Highcrest at Meadow Walk

Sudbury, Massachusetts

PREPARED FOR

Pulte Homes of New England LLC
115 Flanders Road, Suite 200
Westborough, MA 01581

PREPARED BY

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

Issued: April 2017

Table of Contents

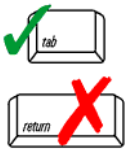
Checklist for Stormwater Report

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 4/26/2017
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:

- [X] No disturbance to any Wetland Resource Areas
- [ ] Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- [X] Reduced Impervious Area (Redevelopment Only)
- [X] 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
- [X] 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

- [X] No new untreated discharges
- [X] Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- [X] 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. Refer to hydrologic analysis included in the Approved Preliminary Stormwater Master Plan for the Overall Project Dated April 2016 as clarified in the Village Retail & Bridges by Epoch at Meadow Walk Stormwater Management Master Plan dated December 2016

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided. Refer to analysis included in the Approved Preliminary Stormwater Master Plan for the Overall Project Dated April 2016

☐ 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.

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.

Pre-construction SWPPP

☒ 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 age-qualified housing portion of the multi-phased, mixed-use redevelopment project proposed at 526-528 Boston Post Road, Sudbury, MA. The age-qualified housing portion includes the construction of 7 buildings, including one 36-unit dwelling and 6 townhouse buildings comprising of 21 dwelling units, with associated drive aisles, parking, and landscape areas.

Due to the nature of the phased development on the Site, VHB developed a Preliminary Stormwater Management Master Plan dated April 2016 for the full-build project to evaluate the existing and anticipated proposed full-build hydrologic conditions on the site. The hydrologic analysis was later supplemented and clarified in an analysis supporting the Village Retail and Bridges by Epoch at Meadow Walk, Sudbury, MA dated December 2016 (Collectively, The Stormwater Management Master Plan). 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 the design included herein for the age-qualified housing portion of the redevelopment plan 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, Pulte Homes of New England LLC, is proposing to construct the age-qualified housing portion (The Project) of the Full Build Redevelopment at 526-528 Boston Post Road, Sudbury, MA (the Site). The Project involves the construction of 7 buildings, including one 36-unit dwelling and 6 townhouse buildings comprising of 21 dwelling units with associated parking, access roadway, landscape, and utilities.

Stormwater management BMPs and conveyances are proposed to support the age-qualified housing construction.

Existing Drainage Conditions

The existing conditions in The Project area of the Site consists predominately of impervious surfaces with paved parking and drives. Topography is relatively flat and slopes southeasterly. Runoff from the age-qualified housing portion of the Site drains to a centrally located retention pond via a closed drainage system. Outflows from the retention pond combine with the closed drainage system located on the southeastern portion of the Site 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.

For a more detailed discussion of the existing hydrologic conditions at the Site, refer to the Preliminary Stormwater Management Master Plan revised April 2016, prepared by VHB. Figure 1 herein presents the Master Plan Existing Drainage Conditions, taken from the April 2016 preliminary stormwater management master plan for reference.

Proposed Drainage Conditions

The age-qualified housing portions of the redevelopment project provides opportunity to enhance the existing on-Site stormwater management system by (1) implementing a series of stormwater water quality and infiltrative BMPs at the Site and (2) reducing the amount of impervious cover at the Site. These improvements will help to restore elements of a natural hydrologic cycle in the Project areas which will benefit the underlying aquifer by increasing both the amount and quality of runoff that is infiltrated and to increase the vegetated buffer between impervious surfaces and the existing wetland systems.

Figure 2 shows the proposed conditions from the Stormwater Management Master Plan as revised December 2016, and Figure 3 reflects the proposed conditions as currently proposed. The work in the age qualified housing area is very consistent

with the master plan. As shown in Figure 3, the work associated with the Project is entirely located within the previously defined S-1B-2 catchment area, except for the reduction in width of the fire access lane, which occurs in subcatchment S-1D. Both areas are tributary to the existing central pond on the site.

The stormwater treatment methods for The Project area are shown in Figure 4. VHB considered a wide range of stormwater BMPs during the preliminary design of the Project. Through a careful design approach, most the impervious areas in this phase of the project are tributary to an infiltrative BMP sized to infiltrate an inch of runoff, which will create a substantial benefit to the underlying aquifer. Where these BMPS are also used for treatment, the following treatment trains for stormwater runoff from paved areas, including:

- Runoff discharges via overland flow to an infiltrating bio-retention area equipped with a forebay;
- Runoff is a collected by deep-sump hooded catch basin, prior to discharge to an infiltrating bio-retention areas with forebay; or,
- Runoff is collected by deep-sump hooded catch basins, directed through an isolator row, and then infiltrated via a subsurface system.

Roof runoff will be infiltrated in one of two ways. Runoff from a majority of the roof area will be captured and directed toward subsurface infiltration systems. This includes the front roof portions of the townhouse buildings and from the larger 36-unit building, as illustrated on Figure 4. The rear portions of the townhouse roofs will sheet flow to relatively flat lawn areas at the rears of the buildings which will also promote some amount of infiltration. Based on

All stormwater treatment BMPs (bio-retention areas and subsurface infiltration systems) are sized to treat the 1-inch water quality volume. As noted above, stormwater from proposed buildings will be discharged to subsurface infiltration systems to maximize recharge to the underlying aquifer. The systems will be sized to infiltrate the first 1-inch of runoff from the rooftops. All stormwater treatment BMPs and the roof drainage systems will overflow into the closed drainage system and discharge to existing stormwater outfalls.

The Site is in the watershed of Hop Brook, which is classified as in impaired waterway requiring a TMDL for impairments including dissolved oxygen saturation, excess algal growth, dissolved oxygen, and total phosphorous. Since a TMDL has not been determined for Hop Brook, there are no required performance standards for discharges in the watershed. The proposed suite of BMPs, as discussed in the next paragraph, and the reduction of impervious area on the Site will provide improvements to these impairments relative to the no-build conditions. Recharge is generally considered the best way to remove phosphorous from stormwater and has a beneficial impact on stormwater temperatures.

VHB is proposing the use of subsurface infiltration basins as part of the age-qualified housing area to provide water quality treatment, and to maximize recharge into the

underlying aquifer. Additionally, the use of overland flow and bio-retention areas is deliberate to provide some vegetated stormwater features while also maximizing separation from groundwater. Soil permeability rates and groundwater depths were determined in support of the BMP design in the Project area by Ransom Consulting LLC and summarized in the attached geotechnical report (see Appendix A).

The comprehensive stormwater management system has been developed in accordance with the Massachusetts Stormwater Handbook. The bio-retention areas, subsurface infiltration basin have been sized to treat the one inch water quality volume 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, and the Massachusetts DEP Zone II (a critical area).

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

Table 1
Proposed Conditions Impervious Cover Comparison

Drainage Area	*Discharge Location*	*Design Point*	*Existing Impervious Area (acres)*	*Preliminary Master Plan Proposed Impervious Area (acres)*	*Proposed Impervious Area Per December 2016 Updated (acres)*	*Currently Proposed Impervious Area** (acres)*
S-1A	Ex RCP Across Boston Post Road	DP-1	7.1	5.3	5.7	5.7
S-1B	Ex Pond at Center of Prop	DP-1	6.6	5.6	4.1*	4.1
S-1C	Ex Pond at Center of Prop	DP-1	11.3	10.8	11.3	11.3
S-1D	Ex Pond at Center of Prop	DP-1	1.6	1.4	1.4	1.4
S-1E	Ex Pond at Center of Prop	DP-1	3.4	2.3	1.7	1.7
S-1F	SW Wetland at Western Prop Line	DP-1	9.9	9.9	9.9	9.9
S-1G	EX RCP Across Boston Post Road	DP-1	N/A	2.3	2.7	2.7
S-2	Overland Flow to Boston Post Rd	DP-2	0.0	0.0	0.0	0.0
S-3	Wetland at Northeast Corner	DP-3	0.0	0.0	0.0	0.0
			39.9	37.6	36.8	36.8

* Table 1 from the Stormwater Management Master Plan assumed The Project would comprise of 2.4 acres of impervious of this 4.1-acre total which is accurate in the current proposed condition.

** Proposed Impervious Area includes all proposed work associated with the "Grocery Store at Meadow Walk" "Bridges by Epoch Sudbury", Village Retail at Meadow Walk" and "Avalon Sudbury" projects as previously approved by the Town of Sudbury, all work described herein proposed as part of the "Highcrest at Meadow Walk" project, and all other existing impervious areas to remain.

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 the Project are described hereon.

Bio-Retention Basin

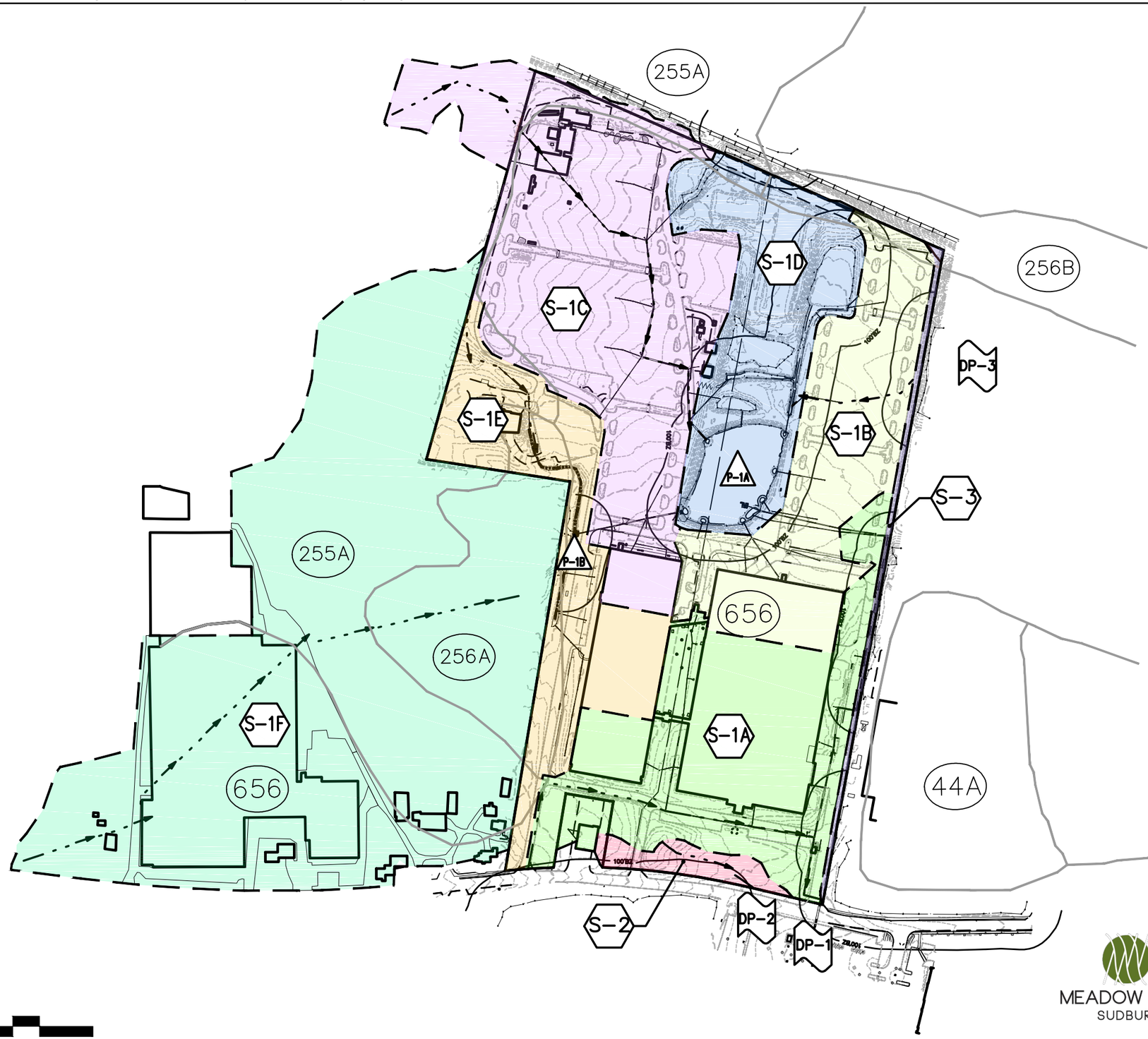
Runoff from portions of the site is directed to bio-retention basins via sheet flow. The bio-retention basins use soils, plants, and microbes to treat stormwater before it is discharged. The bio-retention cells are shallow depressions filled with sandy soil topped with a thick layer of mulch and planted vegetation.

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.

Subsurface Infiltration Basin

The subsurface infiltration systems consist 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.



LEGEND

- P-1 — POND
- DP-1 — DESIGN POINT
- S-1 — DRAINAGE AREA DESIGNATION
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SOIL TYPEBOUNDARY

SCS SOIL CLASSIFICATIONS

- 656 — UDORTHENTS – URBAN LAND HSG – UNKNOWN
- 44A — BIRDSALL MUCKY SILT LOAM HSG – C/D
- 255A — WINDSOR LOAMY SAND HSG – A
- 256A — DEERFIELD LOAMY SAND 3% HSG – B
- 256B — DEERFIELD LOAMY SAND 8% HSG – B

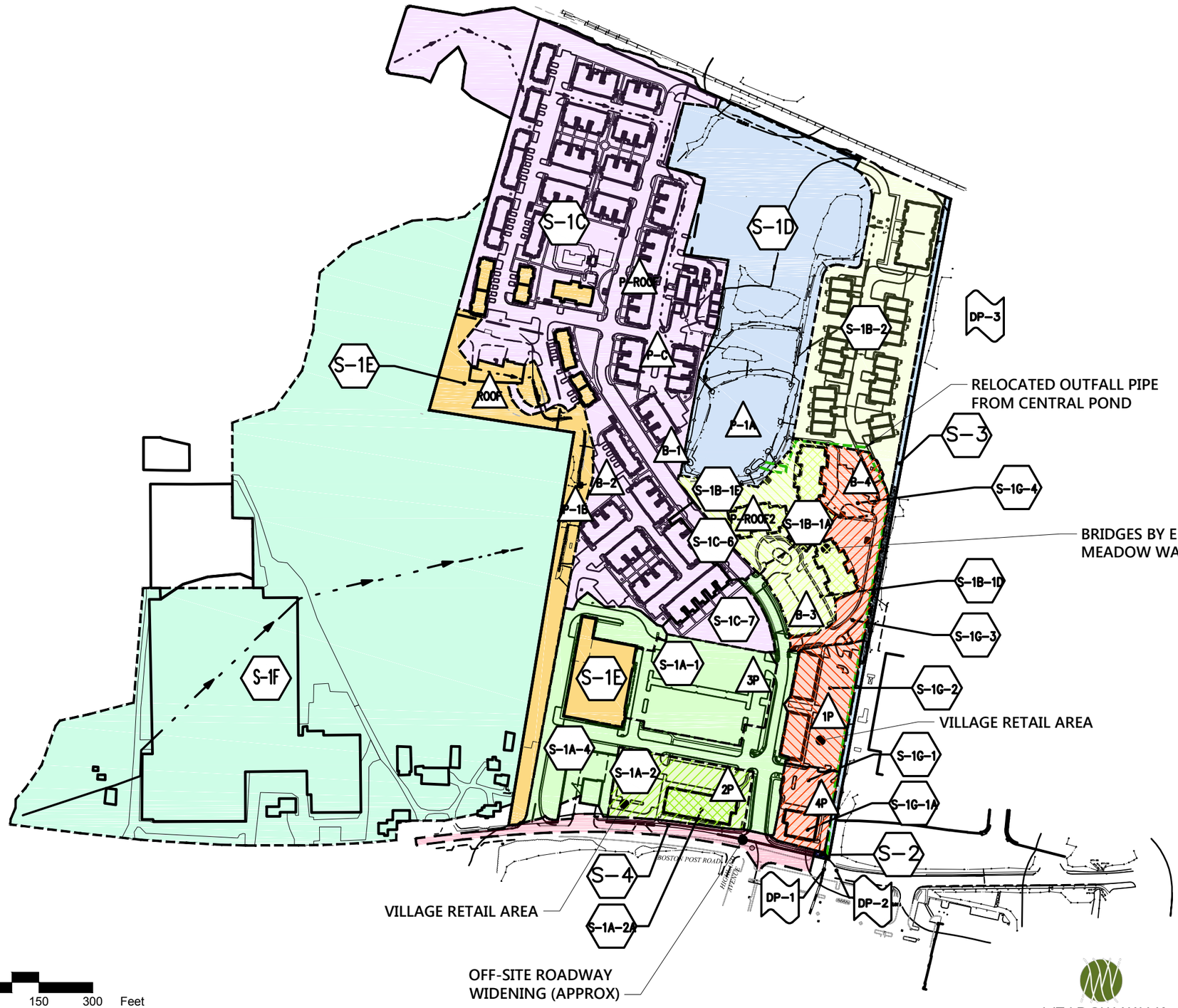
FIGURE 1
MASTER PLAN
EXISTING DRAINAGE CONDITIONS
APRIL 2016

