Hop Brook
3.
4.
5.
6.

### Table 2. Impaired Waters/TMDLs

(Answer the following for each surface water listed in Table 1 above)

| | Is this surface water listed as "impaired"? | If you answered yes, then answer the following: | | | |
|---|---|---|---|---|---|
| | | What pollutant(s) are causing the impairment? | Has a TMDL been completed? | Title of the TMDL document | Pollutant(s) for which there is a TMDL |
| 1. | ☐ YES ☒ NO | | ☐ YES ☒ NO | | |
| 2. | ☐ YES ☒ NO | | ☐ YES ☒ NO | | |
| 3. | ☐ YES ☐ NO | | ☐ YES ☐ NO | | |
| 4. | ☐ YES ☐ NO | | ☐ YES ☐ NO | | |
| 5. | ☐ YES ☐ NO | | ☐ YES ☐ NO | | |
| 6. | ☐ YES ☐ NO | | ☐ YES ☐ NO | | |

Describe the method(s) you used to determine whether or not your project/site discharges to an impaired water: VHB used the US EPA Impaired Waterbodies database found online at http://iaspub.epa.gov/tmdl/attains_state.control?p_state=MA&p_cycle=&p_report_type=T.

**Table 3. Tier 2, 2.5, or 3 Waters**

(Answer the following for each surface water listed in Table 1 above)

| | Is this surface water designated as a Tier 2, Tier 2.5, or Tier 3 water? (see Appendix F) | If you answered yes, specify which Tier (2, 2.5, or 3) the surface water is designated as? |
|---|---|---|
| **1.** | ☐ YES ☒ NO | |
| **2.** | ☐ YES ☒ NO | |
| **3.** | ☐ YES ☐ NO | |
| **5.** | ☐ YES ☐ NO | |
| **6.** | ☐ YES ☐ NO | |

Source: http://www.mass.gov/eea/docs/dep/water/laws/i-thru-z/tblfig.pdf

## 2.3 Nature of the Construction Activity

### General Description of Project

Provide a general description of the construction project:

The Applicant, BPR Development LLC, is proposing to construct a 45,000 sqaure foot grocery store on the existing 50 acre parcel located at 526-528 Boston Post Road in Sudbury, MA (the Project). See Figure 1, Site Location Map.

As proposed, the Project includes 45,000 sqaure feet of building/store space, including 5,000 square feet of mezzanine, ancillary landscape improvements, parking spaces, loading bays, and utility and stormwater improvements to support this use.

The Project Site lies within the SuAsCo surface watershed and there are several wetland resources on the Site. The National Resources Conservation Service (NRCS) has classified surface soils on the Site as predominantly Udorthents-Urban Land complex.

### Size of Construction Project

What is the size of the property (in acres), the total area expected to be disturbed by the construction activities (in acres), and the maximum area expected to be disturbed at any one time?

- Total Property Size: 50 acres
- Total Area of Construction Disturbances: approximately 18 acres
- Maximum area to be disturbed at any one time: up to approximately 18 acres

### Construction Support Activities (only provide if applicable)

Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas).

### Table 4. Construction Support Activities

The contractor will describe construction support activities here (insert additional sheets as necessary)

## 2.4 Sequence and Estimated Dates of Construction Activities

For each phase of construction, include the following information:

- Installation of stormwater controls, and when they will be made operational;
- Commencement and duration of earth-disturbing activities, including clearing and grubbing, mass grading, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
- Cessation, temporarily or permanently, of construction activities on the site, or in designated portions of the site;
- Final or temporary stabilization of areas of exposed soil. The dates for stabilization must reflect the applicable deadlines to which you are subject to in Part 2.2.1; and
- Removal of temporary stormwater conveyances/channels and other stormwater control measures, removal of construction equipment and vehicles, and cessation of any pollutant-generating activities.

The construction sequence must reflect the following requirements:

- Part 2.1.1.1 (area of disturbance);
- Part 2.1.1.3.a (installation of stormwater controls); and
- Parts 2.2.1.1, 2.2.1.2, 2.2.1.3 (stabilization deadlines).

**Table 5. Construction Schedule**

| Date | Activity |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

## 2.5 Allowable Non-Stormwater Discharges

**Table 6. Allowable Non-Stormwater Discharges Present at the Site**

| | Likely to be Present at the Site | |
|---|---|---|
| **Type of Allowable Non-Stormwater Discharges Present at the Site** | **Yes** | **No** |
| Discharges from emergency fire-fighting activities | x | |
| Fire hydrant flushings | x | |
| Landscape irrigation | x | |
| Waters used to wash vehicles and equipment | x | |
| Water used to control dust | x | |
| Potable water including uncontaminated water line flushings | x | |
| Routine external building wash down | x | |
| Pavement wash waters | x | |
| Uncontaminated air conditioning or compressor condensate | x | |
| Uncontaminated, non-turbid discharges of ground water or spring water | x | |
| Foundation or footing drains | x | |
| Construction dewatering water | x | |

## 2.6 Site Maps

Attachment A contains the Project Plans for this project.
Attachment C contains Site Maps including the:

- Site Location Map
- FEMA Flood Insurance Rate Map
- Soil Map
- SWPPP Erosion and Sedimentation Control Measures

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# 3

# Documentation of Compliance with Other Federal Requirements



## 3.1 Endangered Species Protection

### Eligibility Criterion

Under which criterion listed in Appendix D of the Construction General Permit are you eligible for coverage under this permit?

The proponent will be consulting with the Massachusetts Natural Heritage & Endangered Spexies Program (NHESP) prior to submitting the eNOI.

☐ A ☐ B ☐ C ☐ D ☐ E

- **Criterion A.** No federally listed threatened or endangered species or their designated critical habitat(s) are likely to occur in your site's "action area" as defined in Appendix A of this permit.
- **Criterion B.** The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your action area under eligibility Criterion A, C, D, E, or F and there is no reason to believe that federally-listed species or federally-designated critical habitat not considered in the prior certification may be present or located in the "action area". To certify your eligibility under this Criterion, there must be no lapse of NPDES permit coverage in the other operator's certification. By certifying eligibility under this Criterion, you agree to comply with any effluent limitations or conditions upon which the other operator's certification was based. You must include in your NOI the tracking number from the other operator's notification of authorization under this permit. If your certification is based on another operator's certification under Criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in Criterion C in your NOI form.

- **Criterion C.** Federally listed threatened or endangered species or their designated critical habitat(s) are likely to occur in or near your site's "action area," and your site's discharges and discharge-related activities are not likely to adversely affect listed threatened or endangered species or critical habitat. This determination may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect listed species and critical habitat. To make this certification, you must include the following in your NOI: 1) any federally listed species and/or designated habitat located in your "action area"; and 2) the distance between your site and the listed species or designated critical habitat (in miles). You must also include a copy of your site map with your NOI.

- **Criterion D.** Coordination between you and the Services has been concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on federally-listed threatened or endangered species and federally designated critical habitat, and must have resulted in a written concurrence from the relevant Service(s) that your site's discharges and discharge-related activities are not likely to adversely affect listed species or critical habitat. You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

- **Criterion E.** Consultation between a Federal Agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the ESA has been concluded. The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on federally listed threatened or endangered species and federally-designated critical habitat. The result of this consultation must be either:

  i. a biological opinion that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species, nor the destruction or adverse modification of critical habitat; or

  ii. written concurrence from the applicable Service(s) with a finding that the site's discharges and discharge-related activities are not likely to adversely affect federally-listed species or federally designated habitat.

  You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

- **Criterion F.** Your construction activities are authorized through the issuance of a permit under section 10 of the ESA, and this authorization addresses the effects of the site's discharges and discharge-related activities on federally-listed species and federally designated critical habitat. You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

For reference purposes, the eligibility criteria listed in Appendix D of the Construction General Permit are as follows:

### Supporting Documentation

Provide documentation for the applicable eligibility criterion you select in Appendix D of the Construction General Permit, as follows:

For criterion A, indicate the basis for your determination that no federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in your site's action area (as defined in Appendix A of the permit). Check the applicable source of information you relied upon:

☐ Specific communication with staff of the U.S. Fish & Wildlife Service or National Marine Fisheries Service.

☐ Publicly available species list.

☐ Other source

**For criterion B,** provide the Tracking Number from the other operator's notification of permit authorization:

Provide a brief summary of the basis used by the other operator for selecting criterion A, B, C, D, E, or F:

**For criterion C**, provide the following information:

- Any federal ylisted species and/or designated habitat located in your "action area":
- The distance between your site and the listed species or designated critical habitat (in miles). You must also include a copy of your site with your NOI.

**For criterion D, E, or F**, attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding consultation or coordination activities.

## 3.2 Historic Preservation

The Operator responsible for finalizing this SWPPP must:

- Fill out the answers to the questions below for
  - Appendix E, Step 2
  - Appendix E, Step 3
  - Appendix E, Step 4
- Insert copies of any correspondence with the Massachusetts Historical Commission into Attachment L.

## Appendix E, Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

☐ Dike
☒ Berm
☒ Catch Basin
☒ Pond (Bioretention Basin)
☒ Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)
☐ Culvert
☒ Other type of ground-disturbing stormwater control: Subsurface infiltration structures

(Note: If you will not be installing any ground-disturbing stormwater controls, no further documentation is required for Section 3.2 of the Template.)

## Appendix E, Step 2

If you answered yes in Step 1, have prior surveys or evaluations conducted on the site already determined that historic properties do not exist, or that prior disturbances at the site have precluded the existence of historic properties?

☒ YES, prior disturbances at the site have precluded the existence of historic properties ☐ NO

If yes, no further documentation is required for Section 3.2 of the Template. If no, proceed to Appendix E, Step 3.

## Appendix E, Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties?

☐ YES ☐ NO

If yes, provide documentation of the basis for your determination. If no, proceed to Appendix E, Step 4.

## Appendix E, Step 4

If you answered no in Step 3, did the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Office (THPO), or other tribal representative (whichever applies) respond to you within 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties?

☐ YES ☐ NO

If no, no further documentation is required for Section 3.2 of the Template.

If yes, describe the nature of their response:

☐ Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions. *INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE*

☐ No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls. *INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE*

☐ Other:

## 3.3 Safe Drinking Water Act Underground Injection Control Requirements

Do you plan to install any of the following controls? Check all that apply below.

☐ Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

☐ Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow

☒ Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

All stormwater structures meeting the definition of Underground Injection Wells shall be registered in accordance with DEP regulations 310 CMR 27.00. A copy of this application is included in Attachment O.

# 4

# Erosion and Sediment Controls



The purpose of an erosion and sedimentation control program is to minimize the discharge of pollutants from earth-disturbing activities during the construction phase of the project. The program incorporates BMPs specified in guidelines developed by the DEP[1] and the U.S. Environmental Protection Agency[2] and complies with the requirements of the NPDES General Permit for Storm Water Discharges from Construction Activities.

Proper implementation of the erosion and sedimentation control program will:

- minimize exposed soil areas through temporary stabilization and construction sequencing;
- minimize sediment track-out from the site;
- minimize the generation of dust;
- minimize soil compaction;
- place structures to manage stormwater runoff and erosion; and
- establish permanent vegetative cover or other forms of stabilization in accordance with Part 2.2 of the Permit.

Installation of stormwater controls must be completed prior to the commencement of each phase of earth-disturbing activities. All manufactured control measures must be installed and maintained in accordance with the manufacturer's specifications. The site contractor must inspect all erosion and sediment controls in accordance with the applicable requirements in CGP Part 4.1, and document findings in accordance with Part 4.1.7 of the Permit.

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O-xxiii Attachment O-Stormwater Discharge Well Registration

1 Massachusetts Department of Environmental Protection, 1993. *Massachusetts Nonpoint Source Management Manual, The Megamanual: A Guidance Document for Municipal Officials.*

2 United States Environmental Protection Agency, 1992. *Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.*

The following sections describe the erosion and sedimentation controls that will be used on this site. The contractor will implement, modify, and add to these stormwater controls, when required.

## 4.1 Natural Buffers or Equivalent Sediment Controls

### Buffer Compliance Alternatives

Are there any surface waters within 50 feet of your project's earth disturbances?

☒ YES ☐ NO
(Note: If no, no further documentation is required for the SWPPP Template.)

Check the compliance alternative that you have chosen:

☐ I will provide and maintain a 50-foot undisturbed natural buffer.
(Note (1): You must show the 50-foot boundary line of the natural buffer on your site map.)
(Note (2): You must show on your site map how all discharges from your construction disturbances through the natural buffer area will first be treated by the site's erosion and sediment controls. Also, show on the site map any velocity dissipation devices used to prevent erosion within the natural buffer area.)

☐ I will provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
(Note (1): You must show the boundary line of the natural buffer on your site map.)
(Note (2): You must show on your site map how all discharges from your construction disturbances through the natural buffer area will first be treated by the site's erosion and sediment controls. Also, show on the site map any velocity dissipation devices used to prevent erosion within the natural buffer area.)

☐ It is infeasible to provide and maintain an undisturbed natural buffer of any size, therefore I will implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

☒ I qualify for one of the exceptions in Part 2.1.2.1.e. (If you have checked this box, provide information on the applicable buffer exception that applies, below.)

### Buffer Exceptions

Which of the following exceptions to the buffer requirements applies to your site?

☒ There is no discharge of stormwater to surface waters through the area between the disturbed portions of the site and the surface waters located within 50 feet of disturbance.

Stormwater from construction disturbances will be directed to stormwater BMPs and not directly to the surface waters.
(Note: If this exception applies, no further documentation is required for Section 4.1 of the Template.)

☐ No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.
(Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)
(Note (2): Where some natural buffer exists but portions of the area within 50 feet of the surface water are occupied by preexisting development disturbances, you must still comply with the one of the CGP Part 2.1.2.1.a compliance alternatives.)

☐ For a "linear project" (defined in Appendix A), site constraints (e.g., limited right-of-way) make it infeasible for me to meet any of the CGP Part 2.1.2.1.a compliance alternatives.

☐ The project qualifies as "small residential lot" construction (defined in Part 2.1.2.1.e.iv and in Appendix A).

☐ Buffer disturbances are authorized under a CWA Section 404 permit.
(Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)
(Note (2): This exception only applies to the limits of disturbance authorized under the Section 404 permit, and does not apply to any upland portion of the construction project.)

☐ Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail).
(Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)

## 4.2 Perimeter Controls

### General

Installation of perimeter controls must be completed prior to the commencement of earth-disturbing activities.

## Specific Perimeter Controls

**Straw Wattle**

Straw wattles can be installed around the project work limits as perimeter controls. Straw wattles shall be as manufactured by *Earthsaver* or approved equivalent. Straw wattle size and compost fill material shall be in accordance with the manufacturer's recommendations. Straw wattles to be entrenched into the substrate approximately 3 inches to prevent underflow. Install in accordance with manufacturer recommendations.

## Date of Perimeter Control Installation

**Straw Wattle**

Date Installed: _____

## Maintenance Requirements

Straw wattles will be inspected in compliance with the inspection schedule specified in CGP Part 4.1.2 and maintained routinely throughout the duration of the project. In accordance with CGP Part 2.1.2.2.b, the contractor must remove sediment before it accumulates to one-half of the above-ground height of any perimeter control.

## Perimeter Silt Fence and Strawbales

Staked silt fence and straw bales can be used separately or in conjunction as erosion control barriers. They are staked in a line around perimeters of disturbed areas, especially those adjacent to wetlands, waterways, roadways or at the base of slopes. Perimeter barriers intercept, filter, and reduce the velocity of stormwater run-off.

## Date of Perimeter Control Installation

**Silt Fence and Strawbales**

Date Installed: _____

## Maintenance Requirements

Staked Strawbales will be inspected before forecasted storm events, daily during prolonged rain events. Sediment will be removed when it reaches two-thirds the hight of the strawbale or when it accumulates to a depth of one foot adjacent to the silt fence. Bales that are no longer in a condition to operate effectively (e.g. rotted) will be replaced as necessary.

## 4.3 Sediment Track-out

### General

A temporary crushed-stone construction entrance/exit will be constructed.

### Specific Track-Out Controls

**Stabilized Construction Exit**

A cross slope will be placed in the construction entrance to direct runoff to a protected catch basin inlet or settling area. If deemed necessary after construction begins, a wash pad may be included to wash off vehicle wheels before leaving the project site.

### Date of Track-Out Control Installation

**Stabilized Construction Exit**

Date of Installation: _____

### Maintenance Requirements

The exit shall be maintained in a condition which shall prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair or clean out or any measures used to trap sediment.

In the event that sediment is tracked-out of the site onto the surface of off-site streets, other paved areas, and sidewalks, the contractor will remove the deposited sediment by the end of the same work day. If track-out occurs on a non-work day, the contractor will remove the sediment by the end of the next work day. Sediment will be swept, shoveled, vacuumed or removed by similar means. Hosing or sweeping sediment directly into a stormwater conveyance, storm drain inlet, or surface water is prohibited.

Stabilized construction exit shall be removed prior to final finished materials being installed.

## 4.4 Stockpiled Sediment or Soil

### General

Any areas of exposed soil or stockpiles that will remain inactive for more than 14 days will be temporarily stabilized with vegetative or non-vegetative stabilization practices.

## Specific Stockpile Control

### Vegetative Stabilization

Vegetative stabilization practices will include seeding exposed surfaces with a seed mix containing a blend of rapid germinating grasses that are indigenous to central Massachusetts. Once seeded, areas will be covered with a layer of straw mulch according to the recommendations provided by the manufacturer.

### Non-Vegetative Stabilization

Non-vegetative stabilization practices will consist of applying a layer of straw mulch, or an erosion control blanket in accordance with manufacturer's specifications.

## Date of Stockpile Control Installation

### Vegetative Stabilization

Date Installed: _____

Date Installed: _____

Date Installed: _____

### Non-Vegetative Stabilization

Date Installed: _____

Date Installed: _____

Date Installed: _____

## Maintenance Requirements

In accordance with CGP Part 2.1.2.4, the contractor must comply with the following requirements for any stockpiles or land clearing debris composed, in whole or in part, of sediment or soil:

- Locate the piles outside of any natural buffers established under Part 2.1.2.1a and physically separated from other stormwater controls implemented in accordance with Part 2.1;
- Protect from contact with stormwater (including run-on) using a temporary perimeter sediment barrier;
- Where practicable, provide cover or appropriate temporary stabilization to avoid direct contact with precipitation or to minimize sediment discharge;
- Do not hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance (unless connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface water; and
- Unless infeasible, contain and securely protect from wind.

## 4.5 Minimize Dust

### General

When necessary larger areas of exposed soil will be wetted to prevent wind borne transport of fine grained sediment.

### Specific Dust Controls

#### Soil Wetting

Enough water shall be applied to wet the upper 0.5 inch of soil. The water will be applied as a fine spray in order to prevent erosion.

### Date of Dust Control Implementation

#### Soil Wetting

Date of Implementation: _____

Date of Implementation: _____

Date of Implementation: _____

### Maintenance Requirements

Large areas of exposed soils will routinely be inspected to determine if soil wetting is required.

## 4.6 Minimize the Disturbance of Steep Slopes

### General

Disturbances to steep slopes were minimized, to the maximum extent practicable, during the design phase of the project. Preservation of natural grading will occur where feasible and disturbances will be minimized through the implementation of erosion and sediment control practices designed for utilization on steep slopes.

Stabilization of open soil surfaces will be implemented within 14 days after grading or construction activities have temporarily or permanently ceased, unless there is sufficient snow cover to prohibit implementation. Vegetative slope stabilization will be used to minimize erosion on slopes of 3:1 or flatter. Annual grasses, such as annual rye, will be used to ensure rapid germination and production of root mass. Permanent stabilization will be completed with the planting of perennial grasses or legumes. Establishment of temporary and permanent vegetative cover may be established by hydro seeding or sodding. A suitable topsoil, good seedbed

preparation, and adequate lime, fertilizer and water will be provided for effective establishment of these vegetative stabilization methods. Mulch will also be used after permanent seeding to protect soil from the impact of falling rain and to increase the capacity of the soil to absorb water.

### Specific Steep Slope Controls

**Erosion Control Blanket**

Erosion control blankets will be installed by anchoring the top of the blanket in a 6 inch deep trench. The trench shall be backfilled and compacted after the blanket is secured with staples. The erosion control blanket will be installed in the direction of potential flow. Edges of the blankets must be stapled with approximately 4 inches overlap where 2 or more strip widths are required.

### Date of Steep Slope Control Installation

**Erosion Control Blanket**

Date of Installation: _____

Date of Installation: _____

Date of Installation: _____

### Maintenance Requirement

Erosion control blankets will be inspected in compliance with the inspection schedule specified in CGP Part 4.1.2 and maintained routinely throughout the duration of the project.

## 4.7 Topsoil

### General

Topsoil will be preserved throughout the site to the maximum extent practicable. Where it is infeasible to preserve topsoil in place it shall be repurposed throughout the site to the maximum extent practicable.

### Specific Topsoil Controls

**Topsoil Preservation/Repurpose**

Topsoil will be repurposed throughout the project site and excess topsoil will be disposed of in accordance with local, state and federal regulations, as necessary.

### Date of Topsoil Control Implementation

**Topsoil Preservation/Repurpose**

Date of Implementation: _____

Date of Implementation: _____

Date of Implementation: _____

## 4.8 Soil Compaction

### General

In order to avoid soil compaction the contractor will limit vehicle and equipment use in areas where final vegetative stabilization will occur or where infiltration practices will be installed.

Prior to seeding or planting of areas where final vegetative stabilization will occur or where infiltration practices will be installed techniques that condition soil, to support vegetative growth, will be implemented in the event exposed soils become compacted as a result of construction activities. Soil conditioning techniques shall be determined on an individual basis, if required.

### Specific Soil Compaction Controls

**Soil Conditioning Techniques**

### Date of Soil Compaction Control Implementation

Date of Implementation: _____
Date of Implementation: _____
Date of Implementation: _____

### Maintenance Requirement

## 4.9 Storm Drain Inlets

### General

Prior to any earth-disturbing activities inlet protection measures will be installed.

### Specific Storm Drain Inlet Controls

#### Siltsack Sediment Traps

Siltsack sediment traps will be installed at the inlets of existing and proposed catch basins throughout the site. Catch basin grates to be placed over siltsack.

#### Straw Bale and Non-Woven Filter Fabric

A straw bale barrier may be installed at the inlets or existing and proposed catch basins. If straw bales are used, a layer of non-woven filter fabric shall be placed beneath the grate of each catch basin.

### Date of Storm Drain Inlet Control Installation

#### Siltsack Sediment Trap

Date of Installation: _____

Date of Installation: _____

Date of Installation: _____

#### Straw Bale and Non-Woven Filter Fabric

Date of Installation: _____

Date of Installation: _____

Date of Installation: _____

### Maintenance Requirement

The contractor will clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation in or adjacent to the inlet protection measure, the contractor must remove the deposited sediment by the end of the same work day in which it is found or by the end of the following work day if removal by the same work day is not feasible. Sediment will be reused onsite or disposed of at a suitable off-site location.

## 4.10 Constructed Stormwater Conveyance Channels

### General

Constructed Stormwater Conveyance Channels will be used to collect runoff from construction areas and discharge to either sedimentation basins or protected catch basin inlets.

### Specific Constructed Stormwater Conveyance Channel Controls

**Diversion Channels**

Diversion channels will be used to collect runoff from construction areas and discharge to either sedimentation basins or protected catch basin inlets.

### Date of Constructed Stormwater Conveyance Channel Controls Construction

**Diversion Channels**

Date of Installation: _____

Date of Installation: _____

Date of Installation: _____

### Maintenance Requirement

Diversion channel s will be inspected weekly and after any rainfall. If breakout or erosion is observed, the diversion channel shall be reinforced or protected by an erosion control blanket.

## 4.11 Sediment Basins

### General

If the Site contractor discharges flows from the disturbed area into the rehabilitated retention pond, the rehabilitated retention pond will meet the requirements of CGP Part 2.1.3.2.

Temporary sediment basins will be designed either as excavations or bermed stormwater detention structures (depending on grading) that will retain runoff for a sufficient period of time to allow suspended soil particles to settle out prior to discharge. These temporary basins will be located based on construction needs as determined by the contractor and outlet devices will be designed to control velocity and sediment. Points of discharge from sediment basins will be stabilized to minimize erosion.

### Maintenance Requirements

(Note: At a minimum, you must comply with following requirement in CGP Part 2.1.3.2.b: "Keep in effective operating condition and remove accumulated sediment to maintain at least ½ of the design capacity of the sediment basin at all times.")

The sediment basins shall be inspected weekly and after any rainfall. If cracking, erosion, breakout, sediment build-up are observed, the basin shall be reinforced or cleaned out as needed. If accumulated sediment occupies at least ½ of the design

capacity (or is deposited to a depth greater than 6 inches), whichever is smaller, the basin will be cleaned out and sediments will be disposed of properly. If contaminants are observed in the basin(s), they shall be identified and cleaned up in accordance with local, state, and federal requirements.

## 4.12 Chemical Treatment

### Soil Types

List all the soil types (including soil types expected to be found in fill material) that are expected to be exposed during construction and that will be discharged to locations where chemicals will be applied:

Soils within existing developed areas are generally classified as Urban Land and Udorthents and a soil class determination (type A, B, C, or D) is not specified by the NRCS for the Site. The Site soils have been characterized as Class A & B soils based on a review of the NRCS maps for adjacent undisturbed parcels.

### Treatment Chemicals

List all treatment chemicals that will be used at the site and explain why these chemicals are suited to the soil characteristics:

**Table 7. List of Treatment Chemicals and Dosage/Use to be used on Site**

| Chemical | Dosage and Application Details |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

The contractor will comply with all treatment chemical usage requirements under Part 2.1.3.3 of the Permit by:

- utilizing conventional erosion and sediment controls prior to and after the application of any treatment chemical;

- selecting treatment chemicals suitable to the types of soils likely to be exposed during construction activities;
- minimizing discharge risk by storing chemicals in leak-proof containers;
- using chemicals in accordance with good engineering practices and specifications of the chemical provider;
- complying with state and local requirements;
- ensuring that all persons who handle and use treatment chemicals are provided with product-specific training and appropriate dosing requirements;
- complying with additional requirements for the pre-approved use of cationic chemicals; and
- providing proper SWPPP documentation of specific chemicals and chemical treatment systems to be used and compliance with CGP Part 2.1.3.3.

### Special Controls for Cationic Treatment Chemicals

If you have been authorized by your applicable Regional Office to use cationic treatment chemicals, include the official EPA authorization letter or other communication, and identify the specific controls and implementation procedures you are required to implement to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards:

### Training

Describe the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to the use of treatment chemicals:

Personnel will receive all necessary training prior to any treatment chemical application. Attachment J contains the training records.

## 4.13 Dewatering Practices

### General

For the demolition of the existing buildings and the construction of the grocery store (Phase I), we anticipate that dewatering will be needed, primarily for the installation of deeper utilities and construction of the footings near the loading dock of the proposed grocery store. Existing Building Nos. 2, 3 and 4 and most of Building No. 1 are outside of the Massachusetts Contingency Plan (MCP) disposal site boundary and known groundwater contamination associated with Release Tracking Numbers (RTNs) 3-27243 and 3-3037. The proposed grocery store and associated parking lot are also outside of the MCP disposal site boundary. As such, groundwater encountered in deeper excavations during demolition activities and during new construction activities outside of the MCP disposal site boundary will be managed in

accordance with the NPDES General Construction Permit, and guidelines included herein, or recharged on site after removal of sediment through the use of straw bale basins, dewatering filter bags, or settling basins. Groundwater sampling will be conducted as necessary in accordance with the applicable permit.

For construction activities within the MCP disposal site boundary, dewatering will be managed under the NPDES Remediation General Permit (anticipated to be renewed by EPA) or recharged on-site in accordance with the MCP (310 CMR 40.0045). Within the disposal site boundary, we anticipate dewatering will be required to construct the proposed pump station located in the northeastern corner of Phase I. Earthwork, including dewatering, will be performed under a Post-RAO Release Abatement Measure (RAM) Plan in accordance with the MCP (310 CMR 40.0440). Groundwater sampling will be performed prior to dewatering to evaluate the type of treatment required, if any, and effluent sampling will be performed in accordance with the applicable permit requirements for discharge.

## Specific Dewatering Practices

**Straw Bale Basin**

The basins will consist of a ring of staked straw bales overlain by non-woven geotextile filter fabric and crushed stone. Discharge water will be pumped into the basin and allowed to drain through the fabric onto relatively-flat stabilized surfaces.

**Dewatering Filter Bag**

Dewatering filter bags may be used in place of straw bale basins. The bags will be placed on relatively flat terrain, free of brush and stumps, to avoid ruptures and punctures. A maximum of one six-inch discharge hose will be allowed per filter bag. To help prevent punctures, geotextile fabric will be placed beneath the filter bag when used in wooded locations. Unattended filter bags will be encircled with a straw bale and silt fence barrier.

## Date of Dewatering Practice Installation

**Treatment System**

Date of Installation: _____

Date of Installation: _____

Date of Installation: _____

**Treatment System**

Date of Installation: _____

Date of Installation: _____

Date of Installation: _____

### Maintenance Requirement

All dewatering structures will be placed as far away from wetland resources as practicable. Filter bags used during construction will be bundled and removed for proper disposal. Backwash water shall be returned to the beginning of the treatment process or hauled away for disposal. Filter media shall be cleaned and replaced in all dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

## 4.14 Other Stormwater Controls

### General

Additional erosion controls may be used in the event that excessive erosion occurs. Placement of temporary silt fence, straw bales or earthen berms may be used to control the movement of material within the site. If such controls are deemed necessary for adequate protection, they will be installed perpendicular to the flow direction to contain sediment. These measures will be installed to prevent perimeter erosion controls from becoming compromised.

#### Silt Socks

Silt Socks will be placed to trap sediment transported by runoff before it reaches the drainage system or leaves the construction site. Silt Socks will be set in accordance with the details in the Site Plans.

#### Catch Basin Protection

Newly constructed and existing catch basins will be protected with straw bale barriers (where appropriate) or silt sacks throughout construction.

## 4.15 Site Stabilization

### General

Any areas of exposed soil or stockpiles that will remain inactive for more than 14 days will be temporarily stabilized with vegetative or non-vegetative stabilization practices.

### Site Stabilization Practice

☐ Vegetative ☐ Non-Vegetative
☐ Temporary ☐ Permanent

**Vegetative Stabilization**

Stabilization of open soil surfaces will be implemented within 14 days after grading or construction activities have temporarily or permanently ceased, unless there is sufficient snow cover to prohibit implementation. Vegetative slope stabilization will be used to minimize erosion on slopes of 3:1 or flatter. Annual grasses, such as annual rye, will be used to ensure rapid germination and production of root mass. Permanent stabilization will be completed with the planting of perennial grasses or legumes. Establishment of temporary and permanent vegetative cover may be established by hydro seeding or sodding. A suitable topsoil, good seedbed preparation, and adequate lime, fertilizer and water will be provided for effective establishment of these vegetative stabilization methods. Mulch will also be used after permanent seeding to protect soil from the impact of falling rain and to increase the capacity of the soil to absorb water.

## Maintenance Requirement

- In accordance with EPA regulations, the contractor must sign a copy of a certification to verify that a plan has been prepared and that permit regulations are understood.
- The on site contractor will inspect all sediment and erosion control structures periodically and after each rainfall event. Records of the inspections will be prepared and maintained on site by the contractor.
- Silt shall be removed from behind barriers if greater than 6 inches deep or before it has accumulated to one-half the above-ground height of any perimeter control.
- Damaged or deteriorated items will be repaired immediately after identification.
- The underside of straw bales should be kept in close contact with the earth and reset as necessary.
- Sediment that is collected in structures shall be disposed of properly and covered if stored on site.
- Erosion control structures shall remain in place until all disturbed earth has been securely stabilized. After removal of structures, disturbed areas shall be regraded and stabilized as necessary.

## Site Stabilization Practice

☐ Vegetative ☐ Non-Vegetative
☐ Temporary ☐ Permanent

**Non-Vegetative Stabilization**

Non-vegetative stabilization practices will consist of applying a layer of straw mulch, at a rate of 90 pounds per 1,000 square feet. The mulch will be anchored with a tacking coat (non tar) applied by a hydroseeder. Steeper slopes (greater than 10 percent) will be covered with a bonded fiber matrix as described above.

In the event heavy rain is forecast (more than 2 inches over a 24 hour period), slopes that are not stabilized will be treated with a polyacrylamide (PAM) product such as Silt Stop® (or equivalent product). PAM is a non toxic substance that promotes soil bonding. PAM shall be applied in powder or liquid form in accordance with the recommendations provided by the manufacturer.

## Date of Site Stabilization Practice Installation

**Vegetative Stabilization**

Date of Installation: _____

Date of Installation: _____

Date of Installation: _____

**Non-Vegetative Stabilization**

Date of Installation: _____

Date of Installation: _____

Date of Installation: _____

## Mulching

☐ Vegetative ☐ Non-Vegetative
☐ Temporary ☐ Permanent

## Installation

When construction will be temporarily or permanently ceased, mulching shall occur immediately over seeding, as required, for erosion control while vegetation is being established.