MEADOW WALK
SUDBURY

vhb

Figure #3

Existing Drainge Conditions
Sudbury, MA



LEGEND

- P-1 — POND
- DP-1 — DESIGN POINT
- S-1 — DRAINAGE AREA DESIGNATION
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

0 150 300 Feet

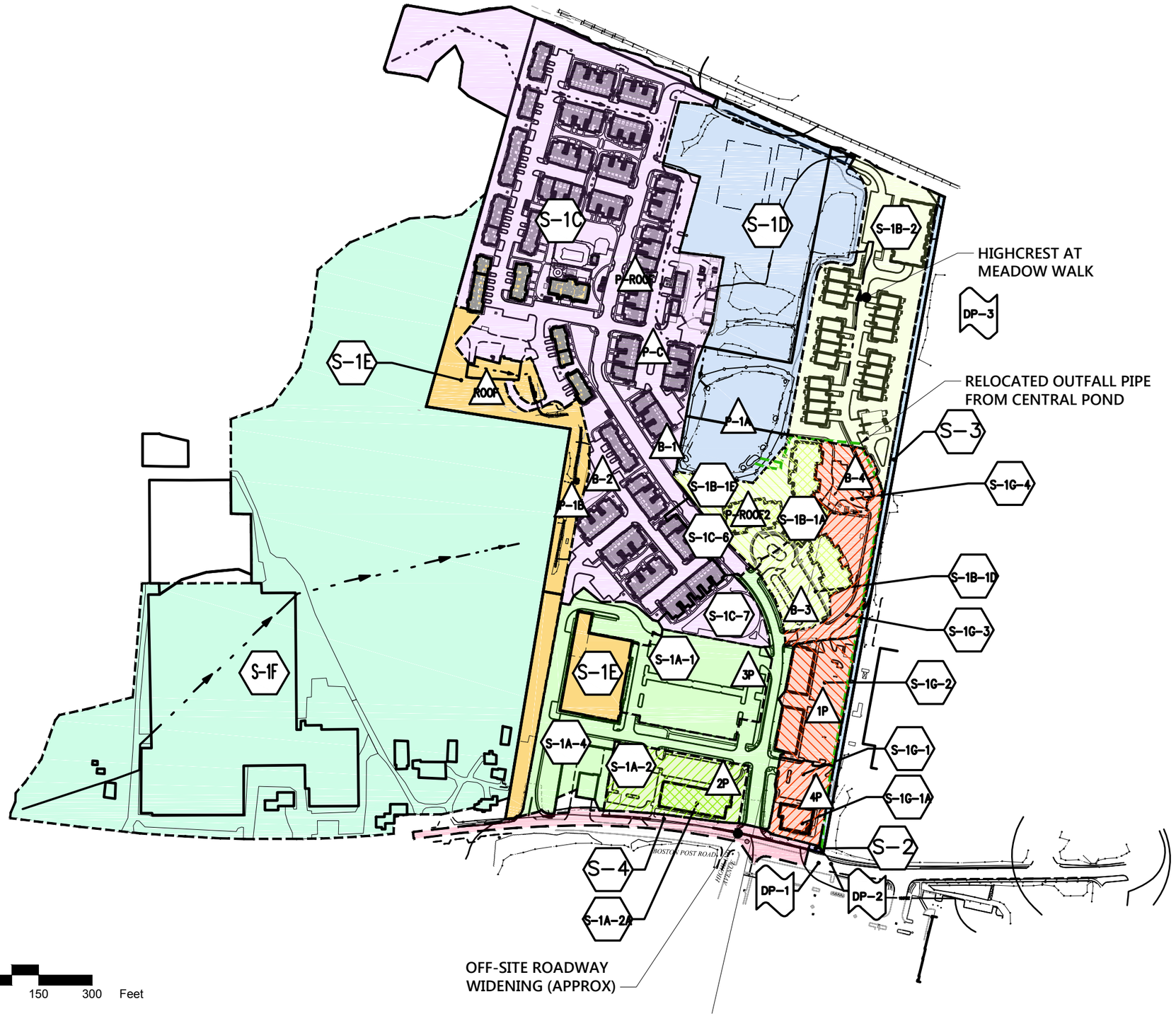
FIGURE 2
MASTER PLAN
PROPOSED
CONDITIONS
DRAINAGE
DECEMBER 2016

MEADOW WALK
SUDBURY

vhb

Figure #3
Master Plan Proposed Drainage Conditions
Village Retail & Bridges by Epoch at Meadow Walk Sudbury, MA

October 2016
Rev: 12/16



LEGEND

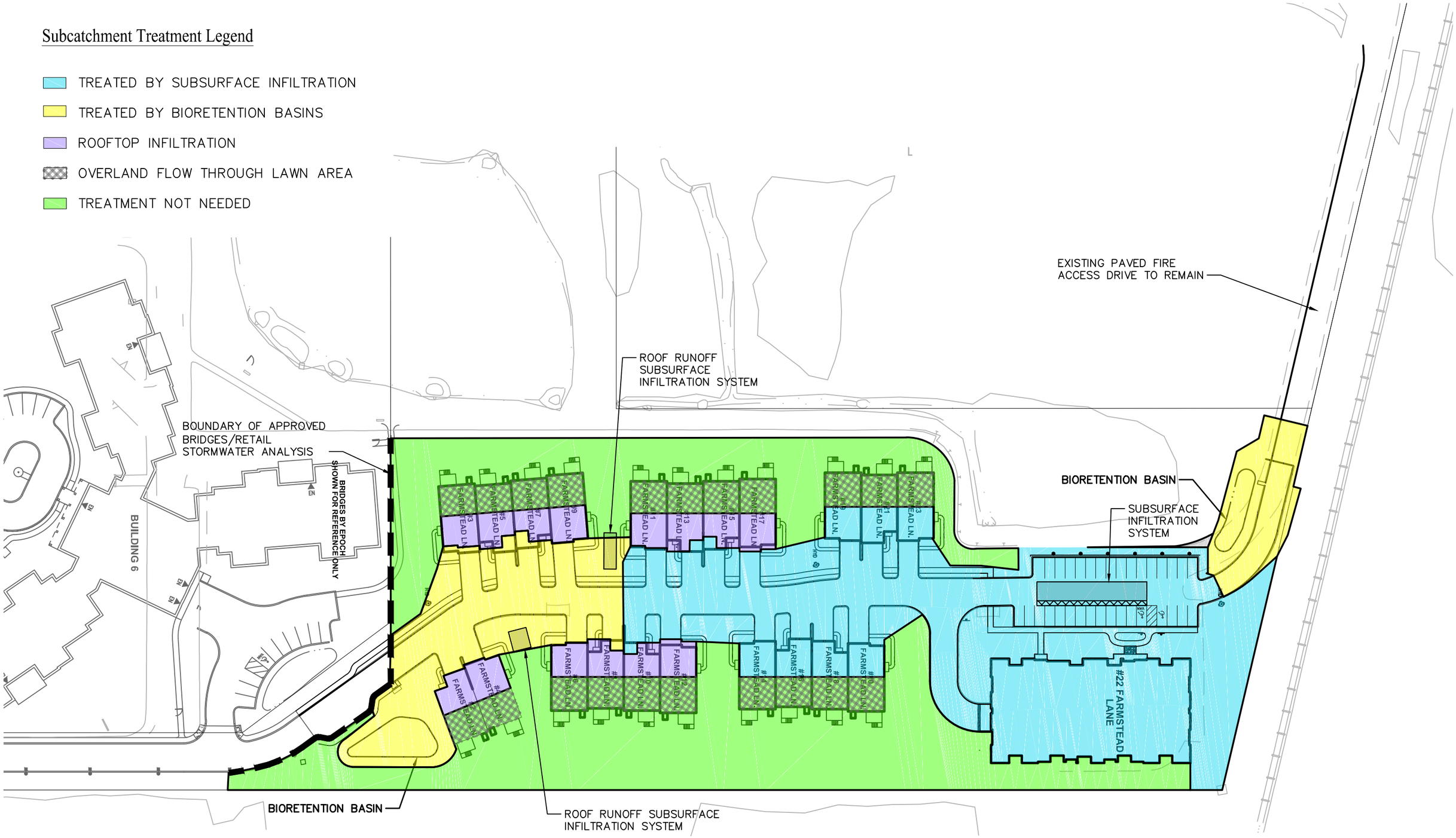
- P-1 — POND
- DP-1 — DESIGN POINT
- S-1 — DRAINAGE AREA DESIGNATION
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

0 150 300 Feet

Figure #3
Master Plan Proposed Drainage Conditions
Highcrest at Meadow Walk April 2017
Sudbury, MA

Subcatchment Treatment Legend

- TREATED BY SUBSURFACE INFILTRATION
- TREATED BY BIORETENTION BASINS
- ROOFTOP INFILTRATION
- OVERLAND FLOW THROUGH LAWN AREA
- TREATMENT NOT NEEDED



0 40 80 160Feet

Figure #4
Stormwater Treatment
Highcrest at Meadow Walk
Sudbury, MA

April 2017

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 stormwater to existing closed drainage systems and proposes one new outfall to wetlands as well as utilizing several existing outfalls.

Standard 2: Peak Rate Attenuation

The Project has been designed to comply with Standard 2.

As noted herein, this phase of construction 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.

Refer to hydrologic analysis included in the Approved Preliminary Stormwater Master Plan for the Overall Project Dated April 2016 as clarified in the Village Retail & Bridges by Epoch at Meadow Walk Stormwater Management Master Plan dated December 2016.

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 and will consequently result in an increase in recharge on the property. While not specifically required to achieve compliance with Standard 3, the infiltrative BMPs proposed are sized to infiltrate the 1" water quality volume.

Compliance to Standard 3 is documented in the Approved Preliminary Stormwater Master Plan for the Overall Project Dated April 2016 as clarified in the Village Retail & Bridges by Epoch at Meadow Walk Stormwater Management Master Plan dated December 2016.

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)

This area is not classified as a LUHPPL., and therefore standard is not applicable.

Standard 6: Critical Areas

The Project will discharge treated storm water to a critical area (Zone II) 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; however, it has been designed to comply with the Stormwater Management Standards as noted above and below.

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. As required under this 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

Geotechnical Report

GEOTECHNICAL ENGINEERING REPORT
PROPOSED RESIDENTIAL DEVELOPMENT
MEADOW WALK SUDBURY
LOT 4
OFF BOSTON POST ROAD
SUDBURY, MASSACHUSETTS

Prepared for:

Pulte Homes of New England, LLC
115 Flanders Road
Westborough, Massachusetts 01581

Prepared by:

Ransom Consulting, Inc.
Pease International Tradeport
112 Corporate Drive
Portsmouth, New Hampshire
(603) 436-1490

Project 161.01118
March 10, 2017

Jay P. Johonnett, P.E.
Project Engineer

Kenneth W. Milender, P.E.
Senior Geotechnical Engineer

RANSOM
Consulting, Inc.

Consulting
Engineers
and Scientists

March 10, 2017

Project 161.01118.002

Mr. Mark Comeau, Senior Land Acquisition Manager
Pulte Homes of New England, LLC
115 Flanders Road
Westborough, Massachusetts 01581

RE: Geotechnical Engineering Report
Proposed Meadow Walk Sudbury Development
526-528 Boston Post Road
Sudbury, Massachusetts

Dear Mr. Comeau:

Enclosed is a copy of the Geotechnical Engineering Report presenting our findings and geotechnical recommendations for design and construction of the proposed Meadow Walk Sudbury residential condominium development at 526 and 528 Boston Post Road in Sudbury, Massachusetts.

The Site test pits and test borings encountered surficial layers of topsoil or asphalt pavement overlying Fill Materials and a sand deposit. Bedrock was not encountered in the Site explorations. Groundwater was encountered at depths of 5 to 11 feet below the existing grades.

The naturally occurring sand deposit soils are considered the uppermost suitable bearing strata for the proposed buildings at this Site. The proposed buildings could be supported on conventional, shallow foundation systems of spread and continuous footings that bear on these soil formations or on structural fill placed and properly compacted above these soil formations. This could require overexcavating existing Fill Materials from localized areas of the proposed building footprints. Ground floors could be constructed as slabs-on-grade.

We appreciate the opportunity to provide engineering services on this project. If you have any questions, please contact us at (603) 436-1490.

Sincerely,

Jay P. Johonnett, P.E.
Project Engineer

Kenneth W. Milender, P.G., P.E
Senior Geotechnical Engineer

JPJ/KWM:cnt
Enclosure

Pease International Tradeport, 112 Corporate Drive, Portsmouth, New Hampshire 03801, Tel (603) 436-1490, Fax (603) 436-6037
400 Commercial Street, Suite 404, Portland, Maine 04101, Tel (207) 772-2891
12 Kent Way, Suite 100, Byfield, Massachusetts 01922-1221, Tel (978) 465-1822
60 Valley Street, Building F, Suite 106, Providence, Rhode Island 02909, Tel (401) 433-2160
2127 Hamilton Avenue, Hamilton, New Jersey 08619, Tel (609) 584-0090

www.ransomenv.com

TABLE OF CONTENTS

1.0 INTRODUCTION

The following report presents the findings of a Geotechnical Engineering Evaluation performed by Ransom Consulting, Inc. (Ransom) for Pulte Homes of New England, LLC (Pulte) at the property proposed for residential development located at 526 and 528 Boston Post Road (referred to in this report as "Site"), in the Town of Sudbury, Middlesex County, Massachusetts (Figure 1). Ransom understands that the Site consists of a 6.085-acre portion (Parcel 4) of the property formerly occupied by Raytheon Company. The Site is proposed for redevelopment for residential use as part of the Meadow Walk Sudbury redevelopment project.

This geotechnical report has been prepared in general accordance with our proposal for services dated February 16, 2017. Authorization was provided in writing by Mr. Mark Comeau, Senior Land Acquisition Manager at Pulte; Site access was also coordinated through Mr. Comeau, who provided an explanation of the planned development of the Site and the proposed facilities being evaluated. Marking the Site for utility clearance, contacting the underground utility clearance system, and contracting the excavating contractor were coordinated by Pulte; Ransom coordinated the utility clearance and the test boring contractor.

This geotechnical engineering evaluation was performed to obtain site-specific subsurface soil information and to make geotechnical evaluations and recommendations for the proposed development project. As completed, Ransom's scope of services included the following items:

1. Providing technical monitoring for the subsurface explorations, collecting soil samples, and preparing exploration logs.

2. Evaluating the field and laboratory data with respect to the proposed development and preparing this report of our findings, evaluations, and recommendations for the proposed design and construction.

This report has been prepared in general accordance with the Pulte Corporation "Soils Policy" (dated January 2013). The Pulte Soils Opinion Letter and Pulte Soil Boring Evaluation Form are provided as Appendices A and B, respectively.

2.0 SITE AND PROJECT DESCRIPTIONS

The Site is located on the north side of Boston Post Road (Route 20) in Sudbury, Massachusetts. The Site consists of a 6.085-acre portion (Parcel 4) of the larger property formerly occupied by the Raytheon Company. The Site currently consists of an asphalt-paved parking lot and a portion of a retention basin. A Site Location Map and a Subsurface Exploration Location Plan are provided as Figures 1 and 2, respectively.

2.1 Existing Conditions

The Site is located on the Framingham, Massachusetts, U.S. Geological Survey 7.5-minute topographic quadrangle. Topographic maps indicated that the ground surface of the Site property generally slopes down gently from an approximate elevation of 156 feet above Mean Sea Level (MSL) at the northern Site boundary to approximate elevation 152 feet above MSL at the southern Site boundary.