## Maintenance Requirements

Periodic inspections shall occur once a week and after every rainstorm 0.25 inches or greater.

See BMP Manual Section 8.2 for specific controls, installation, and maintenance.

## Erosion Control Mats and Blankets

☐ Vegetative ☐ Non-Vegetative
☐ Temporary ☐ Permanent

## Description of Practice

Organic or synthetic materials applied to the soil surface as a continuous sheet. Used to protect disturbed areas from erosion and to enhance seed growth, typically where moving water is likely to wash out new vegetative plantings and mulches are ineffective.

Commonly used techniques include erosion control blankets which are made of mulch material surrounded by plastic netting, jute mats which are sheets of woven jute fiber, and turf reinforcement matting which is usually a geotextile matrix most effective for channels.

# 5

# Pollution Prevention Standards

## 5.1 Potential Sources of Pollution

### Table 8. Construction Site Pollutant

| Pollutant-Generating Activity | Pollutants or Pollutant Constituents (that could be discharged if exposed to stormwater) | Location on Site (or reference SWPPP site map where this is shown) |
|---|---|---|
| Paving Operations | Concrete constituents | |
| Painting | Paint | |
| Vehicle/Building Cleaning | Cleaning solvents, detergents | |
| Landscape Plantings | Fertilizer | |
| Vehicle Maintenance | Petroleum-based products | |
| Cleared & Graded Areas | Soil erosion, fertilizer | |
| Portable Toilets | Sewage | |
| Fuel Tanks | Fuel oil, gasoline, other fuels | |
| Storage Areas | Soil erosion, fuel oil, gasoline, asphalt, concrete, vehicle fluids, paints, solvents, pesticides, fertilizer | |
| | | |
| | | |

**Add information as necessary.**

## 5.2 Spill Prevention and Response

The following practices will be followed for spill control, notification and cleanup:

- The construction superintendent responsible for the daily operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel to receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of the responsible spill personnel will be posted in the material storage area and in the on-site office trailer.

- Spills of toxic or hazardous material in excess of reportable quantities, as established in the CGP, will be reported to the Massachusetts Department of Environmental Protection Division of Hazardous Waste [(617) 292-5851 or (978) 661-7679] and the National Response Center [(800) 424-8802];

- All spills will be cleaned up immediately after discovery;

- The spill area will be kept well ventilated and personnel will wear protective clothing to prevent injury from contact with a hazardous substance; and

- Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be informed of the procedures and the location of the information and cleanup supplies;

- Materials and equipment necessary for spill cleanup will be kept in the material storage area on-site. Equipment and materials will include, but will not be limited to the emergency response equipment listed herein;

The following text is excerpted from the Project Stormwater Management System Operations and Maintenance Manual.

A comprehensive Spill Prevention Control and Countermeasure (SPCC) plan will be developed and implemented by the Project Owner and Tenant. At a minimum the SPCC, will discuss:

- Spill prevention equipment;
- Spill prevention supplies provided on-site; and
- Spill prevention training to be provided by the Owner and/or Tenant to designated employees.

**Initial Notification**

In the event of a spill the facility and/or construction manager or supervisor will be notified immediately.

Facility Manager (name): _____

Facility Manager (phone): _____

Construction Manager (name): _____

Construction Manager (phone): _____

The supervisor will first contact the Fire Department and then notify the Police Department, the Board of Health and the Conservation Commission.

**Further Notification**

Based on the assessment from the Fire Chief, additional notification to a cleanup contractor may be made. The Massachusetts Department of Environmental Protection (DEP) and the EPA may be notified depending upon the nature and severity of the spill. The Fire Chief will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the main construction/facility office and readily accessible to all employees. A hazardous waste spill report shall be completed as necessary using the attached form.

**Emergency Notification Phone Numbers**

| | |
|---|---|
| 1. FACILITY MANAGER<br>NAME: _____<br><br>ALTERNATE CONTACT:<br>NAME: _____ | PHONE: _____<br>BEEPER/CELL: _____, _____<br>HOME PHONE: _____<br><br>PHONE: _____<br>BEEPER/CELL: _____, _____<br>HOME PHONE: _____ |
| 2. FIRE & POLICE DEPARTMENT | EMERGENCY: **911** |
| 3. CLEANUP CONTRACTOR:<br>_____<br>ADDRESS:<br>_____<br>_____ | PHONE: _____ |
| 4. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) | EMERGENCY PHONE: (800) 340-1133 |
| 5. NATIONAL RESPONSE CENTER<br><br>ALTERNATE: U.S. ENVIRONMENTAL PROTECTION AGENCY | PHONE: (800) 424-8802<br><br>EMERGENCY: (800) 424-8802<br>BUSINESS: (800) 424-8802 |
| 6. SUDBURY HEALTH DEPARTMENT<br><br>SUDBURY CONSERVATION COMMISSION: | PHONE: (978)440-5479<br><br>PHONE: (978)440-5471 |

See **Attachment N** for a the Hazardous Waste Oil Spill Report

**Assessment - Initial Containment**

The supervisor or manager will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. A list of recommended spill equipment to be kept on site is included on the following page.

**Fire / Police Department:** **911**

**Sudbury Health Department:** **(978)440-5479**

**Sudbury Conservation Commission:** **(978)440-5471**

**Emergency Response Equipment**

The following is an example of an equipment and materials list that must be prepared by the Owner and Tenant. Equipment and Supplies on this list shall be maintained at all times and stored in a secure area for long-term emergency response need.

| Supplies | | Recommended Suppliers |
|---|---|---|
| ➢ SORBENT PILLOWS/"PIGS" | **2** | ➢ http://www.newpig.com |
| ➢ SORBENT BOOM/SOCK | **25 FEET** | ➢ Item # KIT276 — mobile container with two pigs, 26 feet of sock, 50 pads, and five pounds of absorbent (or equivalent) |
| ➢ SORBENT PADS | **50** | ➢ http://www.forestry-suppliers.com |
| ➢ LITE-DRI® ABSORBENT | **5 POUNDS** | ➢ Item # 43210 — Manhole cover pick (or equivalent) |
| ➢ SHOVEL | **1** | ➢ Item # 33934 — Shovel (or equivalent) |
| ➢ PRY BAR | **1** | ➢ Item # 90926 — Gloves (or equivalent) |
| ➢ GOGGLES | **1 PAIR** | ➢ Item # 23334 — Goggles (or equivalent) |
| ➢ GLOVES – HEAVY | **1 PAIR** | |

## 5.3 Fueling and Maintenance of Equipment or Vehicles

When fueling or maintaining equipment or vehicles, the contractor will adhere to the following requirements (CGP 2.3.3.1):

- If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR 112 and Section 311 of the CWA;
- Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;
- Use drip pans and absorbents under or around leaky vehicles;
- Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements;
- Clean up spills or contaminated surfaces immediately, using dry clean up measures where possible, and eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and
- Do not clean surfaces by hosing the area down.

## 5.4 Washing of Equipment and Vehicles

As listed in CGP 2.3.3.2, the contractor must provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of washing. Effective controls include, but are not restricted to, locating activities away from surface waters and stormwater inlets or conveyances and directing wash waters to a sediment basin or sediments trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls. For compliance with Part 2.3.1.4, for storage of soaps, detergents, or solvents, the contractor must provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these detergents from coming into contact with rainwater, or a similarly effective means designed to prevent the discharge of pollutants from these areas.

As listed in CGP 2.3.3.4, the contractor must provide an effective means of eliminating the discharge of water from the washout and cleanout of concrete and other construction materials. For compliance with this requirement, the contractor must, at minimum, direct all washwater into a leak-proof pit, remove and dispose of hardened concrete waste consistent with CGP 2.3.3.3, and locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances.

## 5.5 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

The following good housekeeping practices will be followed on-site during the construction period:

- An effort will be made to store only enough product required to do the job;
- All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers, and (if possible) under a roof or other enclosure;
- Products will be kept in their original containers with the original manufacturer's label;
- Substances will not be mixed with one another unless recommended by the manufacturer;
- Whenever possible, all of a product will be used before disposing of the container;
- Manufacturer's recommendations for proper use and disposal will be followed; and
- The site superintendent will inspect the storage area daily to ensure proper use and disposal of materials on-site.

The following practices will reduce the risks associated with hazardous materials (e.g., petroleum products, solvents):

- A copy of all Material Safety Data Sheets (MSDS) for materials or products used during construction will be kept in the office trailer;
- Products will be kept in original containers unless they are not re-sealable;
- Original labels and material safety data (MSD sheets) will be retained; they contain important product information; and
- If surplus product must be disposed, manufacturer's or local- and state-recommended methods for proper disposal will be followed.

**Building Products**

All containers will be tightly sealed and covered with plastic sheeting or a temporary roof when not required for use. Excess materials will be properly disposed according to manufacturer's instructions or state and local regulations and shall not be discharged to the storm sewer system. No storage will occur within 100 feet of a wetland or waterway.

**Pesticides, Herbicides, Insecticides**

Pesticides, herbicides, and insecticides will not be used at the Project Site.

**Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals**

All on-site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. Spills will be cleaned up immediately, using dry clean-up methods where possible. No vehicle maintenance or handling of petroleum products will occur within 100 feet of a wetland or waterway.

Any asphalt substances used on-site will be applied according to manufacturer's recommendations. No petroleum-based or asphalt substances will be stored within 100 feet of a wetland or waterway. All containers will be tightly sealed and covered with plastic sheeting or a temporary roof when not required for use.

**Hazardous or Toxic Waste**

In accordance with CGP Part 2.3.3.3.d, the contractor will:

- Separate hazardous or toxic waste from construction and domestic waste;
- Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with

applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;

- Store all containers that will be stored outside within appropriately sized secondary containment (e.g., spill berms, decks, spill containment pallets) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., storing chemicals in covered area or having a spill kit available on site); and
- Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly.
- Hosing will not be utilized as a method to clean surfaces or spills.
- Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

All hazardous waste materials (e.g., petroleum products, solvents) will be disposed in the manner specified by local and state regulation, or by the manufacturer. Site personnel will be instructed in these practices, and the site construction supervisor will be responsible for seeing that these procedures are followed.

**Construction and Domestic Waste**

The contractor will provide waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain construction and domestic wastes. Daily loose trash removal will prevent litter, construction debris, and construction chemicals exposed to stormwater from becoming a pollutant source for stormwater discharges. All loose trash will be placed in appropriate storage containers until being disposed of properly off-site. Areas to be used for storing dumpsters, compactors or other raw or waste materials will be covered to prevent contact with stormwater.

**Sanitary Waste**

Portable toilets will be positioned so that they are secure and will not be tipped or knocked over. All sanitary waste will be collected from the portable units by a licensed contractor as required, and disposed in compliance with state and local regulation.

## 5.6 Washing of Applicators and Containers used for Paint, Concrete or Other Materials

In compliance with the prohibition in CGP Parts 2.3.1.1 and 2.3.1.2, the contractor must provide an effective means of eliminating the discharge of water from the washout and cleanout of stucco, paint, concrete, form release oils, curing compounds, and other construction materials. To comply with this requirement, the contractor must:

- Direct all washwater into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation;
- Handle washout or cleanout wastes as follows:
  - Do not dump liquid wastes in storm sewers;
  - Dispose of liquid wastes in accordance with applicable requirements in Part 2.3.3.3; and
  - Remove and dispose of hardened concrete waste consistent with handling of other construction wastes in Part 2.3.3.3.
- Locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances, and, to the extent practicable, designate areas to be used for these activities and conduct such activities only in these areas.

## 5.7 Fertilizers

Only slow-release organic fertilizers will be used in landscaped areas. This protocol will limit the amount of potential nutrients that could enter the stormwater and wetland systems. Fertilizer use will be reduced once the proposed landscaping is established.

As included in CGP Part 2.3.5, the contractor must follow the requirements below when applying fertilizer products:

- Apply at a rate and in amounts consistent with manufacturer's specifications, or document departures from the manufacturer specifications where appropriate in Part 7.2.7.2 of the CGP;
- Apply at the appropriate time of year for the project location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;
- Avoid applying before heavy rains that could cause excess nutrients to be discharged;

- Never apply to frozen ground;
- Never apply to stormwater conveyance channels with flowing water; and
- Follow all other federal, state, tribal, and local requirements regarding fertilizer application.

## 5.8 Other Pollution Prevention Practices

Pavement sweeping may be performed daily or as needed, when track-out has occurred. The sweeping program will remove sediments and contaminants directly from paved surfaces before their release into stormwater runoff. Pavement sweeping has been demonstrated to be an effective initial treatment for reducing pollutant loading into stormwater.

# 6

# Inspection and Corrective Action

## 6.1 Inspection

### Personnel Responsible for Inspections

Inspections are to be performed by "qualified personnel" as defined in Part 4.1.1 of the Permit and shall include all areas of the site disturbed by construction activity and areas used for materials storage that are exposed to precipitation. The Inspector must look for evidence of, or the potential for, pollutants entering the storm water system, inspect the BMPs installed as part of the Plan, inspect the site drainage outfalls, inspect the site egress points for tracking, and inspect material, waste, borrow, or equipment storage and maintenance areas. If, in the course of the inspection, the inspector identifies an eroded area or an area impacted by sedimentation, additional erosion and sedimentation controls will be implemented, the discharge will be documented, and the SWPPP will be revised to include these changes.

### Inspection Personnel

**Name:** _____

**Title:** _____

**Name:** _____

**Title:** _____

**Name:** _____

**Title:** _____

## Inspection Schedule

At least once every 7 calendar days OR

Once every 14 calendar days and within 24-hours of an event 0.25 inches or greater

To determine if a storm event of 0.25 inch or greater has occurred on the site, data will be obtained from the weather station at Hanscom Field in Bedford, Massachusetts.

For reduction in inspections due to frozen conditions: If the contractor is suspending earth-disturbing activities due to frozen conditions, the contractor may temporarily suspend inspections on the site until thawing conditions (as defined by the CGP as based on the historical likelihood of two or more days with daytime temperatures greater than 32˚F) begin to occur if:

- Runoff is unlikely due to continuous frozen conditions that are likely to continue at the site for at least 3 months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain on snow events) make discharges likely, the contractor must immediately resume regular inspection frequency as described in Parts 4.1.2 or 4.1.3, if applicable;
- Land disturbances have been suspended; and
- All disturbed areas of the site have been temporarily or permanently stabilized in accordance with Part 2.2 of the CGP.

### For reduction in inspections due to frozen conditions:

Beginning Date: _____

End Date: _____

Site Inspection Forms are provided in Attachment E, Corrective Action Forms are provided in Attachment F.

## 6.2 Corrective Action

The following personnel are responsible for completing corrective action forms:

### Personnel Responsible for Corrective Actions

**Name:** _____

**Name:** _____

**Position:** _____

**Address:** _____

**City, State, Zip Code:** _____

**Telephone Number:** _____

**Fax/Email:** _____

**Name:** _____

**Name:** _____

**Position:** _____

**Address:** _____

**City, State, Zip Code:** _____

**Telephone Number:** _____

**Fax/Email:** _____

## 6.3 Delegation of Authority

The following representatives or positions have been granted the delegation of authority to sign inspection reports. A copy of the signed delegation form is provided in Attachment K.

### Duly Authorized Representative(s) or Position(s):

**Company Name:** _____

**Name:** _____

**Position:** _____

**Address:** _____

**City, State, Zip Code:** _____

**Telephone Number:** _____

**Fax/Email:** _____

### Duly Authorized Representative(s) or Position(s):

**Company Name:** _____

**Name:** _____

**Position:** _____

**Address:** _____

**City, State, Zip Code:** _____

**Telephone Number:** _____

**Fax/Email:** _____

# 7

# Training

The following table provides a list of personnel and training completion date, which are responsible for the design, installation, maintenance and/or repair of stormwater controls, the application and storage of treatment chemicals, conducting inspections and completing inspection and corrective action forms.

**Table 9. Documentation for Completion of Training**

| Name | Date Training Completed |
|---|---|
| | |
| | |
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# 8

# Certifications and Notification

The following certification statement must be signed and dated by a person who meets the requirements of Appendix I, Part I.11.b. This certification must be re-signed in the event of a SWPPP Modification.

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.

| OWNER REPRESENTATIVE | CONTRACTOR | SUBCONTRACTOR |
|---|---|---|
| Signature and Date | Signature and Date | Signature and Date |
| Title | Title | Title |
| Steve Senna<br>BPR Sudbury Development LLC<br>c/o National Development<br>2310 Washington Street<br>Newton Lower Falls, MA 02462<br>T: (617) 559-5046<br>ssenna@natdev.com | | |
| Company, Address, Telephone | Company, Address, Telephone | Company, Address, Telephone |

| SUBCONTRACTOR | SUBCONTRACTOR | SUBCONTRACTOR |
|---|---|---|
| Signature and Date | Signature and Date | Signature and Date |
| Title | Title | Title |
| Company, Address, Telephone | Company, Address, Telephone | Company, Address, Telephone |

*Add additional sheets as necessary.*

## 8.1 Notice of Intent (NOI)

After completion of the SWPPP and the above certification, the NOI must be submitted by all site Operators, list above, at least 14 calendar days prior to commencing earth disturbing activities. The project is considered covered under the permit 14 calendar days after EPA has acknowledged receipt of the project NOI on the Agency's website (www.epa.gov/npdes/stormwater/cgpnoisearch), unless EPA notifies the Operator that the authorization has been delayed or denied. Copies of the NOI and the EPA Authorization Email shall be included in Attachment D.

## 8.2 Notice of Termination (NOT)

Until coverage is terminated under this permit, the Operators are required to continue to comply with all conditions and requirements in the permit. To terminate permit coverage, all Operators must submit to EPA a complete and accurate NOT, which certifies an Operator has met the requirements for termination as listed in Part 8 of the CGP. In addition, Operators must submit the NOT within 30 calendar days after any of the triggering conditions listed in Part 8.2 of the CGP. An Operator's authorization to discharge under the CGP terminates at midnight of the calendar day that a complete NOT is processed and posted on EPA's website.

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# Attachment A
# Site Plans

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# Attachment B
# 2012 Construction General Permit

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# Attachment C
# Site Maps

- Site Location Map
- FEMA Flood Insurance Rate Map
- Soil Map
- SWPPP Erosion and Sedimentation Control Measures

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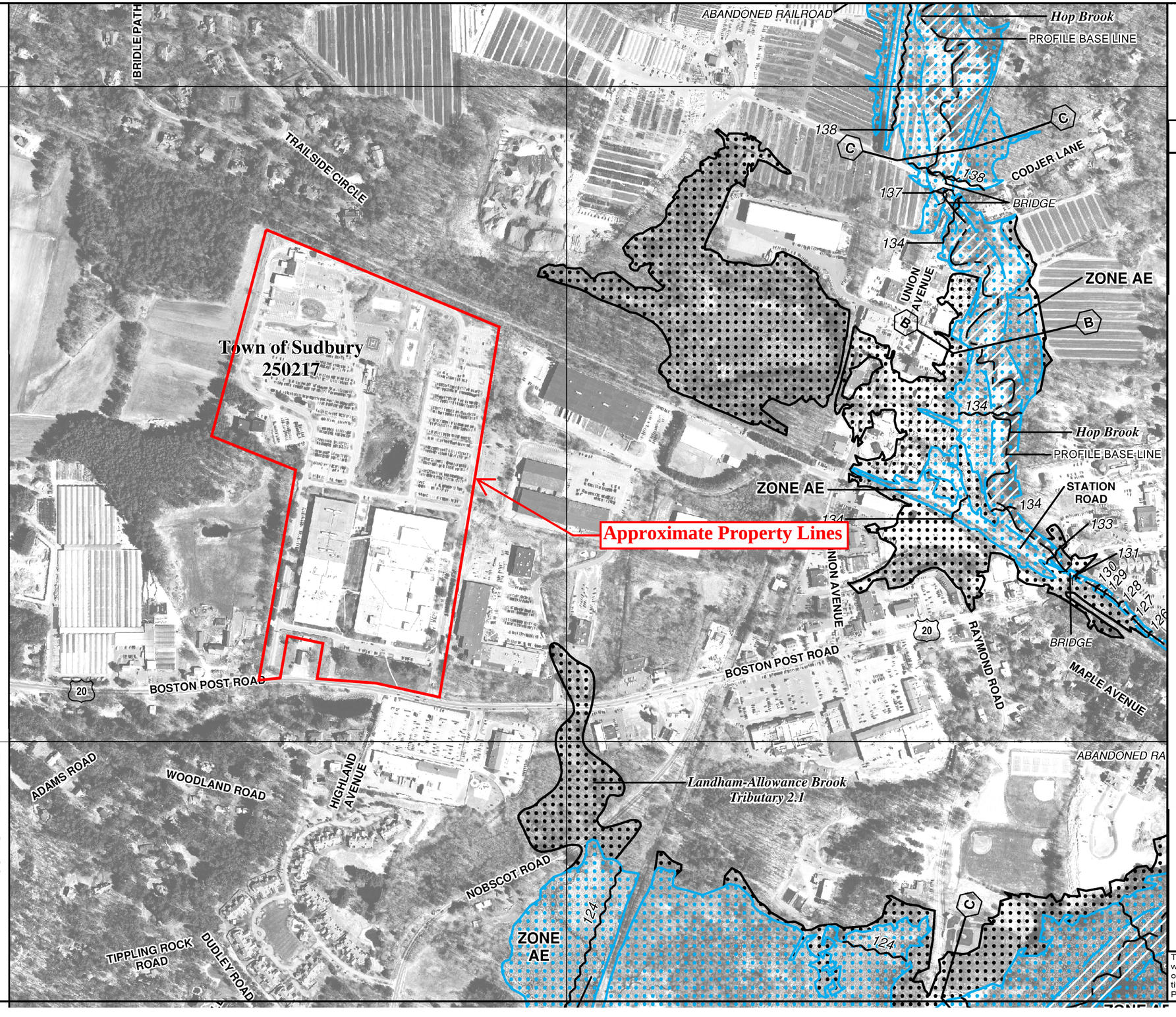
\\vhb\proj\Wat-LD\13125.00\GIS\Project\USGS_Locus.mxd

**Avalon Sudbury** | Boston Post Rd. (Rt. 20), Sudbury, MA

**USGS Locus Map**

Source: USGS 1987




MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0506F

# FIRM

## FLOOD INSURANCE RATE MAP

## MIDDLESEX COUNTY, MASSACHUSETTS

(ALL JURISDICTIONS)

**PANEL 506 OF 656**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| FRAMINGHAM, TOWN OF | 250193 | 0506 | F |
| SUDBURY, TOWN OF | 250217 | 0506 | F |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
**25017C0506F**

**MAP REVISED**
**JULY 7, 2014**

Federal Emergency Management Agency

# LEGEND

## SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE A** No Base Flood Elevations determined.

**ZONE AE** Base Flood Elevations determined.

**ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

**ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

**ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

**ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

**ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

## FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

## OTHER FLOOD AREAS

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

## OTHER AREAS

**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.

**ZONE D** Areas in which flood hazards are undetermined, but possible.

**MAP SCALE 1" = 500'**

250 0 500 1000

FEET

METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

**PANEL 0506F**

# FIRM

**FLOOD INSURANCE RATE MAP**

**MIDDLESEX COUNTY, MASSACHUSETTS**
**(ALL JURISDICTIONS)**

**PANEL 506 OF 656**
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

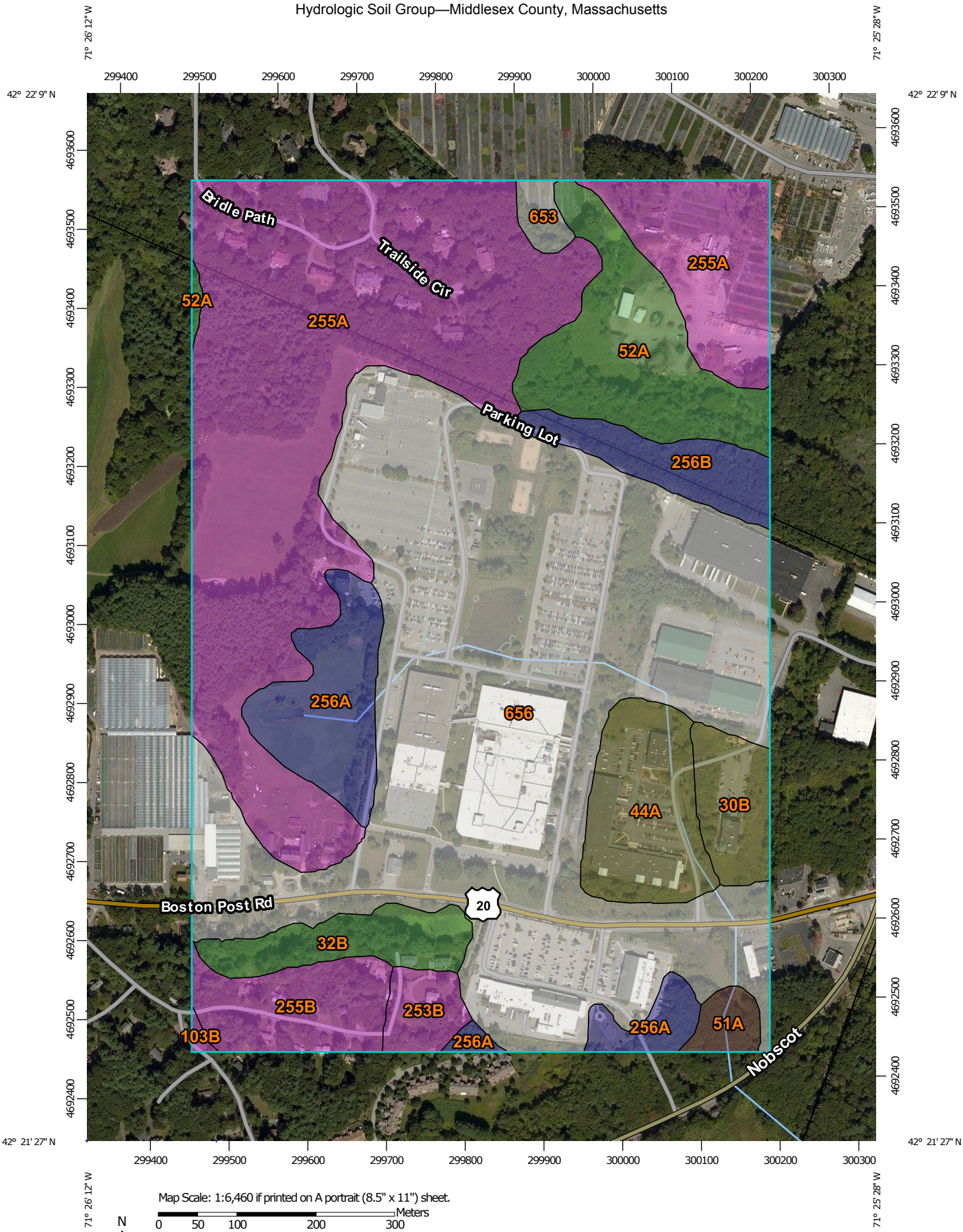
| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| FRAMINGHAM, TOWN OF | 250193 | 0506 | F |
| SUDBURY, TOWN OF | 250217 | 0506 | F |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
**25017C0506F**

**MAP REVISED**
**JULY 7, 2014**

**Federal Emergency Management Agency**


71° 26' 12" W
71° 25' 28" W
299400
299500
299600
299700
299800
299900
300000
300100
300200
300300
42° 22' 9" N
42° 21' 27" N
4693600
4693500
4693400
4693300
4693200
4693100
4693000
4692900
4692800
4692700
4692600
4692500
4692400
Bridle Path
Trailside Cir
Parking Lot
Boston Post Rd
20
Nobscot
653
255A
52A
256B
256A
656
44A
30B
32B
255B
253B
103B
51A
Map Scale: 1:6,460 if printed on A portrait (8.5" x 11") sheet.
Meters
0 50 100 200 300
Feet
0 300 600 1200 1800
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Soil Rating Lines**

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Soil Rating Points**

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 14, Sep 19, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Hydrologic Soil Group

| Hydrologic Soil Group— Summary by Map Unit — Middlesex County, Massachusetts (MA017) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| 30B | Raynham silt loam, 0 to 5 percent slopes | C/D | 4.2 | 2.1% |
| 32B | Wareham loamy fine sand, 0 to 5 percent slopes | A/D | 5.0 | 2.5% |
| 44A | Birdsall mucky silt loam, 0 to 1 percent slopes | C/D | 8.5 | 4.2% |
| 51A | Swansea muck, 0 to 1 percent slopes | B/D | 1.5 | 0.8% |
| 52A | Freetown muck, 0 to 1 percent slopes | A/D | 12.5 | 6.2% |
| 103B | Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes | A | 0.2 | 0.1% |
| 253B | Hinckley loamy sand, 3 to 8 percent slopes | A | 2.4 | 1.2% |
| 255A | Windsor loamy sand, 0 to 3 percent slopes | A | 60.8 | 30.3% |
| 255B | Windsor loamy sand, 3 to 8 percent slopes | A | 6.5 | 3.2% |
| 256A | Deerfield loamy sand, 0 to 3 percent slopes | B | 10.2 | 5.1% |
| 256B | Deerfield loamy sand, 3 to 8 percent slopes | B | 4.9 | 2.4% |
| 653 | Udorthents, sandy | | 1.2 | 0.6% |
| 656 | Udorthents-Urban land complex | | 83.1 | 41.4% |
| **Totals for Area of Interest** | | | **200.9** | **100.0%** |

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

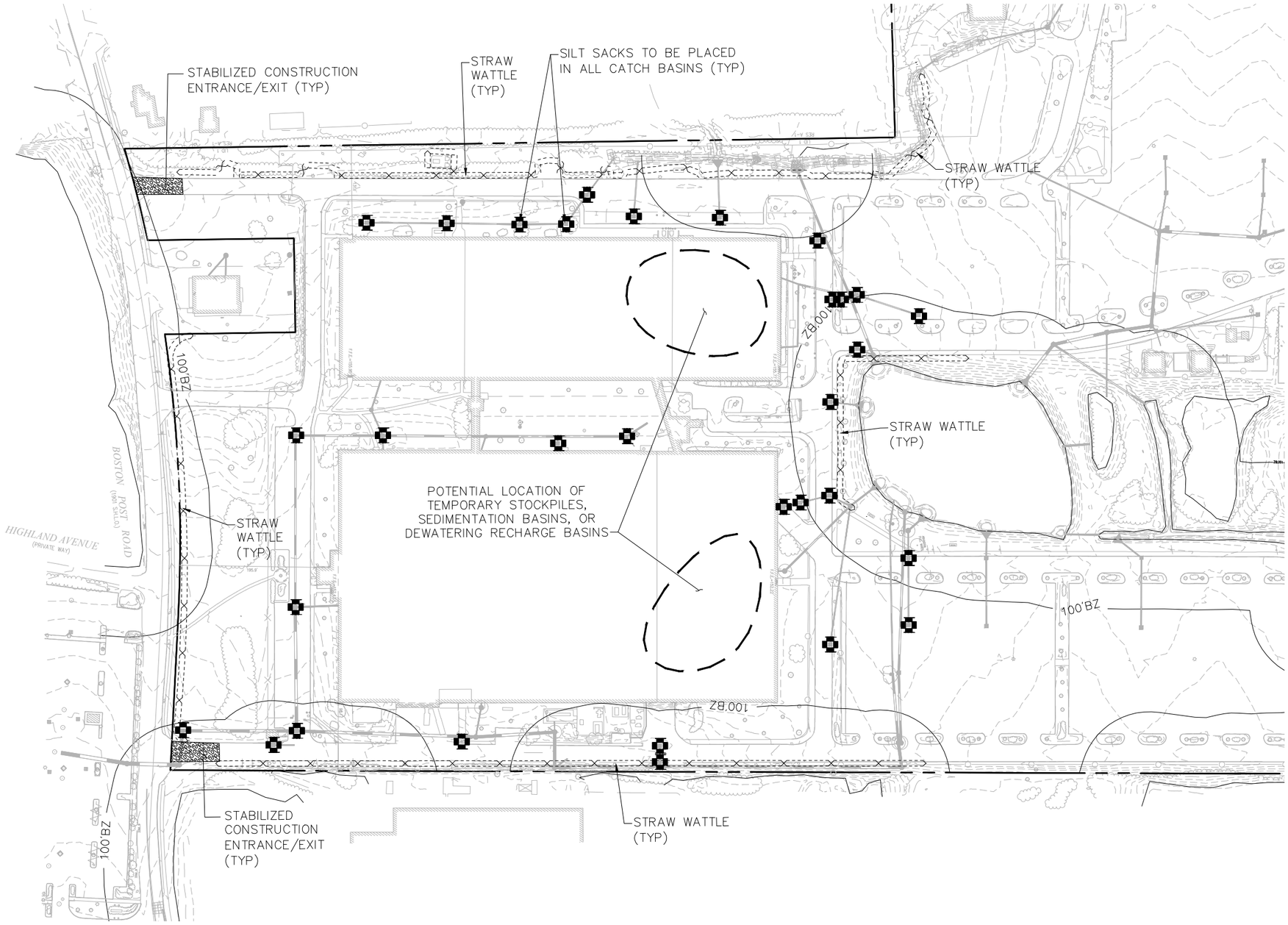
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Higher




## Notes

1. The locations of erosion/sedimentation control measures (including temporary sedimentation basins) shown on this plan are approximate. Final locations to be based on field conditions as determined by the Site Operator who is responsible to implement, inspect, maintain, repair, and modify erosion/sedimentation control measures (including temporary sedimentation basins) as necessary.
2. This plan presents a graphical interpretation of the minimum erosion and sedimentation requirements for the Project. Based on the phasing and timing of the work, the contractor will be responsible for determining whether additional controls are necessary to control erosion and sedimentation. Refer to the Site Plans prepared by VHB for the actual Project Plans.
3. If the Contractor does install a sedimentation basin, the basin shall provide at least 3,600 cubic feet of storage per acre draining to the basin. Sedimentation basin discharge shall be directed to an existing on-site catch basin equipped with a silt sack.