Ransom understands that the Site was developed by Raytheon Company and utilized as an employee parking lot. Raytheon Company ceased operations at the property in 2016. A portion of the Site on the west side includes a stormwater retention basin (Figure 2). Access to the Site is provided by driveways entering the Site from the north and south through the Raytheon Company campus.

2.2 Proposed Development

Ransom understands that the entire Site is being considered for residential development. The proposed redevelopment includes the construction of seven multi-unit, age-restricted condominiums (for a total of 57 units). The largest building proposed, located at the northeasterly corner of the Site, consists of four floors of above-grade living space (36 individual units) with a below-grade parking level. The remaining six buildings are understood to be 2-story buildings constructed with basement levels. In addition to the proposed residential buildings, the redevelopment will include asphalt-paved areas for parking, shared-access drives from the north and south, and limited landscaped areas (Figure 2).

Proposed grading plans were not available for review at the time of this evaluation. Discussions with Mr. Comeau indicated that the buildings will be constructed above the water table. Based on existing site topography, Ransom estimates that cuts and fills of generally less than 1 to 5 feet will be required within the proposed building footprint areas to match existing Site grades with the proposed redevelopment features.

3.0 SUBSURFACE INVESTIGATION

Ransom performed the subsurface explorations for this geotechnical investigation in two phases: test pits were excavated and examined from February 17 through 22, 2017 and test borings were drilled on March 1, 2017. The subsurface exploration program consisted of 14 test pits (designated TP2 through TP15; TP1 was not excavated) and four test borings (designated GB-1 through GB-4) as shown on Figure 2. In addition and at the request of VHB, the Site civil engineer, nine test pits (designated SW-1 through SW-9) were excavated to allow observations of subsurface conditions with respect to potential stormwater management systems to be constructed as part of the redevelopment (Figure 2). The explorations were surveyed with a hand held GPS unit DeLorme PN-60; their locations and elevations are approximate.

3.1 Subsurface Explorations

A total of 23 test pits were excavated by Kennedy Excavation of Uxbridge, Massachusetts using a John Deere Excavator Model 200D.

Four test borings were drilled by New England Boring Contractors (NEBC) of Derry, New Hampshire using a track-mounted drill rig with a 2¼ -inch inside-diameter (ID) hollow-stem auger. Split-barrel sampling with standard penetration testing (ASTM D 1586), using an automatic drive hammer, was conducted nearly continuously from the ground surface to a depth of 6 feet below the ground surface (bgs) and at 5-foot intervals thereafter to the bottoms of the borings.

A Ransom representative monitored the subsurface explorations, prepared exploration logs, and measured groundwater levels. Soil samples were placed in sealed containers and returned to Ransom's office for further evaluation. Soil samples were visually classified in general accordance with visual manual procedures (ASTM D 2488) and described using modified Burmister Soil Classification System descriptors. Exploration logs are attached in Appendix C.

3.2 Laboratory Testing

The geotechnical soil index testing (grain-size distributions and hydrometer gradations) was performed by ConTest Consultants, Inc. of Goffstown, New Hampshire; the laboratory report is included in Appendix D. The geotechnical laboratory tests were performed in general accordance with the applicable ASTM procedures.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the Site were characterized by excavating test pits and drilling test borings into the unconsolidated, overburden soil formations at accessible locations at the Site. Figure 2 illustrates the existing Site features, proposed site layout, and approximate exploration locations. The general characteristics of the subsurface strata are described below; refer to the logs in Appendix C for more detailed soil descriptions at specific locations and depths.

4.1 Subsurface Soils

The test pits were excavated to depths ranging from approximately 8 to 20 feet bgs. The soil borings were advanced to depths ranging from 24 to 26 feet bgs. The subsurface explorations generally encountered surficial layers of asphalt pavement or topsoil overlying Fill Materials, and a naturally occurring silty sand deposit. The general characteristics of the subsurface layers are described below in order of increasing depth encountered below the ground surface.

Surficial Layers

Asphalt pavements or topsoil were penetrated at ground surface in each exploration. The pavement consisted of asphalt concrete approximately 3 to 5 inches thick. Where encountered, the topsoil was approximately 2 to 6 inches thick. Base course gravels, typically 1 to 3 feet in thickness, were generally encountered beneath the surficial layers of asphalt pavement.

Fill Materials

The Fill Materials generally consisted of medium dense, brown, fine sand with varying amounts of silt and gravel used to raise the original grades to their existing elevations. Fill Materials were encountered in most explorations to depths ranging from approximately 2 to 4 feet bgs. Localized areas had Fill Materials up to 7 feet thick. The Fill Materials contained asphalt fragments and cobbles in some areas of the Site. The Fill Materials are classified as silty sand with gravel (SM) in general accordance with the Unified Soil Classification System (USCS).

Buried asphalt pavements, consistent with a former paved surface, were observed in 12 of the test pits. The buried asphalt pavements were observed at depths ranging from approximately 2 to 5 feet bgs. Multiple generations of buried asphalt (up to 3 layers) were observed in test pits SW-7 and SW-8, located on the southern and eastern portions of the Site. Asphalt debris was observed in test pit TP9 from approximately 2 to 4 feet bgs, along the eastern Site boundary.

Sand Deposit

A native sand deposit was encountered directly underlying the Fill Materials in the explorations. The sand deposit consisted of loose to medium dense, gray to orange-brown, fine sand with varying amounts of silt. The sand deposit is classified as poorly graded sand with silt (SP-SM) in general accordance with the USCS.

4.2 Drilling Refusal/Presumed Bedrock Surface

None of the explorations advanced for this investigation encountered refusal, the depth below which the excavator or drilling equipment was not able to penetrate the deeper geologic formations. The deepest explorations were advanced to 26 feet bgs.

4.3 Groundwater

Groundwater was encountered in all of the site explorations. Groundwater or soil mottling was generally observed at depths of approximately 5 to 11 feet bgs, which correspond to approximate elevations of 143 to 148 feet above MSL.

Note that groundwater levels at the Site will fluctuate due to season, temperature, precipitation, nearby underground utilities, debris layers, and construction activity. Therefore, water levels at other times may differ from the observations and measurements made during this evaluation.

5.0 ENGINEERING EVALUATIONS

The subsurface explorations encountered surficial layers of asphalt pavement or topsoil overlying Fill Materials, and sand. The controlling geotechnical features for the development of the Site are:

1. Foundation-Bearing Soils. The naturally occurring sand soils are considered the uppermost suitable bearing stratum for the proposed buildings and foundation elements at this Site. The proposed buildings could be supported on a conventional, shallow foundation system of spread and continuous footings that bear on the naturally occurring sand soils, or on structural fill placed and properly compacted above these soils.

2. Unsuitable Soils. The Fill Materials are considered to be unsuitable soils and should not be relied upon to provide support to the proposed foundation elements; the unsuitable soils will require removal and replacement with compacted structural fill if encountered at foundation bearing elevations. Unsuitable soils were generally encountered to depths of approximately 2 to 4 feet bgs, with localized areas containing Fill Materials up to 7 feet bgs. These soils may be utilized in non-structural areas as common fill.

3. Groundwater. Groundwater or soil mottling was encountered in the explorations at depths of 9 to 10 feet bgs in the area of the Site being proposed for the building with an underground parking level; corresponding to elevations of approximately 145 to 148 feet above MSL. If the finished floor of the proposed larger building is situated at approximately the existing grade, groundwater will likely be encountered during excavation of the proposed below-grade parking level and will require management during and following construction to prevent groundwater from entering the excavation and subsequent parking level. Groundwater was encountered in other areas of the Site at depths of 5 to 11 feet bgs; corresponding to elevations of approximately 143 to 148 feet above MSL.

Geotechnical engineering evaluations for this project are based on the subsurface conditions interpreted from widely spaced subsurface explorations, laboratory testing, and the project design information currently available. Should differing information become known prior to or during construction, the following evaluations and recommendations should be reviewed by Ransom and modifications to these recommendations may be necessary.

6.0 DESIGN RECOMMENDATIONS

Based on the subsurface explorations and our geotechnical evaluations, Ransom presents the following recommendations for the design of the proposed residential development at 526 and 528 Boston Post Road in Sudbury, Massachusetts.

6.1 Building Foundations

The subsurface conditions generally consisted of surficial layers of asphalt pavement or topsoil overlying Fill Materials, and a Sand Deposit. The unsuitable soils (pavement, topsoil and/or Fill Materials) were generally encountered to depths up to approximately 2 to 4 feet bgs, with localized areas having Fill Materials to depths of up to 7 feet bgs.

The unsuitable soils should be excavated from below the building footprints and should be replaced with compacted structural fill. Excavation to remove unsuitable soils is generally anticipated to extend to depths of approximately 7 feet bgs within the proposed building footprints. With proper site preparation, the proposed building could be supported on continuous and spread footings that bear directly on the native sand deposit soils, or compacted structural fill placed above the undisturbed, inorganic, native soils..

Foundation elements should be proportioned using a maximum allowable contact pressure of 2,000 psf. Spread footings should be at least 2 feet wide and continuous footings should be at least 1.5 feet wide. Post-construction total and differential settlements are anticipated to be no more than approximately 1 inch and 0.5 inch, respectively.

Lateral loads may be resisted by friction between the bottoms of footings and supporting subgrades, and by passive earth pressure against the sides of the foundation. A friction coefficient of 0.40 and an equivalent fluid unit weight of 200 pounds per cubic foot (pcf) against the sides of footings should be used.

Exterior footings should be placed a minimum of 4 feet below the lowest existing or proposed adjacent ground surface exposed to freezing. At heated interior locations, footings may be designed to bear 2 feet below the top of ground floor slab. If exposure to freezing is anticipated during or after construction, for example within the below-grade parking area, the interior footings should be lowered to bear 4 feet below the top of the ground floor slab.

6.2 Floor Slabs

Subsurface conditions are generally suitable for standard concrete foundations with concrete footings. Unsuitable soils should be excavated from below building footprint areas and replaced with compacted structural fill. The uppermost 12 inches of material beneath all footings should consist of compacted structural fill that conforms to the gradation specification in this report. A modulus of subgrade reaction of 200 pounds per cubic inch (pci) should be used to proportion the concrete foundation footings constructed on properly compacted structural fill.

Exterior slabs at entrances should be underlain by at least 4 feet of free-draining material, such as structural fill or crushed stone, to reduce the potential for frost heaving. Surrounding grades should be sloped away from the buildings in order to reduce available moisture for forming frost and ice.

6.3 Seismic Considerations

For the purposes of seismic design, the soil profile constitutes a "stiff soil profile" and we assign a seismic site class of "D" to the Site. It is our opinion that the Site soils are not susceptible to liquefaction.

6.4 Groundwater and Drainage Issues

Groundwater or soil mottling was encountered in all the explorations. Groundwater or soil mottling was generally encountered at depths of approximately 5 to 11 feet bgs, corresponding to elevations ranging from approximately 143 to 148 feet above MSL.

Proposed grading plans were not available at the time that this report was prepared. Measurements of the depth to groundwater in our explorations indicate that the building footings could be at approximately the same elevation as groundwater during seasonal high groundwater conditions.

Below-Grade Parking and Basement Levels

Excavation for below-grade parking and basement levels may encounter groundwater and require dewatering during construction. Post-construction below-grade levels may also require long-term management of groundwater, if the grading is constructed below the groundwater elevation, and may potentially include pumping systems and waterproofing of basement walls to prevent groundwater from entering below-grade levels.

It is our opinion that, because the proposed buildings will be constructed above the water table, they do not need vapor barriers (for geotechnical considerations) or underslab drainage systems.

Foundation Drains

Based on the observed depths to groundwater, it is our opinion that all the buildings should be constructed with perimeter foundation drainage systems. The perimeter drainage system should consist of 4-inch diameter, rigid polyvinyl chloride (PVC) SDR35 pipe with perforations of ¼ to ½ inch (openings should be oriented downward). The drain lines should be surrounded by a minimum of 6 inches of ¾-inch crushed stone wrapped in a nonwoven geotextile filter fabric (Mirafi 140N or approved equivalent). The foundation drains should be placed adjacent to the exterior sides of the spread footings at a minimum depth of 4 feet below adjacent exterior grades to protect against frost.

Where possible, the foundation drains should be pitched down at a minimum slope of 0.5 percent in the direction of flow. Cleanouts should be provided at every other 90-degree bend in order to provide for future flushing the system as needed.

The foundation drains should be gravity drained to daylight or to a suitable system outlet. The final outlet of the drainage systems should be designed by the project civil engineer in consideration of all applicable municipal, state, and federal regulations.

Roof downspout drains should not be connected to the foundation drain system, but rather should be separately tightlined to their discharge outlets.

Waterproofing

Waterproofing is used to prevent water migrating through the concrete frost walls. Exterior surfaces of the frost walls, basement walls, and footings should be waterproofed using a waterproofing agent and installation specifications specified by the project architect and/or structural engineer.

Surrounding site grades should be sloped away from the buildings in order to reduce the moisture available for forming frost and ice.

7.0 EARTHWORK AND CONSTRUCTION RECOMMENDATIONS

Based on the subsurface explorations and our geotechnical evaluations, Ransom presents the following recommendations for the construction of the proposed residential development at 526 and 528 Boston Post Road in Sudbury, Massachusetts.

7.1 Subgrade Preparation

The Fill Materials are considered to be unsuitable for providing support to the proposed building foundation elements. The Sand Deposit is considered to be the uppermost suitable bearing strata at this site.

All Fill Materials, topsoil, pavements, debris, frozen soils, and loose or disturbed soils should be removed from below the building footprints and foundation bearing zones. These unsuitable materials should be completely removed from foundation bearing zones (to the lateral limits defined by a one horizontal to one vertical (1H:1V) line sloped down and away from the bottom edge of foundations to the top of undisturbed native soils) and replaced with compacted structural fill. Existing Fill Materials encountered outside of proposed building footprints and foundation bearing zones do not have to be excavated and removed, from a geotechnical standpoint, from non-structural areas, roadways, and parking areas.

After site stripping has been completed, the subgrade beneath the building footprints and 10 feet beyond, parking lots, loading areas, and driveways should be compacted with at least four complete passes of a 15-ton vibratory drum roller in directions perpendicular to one another. Silty subgrades which are saturated or are observed to pump and weave during rolling should be rolled statically.

Unstable subgrade areas are characterized by weaving or rutting of more than one inch during proofrolling. Any unstable areas identified should be undercut at least 12 inches, or to competent soil, and replaced with compacted structural fill, crushed stone, or common fill. The depth of undercutting and type of backfill material should be selected with consideration of proposed use (i.e., building or pavement) and soil and weather conditions encountered during construction.

The contractor is responsible for construction means and methods and should anticipate the need for methods to prevent disturbance, softening, or rutting of subgrades, or damage to overlying soils resulting from construction traffic. Care must be taken to avoid disturbing subgrades by keeping construction traffic off of subgrades during wet conditions and/or inclement weather until a firm fill layer has been placed. Subgrade soils that become unstable should be undercut and replaced with structural fill, crushed stone or common fill, as necessary.

Final foundation subgrade preparation should include re-compaction of bearing surfaces. Care should be taken to limit disturbance to bearing surfaces prior to placement of concrete. Any loose, softened, or disturbed material should be removed and replaced with compacted structural fill prior to placement of concrete. Excavated subgrades should not be left exposed overnight unless the forecast calls for above-freezing, clear conditions.

7.2 Temporary Excavations

Construction site safety means and methods, and sequencing of construction activities is the sole responsibility of the contractor. Under no circumstances should the following information be interpreted to mean that Ransom is assuming responsibility for construction site safety, trench protection, or the contractor's responsibilities. Such responsibility is not being implied and should not be inferred.

All temporary excavations should be performed according to Occupational Safety and Health Administration (OSHA) Standards (29 CFR 1926 Subpart P). The Fill Materials and native soils are OSHA Type C soils. Accordingly, temporary unbraced excavations should be cut no steeper than 1½ H:1V under dry or dewatered conditions.

7.3 Dewatering and Runoff Control

Groundwater or mottling was encountered in the subsurface explorations ranging from depths of 5 to 11 feet bgs, corresponding to approximate elevations of 143 to 148 feet above MSL. Ransom anticipates that groundwater could be encountered in the general excavations for foundations and deeper utilities. The contractor should be prepared to implement water controls as needed.

Surface water runoff should be directed away from excavations to reduce dewatering efforts and to protect subgrades from becoming soft and unstable. The contractor should anticipate the need for controlling runoff during wet periods; pumping from open sumps will likely provide adequate control of water within excavations during construction.