Figure 1 April 2016

Draft SWPPP Erosion and Sedimentation Control Measures
Grocery Store at Meadow Walk
Sudbury, MA

# Attachment D
# EPA eNOI, Local, and State Authorizations

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# Attachment E
# Inspection Forms

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## Grocery Store at Meadow Walk Sudbury

Report No. ____

**Site Inspection Form**

Page **1** of ____

Date / Time of Inspection: _____ Weather Conditions:_____

Recent Precipitation Event:_____

Construction Activities Underway:_____

_____

**Status of Existing BMPs**

| Erosion Control Measure | Status – Cleaning or Repair Needed | Comments/Notes |
|---|---|---|
| | ☐yes ☐no | |
| | ☐yes ☐no | |
| | ☐yes ☐no | |
| | ☐yes ☐no | |
| | ☐yes ☐no | |
| | ☐yes ☐no | |
| | ☐yes ☐no | |
| | ☐yes ☐no | |
| | ☐yes ☐no | |
| | ☐yes ☐no | |

N/A – Not applicable

**In the event of a spill refer to the Spill Response Procedure and contact appropriate agencies. Refer to Section 5.2 for Spill Prevention Plan and Response Procedures.**

General Comments (Attached figures to show locations of concern):

Are additional Erosion Control Measures Needed?

☐ No ☐ Yes If yes, describe:_____

_____

Report No. .___

Are sediment/pollution discharges from the site present?

☐ No ☐ Yes If yes, describe:_____

_____

_____

Describe any corrective action required at this time: _____

_____

_____

_____

_____

_____

Notes:_____

_____

_____

_____

Attach additional sheets with notes, comments, illustrations and issues as needed. Use site plan to identify locations of work areas or issues noted above.

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.

Stormwater Control Manager:_____ Date: _____

Qualifications: _____

# Attachment F
# Corrective Action Form

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# Stormwater Construction Corrective Action Form

| General Information | | | |
|---|---|---|---|
| **Project Name** | | | |
| **NPDES Tracking No.** | | **Location** | |

**Non Compliance**

| | BMP / activity | Date Observed | Date Corrected | Corrective Action Needed and Notes |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |

**Corrective Action**

| Describe how any incidents of non-compliance have been addressed: |
|---|
| |

## CERTIFICATION STATEMENT

"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."

**Print name and title:**

_____

**Signature:**_____

**Date:**_____

# Attachment G
# SWPPP Amendment Log

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## SWPPP Amendment Log

| No. | Description of the Amendment | Date of Amendment | Amendment Prepared by [Name(s) and Title] |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
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# Attachment H
# Subcontractor Certifications/Agreements

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**SUBCONTRACTOR CERTIFICATION**
**STORMWATER POLLUTION PREVENTION PLAN**

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

**I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.**

This certification is hereby signed in reference to the above named project:

**Company:**

**Address:**

**Telephone Number:**

**Type of construction service to be provided:**

**Signature:**

**Title:**

**Date:**

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# Attachment I
# Grading and Stabilization Activities Log

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## Grading and Stabilization Activities Log

| Date Grading Activity Initiated | Description of Grading Activity | Description of Stabilization Measure and Location | Date Grading Activity Ceased (Indicate Temporary or Permanent) | Date When Stabilization Measures Initiated |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
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# Attachment J
# Training Log

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**Stormwater Pollution Prevention Training Log**

Project Name: _____

Project Location: _____

Instructor's Name(s): _____

Instructor's Title(s): _____

Course Location/Date: _____

Course Length (hours): _____

Stormwater Training Topic

Stormwater Training Topic: *(check as appropriate)*

- ❑ Sediment and Erosion Controls
- ❑ Stabilization Controls
- ❑ Pollution Prevention Measures
- ❑ Emergency Procedures
- ❑ Inspections/Corrective Actions

Specific Training Objective: _____

Attendee Roster: *(attach additional pages as necessary)*

| No. | Name of Attendee | Company |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

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# Attachment K
# Delegation of Authority

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## Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

Name of person/position: _____

Company: _____

Address: _____

City, State, zip _____

Phone _____

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

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.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

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# Attachment L
# Historic Properties Documentation

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# Attachment M
# Endangered Species Documentation

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# Attachment N
# Hazardous Waste Oil Spill Report

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## Hazardous Waste / Oil Spill Report

Date: ___/___/_____ Time: _____ AM / PM

Exact location _____

Type of equipment:_____ Make:_____ Size:_____

License or S/N:_____ Weather Conditions:_____

On or near water ☐ Yes If yes, name of body of water:_____

☐ No

Type of chemical / oil spilled: _____

Amount of chemical / oil spilled: _____

Cause of spill: _____

_____

_____

Measures taken to contain or clean up spill: _____

_____

_____

Amount of chemical / oil recovered: _____ Method:_____

Material collected as a result of clean up

_____ drums containing: _____

_____ drums containing: _____

_____ drums containing: _____

Location and method of debris disposal:_____

Name and address of any person, firm, or corporation suffering damages:_____

_____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring:_____

_____

Spill reported to General Office by:_____Time: _____AM / PM

Spill reported to DEP / National Response Center by:_____

DEP Date: _/_/_ Time:_____AM / PM Inspector:_____

NRC Date: _/_/_ Time:_____AM / PM Inspector: _____

Additional comments: _____

_____

_____

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# Attachment O
# Stormwater Discharge Well Registration

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# Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Drinking Water Program

# BRP WS 06 UIC Registration
# Stormwater Discharge Well
# Instructions and Supporting Materials

**Introduction**

Massachusetts Department of Environmental Protection (MassDEP) *Permit and Registration Applications*, as well as these *Instructions & Supporting Materials*, also are available for download from the MassDEP Web site at http://www.mass.gov/eea/agencies/massdep/service/approvals/ in two file formats: Microsoft Word™ and Adobe Acrobat PDF™. Either format allows documents to be printed.

*Instructions & Supporting Materials* files in Microsoft Word™ format contain a series of documents that provide guidance on how to prepare a permit application.

*Permit Applications* in Microsoft Word format must be downloaded separately. Users with Microsoft Word™ 97 or later may complete these forms electronically.

Permitting packages in Adobe Acrobat PDF format combine *Permit Applications* and *Instructions & Supporting Materials* in a single document. Adobe Acrobat PDF™ files may only be viewed and printed without alteration. *Permit Applications* in this format may not be completed electronically, but must be printed and completed using a typewriter or by hand.

**Permit Name**
Registration Stormwater Discharge Well

| | |
|---|---|
| **Permit Code** | BRP WS06 (includes BRP WS06 categories as cited in the permit and fees regulations 310 CMR 4.00) (http://www.mass.gov/eea/agencies/massdep/service/regulations/310-cmr-4-00-timely-action-schedule-and-fee-provisions.html) |
| **Purpose of Registration** | Regulating the injection of fluids to the ground to prevent contamination of groundwater used as a source of drinking water. |
| **For Assistance with this application** | Contact MassDEP Bureau of Resource Protection, Underground Injection Control (UIC) Program:<br>For all UIC types: (617) 292-5859. For email questions: ask.UIC@state.ma.us |

# BRP WS 06 UIC Registration
# Stormwater Discharge Well
# Instructions and Supporting Materials

**Who must apply**

Any party who has discharged, is discharging, or proposes to discharge to a Class V Stormwater Discharge Well as defined in 310 CMR 27.00 must apply unless exempted by 310 CMR 27.07 (http://www.mass.gov/eea/docs/dep/service/regulations/310cmr27.pdf). Also, any party that has a registered Class V stormwater discharge well with the UIC Program for which ownership, contents or type of discharge, physical location, number of wells, or construction details have or will change. Also any Class V water purification discharge well that was not previously registered and which is now being registered for Pre-Closure. The only types of Class V stormwater UIC wells not requiring UIC Registration are those associated with properties that are only used for **single unit** (family) residential use **OR** for which a permit has been obtained from the MassDEP Ground Water Discharge Program (314 CMR 5.00 http://www.mass.gov/eea/agencies/massdep/water/regulations/314-cmr-5-00-groundwater-discharge-permits.html). Typically the only types of Class V UIC wells that require a Ground Water Discharge Permit are those that are adding chemicals to the discharge to the UIC well.

If you are attempting to register a different type of UIC Class V well then see the UIC Program's main web page (http://www.mass.gov/eea/agencies/massdep/water/drinking/underground-injection-control.html) to obtain the applicable UIC Registration application form for your well type. Also see the "Class V Injection Well Category and Well Type Descriptions" link under the "Guidance" Section of this web page for descriptions of the various UIC Class V well types.

**May I submit one application for multiple properties?**

No. A separate BRP WS 06 UIC Registration application form must be submitted for each facility address. Multiple wells may only be registered under one application if all wells are on the same property. Also, all wells must be in the same municipality (with some limited exceptions).

**What land use types must use this application**

This application form applies to all types of land uses.

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**Fees**

Depending upon the specific details concerning your application, your registration fee is $0, $110, $220, $290, $400, $585 or $695. See the discussion below under Section A, Registration Fee to determine the applicable registration fee.

**Review timeline**

If MassDEP fails to issue a determination for the registration of the UIC Class V well on an adequately prepared BRP WS-06 application within 48 days of receipt of the application and payment of the application fee, the Department will refund the entire fee and will continue with the review. The same applies if MassDEP fails to issue a determination for the application for pre-closure of a UIC Class V well within 30 days of receipt of the application and payment of the application fee.

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# BRP WS 06 UIC Registration
# Stormwater Discharge Well
# Instructions and Supporting Materials

**What regulations apply?**

Regulations that apply primarily include, but are not limited to:

- Underground Injection Control Program, 310 CMR 27.00 (http://www.mass.gov/eea/docs/dep/service/regulations/310cmr27.pdf).

These and other MassDEP Regulations are available online at:
http://www.mass.gov/eea/agencies/massdep/service/regulations/

Or, they may be purchased at

State Bookstore
Massachusetts State House
Room 116
Boston, MA 02133
617-727-2834

State Bookstore West
436 Dwight Street, Room 102
Springfield, MA 01103
413-784-1376

**What other requirements must be considered?**

The installation and operation of Class V Water Purification discharge wells shall comply with the MassDEP *Standard Design Requirements for Shallow Injection Wells*.

You may only register one UIC Class V "well category" and "well type" combination with each BRP WS06 application. If your residence or facility includes multiple combinations of "well category" and "well type" then you must submit a separate BRP WS06 application with applicable payment transmittal form and fee for each unique combination. The requirement for separate applications applies whether for multiple single use wells or a single well that is used for more than one type of UIC Class V wastewater discharge.

If your application is for the conversion of a well that was not previously registered then you must submit two (2) separate BRP WS06 applications (with 2 separate payment transmittal forms) and pay the fees associated with each registration application. One application must be submitted for the proposed converted new use and one for the closure or partial closure of the unregistered well use.

In addition to the above UIC registration requirements, applicants should consider the need to obtain the following permits or sanctions that may apply:

- Wetlands requirements should be checked through the local Conservation Commission;
- Ground Water Discharge Permit Program (314 CMR 5.00 http://www.mass.gov/eea/agencies/massdep/water/regulations/314-cmr-5-00-groundwater-discharge-permits.html);
- A MassDEP Title 5 Permit (310 CMR 15.00 http://www.mass.gov/eea/agencies/massdep/water/regulations/310-cmr-15-00-septic-systems-title-5.html);
- Local Board of Health requirements may also apply; and,
- Local Plumbing Inspector requirements.

**Note:** The additional requirements listed above are examples intended to serve as a guide to the applicant. They do not necessarily include **all** possible additional requirements.

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**How long is the Registration valid?**

UIC registrations for Class V wells currently do not have expiration dates provided that the Owner/Operator submits a UIC Modification Application when pertinent inventory information changes. Future changes in Massachusetts regulations may establish expiration/renewal dates for any and all UIC Class V well types.

**Massachusetts Department of Environmental Protection**
Bureau of Resource Protection – Drinking Water Program

# BRP WS 06 UIC Registration
# Stormwater Discharge Well
# Instructions and Supporting Materials

**How to Apply**

To submit an application to MassDEP, follow the steps described below:

| Step | Action |
|---|---|
| 1. | Complete a MassDEP Transmittal Form for Permit Application and Payment. The transmittal form and required transmittal number can be obtained at : http://www.mass.gov/eea/agencies/massdep/service/approvals/transmittal-form-for-payment.html Submit payment and original signed transmittal form to the MassDEP address shown on the transmittal form. *Please note that if you are sending in payment for multiple application forms you must submit a separate transmittal form (each with a unique transmittal number) for each form that is submitted.* |
| 2. | Complete the appropriate Application Form - BRP WS 06 UIC Registration Stormwater Discharge Well(s). Include all specified information. Use additional sheets if necessary. |
| 3. | Submit a complete application package including a BRP WS-06 form, a copy of the Transmittal Form for Permit Application and Payment, and all specified attachments to:<br><br>MassDEP, BRP UIC Program<br>One Winter Street, 5th Floor<br>Boston, MA 02108<br><br>**Please note that if that the PO box shown on the Transmittal Form for Permit Application and Payment is for the bank that MassDEP uses to deposit permit and registration fees. If you send the entire application package to the PO box rather than the One Winter Street address, the bank will discard everything other than the Payment Transmittal Form and check and you will be required to resubmit your application package to MassDEP.** |
| 4. | Retain a copy of the complete application package for your files. |

**Instructions to assist with completing the application form:**

## A. Registration Category and Fee

### Registration Category

Identifying the type of registration activity you are conducting

| Registration Category: | Expanded Description |
|---|---|
| 1.a. Registration of a Proposed or Existing Unregistered UIC Well(s) | Select this category for the first time registration of a proposed injection well(s) or an existing injection well unless the well is being registered for the purpose of closing, partially closing, or converting it to a new use. |

| | |
|---|---|
| 1.b.<br>Pre-Closure of an Unregistered or Registered UIC Well(s) | Select this category for the first time registration of an existing injection well(s) for the purpose of closing or partially closing it unless also converting it to a new use. Also select this category for the purpose of obtaining Pre-Closure approval for a well(s) that has already received a MassDEP UIC registration number where you also must modify any of the information that was submitted with the original UIC registration application for that well. If none of the original information must be changed then you should use the shorter BRP WS06d Pre-Closure application form for your convenience. |
| 1.c.<br>Pre-Closure of an Unregistered or Registered UIC Well(s)and Conversion to New Well Type | Select this category for the first time registration of an existing injection well(s) for the purpose of closing the initial use and converting it to a new use. **You must complete a separate BRP WS 06 application form for the use that the well is being converted to (if applicable).** Also select this category for the purpose of obtaining Pre-Closure approval for a well(s) that is being converted to a new use and that has already received a MassDEP UIC registration number where you also must modify any of the information that was submitted with the original UIC registration application for that well If none of the original information must be changed then you should use the shorter BRP WS06d Pre-Closure application form for your convenience. |
| 1.d.<br>Modification of a UIC Registration Application that is Still Under Review at MassDEP | Select this category if you must make modifications or corrections to a previously submitted BRP WS06 application form that is still pending MassDEP review and approval. |
| 1.e.<br>Modification of an Existing UIC Registration that Does Not Include Increasing the Number of Registered Wells (Minor Modification) | Select this category for modification to an existing MassDEP approved UIC registration that does not include increasing the number of registered wells. |
| 1.f.<br>Modification of an Existing UIC Registration that Includes Increasing the Number of Registered Wells (Major Modification) | Select this category for modification to an existing MassDEP approved UIC registration that includes increasing the number of registered wells. |

For the above Pre-Closure categories (items 1.b. and 1.c.), if you are submitting for an UIC well(s) that has received a MassDEP issued UIC registration number complete Sections A, B, L, and M of this application form and for all other Sections only complete the data/information fields where you are entering new or revised information. For any of the above Modification categories (items 1.d., 1.e., and 1.f.) complete Sections A, B, and M of this application and for all other Sections only complete the data/information fields where you are entering new or revised information.

For Modifications, Pre-Closures, or Pre-Closures and Conversions of a UIC Registered Well(s) you must enter the UIC registration number that was previously issued by MassDEP. If you can't locate your UIC registration number then call the number or send an email to the address listed on page one of this form for assistance.

## Basic Well Information

1. Descriptions of the well category and well type can be found on the UIC Class V Well Category and Well Type Descriptions web page (http://www.mass.gov/eea/agencies/massdep/water/approvals/uic-class-v-well-category-and-well-type-descriptions.html).

2. The fee structure and classification of an application is impacted by whether a well is being installed at a residential or non-residential site. In order to be classified as, fee exempt, residential well(s) must service 4 or fewer residential units AND only be used for residential purposes.
3. Some wells can be used for more than one purpose. For instance, a dry well may be used for both stormwater or water purification discharge and system bleed from an open-loop ground source heat pump well. If applicable, indicate the other well category and well type.

## Registration Fee

For Registration of More than One Type of Discharge – This form may only be used to apply for UIC registration of stormwater discharge to one type of Stormwater Discharge Well(s) (from the selection in Basic Well Information Question #2). A separate BRP WS06 registration application, payment transmittal form (transmittal form not required if you answered "yes" to Basic Well Information question #3), and applicable fee shall be submitted for each additional type of discharge even if one discharge well(s) is used for more than one well category and well type combination.

For Conversion of Unregistered Wells - If your application is for the conversion of a well(s) that was not previously registered, you shall submit one application form, payment transmittal form, and applicable fee for the registration and closure or partial closure of each of the unregistered well uses. You shall also submit a separate registration application form, payment transmittal form, and applicable fee for each type of new UIC Class V discharge well.

For Conversion of Registered Wells - If your application is for the conversion of a Registered UIC well(s), you shall submit a separate registration application form, payment transmittal form, and applicable fee for each type of new UIC Class V discharge. In addition one BRP WS06d Pre-Closure application must be submitted for the closure of the previous well use.

Fee Table Instructions
Determine which fee applies to your well using the provided fee table in conjunction with the answers you provided for Questions 1 (registration category), 2 (well type), and 3 (residential status).
Step 1: Find the Registration Category in the first row (this will limit the number of columns you have to choose from to either 1 or 2).
Step 2: In the second row find the one column that matches your response to Question 3.
Step 3: Follow this column downward to the row that matches your well category (selected in Question 2).

| **Your Registration Category Selection** (from Section A, question 1 above) | | **1.a. or 1.f.** | | **1.b. or 1.c.** | | **1.d. or 1.e.** |
|---|---|---|---|---|---|---|
| **Your Answer to Question 3** | | **Yes** | **No** | **Yes** | **No** | **Yes or No** |
| **Your Well Type** (from question 2 above) | No land uses with higher potential pollutant loads per MassDEP Stormwater Handbook | $0 | $110 | $0 | $220 | $0 |
| | One or more land uses with higher potential pollutant loads per MassDEP Stormwater Handbook | $585 | $585 | $695 | $695 | |
| | Agricultural | $290 | $290 | $400 | $400 | |
| | Karst | $0 | $0 | $0 | $110 | |

Exceptions: If the well(s) is owned by a local or regional government the fee is $0. If the well(s) is owned by the state then the entire fee indicated above applies.

## B. Facility/Residential Information

**Facility/Residential Property Name:** Enter the common name of this facility if it is different than the legal name and the facilities (or residence's) street address and the town that the facility is located in. You may enter "private residence" under the "Facility/Residential Property Name" category if applicable.

**Additional information (for facilities only):** The remainder of the information discussed below under Section B does not apply to a property that is only used as a private residence. If the property is only used as a private residence then you may proceed to Section C.

**Company Name:** Enter the **legal** / corporate name (i.e., Acme Products, Inc.) or the name of the **legal** representative of the company if the company operates under an assumed business name (i.e., John Smith, dba Acme Products). The name must be a legal, active name registered with the state of Massachusetts, unless otherwise exempted by the Department of Commerce regulations.

**Facility PWS ID number:** If the facility is a Public Water System (PWS) or there is a PWS on the same site list the PWS ID number assigned by the MassDEP Drinking Water Program.

**NAICS or SIC Code:** Enter the Standard Industrial Classification (SIC) four-digit code **or** North American Industry Classification System five or six-digit code (NAICS) for the facility. These codes are used to describe the primary activity at the facility that generates the most money and may be found on fire marshal reports, insurance papers, or tax forms. The NAICS codes replaced the SIC system in 1997; however, it is usually easy to convert between the two systems so either code is acceptable. SIC or NAICS information is also available from the U.S. Census Bureau at 1-888-756-2427 or at http://www.naics.com/search.htm. Include a secondary code if applicable.

**EPA Hazardous Waste Generator ID Number:** If you store Hazardous Waste on site enter the appropriate EPA ID number(s). If you store Hazardous Waste on site and do not have an ID number contact your Regional MassDEP office and ask for the Hazardous Waste section to obtain an appropriate ID number. Find your region: http://www.mass.gov/eea/agencies/massdep/about/contacts/

**Tenant Name and Tenant's EPA Hazardous Waste Generator ID Number:** If the well will receive waste from a tenant or from an area occupied by a tenant on the property then list the name of the tenant and, if applicable, the EPA Hazardous Waste Generator ID Number that has been assigned to the tenant.

## C. Current Status of Activity(ies) Being Registered

**Designed but not yet constructed/modified/closed/converted:** Construction/modification/closure/partial closure/conversion of the system has not started.

**Proposed activity partially completed or completed but not active:** Construction of the new well(s) or modification or conversion of a registered well(s) or conversion of an unregistered well(s) has begun or has been completed but the well(s) has not been placed into operation.

**Discharge discontinued but closure activities not completed:** All entry points to well(s) temporarily plugged or discharge discontinued but well closure activities are not yet completed.

**Proposed activity completed and active or closure completed:**
Construction/modification/conversion/closure/partial closure has been completed and the system has either been placed into operation and/or the closure activities have been completed and the well has been partially or permanently closed.

Enter the date that the well(s) was placed in service or the date that the closure activities were completed.

**Is the applicant requesting a waiver of the 30-day review period for closure applications?** If you answer "yes" you must include in a cover letter with your application the reason you are requesting a waiver of the 30-day review period.

## D. Owner/Operator Information

**Name and Address of Owner:** Enter the legal/corporate name (i.e., Acme Products, Inc.) and address of the owner of the company if different than the facility name in Section A. The name must be a legal, active name registered with the state of Massachusetts, unless otherwise exempted by the Department of Commerce regulations. If this information is the same as the "Facility/Residential Property Name" or the "Company Name" from Section B you may enter in the "Name of Owner" space "same as facility name" or "same as company name".

**Legal Contact:** Give the name and phone numbers to whom you want all correspondence directed. The correspondence will otherwise be sent to the Operator's and Owner's addresses.

**Name and address of the operator: (if not the same as the owner):** In the case where the property is owned by one or more entities but the facility is operated by another company and the facility owner's name and address are different than in Section A, enter the **legal** / corporate name (i.e., *Acme Products, Inc.*) and address of the owner of the facility. The name must be a legal, active name registered with the state of Massachusetts, unless otherwise exempted by the Department of Commerce regulations. If applicable, under "Name of Operator" you may enter "same as owner" or "same as facility name" or "same as company name".

**Ownership Type:** Select the applicable category.

## E. Designer

Enter the name and phone number of the person who has designed the proposed/existing UIC system and the company for which he/she works or the person who is overseeing the well closure activities. If designed by a Massachusetts licensed engineer, enter Massachusetts license number. An internet based Massachusetts Engineer lookup tool can be found here: http://license.reg.state.ma.us/public/licque.asp?query=personal&color=red&board=EN. If designed by a Licensed Site Professional (LSP) enter the Massachusetts LSP license number. (An internet based LSP lookup tool can be found here: http://public.dep.state.ma.us/LSP/lspsearch.htm)

## F. Installer

Enter the name and phone number of the person who will install or has installed the proposed/existing UIC system or who will conduct the well closure activities and the company for which he/she works.

## G. Preparer Information

Enter the name, address, and phone number of the person who has completed the BRP WS06 registration application form and the company for which he/she works. If applicable, enter Massachusetts license number or the Massachusetts LSP license number. (An internet based LSP lookup tool can be found here: http://public.dep.state.ma.us/LSP/lspsearch.htm)

## H. Registered Well Driller

If the UIC well installation involves the installation of a drilled well or the decommissioning of a drilled well, enter the driller's name, the name of the company that he/she works for, the driller's MassDEP Well Driller certification number, and a phone number where the driller can be reached. Per 310 CMR 46.00 (http://www.mass.gov/eea/agencies/massdep/water/regulations/310-cmr-46-00-3-certification-of-well-drillers-and-filing-of-well-completion-reports.html) drilled wells may only be installed or decommissioned by a MassDEP Certified Well Driller. A list of certified well drillers can be found here: http://www.mass.gov/eea/agencies/massdep/water/drinking/well-drillers-program.html

## I. Site Information

**Water Supply**: Indicate whether the facility is supplied water from a Public Water System (PWS) or a private well. Note that in addition to large municipal water systems, most private water companies that have 15 or more service connections are considered a PWS.

**Sewer:** Indicate whether the facility is connected to a public sewer system or whether the property is serviced by an on-site sanitary wastewater disposal system (Title 5 or Groundwater Discharge Permit).

**Other Discharges:** List and locate on the site map all other discharges on the site, whether or not they are registered or permitted with MassDEP. Provide the information requested on the application form.

**Sites with Activity and Use Limitations (AULs):** The following web link provides a searchable database where one may look up properties in Massachusetts where an "Activity and Use Limitation" (AUL) has been recorded or registered: http://public.dep.state.ma.us/SearchableSites/Search.asp. An AUL provides notice to users of property of the presence of oil or hazardous material (OHM) contamination remaining at the location after a cleanup has been conducted pursuant to M.G.L. Chapter 21E and the Massachusetts Contingency Plan MCP). The AUL is a legal document that identifies activities and uses of the property that may and may not occur, as well as the property owner's obligation and maintenance conditions that must be followed to ensure the safe use of the property.

**Location of Well(s):** Enter the UIC Well latitude and longitude coordinates for each UIC well included in this application in decimal degrees to a minimum of five decimal places and fill out the information requested on how you obtained this data. Only enter the location of wells for the Well Category and Well Type that you are registering with this application.

In the far left column of the table provided in the form the applicant shall provide a unique name identifier for each well being registered. The identifier can be a combination of characters, symbols and numbers (i.e. storm-1, storm-2, etc.). The middle two columns are for entering latitude and longitude. Place a check mark or the letter "X" in the far right column for any well that is being either physically closed or for which all entry points for the well category and well type associated with this application are being closed or discontinued such that the well will no longer be receiving stormwater associated with this UIC well category and well type. If you are only closing some, but not all of the entry points associated with this UIC well category and well type you should leave this column blank (i.e. the well will continue to receive wastewater of this well category and well type after the proposed closure activities).

Where indicated, identify the method used for locating the latitude/longitude coordinates for the UIC Class V well(s) and the accuracy of the measurement.

If you would like to test whether your Latitude and Longitude data are correct, simply go to www.maps.google.com and type in the numbers in the following format and select the search icon (blue box with

magnifying glass). A green arrow should appear on the location of the coordinates provided. [Format example: 42.37635 -71.06075]

If you do not have access to a GPS unit you may use Internet tools including the following:

1. Go to http://maps.google.com/
2. Select **Maps Labs** from the lower left corner of the web page.
3. A separate window will open up with various map tools available for use.
4. Scroll down and select Enable next to the "**LatLng Marker**" tool.
5. Select **Save Changes** (note: you may have to drag the window up in order to access the "save changes button).
6. Using Google Maps, navigate and zoom in to the well site.
7. Right click on the point closest to the well being located and select "**Drop LatLng Marker**."
8. Select and copy or note the lat/long provided in the marker tab.

**Attachments:**

**All Plans and Maps Submitted Must Have a Title, North Arrow and a Bar Scale of Distance.**

**UIC Class V Well Stormwater Non-Exposure Form:** The UIC Stormwater Non-Exposure Form is required for all original UIC Registration applications for stormwater wells and for any Modification UIC Registration applications where one or more proposed stormwater well is being added to the existing UIC Registration. The only exceptions are for registration applications for which **all** stormwater wells associated with this application or are being registered for Pre-Closure or if you answered "yes" to Question #3 in Section A (i.e. the land use is only for one to four residential units). The form and instructions can be found here: http://maps.massgis.state.ma.us/images/dep/omv/wspviewer.htm.

**Topo or Orthophoto map of the facility**: Provide a topographic map or maps of the area extending at least to **1/2 mile** beyond the property boundaries of the facility, which clearly show the following:

1) The site location;
2) All hazardous waste management and storage facilities;
3) All springs and surface water bodies in the area, plus all Public Water System (PWS) drinking water wells within ½ mile of the facility and the nearest private drinking water wells within ¼ mile of the facility that are identified in the public record or otherwise known to you.
4) All public source water protection areas including: Zone II's, Zone C's or Interim Wellhead Protection Area's (IWPA). (Water supply protection maps are available at http://maps.massgis.state.ma.us/images/dep/omv/wspviewer.htm.)

**Scaled site plan of the facility with the following**:

1) Location of buildings, property boundary lines, and abutting streets;
2) Plat and lot number (from local tax assessor record maps);
3) Location where groundwater table elevation, ledge test, percolation data, and soil profile data were collected (if applicable);
4) Location of all UIC Class V Wells associated with this application or UIC Registration Number;
5) Location of all other shallow or deep injection well(s) and all drains, drain lines, treatment devices, drywells, cesspools, septic systems and other on-site surface or subsurface discharges at the facility;
6) Location of drinking water well(s) and other types of water supply wells on the property, and any on abutting properties or public water supplies within 500 feet of the shallow injection well;
7) Boundary of any known oil or hazardous material contaminant soils or groundwater plume and any Activity Use Limitation areas that exist on the property; and,
8) Location of monitoring wells (if applicable).

# BRP WS 06 UIC Registration
# Stormwater Discharge Well
# Instructions and Supporting Materials

**Description of the shallow injection well system and its major components**: The description **must** contain diagrams (**design sheets**) including the plan view and **cross sectional diagram** of the shallow injection well system, indicating piping, junction boxes, tanks, treatment devices, wells and drainfields. Dimensions of all major components and design calculations **must** be included.

**Narrative Statement**: Provide a narrative statement that indicates that this proposed well(s) and UIC Class V discharge will conform to the MassDEP *Standard Design Requirements for Shallow Injection Wells* (http://www.mass.gov/eea/agencies/massdep/water/drinking/standard-design-requirements-for-shallow-uic-class-v-.html) and provide explanations for any deviation(s) from these requirements.

**Material Safety Data Sheets (MSDS) (if applicable)** - for all chemical products stored or used at the facility which may discharge to the shallow injection well and or are known to be added to the effluent to the well.

**Analytical Testing Data**: Laboratory analytical results from soil samples may be required for an existing stormwater discharge well that has one or more land uses with higher potential pollutant loads in order to establish base-line conditions prior to the MassDEP issuance of the UIC registration approval. Typically water quality testing is not required to be submitted with the UIC application package but may be a condition of MassDEP's issuance of an approval to install or operate the well depending upon site specific concerns for water quality.

**Equipment Specification Sheets** - for all treatment equipment that will add chemicals to the proposed wastewater that is or will be discharged to the UIC Class V well. Specification sheets are not required for filtration equipment that will not add chemicals to the wastewater that is discharged to the UIC Class V well. Please note that chemical additives are not commonly used for Class V Stormwater wells. You should discuss the proposed use of any chemical additives with the MassDEP UIC Program prior to submitting your application form and payment.

**Other Information:** If the responsibility for operating and maintaining one or more of your stormwater wells will be transferred to another entity (e.g. municipality) after completion of your project, you shall attach a letter from the local municipality or other responsible party agreeing to committing to the long term maintenance of the **UIC system**, as described in the Certification statement that is signed by the Operator of the UIC well(s) in Section M of this application form. See the instructions for Section K for additional information that may be required as attachments to this application.

## J. Injection Well Information

**Number of wells, maximum well depth and month/year of installation:** Indicate the number of wells being registered. Include a breakdown of the number of wells being proposed (not yet constructed) and the number of existing wells, the proposed well depth (enter maximum well depth if registering multiple wells), and the month and year installed (for existing wells). Only include the number of wells that are being included with this registration (i.e. only include the wells for the unique combination of "well category" and "well type" associated with this application).