Earthwork should be completed "in the dry." Subgrade soils that become unstable should be undercut and replaced with structural fill or crushed stone, as necessary. Excavation side slopes should be monitored for potential seepage and maintained to promote stability, accordingly.

Temporary detention ponds, trenches, ditches, and dewatering sumps should not be made in areas to be filled.

7.4 Placement of Granular Engineered Fills

Engineered fills could be required to achieve the final design grades in several areas of the proposed site development. The table below is the gradation specifications for soils to be used in engineered fills at the Site. Reference is made to materials described in the Massachusetts Highway Department (MHD) *Standard Specifications for Highways and Bridges*. The different granular fill types should be used as follows:

1. Structural Fill should be used for engineered fills below building footprint areas and in foundation bearing zones.

2. Common Fill should be used for engineered fills below roadway, parking, and other non-structural areas.

All granular fills should be placed in 12-inch maximum loose lifts and should be compacted to a minimum of 95 percent of the material's maximum dry density, as determined by ASTM D 1557 (modified Proctor test) and verified with field density testing (ASTM D 6938 or equivalent method). Lift thickness should be a maximum of 6-inch loose lifts when compacted with hand-guided equipment.

Where subgrades become saturated, unstable, and/or difficult to compact, crushed stone should be placed and compacted in lieu of structural fill. Crushed stone, when used, should be wrapped in a geotextile filter fabric, such as Mirafi 140N or equal. At no time should structural fill or common fill be placed over crushed stone that has not been wrapped in a geotextile filter fabric.

Type	Size	% Passing
Structural Fill; MHD M1.03.0a	6" (150 mm) 1/2" (12.5 mm) No. 4 (4.75 µm) No. 50 (300 µm) No. 200 (75 µm)	100 50–85 40–75 8–28 0–10
Common Fill	8" No. 200 (75 µm)	100 0–15 (when placed within 4 feet of finished grade in paved areas)

7.5 Reuse of Site Soils

A preliminary assessment of the suitability of using the unconsolidated soils at the Site in the proposed construction is based on the soil classifications and observations at the Site. The suitability of these materials is summarized below.

1. Topsoils are suitable only for reuse as common fill below landscaped areas.

2. The naturally occurring sands that will be excavated are suitable for reuse as common fill below non-structural areas and landscaped areas.

3. The existing Fill Materials that will be excavated are suitable for reuse as common fill below non-structural areas and landscaped areas.

Materials to be used as structural fill will need to be imported to the Site. Representative samples of all proposed fills should be submitted for testing during construction to compare their gradation characteristics to the requirements of the project specifications, and to establish their optimum water contents and maximum dry densities (modified Proctor testing, ASTM D 1557). The geotechnical engineer must approve use and reuse of on-site or borrow soils for structural and common fills. Use of fills assumes that the moisture content of the material will be strictly controlled in order to allow for proper placement and compaction.

7.6 Underground Utilities

Bedding placed below utilities should be in accordance with the utility and manufacturer requirements. In general, utilities may be supported directly on a minimum 6-inch-thick layer of compacted structural fill, crushed stone, or other suitable pipe bedding materials. Fill placed as backfill for utilities below building floor slabs should consist of compacted structural fill or crushed stone. Elsewhere, fill placed as backfill for utilities should consist of compacted common fill.

7.7 Construction Monitoring

Ransom should be provided the opportunity to review the final design and specifications to ensure our recommendations presented herein have been properly interpreted and applied. Ransom recommends that all fill, backfill, and compaction be inspected and tested by a qualified firm to make sure the proper materials are placed and adequately compacted. Ransom should review all soil inspection and testing reports. Ransom should be retained to provide construction observation and documentation for the following aspects of site development:

1. Observe subgrade conditions as they are exposed and confirm that the exposed conditions are consistent with those in this report;

2. Observe and document the removal of Fill Materials within the proposed building footprint areas and foundation bearing zones; and

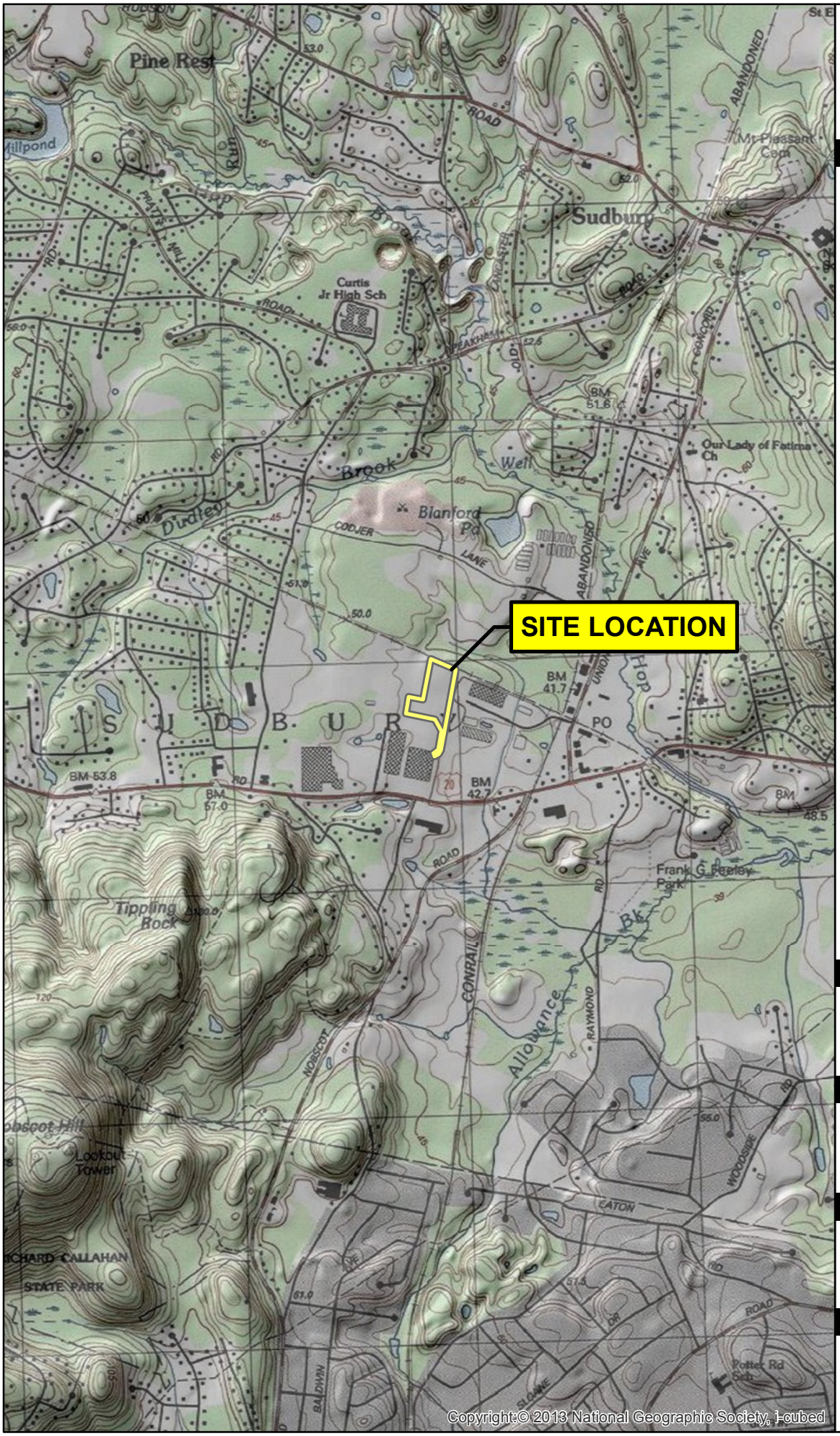
3. Determine the need for additional cut and backfill, or stabilization of subgrades.

8.0 CLOSING COMMENTS

This report has been prepared for specific application to the proposed residential development located at 526 and 528 Boston Post Road, Lot 4 in Sudbury, Massachusetts, as understood by Ransom at the time. In the event that changes in the design or location of the proposed structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless they have been reviewed and modified or verified in writing by Ransom. Our recommendations are based in part upon data obtained from widely spaced test pits and borings. The nature and extent of variations between explorations will not become evident until construction. If significant variations then appear, it may be necessary to reevaluate the recommendations of this report.

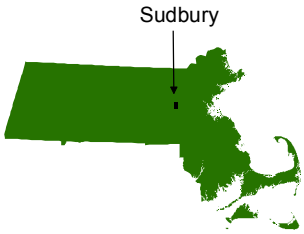
We recommend that Ransom be provided the opportunity to review the final design plans and project specifications in order to confirm that the recommendations made in this report were interpreted and implemented as intended.

The findings, recommendations, specifications, and professional opinions contained within this project geotechnical report have been prepared in accordance with generally accepted professional geotechnical engineering practice. No other warranties are implied or expressed.



RANSOM Consulting Engineers and Scientists

Regional Locator Map



Notes

1. Data Source: USGS National Map Seamless Server, 24K DRG, 1/3" NED
2. USGS Quad Name: Framingham
3. Latitude: 42° 21' 49" N
   Longitude: 71° 25' 47" W
   UTM Northing: 4693017 mN
   UTM Easting: 299906 mE

Scale and Orientation

0 1,000 2,000

1 inch = 2,000 feet

Prepared For

Pulte Homes of
New England, LLC
115 Flanders Road
Westborough, Massachusetts

Site Address

Proposed Residential Development, Meadow Walk Sudbury, Lot 4
Off Boston Post Road
Sudbury, Massachusetts

161.01118 | Mar 2017

Figure 1

Site Location Map

G:\Data\MA\Project\161_01118_PI\Maps\Figure_1.mxd

RANSOM
Consulting Engineers and Scientists

Legend & Notes

- Site Boundary
- Geotech Boring
- Stormwater Infiltration Test Pit
- Test Pit Location
- Proposed Building

Notes

1. Site Plan based on National Agricultural Imagery Program Orthophotography
2. Some features are approximate in location and scale
3. This plan has been prepared for Pulte Homes of New England, LLC. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 50 100

1 inch = 100 feet

Prepared For

Pulte Homes of
New England, LLC
115 Flanders Road
Westborough, Massachusetts

Site Address

Proposed Residential Development, Meadow Walk Sudbury, Lot 4
Off Boston Post Road
Sudbury, Massachusetts

161.01118 | Mar 2017

Figure 2
Subsurface Exploration Plan

G:\Data\MA\Project\161_01118\Maps\Figure_2.mxd

APPENDIX A

Soils Opinion Letter

Geotechnical Engineering Report
Proposed Residential Development
Meadow Walk Sudbury
Lot 4
Off Boston Post Road
Sudbury, Massachusetts

RANSOM
Consulting, Inc.

Consulting
Engineers
and Scientists

March 10, 2017

Project 161.01118.002

Mr. Mark Comeau, Senior Land Acquisition Manager
Pulte Homes of New England, LLC
115 Flanders Road
Westborough, Massachusetts 01581

RE: Soils Opinion Letter
Proposed Meadow Walk Sudbury Development
Lot 4, Off Boston Post Road
Sudbury, Massachusetts

Dear Mr. Comeau:

Ransom Consulting, Inc. (Ransom) understands that Pulte Homes of New England LLC is considering the purchase of the land behind 526 and 528 Boston Post Road in Westborough, Massachusetts (the "Site"), and that in order to assist in its decision whether to purchase the land, Pulte has requested our professional assistance with respect to the feasibility of using the land for a development of up to 60 residential condominium units within seven buildings. Ransom acknowledges that:

1. We are professional geotechnical engineers licensed by the Commonwealth of Massachusetts.

2. We have professional errors and omissions insurance coverage with limits of one million dollars as evidenced by the attached certificate of insurance.

3. We have reviewed Pulte's Soils Investigation Policy dated January, 2013 (the "Policy"). We understand that this letter is being furnished to assist Pulte in complying with it.

4. We have inspected the land described above which Pulte proposes to purchase, and we have conducted and/or reviewed such tests as we deem appropriate to form a professional opinion that the land can be developed and used for the intended purpose.

Based on our investigation, review, and/or tests it is our professional opinion that there are minimal subsurface conditions at the Site that may materially increase the cost of developing the property for the proposed use or would require special design of one or more of the following: foundation footings, cut and fill procedures, dewatering, soil removal and disposal, or any other development or construction activity.

The Site is currently developed as a paved parking lot formerly used by adjacent industrial owner. Subsurface conditions generally consist of surficial layers of topsoil and asphalt pavement overlying Fill Materials and a naturally occurring sand deposit. The Fill Materials are undocumented, and generally 2 to 4 feet thick, with localized pockets of deeper Fill Materials as much as 7 feet thick encountered. The

uppermost suitable bearing stratum is the sand deposit soils; our explorations did not encounter bedrock to depths of approximately 25 feet below the existing ground. Groundwater was encountered in all of the explorations, at depths between 5 and 11 feet below the existing grades.

Following stripping and grubbing, we anticipate that the subsurface conditions at the Site will be suitable for conventional spread footing foundations with concrete slabs. The foundation elements should be founded upon the naturally occurring sand soils, or upon compacted structural fill placed on these naturally occurring soils. Due to the shallow groundwater conditions, all the buildings should be constructed with foundation drains adjacent to the footings and vapor barriers below the slabs-on-grade. In addition, the building that will have below-grade parking should be constructed with an underslab drainage system.

Thank you for this opportunity to be of serviced to Pulte Homes. Please contact me at (603) 436-1490 or kenneth.milender@ransomenv.com if you have questions or require additional information.

Sincerely,

RANSOM CONSULTING, INC.

Kenneth W. Milender, P.G., P.E.
Senior Geotechnical Engineer

KWM/TJS:jar

APPENDIX B

Soil Boring Evaluation Form

Geotechnical Engineering Report
Proposed Residential Development
Meadow Walk Sudbury
Lot 4
Off Boston Post Road
Sudbury, Massachusetts

SOIL BORING EVALUATION FORM

Parcel: 526 and 528 Boston Post Road (Map 07, proposed subdivision Lot 4), Sudbury, Massachusetts
County: Middlesex County

In performing the requested work, the driller should also look for and record the following condition if they occur on the parcel:

ITEMS CHECK IF LOCATION OR	Check if Found	LOCATION OR BORING #
1. Unusual Soil Coloration or Streaking (Surface or Subsurface)		
2. Disturbed Soil (Surface or Subsurface)		
3. Fill Materials		
a. Soil not Native to Site		
b. Debris Fill (metal, glass, concrete, garbage, etc.)	X	*TP105, TP106, TP108, TP110, TP111, TP112, TP113, TP114, TP115, SW-4, SW-7, SW-8 (asphalt pavement within the Fill Materials)*
4. Areas of Sparse, Sick or Dead Vegetation		
5. Drums, Storage Tanks or Other Containers		
6. Discolored/Polluted Water (ground or surface)		
7. Unusual Odors:		
a. Chemical/Solvent		
b. Gasoline		
c. Rotten Egg/Sewage		
d. Oil or Fuel Oil		

COMMENTS AND SUMMARY: A Phase I ESA is being prepared by Ransom and is available under separate cover. We observed no indications of environmental concern with respect to oil, gasoline, and/or hazardous waste in the explorations performed for this geotechnical evaluation.

Signed _____

Date: 03/7/2017

Company: Ransom Consulting, Inc.

APPENDIX C

Exploration Logs

Geotechnical Engineering Report
Proposed Residential Development
Meadow Walk Sudbury
Lot 4
Off Boston Post Road
Sudbury, Massachusetts

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP2	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 156 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 0820 Time Completed: 0900
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-4"	S1	NA	ASPHALT.
4"-12"	S2	8"	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist, frozen.
1'-2'8"	S3	1'-4'	Fill; tan, fine SAND, moist.
2'8"-8.5'	S4	1'-4'	Tan/gray, fine SAND, moist, rust staining.
8.5'-16'	S5	NA	Gray/orange brown, fine SAND, moist, mottling.
16'-20'	S6	NA	Gray/orange brown, fine SAND, moist, laminated, rust stain, wet.