**Well construction:** Check applicable well type(s). Enter type of well seal and the grout material used to create the well seal (if applicable). Well seals and grout are typically associated with **drilled** wells and not with shallow injections wells.

**Will the Discharge Include any Well Additive(s)?** If yes, submit *Proposal for Chemical Use (additive) in a UIC Class V Well* supplemental form.

**Source of Injection Fluid and Potential Contaminants:** Describe the types of fluids being discharged to the UIC well (e.g., backwash from water softening unit, reject water from reverse osmosis unit, stormwater run-off

from parking lot or roof, non-contact cooling water, ground source heat pump or plate and frame heat exchanger, etc.). Identify all sources of injection fluid and for each, detail the potential contaminants that may be present in the injection fluid.

**List Any Current or Proposed Treatment Devices:** If applicable, list all treatment devices proposed or installed prior to the infiltration structure in order to prevent the contamination of underground sources of drinking water. The sampling point for the system must be after all treatment devices. Specifications and a detail sheet must be provided for all treatment devices. A statement from the device manufacturer or from the UIC system designer must be included stating that the devise(s) are rated to meet the standards of the UIC program.

**Rate of Injection:**

**Maximum total rate of injection (gallons per minute):** Enter the maximum discharge rate that the well(s) is/are designed to accept in gallons per minute (for all wells combined).

**Maximum total rate of injection (gallons per day):** Provide the maximum daily discharge rate in gallons per day that all wells combined are designed to accept.

**Month/Year ceased using well(s) for previous use(s):** Enter this information for unregistered wells that are being registered for closure/partial closure or conversion (if applicable).

**Number of entry points to the system:** The number of entry points to a stormwater UIC Class V discharge well is the number of catch basins (including leaching catch basins which are considered both an entry point and a Class V UIC well), surface drainage structures (trench, grate, channel & certain Low Impact Development (LID) Best Management Practices (BMPs)) and roof drain downspouts that contribute stormwater discharge to the stormwater UIC well(s).. Enter the existing number of entry points and the proposed number of entry points. If the facility has multiple existing UIC registrations or if multiple UIC registrations are being applied for, only enter the number of entry points for the unique “well category” and “well type” associated with this application.

**Well Setback Distances and Depth:**

**Distance to nearest wetland or water body (within 200 feet of the UIC well):** Water bodies include lakes, ponds, reservoirs, ocean, rivers, and streams. Note: If you are within 200 feet of a waterbody or wetland you must notify the local conservation commission.

**Distance to nearest septic system (within 200 feet of the UIC well):** If not known check with local Board of Health. All on-site septic systems must be shown on the site plan.

**Distance to nearest building foundation (within 25 feet of the UIC well):** If multiple wells, list the shortest distance between the wells and the building foundation.

**Distance to nearest property line (within 25 feet of the UIC well):** If multiple wells, list the shortest distance between the wells and the property boundary.

**Depth to Water Table and Depth to Bedrock:** If the UIC discharge is an existing system and the depths are not known provide the best information available. However, systems installed after 9/13/02 must provide these data. If water table and depth to bedrock are not available at the time of UIC registration application submittal, it will be a condition of MassDEP’s issuance of an approval to install the well.

Depth to bedrock is only required to the depth of the bottom of the deepest proposed UIC Class V injection well or depth to water table, whichever is deeper. If no bedrock is encountered to that depth then the applicant should enter "greater than [insert depth] feet".
**Soil Type:** Use terms such as fill, sandy till, gravel, sand, etc.

**Distance to Nearest Private Drinking Water Well (within 1,250 feet of the UIC well):** If not known check with local Board of Health. All on-site wells must be shown on the site plan.

**Distance to Nearest Public Water Supply Source (e.g. well or reservoir) (within 2,500 feet):** If not known check at - http://maps.massgis.state.ma.us/images/dep/omv/wspviewer.htm. All on-site wells must be shown on the site plan. If you need assistance, check with the Customer Service Center at the Regional MassDEP office.

## K. Additional Well-Type-Specific Information

### Stormwater Well

**Does the overflow from the UIC well(s) discharge to groundwater onto a different property or to a stormwater system that is owned/operated by another entity?** Check the "yes" box if the overflow is connected to a groundwater discharge well or to a stormwater system that is not owned by the same entity that owns the property for which the UIC stormwater discharge registration is being sought.

If you checked the "yes" box for this question then you must attach a copy of the approval letter, permit, or Order of Conditions from the entity that owns the property that is receiving the overflow water or from the entity that controls the municipal stormwater system or from the local conservation commission (whichever is applicable).

**Does the overflow from the UIC well(s) discharge to surface water or within a wetland or surface water buffer on-site or off-site?** Check the applicable "yes" or "no" box.

If you checked the "yes" box for this question then you must attach the Order of Conditions from the local conservation commission.

## L. Injection Well(s) or Activity(ies) Being Closed

Is the closure being required by a federal, state, or local entity? Check the "yes" box if the proposed closure is the result of a written notification by a federal, state, or local authority indicating that the well(s) must be closed. If you check off the "yes" box fill out the information requested to identify the issuing authority and any contact information that was provided to you for that authority.

Number of Wells Being Closed with this Application: Enter the number of stormwater discharge wells that will be completely closed that are associated with this UIC registration application or with the existing UIC registration number that was previously assigned by MassDEP. Completely closed means that all entry points associated with the stormwater discharge will no longer discharge to the well(s) after the proposed closure activities have been completed. If you are only closing some but not all of the stormwater entry points for a particular UIC well then you are only closing some of the entry points and not the well itself. Do not include in your answer any wells for which one or more stormwater entry points will continue to discharge to the well following the completion of the proposed closure activities.

Closure of a UIC well does not necessarily mean that the well itself will be physically decommissioned. Under many circumstances a well that is closed as a UIC well for one "well category" and "well type" may continue to be

used for other types of UIC and/or non-UIC type uses. However, if the well will not be used for any other water supply or water discharge purposes it is considered an abandoned well per 310 CMR 46.00 (http://www.mass.gov/eea/docs/dep/service/regulations/310cmr46.pdf). An abandoned well shall be physically decommissioned before it falls into a state of disrepair. A drilled well shall be decommissioned by a MassDEP Certified Well Driller before it falls into a state of disrepair. Please note that an abandoned well that falls into a state of disrepair may be considered a potential hazard to public health or safety and become reclassified as an unauthorized UIC Class V well that will require subsequent UIC registration for the purposes of properly closing the well.

Will this proposed closure activity result in the complete closure of all wells associated with this registration application or with the existing UIC registration number? Only answer "yes" to this question if **all** of the stormwater discharges associated with the UIC well(s) included in this UIC registration application or with the existing UIC registration number that was previously assigned by MassDEP will discontinue upon completion of the proposed well closure activities. **It is important that this question be answered correctly because MassDEP will determine whether or not the UIC registration for stormwater discharge will be completely closed out upon the completion of the proposed closure activities. The consequences of answering "yes" will be that any further stormwater discharges associated with this UIC registration number will be unauthorized.**

If you check off the "no" box for this question, enter the number of wells associated with this UIC registration number that will continue to receive stormwater discharges of this well type.

Number of entry points to the system: There are three questions associated with the number of entry points. The number of entry points to a UIC stormwater well is the number of catch basins, and roof drain downspouts that are discharging to the well(s). Enter the number of entry points before closure, the number of entry points proposed for closure, and the number of entry points that will remain after the proposed closure activities have been completed. Only enter the number of entry points for the stormwater discharges associated with this UIC registration number.

**Proposed or previously completed well closure activities (check all that apply):**

Closure activities shall adhere to the Mass DEP Guidance Document #: BRP/DWM/DW/G04-3, *Massachusetts Closure Requirements for Underground Injection Control (UICs) Wells (including shallow injection wells)* (http://www.mass.gov/eea/docs/dep/water/laws/i-thru-z/uicclose.pdf). The discussion of required laboratory analytical testing parameters in that document is focused on motor vehicle – waste disposal wells. For other types of "well category" and "well type" combinations the sampling parameters chosen will depend upon the types of contaminants that were either known to have been discharged to the well or that had the potential to have been discharged into the well. If properly maintained and operated, many UIC Class V stormwater discharge wells will not require sampling of fluids/sediments in the bottom of the well or in the area surrounding the well. If uncertain as to what sampling and laboratory analyses should be completed, you are encouraged to contact the MassDEP UIC Program at ASK.UIC@state.ma.us prior to submitting your Pre-Closure application.

Check all boxes that describe the types of well closure activities associated with this UIC Pre-Closure application. You shall include both proposed closure activities and activities that will have already been completed at the time this application is submitted. The selection options include the following:

- Clean out well(s);
- Sample fluids/sediments in the bottom of the injection well;
- Remove well(s) and any contaminated soil – the selection of this option indicates that the well(s) will be physically removed (excavated) from the ground;
- Appropriate disposal of remaining fluids/sediments;
- Conversion to other well type;

- **Note:** Only select this option if the well is being converted to another UIC Class V well type. If you are converting to a non-UIC Class V well type (i.e. converting to an irrigation well, etc.) then you should not select this option and you should not select the following "well and all entry points physically decommissioned" option. If you select this option you will be asked to select the well category and type for the new purpose of the well. Note: a separate UIC registration application (BRP WS06) must be submitted for any conversion to a new well type). If you are converting to a non-UIC Class V well type (i.e. irrigation well) then you should indicate your intent in an attached narrative to your Pre-Closure application from;
- Well(s) and entry points abandoned (physically decommissioned). The selection of this option indicates that the well, or one or more of the UIC wells, associated with this UIC Registration Number will be physically removed/filled-in/destroyed and that all entry points to the well will either be removed and/or the piping to the UIC well will be permanently sealed so that no fluid may continue to be directed toward the closed well.;
- Partial Closure - Some of the current or past discharges will be discontinued. Other discharges of the well category and well type associated with this UIC Registration Number to the well(s) will continue;
- Sample fluids/sediments from the area surrounding the injection well (as applicable); or,
- Other (Describe).

**Proposed Laboratory Analytical Parameters for Soil Sampling Activities:**

The selection of soil or groundwater analytes shall be based upon the potential oil and/or hazardous materials that are known to have discharged to the UIC well or had the potential to be discharged to the UIC well. Laboratory analytical results from soil samples are often required for a stormwater discharge well that has one or more land uses with higher potential pollutant loads In many instances laboratory analyses are not required for the closure of the other types of UIC Class V stormwater discharge wells.

Go to http://www.mass.gov/eea/agencies/massdep/water/drinking/certified-laboratories.html for MassDEP's online searchable database of MassDEP Certified Laboratories.

**Proposed Laboratory Analytical Parameters for Groundwater Sampling Activities:**

See discussion above for proposed soil sampling activities.

## M. Certifications for UIC Well(s) that is/are Being Registered for Continued Use or Proposed Future Use as a Stormwater Well

The certification statements in Section M shall be signed if one or more of the existing or proposed wells included in this application are being registered for continued or future use. If all of the wells included in this application are being registered for closure then the certification statements in Section M should be left blank and you shall complete the certification statements in Section N of this document.

Section M has two certification statements. One is for the operator of the existing or proposed UIC well(s) and one is for the owner of the property on which the existing or proposed UIC well(s) is, or will be, located. All applications are required to have the Operator certification statement signed by the operator. If the operator **is not** also the owner of the property then the property owner shall sign the Owner certification statement. The following are the only eligible persons who may sign for the operator or owner.

Any person who signs for the operator or owner must have authority to legally bind the business to perform the activities described in the applicable certification statement. That person must be one of the following:

- In a sole proprietorship, the company's sole proprietor.

- In a partnership, a general partner with authority to bind the partnership.
- In a corporation or a non-profit corporation, a corporate official with authority to bind the corporation, e.g., president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision making functions of the corporation.
- In a municipality or other public agency, a principal executive officer or ranking elected official who is empowered to enter into contracts on behalf of the municipality or public agency.

### N. Certifications for UIC Well(s) that is/are Being Registered for Complete Closure of all Future Use as a Stormwater Well

The certification statements in Section N shall be signed if all of the wells included in this application are being registered for closure. See the instructions above for Section M for the descriptions for the persons who are eligible to sign for the operator or owner.

**Massachusetts Department of Environmental Protection**
Bureau of Resource Protection – drinking water program

# BRP WS 06 UIC Registration

## Stormwater Discharge Well

**Note:** this application form only applies to Stormwater Discharge Wells.

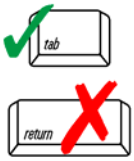
Refer to the Instructions and Supporting Materials document that corresponds to this UIC Registration form for detailed instructions regarding the completion of this form and the required attachments.

Transmittal # (not required for 1- to 4-unit residential applications)

## A. Registration Category and Fee

### Registration Category

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.




1. Identify the type of registration activity you are conducting (check one):

   a. Registration of a Proposed or Existing Unregistered UIC Well(s) ☐

   b. Pre-Closure of an Unregistered or Registered UIC Well(s) ☐

   c. Pre-Closure of an Unregistered or Registered UIC Well(s)and Conversion to New Well Type* ☐

   * **Note:** Conversion also requires submittal of a separate registration application for the new well type.

   d. Modification of a UIC Registration Application that is Still Under Review at MassDEP ☐

   e. Modification of an Existing UIC Registration that Does Not Include Increasing the Number of Registered Wells ☐

   f. Modification of an Existing UIC Registration that Includes Increasing the Number of Registered Wells ☐

   **Note:** For the above Pre-Closure categories (items b and c), if you are submitting for a UIC well(s) that has received a MassDEP issued UIC registration number complete Sections A, B, L, and M of this application and for all other Sections only complete the data/information fields where you are entering new or revised information. For any of the above Modification categories (items d, e, and f) complete Sections A, B, and M of this application and for all other Sections only complete the data/information fields where you are entering new or revised information.

   For Modifications, Pre-Closures, or Pre-Closures and Conversions of a UIC Registered Well:

   Enter UIC Registration Number (required): _____ UIC Registration Number issued by MassDEP

### Basic Well Information

2. Well Category, Well Type and registration fee

   Well Category: Stormwater

   Well Type (select one):

   ☐ No Land Uses with Higher Potential Pollutant Loads per MassDEP Stormwater Handbook

   ☐ One or more Land Uses with Higher Potential Pollutant Loads per MassDEP Stormwater Handbook

   ☐ Agricultural

   ☐ Karst

# BRP WS 06 UIC Registration

## Stormwater Discharge Well

## A. Registration Category and Fee (cont.)

3. Is the facility serviced by the well(s) **both**:

   a. For four (4) residential units or fewer; and,
   b. Only used for residential purposes? ☐ Yes ☐ No

4. Are any of the wells included in this registration application also being used for another type of UIC Class V discharge? ☐ Yes ☐ No

5. If you answered "yes" to the above question 4, enter the well category and well type for the other type of discharge (refer to the *Class V Injection Well Category, Well Type, and Fee Table* (see instructions document for web link)):

   Well Category _____ Well Type _____

**UIC Registration Fee**

**Notes:**
For Registration of More than One Type of Discharge – This form may only be used to apply for UIC registration of discharge from one type of stormwater discharge well(s). A separate BRP WS06 registration application, payment transmittal form, and applicable fee shall be submitted for each additional type of discharge even if one discharge well is used for more than one well category and well type combination.

For Conversion of Unregistered Wells - If your application is for the conversion of a well(s) that was not previously registered, you shall submit one application form, payment transmittal form, and applicable fee for the registration and closure or partial closure of each of the unregistered well uses. You shall also submit a separate registration application form, payment transmittal form, and applicable fee for each type of new UIC Class V discharge well.

For Conversion of Registered Wells - If your application is for the conversion of a Registered UIC well(s), you shall submit a separate registration application form, payment transmittal form, and applicable fee for each type of new UIC Class V discharge. In addition one BRP WS06d Pre-Closure application must be submitted for the closure of the previous well use.

**Fee Table Instructions:**

Determine which fee applies to your well using the following fee table in conjunction with the answers you provided for questions 1 (registration category), 2 (well type), and 3 (residential status).
Step 1: Find the Registration Category in the first row (this will limit the number of columns you have to choose from to either 1 or 2).
Step 2: In the second row find the one column that matches your response to Question 3.
Step 3: Follow this column downward to the row that matches your well category (selected in Question 2).

# BRP WS 06 UIC Registration

## Stormwater Discharge Well

## A. Registration Category and Fee (cont.)

| **Your Registration Category Selection** (from question 1 above) | **1.a. or 1.f.** | | **1.b. or 1.c.** | | **1.d. or 1.e.** |
|---|---|---|---|---|---|
| **Your Answer to Question 3** | **Yes** | **No** | **Yes** | **No** | **Yes or No** |
| No land uses with higher potential pollutant loads per MassDEP Stormwater Handbook | $0 | $110 | $0 | $220 | $0 |
| One or more land uses with higher potential pollutant loads per MassDEP Stormwater Handbook | $585 | $585 | $695 | $695 | |
| Agricultural | $290 | $290 | $400 | $400 | |
| Karst | $0 | $0 | $0 | $110 | |

Exceptions: If the well(s) is owned by a **local or regional government** the fee is **$0**. If the well(s) is owned by the **Commonwealth of Massachusetts**, the standard fees indicated above apply. If the fee would have exceeded $100 then the entire fee indicated above applies.