Pit Dimensions (Ft.) Length 16 Width 6 Depth 20	Remarks: 1) Groundwater seeps at 16.0'. 2) ESHWT 2'8" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP3	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 154 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 0905 Time Completed: 0940
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-4"	S1	NA	ASPHALT.
4"-1'4"	S2	10"	Base course; brown, fine SAND, little gravel, trace cobble, moist, frozen.
1'4"-4'	S3	1'4"-4'	Fill; tan, fine SAND, moist.
4'-9'	S4	NA	Gray/tan, fine SAND, moist/very moist, minor rust staining.
9'-10'	S5	NA	Gray/orange brown, fine SAND, wet, heavy rust staining, laminated.

Pit Dimensions (Ft.) Length 13 Width 5 Depth 10	Remarks: 1) Groundwater seeps at 9.0'. 2) ESHWT 4'0" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP4	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 154 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: : _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 0945 Time Completed: 1010
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-4"	S1	NA	ASPHALT.
4"-1'8"	S2	1'	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist, frozen.
1'8"-5'	S3	1'8"-4'	Fill; tan, fine SAND, moist.
5'-9'	S4	NA	Gray/tan, fine SAND, moist/very moist, minor rust staining.
9'-10'	S5	NA	Gray/orange brown, fine SAND, wet, heavy rust staining, laminated.

Pit Dimensions (Ft.) Length 13 Width 5 Depth 10	Remarks: 1) Groundwater seeps at 9.0'. 2) ESHWT 5'0" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP5	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 153 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1015 Time Completed: 1040
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-4"	S1	NA	ASPHALT.
4"-10"	S2	7"	Base course; brown, fine to coarse SAND, little gravel, trace cobbles, moist.
10"-1'10"	S3	1'-4'	Fill; tan, fine SAND, moist.
1'10"-2'7"	S4	1'-4'	Fill; brown, fine SAND, trace medium to coarse SAND, moist.
2'7"-2'10"	S5	1'-4'	ASPHALT.
2'10"-3'4"	S6	1'-4'	Fill; tan, fine SAND, moist.
3'4"-5'1"	S7	1'-4'	Tan/orange brown, fine SAND, moist/very moist, little rust staining.
5'1"-12.5'	S8	NA	Gray/orange brown, fine SAND, wet, heavy rust staining, laminated.

Pit Dimensions (Ft.)
Length 15
Width 5.5
Depth 12.5

Remarks:
1) Groundwater seeps at 5.1'.
2) ESHWT 3'4" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP6	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1045 Time Completed: 1115
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-3'	S2	1'5"	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
3'-3'3"	S3	NA	ASPHALT.
3'3"-3'9"	S4	3'3"-4'	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
3'9"-5'	S5		Tan/orange brown, fine SAND, moist/very moist, little rust staining, laminated, wet at 5'.
5'-11.5'	S6	NA	Gray/orange brown, fine SAND, wet, heavy iron staining, laminated.

Pit Dimensions (Ft.) Length 14 Width 5.5 Depth 11.5	Remarks: 1) Groundwater seeps at 5.0'. 2) ESHWT 3'9" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP7	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1120 Time Completed: 1155
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-2.5"	S1	NA	ASPHALT.
2.5"-32"	S2	12"	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
32"-5'	S3	1'-4'	Tan, fine SAND, moist, minor rust staining, very moist at bottom.
5'-11'	S4	NA	Gray/orange brown, fine SAND, wet, heavy rust staining, laminated, trace roots.

Pit Dimensions (Ft.) Length 13 Width 7 Depth 11	Remarks: 1) Groundwater seeps at 5.0'. 2) ESHWT 2'8" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP8	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 153 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1200 Time Completed: 1245
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-17"	S2	10"	Base course; tan, fine to coarse SAND, little gravel, little cobble, moist.
17"-3'2"	S3	1'-4'	Fill; brown, fine to coarse SAND, little gravel, little cobble, trace asphalt debris, moist.
3'2"-3'-5"	S4	1'-4'	ASPHALT.
3'5"-4'5"	S5	1'-4'	Base course; brown, fine to coarse SAND, little gravel, little cobble, trace asphalt debris, moist.
4'5"-6'	S6	NA	Tan, fine SAND, moist/very moist.
6'-11.5'	S7	NA	Gray/orange brown, fine SAND, wet, heavy iron staining, laminated.

Pit Dimensions (Ft.)
Length 12
Width 5
Depth 11.5

Remarks:
1) Groundwater seeps at 6.0'.
2) ESHWT 6'0" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP9	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 153 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1250 Time Completed: 1340
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-1'	S2	7"	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
1'-1'10"	S3	1'-4'	Base course; tan, fine to coarse SAND, little gravel, trace cobble, moist.
1'10"-4'4"	S4	1'-4'	Brown, fine to coarse SAND, little gravel, moist, asphalt debris observed.
4'4"-6'	S5	NA	Tan/orange brown, fine SAND, moist/very moist, little iron staining.
6'-11.5'	S6	NA	Tan/orange brown, fine SAND, wet, heavy iron staining, laminated.
11.5'-13.5'	S7	NA	Gray/orange brown, fine SAND, wet, iron staining, laminated, trace roots.

Pit Dimensions (Ft.) Length 16 Width 7 Depth 13.5	Remarks: 1) Groundwater seeps at 6.0'. 2) ESHWT 4'4" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP10	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1345 Time Completed: 1415
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-21"	S2	6"	Base course; tan, fine to medium SAND, little coarse sand, trace gravel, trace cobble, moist.
21"-24"	S3	1'4"	ASPHALT.
2'-3'10"	S4	1'4"	Brown, fine to coarse SAND, little gravel, moist.
3'10"-6'6"	S5	1'4"	Tan/orange brown, fine SAND, very moist/moist, rust staining.
6'6"-7'	S6	NA	Tan/orange brown, fine SAND, wet, rust staining.
7'-10.5'	S7	NA	Gray/orange brown, fine SAND, wet, iron staining, laminated, trace roots.

Pit Dimensions (Ft.) Length 14 Width 7.5 Depth 10.5	Remarks: 1) Groundwater seeps at 6.5'. 2) ESHWT 3'10" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP11	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1420 Time Completed: 1445
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-23"	S2	1'-4'	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
23"-31"	S3	1'-4'	ASPHALT.
31"-3'3"	S4	1'-4'	Base course; tan, fine to coarse SAND, little gravel, moist.
3'3"-5'3"	S5	4.5'	Tan/orange brown, fine SAND, moist/very moist, little rust staining.
5'3"-7'1"	S6	NA	Gray/orange brown, fine SAND, very moist, rust staining.
7'1"-10'	S7	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated.

Pit Dimensions (Ft.) Length 15 Width 6 Depth 10	Remarks: 1) Groundwater seeps at 7.1'. 2) ESHWT 3'3" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP12	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 154 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1450 Time Completed: 1525
Weather: Clear, 30° F	
Logged by: AMR	Date: 2/17/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-4"	S1	NA	ASPHALT.
4"-9"	S2	1'-4'	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
9"-3'6"	S3	1'-4'	Fill; tan, fine SAND, trace gravel/cobble, moist.
3'6"-4'9"	S4	1'-4'	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist, asphalt debris observed.
4'9"-5'3"	S5	4.5'	ASPHALT.
5'3"-6'3"	S6	NA	Orange brown, fine SAND, moist/very moist, rust staining.
6'3"-11'	S7	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated, trace roots.

Pit Dimensions (Ft.)
Length 13
Width 6.5
Depth 11

Remarks:
1) Groundwater seeps at 6.3'.
2) ESHWT 5'3" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP13	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 153 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 0720 Time Completed: 0800
Weather: 35° F	
Logged by: AMR	Date: 2/21/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-1'7"	S2	NA	Base course; brown, fine SAND, little medium to coarse sand, trace gravel, trace cobble, moist.
1'7"-2'9"	S3	1'-4'	Fill; tan, fine SAND, trace medium to coarse sand, moist.
2'9"-5'	S4	1'-4'	Fill; tan, fine SAND, trace medium to coarse sand, moist, asphalt debris observed.
5'-5'3"	S5	NA	ASPHALT.
5'3"-5'11"	S6	NA	Base course; brown, fine to coarse SAND, trace gravel, moist.
5'11"-9'4"	S7	NA	Orange brown, fine SAND, moist/very moist, rust staining.
9'4"-10.5'	S8	NA	Orange brown, fine SAND, wet, rust staining.

Pit Dimensions (Ft.) Length 14 Width 5.5 Depth 10.5	Remarks: 1) Groundwater seeps at 9.3'. 2) ESHWT 5'11" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP14	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 151 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 0810 Time Completed: 0855
Weather: 35° F	
Logged by: AMR	Date: 2/21/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3.5"	S1	NA	ASPHALT.
3.5"-13.5"	S2	1'-3'	Base course; brown, fine to coarse SAND, little gravel, trace cobbles, moist.
13.5"-28.5"	S3	1'-3'	Fill; tan, fine SAND, trace medium to coarse SAND, moist.
28.5"-32.5"	S4	1'-3'	ASPHALT.
32.5"-44.5"	S5	38"	Base course; brown, fine to coarse SAND, little gravel, trace cobbles, moist.
44.5"-56.5"	S6	NA	Tan, fine SAND, moist/very moist, trace iron staining.
56.5"-6'	S7	NA	Orange brown, fine SAND, very moist, rust staining, laminated.
6'-11'	S8	NA	Orange brown, fine SAND, wet, rust staining, laminated.

Pit Dimensions (Ft.) Length 14 Width 7 Depth 11	Remarks: 1) Groundwater seeps at 6.0'. 2) ESHWT 3'8" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: TP15	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 0900 Time Completed: 1000
Weather: 35° F	
Logged by: AMR	Date: 2/21/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-2'	S2	8"	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
2'-5'	S3	1'-4'	Fill; tan, fine SAND, trace medium to coarse sand, moist.
5'-5'3"	S4	NA	ASPHALT up to 12" at north end of pit.
5'3"-6'6"	S5	NA	Stone; coarse gravel, wet, perched in gravel.
6'6"-7'6"	S6	NA	Tan, fine SAND, moist/very moist, trace iron staining.
7'6"-10'	S7	NA	Gray/orange brown, fine SAND, wet, iron staining, laminated.

Pit Dimensions (Ft.) Length 13 Width 7 Depth 10	Remarks: 1) Groundwater seeps at 7.5'. 2) ESHWT 6'6" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-6	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 151 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1020 Time Completed: 1100
Weather: 35° F	
Logged by: AMR	Date: 2/21/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-2'9"	S2	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
2'9"-3'10"	S3	3'-4'	Tan/orange brown, fine SAND, moist/very moist, rust staining.
3'10"-6'	S4	NA	Gray/orange brown, fine SAND, very moist, rust staining, laminated.
6'-10'	S5	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated.

Pit Dimensions (Ft.) Length 12 Width 6 Depth 10	Remarks: 1) Groundwater seeps at 6.0'. 2) ESHWT 2'9" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-5	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1105 Time Completed: 1125
Weather: 35° F	
Logged by: AMR	Date: 2/21/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-4"	S1	NA	ASPHALT.
4"-2'4"	S2	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
2'4"-4'	S3	2.5'-3.5'	Tan, SILT, little sand, moist, trace rust staining.
4'-6'	S4	NA	Tan/orange brown, fine SAND, very moist, iron staining, laminated.
6'-8.5'	S5	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated.

Pit Dimensions (Ft.) Length 11 Width 6 Depth 8.5	Remarks: 1) Groundwater seeps at 6.0'. 2) ESHWT 2'4" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-4	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1130 Time Completed: 1240
Weather: 35° F	
Logged by: AMR	Date: 2/21/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-4"	S1	NA	ASPHALT.
4"-19"	S2	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
19"-3.5'	S3	3'-4'	Brown/tan, fine to medium SAND, little silt, moist, brown stain lines, laminated, trace iron staining.
3.5'-3'10"	S4	NA	ASPHALT on south 3' of pit only.
3'10"-5'8"	S5	NA	Gray/orange brown, fine SAND, very moist, iron staining, mottling, laminated.
5'8"-10'	S6	NA	Gray/orange brown, fine SAND, wet, iron staining, mottling, laminated.

Pit Dimensions (Ft.) Length 14 Width 6 Depth 10	Remarks: 1) Groundwater seeps at 5.8'. 2) ESHWT 3'10" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-3	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1245 Time Completed: 1350
Weather: 35° F	
Logged by: AMR	Date: 2/21/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-38"	S2	NA	Base course; brown, fine to medium SAND, little gravel, trace cobble, moist.
38"-6'	S3	3'-4'	Gray, fine to coarse SAND, trace silt, trace gravel, moist/very moist, trace iron staining, laminated.
6'-8'	S4	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated.

Pit Dimensions (Ft.) Length 12 Width 8 Depth 8	Remarks: 1) Groundwater seeps at 6.0'. 2) ESHWT 3'2" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-2	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 156 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1400 Time Completed: 1500
Weather: 35° F	
Logged by: AMR	Date: 2/21/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3.5"	S1	NA	ASPHALT.
3.5"-1.5'	S2	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
1.5'-5.5'	S3	NA	Fill; tan, fine SAND, moist.
5.5'-6'	S4	5'-6'	Tan, fine SAND, moist.
6'-8'10"	S5	NA	Gray/orange brown fine SAND, moist/very moist, rust staining laminated.
8'10"-14'	S6	NA	Gray/orange brown fine SAND, wet, rust staining laminated.
Pit Dimensions (Ft.) Length 13 Width 6 Depth 14			Remarks: 1) Groundwater seeps at 8.9'. 2) ESHWT 6'0" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-7	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 152 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 0720 Time Completed: 0815
Weather: 40° F	
Logged by: AMR	Date: 2/22/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-2'	S2	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist, roots at 2'.
2'-2'6"	S3	NA	Fill; tan, fine SAND, moist.
2'6"-2'9"	S4	NA	ASPHALT.
2'9"-3'9"	S5	NA	Fill; tan, fine SAND, moist.
3'9"-4'	S6	NA	ASPHALT.
4'-4'7"	S7	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
4'7"-5'	S8	NA	ASPHALT.
5'-5'8"	S9	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
5'8"-9'4"	S10	6'-7.5'	Gray/orange brown, fine SAND, moist/very moist, rust staining, laminated.
9'4"-11'	S11	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated.
Pit Dimensions (Ft.) Length 13 Width 6 Depth 11			Remarks: 1) Groundwater seeps at 9.3'. 2) ESHWT 5'8" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-8	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 153 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: Time Completed: 0925
Weather: 40° F	
Logged by: AMR	Date: 2/22/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-3"	S1	NA	ASPHALT.
3"-21"	S2	NA	Base course; brown, fine to coarse SAND, little gravel, little cobble, moist.
21"-26"	S3	NA	ASPHALT.
26"-36"	S4	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
36"-40"	S5	NA	ASPHALT.
3'4"-5'1"	S6	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
5'1"-6.5'	S7	5.5'-6.5'	Tan/orange brown, fine to medium SAND, little silt, moist, rust staining.
6.5'-8'6"	S8	7'-8'	Gray/orange brown, fine SAND, moist/very moist, rust staining, laminated.
8'6"-9'4"	S9	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated.
Pit Dimensions (Ft.) Length 12 Width 6 Depth 10			Remarks: 1) Groundwater seeps at 8.5'. 2) ESHWT 5'1" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-9	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 153 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 0930 Time Completed: 1020
Weather: 40° F	
Logged by: AMR	Date: 2/22/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-4"	S1	NA	ASPHALT.
4"-2'6"	S2	NA	Base course; brown, fine to coarse SAND, little gravel, trace cobble, moist.
2'6"-4'3"	S3	3.5'-4.5'	Tan/orange brown, fine to medium SAND, little silt, moist, rust staining.
4'3"-7'3"	S4	NA	Gray/orange brown, fine SAND, moist/very moist, rust staining, laminated.
7'3"-12'	S5	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated.

Pit Dimensions (Ft.) Length 12 Width 6 Depth 12	Remarks: 1) Groundwater seeps at 7.4'. 2) ESHWT 2'6" based on observed rust staining.

RANSOM Consulting, Inc.