**Enter fee here:** **$** _____

**Annual Compliance Fee:** There is no annual compliance fee associated with this Registration.

## B. Residential/Facility Information

Facility/Residential Property Name _____ Facility/Residential Street Address _____

City/Town _____ State _____ Zip Code _____

**Additional information (for facilities only):**

Company Name _____ (MassDEP use only) Facility # _____

Facility Public Water Supplier (PWS) ID# (if applicable) _____ NAICS or SIC Code # (if applicable) _____

Facility Telephone # _____

Facility Mailing Address (if different from street address) _____

City/Town _____ State _____ Zip Code _____

EPA Hazardous Waste Generator ID # (if applicable) _____ EPA Hazardous Waste Generator ID # (if applicable) _____

Tenant Name (if applicable) _____ Tenant's EPA Haz. Waste Generator ID # (if applicable) _____

# BRP WS 06 UIC Registration
## Stormwater Discharge Well

## C. Current Status of Activity(ies) Being Registered (check one)

- ☐ Designed, but not yet constructed/modified/closed/converted
- ☐ Discharge discontinued but closure activities not completed
- ☐ Proposed activity completed and active or closure completed
- ☐ Proposed activity partially completed or completed but not active

Date placed in service (or date closure completed)

Is the applicant requesting a waiver of the 30-day waiting period for closure applications?
☐ Yes ☐ No

If you answered "yes" to this question, indicate your reasons for requesting the waiver in a cover letter attached to this application.

## D. Owner/Operator Information

Name of Owner | Address of Owner (enter "same" if same as facility)

City/Town | State | Zip Code

Owner Email Address

Owner's Legal Contact | Legal Contact Phone # | Legal Contact Fax #

Legal Contact Email Address

Name of Operator (if different from owner) | Address of Operator (enter "same" if same as facility)

City/Town | State | Zip Code

Operator's Legal Contact | Legal Contact Phone # | Legal Contact Fax #

Legal Contact Email Address

Ownership Type (choose one):

Private: ☐ Industrial ☐ Commercial ☐ Non-profit ☐ Residential

Public: ☐ Local ☐ Regional ☐ State ☐ Federal

## E. Designer

Name of Designer | Name of Company

Massachusetts Engineer License # (if applicable) | Designer Phone # | Email

LSP # (if applicable) | National 3rd party or manufacturer approval & ID # (if applicable)

**Massachusetts Department of Environmental Protection**
Bureau of Resource Protection – drinking water program

# BRP WS 06 UIC Registration

## Stormwater Discharge Well

## F. Installer

Name of Installer

Name of Company

National 3rd party or manufacturer approval & ID # (if applicable)

Installer Phone #

Email

## G. Preparer

Name of Preparer

Preparer Address

City/Town

State

Zip Code

Preparer Phone #

Email address

Massachusetts Engineer License # (if applicable)

LSP # (if applicable)

## H. Registered Well Driller (if applicable)

MassDEP Well Driller Registration #

Name of Well Driller

Phone #

Name of Company

Email address

## I. Site Information

Water Supply: ☐ Public ☐ Private

Sewer: ☐ Public ☐ Private

**Other Discharges:**

Are there other current or proposed discharges on site? ☐ Yes ☐ No

If yes, are they permitted with MassDEP? ☐ Yes ☐ No

If yes, permit #:

Permit #

If no, are they registered with MassDEP as UIC Class V wells? ☐ Yes ☐ No

If yes, registration #:

Registration #

Please list the type or types of other discharges:

Check any of the following that apply to this site:

a. ☐ Bureau of Waste Site Cleanup Priority Site

If yes, file number

b. ☐ Bureau of Waste Site Cleanup Waiver Site

If yes, file number

c. ☐ Superfund site

If yes, Federal ID #

# BRP WS 06 UIC Registration
## Stormwater Discharge Well

## I. Site Information (cont.)

If the site is currently being regulated by the Bureau of Waste Site Cleanup, check any of the following that apply:

☐ Incident Response ☐ Short Term Measure

☐ Activity and Use Limitations: _____

Confirm that the applicant has checked that the site does not have any activity restrictions with respect to limiting discharges on the site.

☐ No restrictions ☐ Restrictions (please explain; attach additional sheets if necessary):

_____

_____

**Location of Wells:**

Only enter the location of wells for the one well type you are including in this registration.

**Note: Latitude & Longitude are required data.** Well ID# is assigned by you and each well should have a unique ID#. Please check the closure box for any well(s) being completely closed to the well category and well type associated with this registration application.

If you need additional well locations, please provide all information on a separate sheet.

If you do not have access to a GPS unit, see instructions to this form for Internet tools that may be used to select well locations.

| **Well ID (name and/or number)** | **Latitude in Decimal Degrees (e.g., 42.355767)** | **Longitude in Decimal Degrees (e.g., -71.060996)** | **Check here if well is either being physically closed or if all entry points (discharges) associated with this well category and well type will be discontinued.** |
|---|---|---|---|
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |

# BRP WS 06 UIC Registration
## Stormwater Discharge Well

## I. Site Information (cont.)

Identify the method used for locating the latitude/longitude coordinates for the UIC Class V well(s) (check one):

Location Type:

☐ Approximate location of well

☐ Approximate center of area where discharge is located (i.e. center of drainfield or trench)

Accuracy – Estimated horizontal accuracy is less than (check one):

☐ +/-100 feet ☐ +/- 500 feet ☐ +/- 1000 feet

Provide a narrative description of the site and the feature to be permitted. As an example: "The site is on the west side of Main Street, the third building north of High Street. The disposal field lies 100 feet off the southwest corner of the building."

**Attachments:**

All of the following shall be attached to this application (unless submitted with a previous application and the information contained in the original submittal has not changed):

☐ UIC Class V Stormwater Non Exposure Form and Certification Statement (required for all registrations unless filing for Pre-Closure of all stormwater wells associated with this UIC registration application or you answered "yes" to Question #3 in Section A).

☐ Topographic or Orthophoto Map ☐ Design Sheets ☐ MSDS Sheets (if applicable)

☐ Site Plan (include bar scale, stormwater collection system, and delineation of drainage area contributing to the stormwater wells).

☐ Equipment Specification Sheets (if applicable) ☐ Narrative Statement

☐ Cross Sectional Diagram Depicting All Underground Components of the UIC System

☐ Analytical Testing Data ☐ Other information

## J. Injection Well Information

Number of proposed new wells

Maximum well depth

Number of existing wells

Month/year of UIC wells construction (for existing wells)

# BRP WS 06 UIC Registration
## Stormwater Discharge Well

## J. Injection Well Information (cont.)

Total Number of Existing Plus Proposed Wells (do not include wells that are in a different UIC well category and well type (those must be registered under a separate UIC registration number)):

_____

**Well Construction** (check all that apply):

☐ Drywell ☐ Drilled Well ☐ Manufactured System ☐ Dug Well

☐ Improved Sinkhole ☐ Drainfield/Leachfield ☐ Trench Drain

☐ Other (describe): _____

**Well Additives:**

Are any well additives being used or proposed for use? ☐ Yes ☐ No

If you answered yes, attach a completed *Proposal for Chemical Use (additive) in a UIC Class V Well* supplemental form. **Please note that chemical additives are not typically allowed for UIC registered stormwater wells.**

**Source of Injection Fluid and Potential Contaminants**

| | |
|---|---|
| Source of injection fluid #1 | Potential contaminants for Source #1 |
| Source of injection fluid #2 | Potential contaminants for Source #2 |
| Source of injection fluid #3 | Potential contaminants for Source #3 |
| Source of injection fluid #4 | Potential contaminants for Source #4 |

**Treatment Devices**

If applicable, list any treatment devices prior to the injection point that will serve to remove contaminants from the water that is discharged into the stormwater well(s) (attach specification sheets & include on site plan and cross section):

_____

_____

_____

**Rate of Injection**

Maximum total rate of injection (of all wells combined): _____ Gallons per minute and _____ Gallons per day

Month/Year ceased using well(s) for previous use(s) (only applies to wells being closed or converted if applicable): _____

# BRP WS 06 UIC Registration
## Stormwater Discharge Well

## J. Injection Well Information (cont.)

**Number of Entry Points**

Note: The number of entry points equals the number of collection points to the stormwater system that are or will be discharging to the stormwater well(s). This includes catch basins (including leaching catch basins which are considered both an entry point and a Class V UIC well), surface drainage structures (trench, grate, channel & certain Low Impact Development (LID) Best Management Proctices (BMPs)) and roof drain downspouts.

_____ _____
# of entry points to existing system | Total # of entry points for proposed system (existing plus proposed)

**Well setback distances and depths (all distances shall be provided in feet):**

Distance to nearest wetland or water body (enter "NA" if distance is greater than 200 feet) _____

Distance to nearest septic system (enter "NA" if distance is greater than 200 feet) _____

Distance to nearest building foundation (existing or proposed) (enter "NA" if distance is greater than 25 feet) _____

Distance to nearest property line (enter "NA" if distance is greater than 25 feet) _____

Depth to water table (feet) (indicate "unknown" if unknown) _____

Depth to bedrock (feet) (indicate "unknown" if unknown) _____

_____
Soil type(s) at site - e.g., fill, sandy till, gravel, sand

Distance to nearest private drinking water well (existing or proposed) (enter "NA" if distance is greater than 1,250 feet) _____

Distance to nearest Public Water Supply source (e.g., well or reservoir) (enter "NA" if distance is greater than 2,500 feet) _____

## K. Additional Well-Type-Specific Information

In addition to completing the questions in this section, all registration applications for a new stormwater well(s) and for an existing stormwater well(s) that was not previously registered with the MassDEP UIC program must attach a completed ***UIC Stormwater Non Exposure Form*** (unless you answered "yes" to Question #3 in Section A). The non-exposure form is required for a Pre-Closure of unregistered wells unless all of the wells being registered with this application are also being closed. The non-exposure form is also required if filing a Modification of an existing UIC registration for the purpose of adding an additional stormwater well(s) or for all other modifications where any of the information previously submitted on the non exposure form has changed or needs to be corrected.

Does overflow from the UIC well(s) discharge to groundwater or surface water on a different property or to a stormwater system that is owned/operated by another entity?

☐ Yes ☐ No

If yes, the applicant must attach a copy of the approval letter/permit/Order of Conditions from the entity owning the property that is receiving the overflow water or from the entity that controls the municipal stormwater system or from the local conservation commission.

# BRP WS 06 UIC Registration
## Stormwater Discharge Well

## K. Additional Well-Type-Specific Information (cont.)

Does the overflow from the UIC well(s) discharge to surface water or within a wetland or surface water buffer on-site?

☐ Yes ☐ No

If yes, the applicant must attach a copy of the Order of Conditions from the local conservation commission allowing the discharge.

## L. Injection Well(s) or Activity(ies) Being Closed

**Note:** Section L should only be filled in if you are closing a well(s).

Is the closure being required by a federal, state, or local entity? ☐ Yes ☐ No

If yes, which regulatory entity? _____
Name

_____ _____
Contact name for regulatory entity Contact Phone #

Number of Wells Being Closed with this Application _____

Will this proposed closure activity result in the complete closure of all wells associated with this registration application or with the existing UIC registration number?

☐ Yes ☐ No

If you answered "no" to the above question, how many wells of this well category and well type will remain after the proposed closure activities have been completed?

_____

The following three (3) data entry fields are only associated with the well type being registered with this application. Do not include the numbers of entry points associated with any converted new well type (if applicable).

Number of entry points to system before closure _____

Number of entry points proposed for closure _____

Number of entry points to system after closure _____

Proposed or previously completed well closure activities (check all that apply):

☐ Clean out well(s) ☐ Sample fluids/sediments in the bottom of the injection well(s)

☐ Remove well(s) and any contaminated soil ☐ Appropriate disposal of remaining fluids /sediments

☐ Conversion to other Well Category/Type _____ / _____
Well Category/Well Type

**Note:** a separate UIC registration application (BRP WS06) must be submitted for any conversion to a new well type.

☐ Well(s) and all entry points physically decommissioned

☐ Partial Closure (some but not all entry points eliminated or well(s) still in use for other types of discharge)

# BRP WS 06 UIC Registration

## Stormwater Discharge Well

## L. Injection Well(s) or Activity(ies) Being Closed (cont.)

☐ Sample fluids/sediments from the area surrounding the injection well(s) (as applicable)

☐ Other (specify): _____

**Proposed Laboratory Analytical Parameters for Soil Sampling Activities:**

Soil Sampling Parameter #1 | Soil Sampling Parameter #2

**Proposed Laboratory Analytical Parameters for Groundwater Sampling Activities:**

Groundwater Sampling Parameter #1 | Groundwater Sampling Parameter #2

# BRP WS 06 UIC Registration

## Stormwater Discharge Well

## M. Certifications for UIC Well(s) that is/are Being Registered for Continued Use or Proposed Future Use for the Stormwater Well Type Activity Selected for this Application (Applicant to fill in this information)

**Operator:**

The injection well(s) described above is used for placement or injection of fluids into the ground. I understand that this well(s) is subject to inventory requirements and compliance with the regulations under the Underground Injection Control Program established pursuant to the Safe Drinking Water Act, P.L. 93-523 and amendments, and UIC guidelines, and I hereby serve notice that the well(s) is proposed or in service.

I agree:

1. That the well(s) described herein will not be used for discharges other than those described above (unless I have applied for and received the required Massachusetts and local government approvals);

2. That I will notify the MassDEP Drinking Water Program/UIC Program (on forms provided by the UIC program) if any of the information (including ownership, location or type of discharge, and installation of additional wells,) for the above well(s) changes, but before the change occurs (30-day minimum notice on ownership/operator and 60-day notice on all other changes) (ownership changes not required after a UIC registration number has been completely closed (i.e. all wells associated with the approved registration application have been closed and closure has been approved by MassDEP));

3. That I will notify the MassDEP Drinking Water Program/UIC Program (on forms provided by the UIC program) if the well(s) becomes inactive;

4. That I will notify the MassDEP Drinking Water Program/UIC Program (on forms provided by the UIC program) when the above well(s) is no longer in use, but before physically decommissioning the well(s) and that I will file a Post-Closure Notification Form within seven days of completing the closure with the UIC program;

5. That I will maintain financial responsibility for the well(s) described above; and

6. That I will provide a sampling tap (approved by MassDEP) and allow sampling at the point of injection (not required for a closed well).

I certify under pains and penalties of law that I have personally examined and am familiar with the information submitted in this document and all attachments and based on my personal knowledge or inquiry of those agents immediately responsible for obtaining the information on my behalf, I believe the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment.

| Signature of Operator | Date |
|---|---|
| Name of Operator | Position/Title |

# BRP WS 06 UIC Registration
## Stormwater Discharge Well

## M. Certifications for UIC Well(s) that is/are Being Registered for Continued Use or Proposed Future Use for the Stormwater Well Type Activity Selected for this Application (cont.) (Applicant to fill in this information)

**Owner (must be completed if owner has not signed above as operator)**

I certify that I have personally examined and am familiar with the information submitted in this document and agree to the installation, conversion, or closure of the discharge well(s) described in this application. I also agree that I will assume the responsibilities of the operator in the event that the operator leaves the property and a replacement operator has not been established and reported to MassDEP (on forms provided by the UIC program).

| Signature of Owner | Date |
|---|---|
| Printed Name | Position/Title |

## N. Certifications for UIC Well(s) that is/are Being Registered for Complete Closure of all Future Stormwater Activities Associated with the Well Type Selected for this Application: (Applicant to fill in this information)

**Operator**

I certify under pains and penalties of law that I have personally examined and am familiar with the information submitted in this document and all attachments and based on my personal knowledge or inquiry of those agents immediately responsible for obtaining the information on my behalf, I believe the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment.

| Signature of Operator | Date |
|---|---|
| Name of Operator | Position/Title |

**Owner (must be completed if owner has not signed above as operator)**

I certify that I have personally examined and am familiar with the information submitted in this document and agree to the conversion or closure of the discharge well(s) described in this application.

| Signature of Owner | Date |
|---|---|
| Printed Name | Position/Title |

Submit a signed and complete application package to:

MassDEP
Bureau of Resource Protection
UIC Program
One Winter Street, 5th Floor
Boston, MA 02108

Send duplicate copies of this form to:

Local Board of Health