Consulting Engineers and Scientists

TEST PIT LOG

Project: Meadow Walk Sudbury	Project #: 161.01118.002
TEST PIT IDENTIFICATION: SW-1	
Location: 526 & 528 Boston Post Road, Sudbury, MA	Ground Elevation: 154 +/-
Client: Pulte Homes of New England, LLC	Datum: NA
Contractor: Kennedy	Operator:
Equipment: John Deere 200 DLC	Samples Collected: _X_Yes__No
Capacity/Reach: 20' bgs	Time Started: 1025 Time Completed: 1100
Weather: 40° F	
Logged by: AMR	Date: 2/22/17
Checked by: KWM	Date: 3/10/17

TEST PIT INFORMATION

Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-5.5'	S1	2.5'-3.5'	Topsoil; brown, fine SAND, little silt, trace medium sand, trace organics.
5.5'-6.5'	S2	6'-7'	Orange brown, medium SAND, moist, rust staining, laminated.
6.5'-11'	S3	6'-7'	Gray/orange brown, fine SAND, moist/very moist, rust staining, laminated.
11'-12.5'	S4	NA	Gray/orange brown, fine SAND, wet, rust staining, laminated.

Pit Dimensions (Ft.)
Length 12
Width 6
Depth 12.5

Remarks:
1) Groundwater seeps at 11.0'.
2) ESHWT 5'6" based on observed rust staining.

RANSOM
Consulting Engineers and Scientists

BORING AND MONITORING WELL LOG: B101

Reviewed by:	Total Depth: 26 Feet	Logged By: AMR
Date Reviewed:	Boring Diameter: 2.25 Inches	Date Drilled: 03/01/17 to 03/01/17
Surface Elevation (ft.): NA	Well Stickup: NA	Driller: NEBC

DEPTH	DESCRIPTION (Based on USCS and modified Burmister Soil Classification System)	SOIL PROFILE	SAMPLE	SAMPLE NUMBER	BLOWS (per 6")	SPT-N Value	PENETRATION/ RECOVERY	OVM (ppm) / DEXSIL (ppm)	WELL CONSTRUCTION
	S1 (0-2') 3" ASPHALT, over 4" Medium dense, brown, fine to coarse SAND, little gravel, moist, over 6" Tan, fine SAND, moist.	Fill		S1	14-15-11-8	26	24/13	<0.1	
	S2 (2-4') 15" Medium dense, tan, fine SAND, moist.	Fill		S2	12-10-8-9	18	24/15	<0.1	
5	S3 (4-6') 22" Medium dense, gray/orange brown, fine SAND, moist, rust staining, laminated. Auger to 9'.	Sand		S3	10-14-14-13	28	24/22	<0.1	
10	S4 (9-11') 15" Loose, gray/orange-brown, fine SAND, wet, rust staining, laminated. Auger to 14'.	Sand		S4	4-4-2-5	6	24/15	<0.1	
15	S5 (14-16') 19" Medium dense, gray/orange-brown, fine SAND, wet, rust staining, laminated. Auger to 19'.	Sand		S5	13-14-8-8	22	24/19	<0.1	
20	S6 (19-21') 8" Medium dense, gray/orange-brown, fine SAND, wet, rust staining, laminated, over 8" Gray/orange brown, silty fine SAND, rust staining, laminated. Auger to 21'.	Sand/Silty Sand		S6	6-7-7-6	14	24/16	<0.1	
25	S7 (24-26') 20" Medium dense, brown/orange-brown, fine SAND, trace silt, wet, rust staining, laminated, lensed of silty fine SAND. End of boring 26' bgs.	Sand		S7	4-9-10-9	19	24/20	<0.1	

WATER LEVELS:

During Drilling	End of Boring	Date:
NA	NA	3-1-17

WELL LEGEND:

Filter Sand | Native Fill | Bentonite | Bentonite Grout | Concrete | PVC Screen | PVC Riser

NOTES:

1. Boring advanced using hollow stem auger drilling techniques with 140lb hammer falling 30 inches.
2. Soil Sampling: 1 1/2 inch I.D. Split Spoon Sampler driven with 140 lb hammer falling 30 inches.

CLIENT:
Pulte Homes of New England, LLC

SITE:
Proposed Residentail Development - Meadow Walk Sudbu
526 and 528 Boston Post Road
Sudbury, Massachusetts

Project No.: 161.01118.002 | Page: 1

RANSOM
Consulting
Engineers
and Scientists

BORING AND MONITORING WELL LOG: B102

Reviewed by:	Total Depth: 26 Feet	Logged By: AMR
Date Reviewed:	Boring Diameter: 2.25 Inches	Date Drilled: 03/01/17 to 03/01/17
Surface Elevation (ft.): NA	Well Stickup: NA	Driller: NEBC

DEPTH	DESCRIPTION (Based on USCS and modified Burmister Soil Classification System)	SOIL PROFILE	SAMPLE	SAMPLE NUMBER	BLOWS (per 6")	SPT-N Value	PENETRATION/ RECOVERY	OVM (ppm) / DEXSIL (ppm)	WELL CONSTRUCTION
	S1 (0-2') 9" Loose, black/brown fine SAND, some silt, trace medium to coarse sand, moist.	Sand		S1	1-3-6-6	9	24/9	<0.1	
	S2 (2-4') 2" Medium dense, black/brown, fine SAND, some silt, trace medium to coarse sand, moist, over 8" Brown fine to coarse SAND, trace fine gravel, moist, fill, over 7" Tan, fine SAND, moist.	Topsoil/Fill		S2	11-17-11-10	28	24/17	<0.1	
5	S3 (4-6') 7" Medium dense, tan, fine SAND, moist, over 4" Brown, fine SAND, moist, trace black lamination.	Fill/Sand		S3	5-5-6-6	11	24/11	<0.1	
	S4 (6-8') 17" Loose, brown/orange-brown, fine SAND, moist, rust staining, laminated, over 4" Gray/orange-brown, fine SAND, moist, rust staining, laminated.	Sand		S4	6-5-5-7	10	24/21	<0.1	
10	S5 (8-10') 21" Medium dense, gray/orange-brown, fine SAND, moist, rust staining, laminated. Auger to 14'.	Sand		S5	6-6-5-5	11	24/21	<0.1	
15	S6 (14-16') 13" Medium dense, gray/orange brown, fine SAND, wet, minor rust staining, laminated. Auger to 19'.	Sand		S6	4-7-7-8	14	24/13	<0.1	
20	S7 (19-21') 12" Medium dense, gray/orange/brown, fine SAND, wet, rust staining, laminated. Auger to 24'.	Sand		S7	4-6-6-5	11	24/12	<0.1	
25	S8 (24-26') No sample; running sand.			S8					
	End of boring 26'.								

WATER LEVELS:

During Drilling	End of Boring	Date:
NA	NA	3/1/17

WELL LEGEND: Filter Sand, Native Fill, Bentonite, Bentonite Grout, Concrete, PVC Screen, PVC Riser

NOTES:
1. Boring advanced using hollow stem auger drilling techniques with 140lb hammer falling 30 inches.
2. Soil Sampling: 1 1/2 inch I.D. Split Spoon Sampler driven with 140 lb hammer falling 30 inches.

CLIENT:
Pulte Homes of New England, LLC

SITE:
Proposed Residentail Development - Meadow Walk Sudbu
526 and 528 Boston Post Road
Sudbury, Massachusetts

Project No.: 161.01118.002 Page: 1

RANSOM
Consulting
Engineers
and Scientists

BORING AND MONITORING WELL LOG: B103

Reviewed by:	Total Depth: 26 Feet	Logged By: AMR
Date Reviewed:	Boring Diameter: 2.25 Inches	Date Drilled: 03/01/17 to 03/01/17
Surface Elevation (ft.): NA	Well Stickup: NA	Driller: NEBC

DEPTH	DESCRIPTION Based on USCS and modified Burmister Soil Classification System	SOIL PROFILE	SAMPLE	SAMPLE NUMBER	BLOWS (per 6")	SPT-N Value	PENETRATION/ RECOVERY	OVM (ppm) / DEXSIL (ppm)	WELL CONSTRUCTION
	S1 (0-2') 5" Asphalt, over 6" very dense, brown, fine to coarse SAND, little gravel, moist.	Fill		S1	NA-8-26-26	52	18/6	<0.1	
	S2 (2-4') 2" Medium dense, brown, fine to coarse SAND, over 9" tan, fine SAND, trace medium sand, moist/very moist, fill.	Fill		S2	12-11-8-13	19	24/11	<0.1	
5	S3 (4-6') 4" Dense, tan fine SAND, moist, over 2" black, fine SAND, some Silt, trace medium to coarse sand, moist, over 8" Gray/orange-brown, fine SAND, moist, rust staining, laminated. Auger to 9'.	Fill/Sand		S3	19-27-22-15	49	24/14	<0.1	
10	S4 (9-11') 16" Loose, gray/orange brown, fine SAND, wet, rust staining, laminated. Auger to 14'.	Sand		S4	3-5-3-3	8	24/16	<0.1	
15	S5 (14-16') 17" Loose, gray/orange-brown, fine SAND, trace silt, wet, trace rust staining, laminated. Auger to 19'.	Sand		S5	5-6-7-4	11	24/17	<0.1	
20	S6 (19-21') 14" Medium dense, gray/orange-brown, fine SAND, trace silt, wet, minor rust staining, laminated. Auger to 24'.	Sand		S6	3-6-7-5	13	24/14		
25	S7 (24-26') 12" Loose, brown/red, fine SAND, wet, over 4" brown/tan, silty fine SAND, wet, laminated. End of boring 26'.	Sand		S7	4-5-3-7	8	24/16		

WATER LEVELS:

During Drilling	End of Boring	Date:
NA	NA	3/1/17

WELL LEGEND:

Filter Sand | Native Fill | Bentonite | Bentonite Grout | Concrete | PVC Screen | PVC Riser

NOTES:
1. Boring advanced using hollow stem auger drilling techniques with 140lb hammer falling 30 inches.
2. Soil Sampling: 1 1/2 inch I.D. Split Spoon Sampler driven with 140 lb hammer falling 30 inches.

CLIENT:
Pulte Homes of New England, LLC

SITE:
Proposed Residentail Development - Meadow Walk Sudbu
526 and 528 Boston Post Road
Sudbury, Massachusetts

Project No.: 161.01118.002 Page: 1

RANSOM
Consulting
Engineers
and Scientists

BORING AND MONITORING WELL LOG: B104

Reviewed by:	Total Depth: 26 Feet	Logged By: AMR
Date Reviewed:	Boring Diameter: 2.25 Inches	Date Drilled: 03/01/17 to 03/01/17
Surface Elevation (ft.): NA	Well Stickup: NA	Driller: NEBC

DEPTH	DESCRIPTION (Based on USCS and modified Burmister Soil Classification System)	SOIL PROFILE	SAMPLE	SAMPLE NUMBER	BLOWS (per 6")	SPT-N Value	PENETRATION/ RECOVERY	OVM (ppm) / DEXSIL (ppm)	WELL CONSTRUCTION
	S1 (0-2') 3" ASPHALT, over 10" Dense, brown fine to coarse SAND, little gravel, moist.	Fill		S1	4-20-23-30	43	24/13	<0.1	
	S2 (2-4') 11" Very dense, brown, fine to coarse SAND, trace gravel, moist.	Fill		S2	23-35-30-29	65	24/11	<0.1	
5	S3 (4-6') 13" Dense, brown/orange-brown, fine SAND, moist, rust staining.	Sand		S3	12-23-19-13	42	24/13	<0.1	
	Auger to 9'.								
10	S4 (9-11') 10" Medium dense, gray/orange-brown, fine SAND, trace silt, wet, rust staining, laminated.	Sand		S4	4-7-6-4	13	24/10	<0.1	
	Auger to 14'.								
15	S5 (14-16') 8" Loose, gray/orange-brown, fine SAND, trace silt, wet, rust staining, laminated, over 8" Gray/orange-brown fine SAND, trace silt, minor rust staining, laminated. Heavy rust stain at 4"-8".	Sand		S5	3-3-5-5	8	24/16	<0.1	
	Auger to 19'.								
20	S6 (19-21') 12" Loose, brown/red, fine SAND, wet, over 6" brown/tan, silty SAND, wet, laminated, rust stain at 12-12.5".	Sand		S6	4-6-3-3	9	24/18	<0.1	
	Auger to 24'.								
25	S8 (24-26') No sample; running sand.			S7					
	End of boring 26'.								

WATER LEVELS:

During Drilling	End of Boring	Date:
NA	NA	3-1-17

WELL LEGEND:

NOTES:
1. Boring advanced using hollow stem auger drilling techniques with 140lb hammer falling 30 inches.
2. Soil Sampling: 1 1/2 inch I.D. Split Spoon Sampler driven with 140 lb hammer falling 30 inches.

CLIENT:
Pulte Homes of New England, LLC

SITE:
Proposed Residentail Development - Meadow Walk Sudbu
526 and 528 Boston Post Road
Sudbury, Massachusetts

Project No.: 161.01118.002 Page: 1

RANSOM
Consulting
Engineers
and Scientists

Soil Classification Terms

Grain Size		
Material	***Fraction***	***Sieve Size***
Boulders		12" +
Cobbles		3"–12"
Gravel	coarse	¾"–3"
	fine	No. 4 to ¾"
Sand	coarse	No. 10 to No. 4
	medium	No. 40 to No. 10
	fine	No. 200 to No. 40
Fines (Silt & Clay)		Passing No. 200

Identification of soil type Is made on the basis of an estimate of particle sizes, and in the case of fine-grained soils, also on basis of plasticity.

Coarse and Fine Grained Soils	
Descriptive Adjective	****Percentage Requirement***
Trace	1–10%
Little	10–20%
Some	20–35%
And	35–50%

When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.
*Percentage measured by weight.

Standard Penetration Value (N) & Undrained Shear Strength (S_u) v. Relative Density & Consistency

GRANULAR SOILS	
N	***Relative Density (%)***
0–4	Very Loose (0-15)
4–10	Loose (15-35)
10–30	Medium Dense (35-65)
30–50	Dense (65-85)
>50	Very Dense (>85)

COHESIVE SOILS		
S_u (psf)	***N***	***Consistency***
<250	<2	Very Soft
250 to 500	2–4	Soft
500 to 1,000	4–8	Medium
1,000 to 2,000	8–15	Stiff
2,000 to 4,000	15–30	Very Stiff
>4,000	>30	Hard

Consistency of cohesive soils is based upon undrained shear strength determined from field vane shear, pocket penetrometer, torvane, or laboratory tests. Consistency of cohesive soils is based upon the N-value when no other data is available.

RANSOM
Consulting
Engineers
and Scientists

Rock Classification Terms

Weathering Classification		
Grade	***Symbol***	***Diagnostic Features***
Fresh	**F**	No visible sign of decomposition or discoloration. Rings under hammer impact.
Slightly Weathered	**WS**	Slight discoloration inwards from open fracture, otherwise similar to F.
Moderately Weathered	**WM**	Discoloration throughout. Weaker mineral such as feldspar decomposed. Strength somewhat less than fresh rock but cores can not be broken by hand or scraped by knife.
Highly Weathered	**WH**	Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming distinct but fabric.
Completely Weathered	**WC**	Minerals decomposed to soil but fabric and structure preserved (Saprolite). Specimens easily crumbled or penetrated.
Residual Soil	**RS**	Advanced state of decomposition resulting in Plastic soils. Rock fabric and structure completely destroyed. Large volume change.

Rock Descriptors			
Term		Meaning	
Hardness	Soft	Scratched by fingernail	
	Medium Hard	Scratched easily by penknife	
	Hard	Scratched with difficulty by penknife	
	Very Hard	Cannot be scratched by penknife	
Jointing/ Fractures	Slight	2 to 6 ft. spacing	
	Moderate	8in. to 2 ft.	
	High	2 in. to 8 in.	
	Intense	< 2in.	
Bedding	Laminated	(< 1")	Natural Break in Rock Layers
	Thin Bedded	(1" - 4")	
	Bedded	(4" - 12")	
	Thick Bedded	(12" - 36")	
	Massive	(> 36")	

RANSOM
Consulting
Engineers
and Scientists

Unified System Classification of Soils (ASTM D 2487)

Major Divisions			*Group Symbols*	*Typical Names*
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels 50% or more of coarse fracton retained on No. 4 sieve	Clean Gravels	**GW**	Well-graded gravels and gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines.
		Gravels w/ Fines	**GM**	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	Sands More than 50% coarse fraction passes No. 4 sieve	Clean Sands	**SW**	Well-graded sands and gravelly sands little or no fines.
			SP	Poorly graded sands and gravelly sands little or no fines.
		Sands w/ Fines	**SM**	Silty sands, gravel-sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
Fine-Grained Soils 50% or more passes No. 200 sieve	Silts and Clays Liquid Limit 50% or less		**ML**	Inorganic silts, very fine sands, rock flour.
			CL	Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays.
			OL	Organic silts and organic silty clays of low plasticity.
	Silts and Clays Liquid limit greater than 50%		**MH**	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity.
Highly Organic Soils			**Pt**	Peat, mulch and other highly organic soils

APPENDIX D

Laboratory Test Results

Geotechnical Engineering Report
Proposed Residential Development
Meadow Walk Sudbury
Lot 4
Off Boston Post Road
Sudbury, Massachusetts

ConTest Consultants, Inc.

Providing Inspection/Testing & Consulting Services

LETTER OF TRANSMITTAL

TO: Ransom Consulting - Jay Johonnett

DATE: 3/8/2017

PROJECT: Pulte Sudbury - Sudbury, MA - 161.01118 (PO 9837)

CTC PROJECT NO.: 217122

Attached are the following for your use:

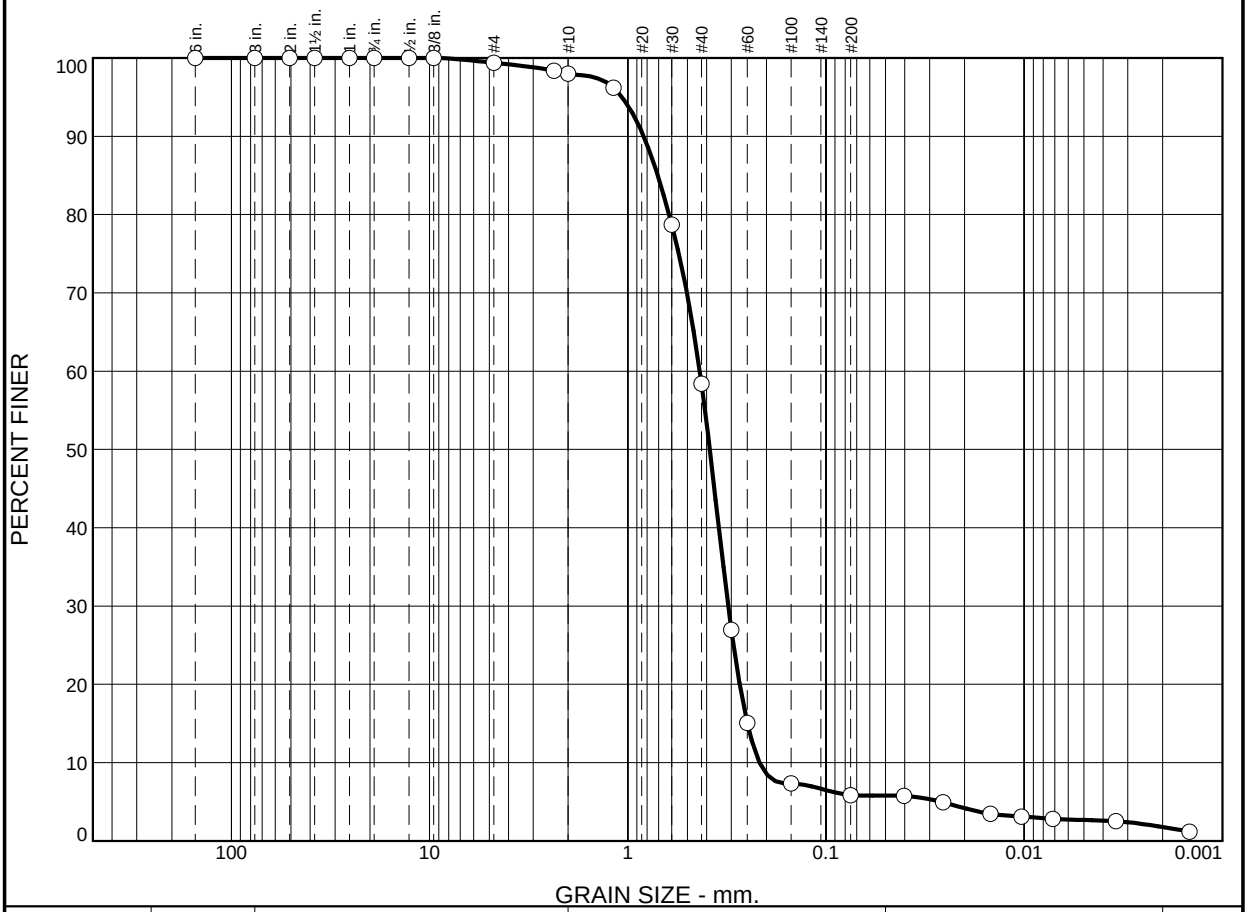
COPIES	DATE	LAB NUMBER	DESCRIPTION
			Concrete Reports - Cylinders
			Concrete Inspection Report
			Reinforcing Steel Inspection Report
			Field Density Report
			Organic & Moisture Content
5		L-169-17 L-170-17 L-171-17 L-172-17 L-173-17	Particle Size Distribution Report w/ Hydrometer
5		L-169-17 L-170-17 L-171-17 L-172-17 L-173-17	USDA Chart

CC: Ransom Consulting - Ken Milender

Reviewed By: Donald Walden

18 Cote Ave. Unit 11 Goffstown, NH 03045
p (603) 626-4422 • *f* (603) 782-0064
www.contestconsultantsinc.com

Particle Size Distribution Report



% Stones	% +3"	% Gravel			% Sand					% Silt		% Clay
		Coarse	Medium	Fine	V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Fine	
0.0	0.0	0.0	0.6	1.4	4.1	24.3	54.5	8.6	0.7	1.6	2.4	1.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	99.4		
#8	98.3		
#10	98.0		
#16	96.2		
#30	78.7		
#40	58.4		
#50	26.9		
#60	15.1		
#100	7.4		
#200	5.8		
0.0404 mm.	5.8		
0.0256 mm.	4.9		
0.0148 mm.	3.5		
0.0103 mm.	3.1		
0.0072 mm.	2.8		
0.0034 mm.	2.5		
0.0015 mm.	1.2		

* (no specification provided)

Soil Description

Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.8330 D_{85}= 0.7057 D_{60}= 0.4336
D_{50}= 0.3860 D_{30}= 0.3112 D_{15}= 0.2496
D_{10}= 0.2162 C_u= 2.01 C_c= 1.03

Classification

USCS= AASHTO=

Remarks

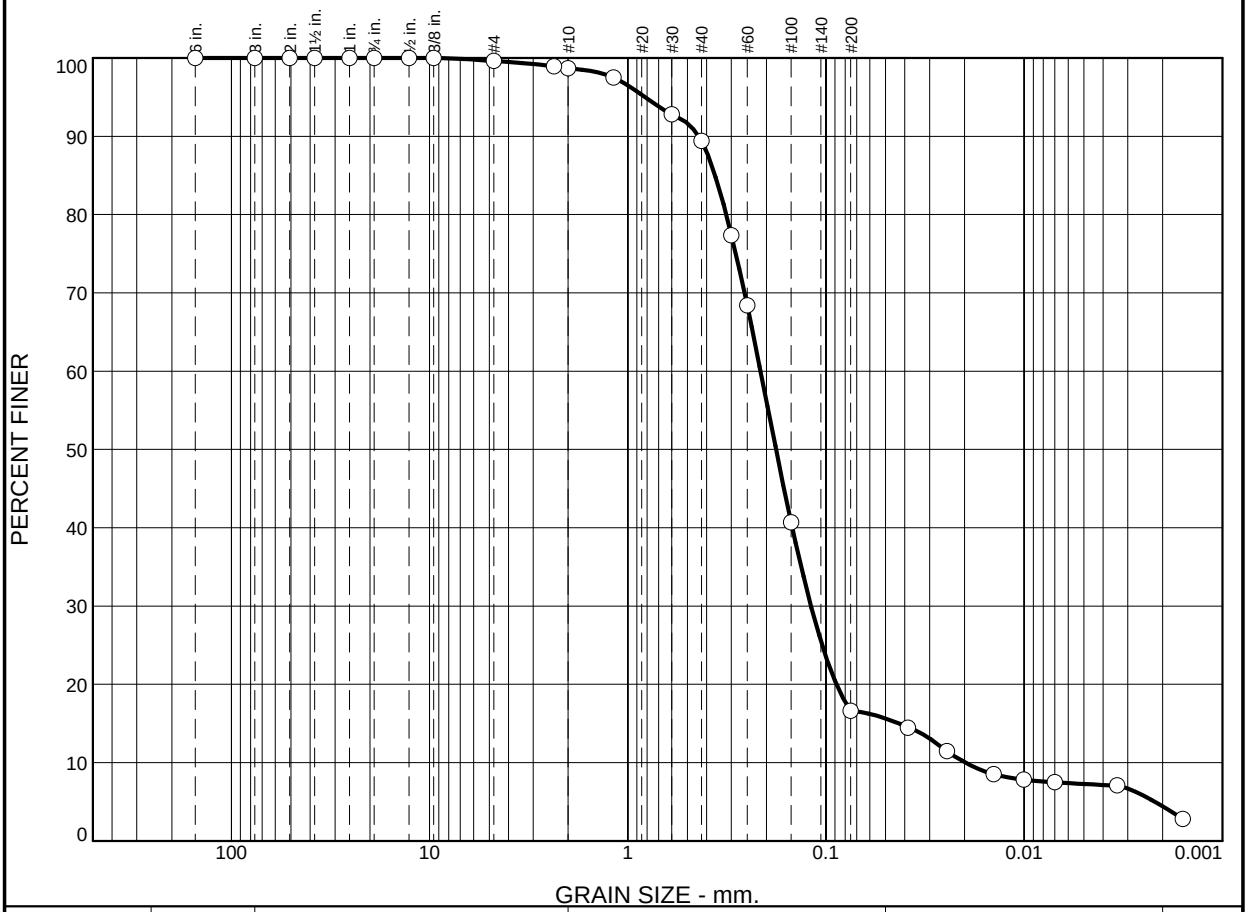
Location: SW-3, S-3
Sample Number: L-169-17 **Depth:** 3'-4' **Date:** 3/3/2017

ConTest Consultants, Inc.

Goffstown, New Hampshire

Client: Ransom Consulting
Project: Pulte Sudbury (161.01118)
Sudbury, MA
Project No: 217122 **Figure**

Particle Size Distribution Report



% Stones	% +3"	% Gravel			% Sand					% Silt		% Clay
		Coarse	Medium	Fine	V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Fine	
0.0	0.0	0.0	0.4	0.9	2.2	4.9	23.2	44.9	7.9	5.5	5.7	4.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	99.6		
#8	98.9		
#10	98.7		
#16	97.5		
#30	92.8		
#40	89.4		
#50	77.3		
#60	68.4		
#100	40.7		
#200	16.6		
0.0386 mm.	14.5		
0.0245 mm.	11.5		
0.0142 mm.	8.5		
0.0100 mm.	7.8		
0.0070 mm.	7.5		
0.0034 mm.	7.1		
0.0016 mm.	2.8		

* (no specification provided)

Soil Description

Loamy sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4389 D_{85}= 0.3628 D_{60}= 0.2139
D_{50}= 0.1786 D_{30}= 0.1190 D_{15}= 0.0429
D_{10}= 0.0198 C_u= 10.83 C_c= 3.35

Classification

USCS= AASHTO=

Remarks

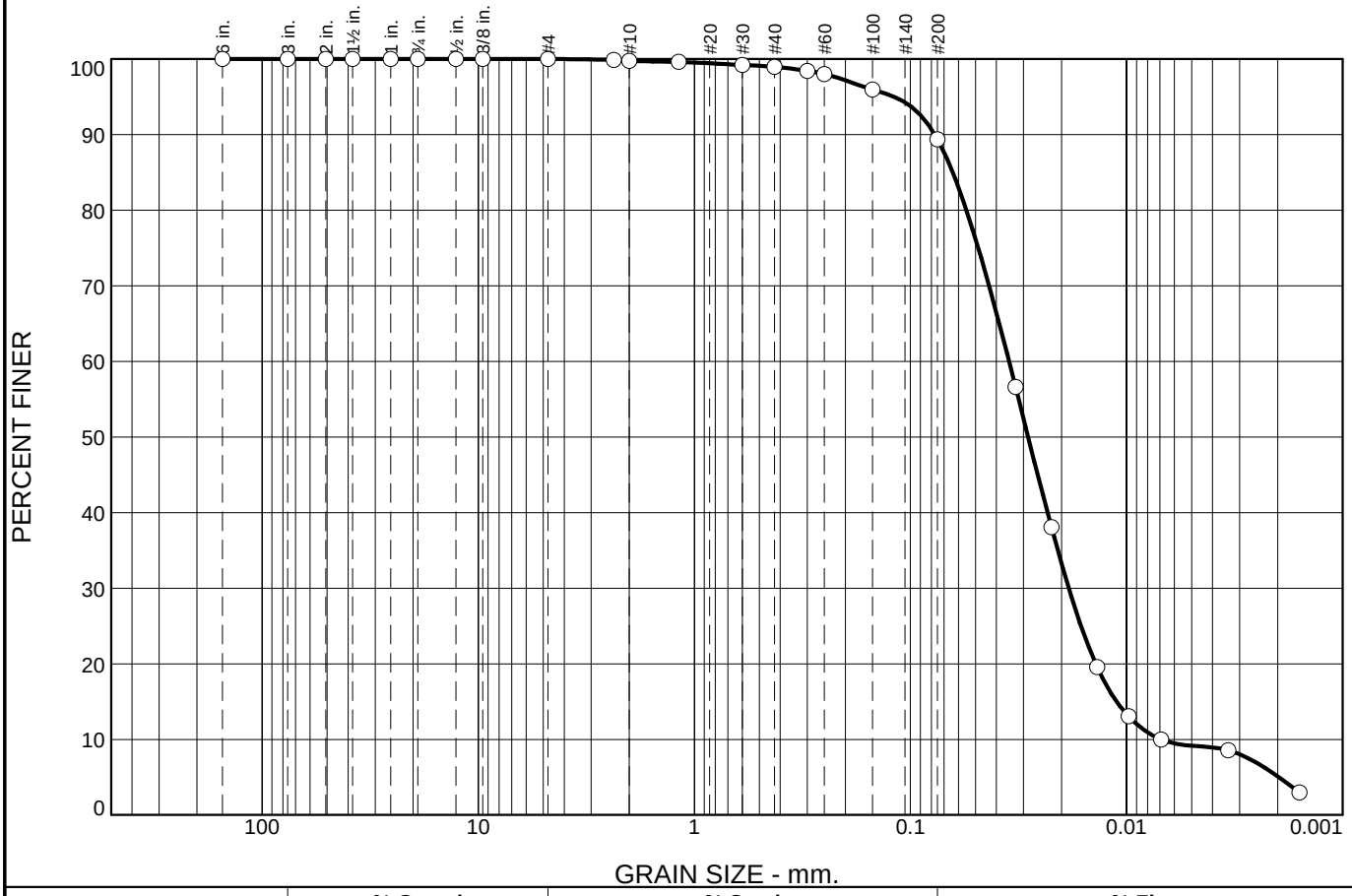
Location: SW-4, S-3
Sample Number: L-170-17 **Depth:** 3'-4' **Date:** 3/3/2017

ConTest Consultants, Inc.

Goffstown, New Hampshire

Client: Ransom Consulting
Project: Pulte Sudbury (161.01118)
Sudbury, MA
Project No: 217122 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	0.8	9.6	80.2	9.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	99.9		
#10	99.8		
#16	99.6		
#30	99.2		
#40	99.0		
#50	98.4		
#60	98.0		
#100	95.9		
#200	89.4		
0.0326 mm.	56.6		
0.0223 mm.	38.1		
0.0137 mm.	19.6		
0.0098 mm.	13.1		
0.0069 mm.	10.0		
0.0034 mm.	8.5		
0.0016 mm.	3.0		

* (no specification provided)

Soil Description

Silt loam

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.0772 D_{85}= 0.0637 D_{60}= 0.0350
D_{50}= 0.0285 D_{30}= 0.0185 D_{15}= 0.0111
D_{10}= 0.0069 C_u= 5.05 C_c= 1.41

Classification

USCS= AASHTO=

Remarks

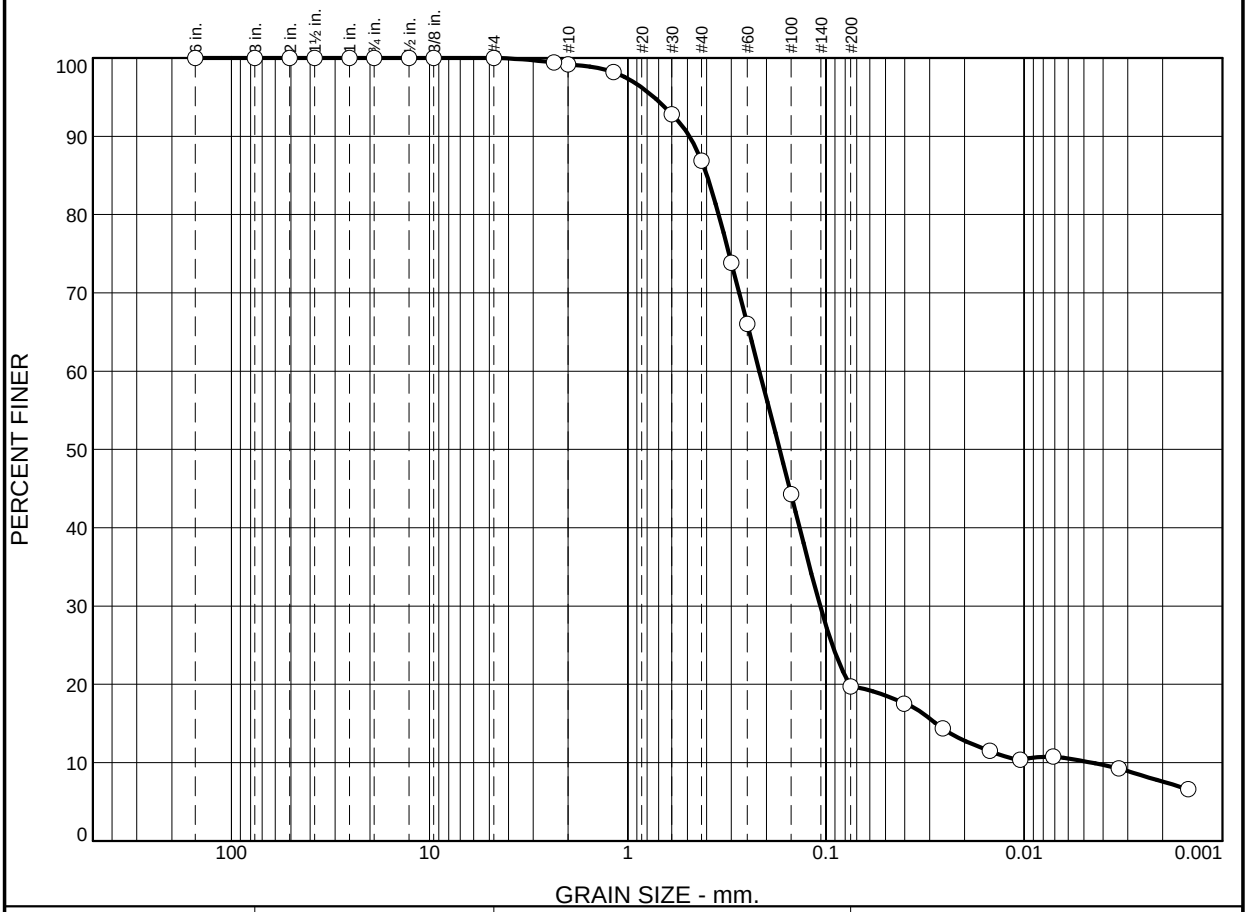
Location: SW-5, S-3
Sample Number: L-171-17 **Depth:** 2.5'-3.5' **Date:** 3/3/2017

ConTest Consultants, Inc.

Goffstown, New Hampshire

Client: Ransom Consulting
Project: Pulte Sudbury (161.01118)
Sudbury, MA
Project No: 217122 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.8	12.3	67.2	9.5	10.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	99.4		
#10	99.2		
#16	98.2		
#30	92.8		
#40	86.9		
#50	73.8		
#60	66.1		
#100	44.3		
#200	19.7		
0.0403 mm.	17.5		
0.0257 mm.	14.4		
0.0149 mm.	11.5		
0.0105 mm.	10.4		
0.0071 mm.	10.8		
0.0033 mm.	9.3		
0.0015 mm.	6.6		

* (no specification provided)

Soil Description

Loamy Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4891 D_{85}= 0.3992 D_{60}= 0.2168
D_{50}= 0.1713 D_{30}= 0.1068 D_{15}= 0.0278
D_{10}= 0.0046 C_u= 47.42 C_c= 11.52

Classification

USCS= AASHTO=

Remarks

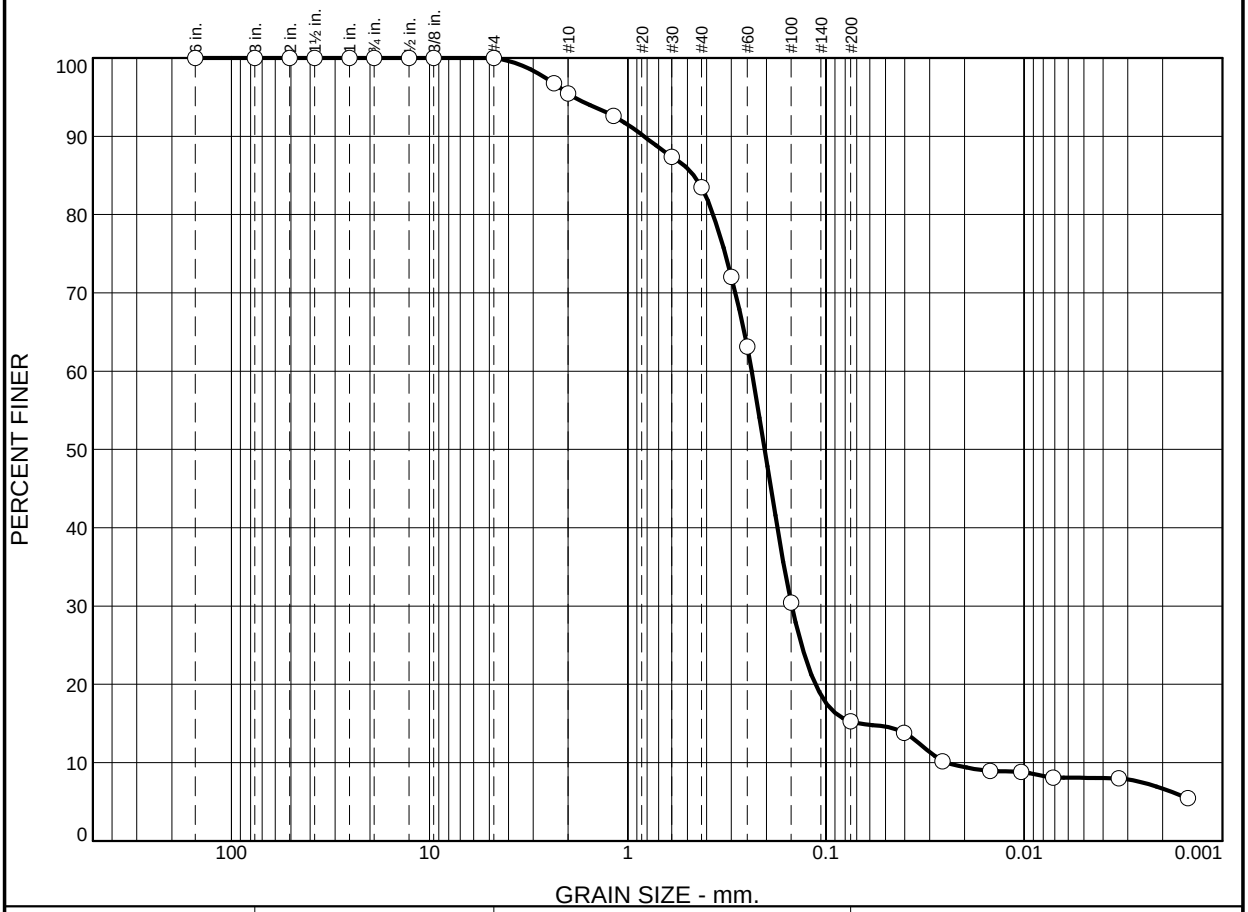
Location: SW-8, S-7
Sample Number: L-172-17 **Depth:** 5.5'-6.5' **Date:** 3/3/2017

ConTest Consultants, Inc.

Goffstown, New Hampshire

Client: Ransom Consulting
Project: Pulte Sudbury (161.01118)
Sudbury, MA
Project No: 217122 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	4.6	11.9	68.2	7.2	8.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
6"	100.0		
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	96.7		
#10	95.4		
#16	92.6		
#30	87.4		
#40	83.5		
#50	72.0		
#60	63.1		
#100	30.5		
#200	15.3		
0.0404 mm.	13.8		
0.0258 mm.	10.1		
0.0149 mm.	8.9		
0.0103 mm.	8.8		
0.0071 mm.	8.1		
0.0033 mm.	8.0		
0.0015 mm.	5.5		

* (no specification provided)

Soil Description

Loamy sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.8308 D_{85}= 0.4643 D_{60}= 0.2371
D_{50}= 0.2037 D_{30}= 0.1487 D_{15}= 0.0676
D_{10}= 0.0247 C_u= 9.62 C_c= 3.78

Classification

USCS= AASHTO=

Remarks

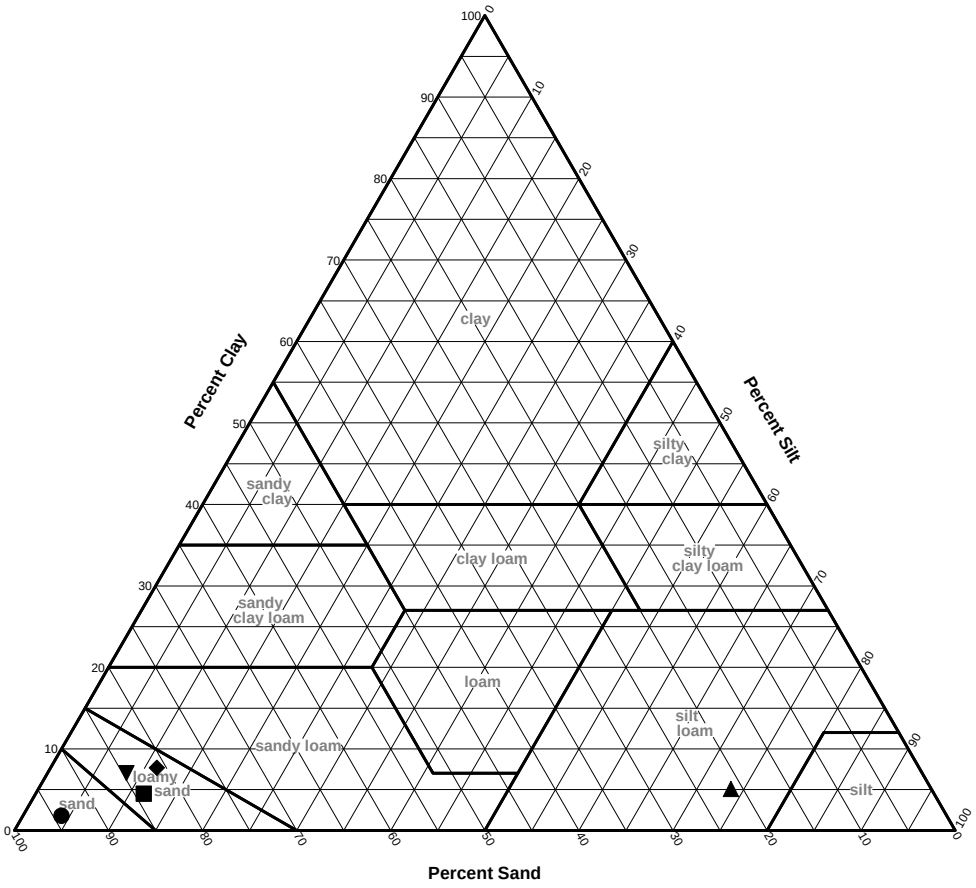
Location: SW-9, S-3
Sample Number: L-173-17 **Depth:** 3.5'-4.5' **Date:** 3/3/2017

ConTest Consultants, Inc.

Goffstown, New Hampshire

Client: Ransom Consulting
Project: Pulte Sudbury (161.01118)
Sudbury, MA
Project No: 217122 **Figure**

USDA Soil Classification



SOIL DATA

	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●	Boring	L-169-17	3'-4'	94.1	4.1	1.8	Sand
■	Boring	L-170-17	3'-4'	84.0	11.6	4.5	Loamy sand
▲	Boring	L-171-17	2.5'-3.5'	21.3	73.5	5.1	Silt loam
◆	Boring	L-172-17	5.5'-6.5'	81.0	11.3	7.7	Loamy sand
▼	Boring	L-173-17	3.5'-4.5'	84.6	8.4	7.0	Loamy sand

ConTest Consultants, Inc.

Goffstown, New Hampshire

Client: Ransom Consulting

Project: Pulte Sudbury (161.01118)
Sudbury, MA

Project No.: 217122

Figure

Appendix B
Standard 4 Computations and Supporting Information

- TSS Removal Worksheets
- Sediment Forebay Sizing Calculations
- Bio-retention Basin Water Quality Volume Calculations
- Subsurface Infiltration Basin Water Quality Volume Calculations
- Roof Runoff Water Quality Volume Calculations

TSS Removal Worksheets

TSS Removal Calculation Worksheet

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

Project Name:	**Highcrest at Meadow Walk**	Sheet:	**2 of 2**
Project Number:	**13125.08**	Date:	**19-Apr-2017**
Location:	**Sudbury, MA**	Computed by:	**CRP**
Discharge Point:	**DP1**	Checked by:	**RLG**
Drainage Area(s):	**S1B-Portion**		

A	B	C	D	E
BMP*	TSS Removal Rate*	Starting TSS Load**	Amount Removed (C*D)	Remaining Load (D-E)
Bioretention Area	**90%**	**1.00**	**0.90**	**0.10**
	0%	**0.10**	**0.00**	**0.10**
	0%	**0.10**	**0.00**	**0.10**
	0%	**0.10**	**0.00**	**0.10**
	0%	**0.10**	**0.00**	**0.10**

* 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 = **90%**

TSS Removal Calculation Worksheet

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

Project Name:	**Highcrest at Meadow Walk**	Sheet:	**1 of 2**
Project Number:	**13125.08**	Date:	**19-Apr-2017**
Location:	**Sudbury, MA**	Computed by:	**CRP**
Discharge Point:	**DP1**	Checked by:	**RLG**
Drainage Area(s):	**S1B-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%**

Sediment Forebay Sizing Calculations

Sediment Forebay Sizing Calculations

Project Name: **Highcrest at Meadow Walk** **Proj. No.:** 13125.08
Date: 4/26/2017
Project Location: **Sudbury, MA** **Calculated by:** RLG

Bio-Retention Basin 1

Total Contributing Impervious Area (sq.ft.) = **12,524**

Sediment Forebay WQV:

Required:

Runoff Depth to be Treated (in.)	Required Volume (cu.ft.)
0.10	**104**

Provided:

Elevation	Area (s.f.)	Cumulative Volume (c.f.)
151.5	68	0
152.5	196	**132**

Bio-Retention Basin 2

Total Contributing Impervious Area (sq.ft.) = **4,900**

Sediment Forebay WQV:

Required:

Runoff Depth to be Treated (in.)	Required Volume (cu.ft.)
0.10	**41**

Provided:

Elevation	Area (s.f.)	Cumulative Volume (c.f.)
159	61	0
160	175	**118**

Bio-Retention Basin Water Quality Volume Calculations

Summary for Pond B-1: Bio Reten 1

Inflow Area = 0.288 ac,100.00% Impervious, Inflow Depth > 1.00" for WQV-DYN event
Inflow = 0.59 cfs @ 12.07 hrs, Volume= 0.024 af
Outflow = 0.09 cfs @ 12.53 hrs, Volume= 0.013 af, Atten= 84%, Lag= 27.7 min
Discarded = 0.09 cfs @ 12.53 hrs, Volume= 0.013 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 151.84' @ 12.53 hrs Surf.Area= 1,687 sf Storage= 550 cf

Plug-Flow detention time= 21.6 min calculated for 0.013 af (52% of inflow)
Center-of-Mass det. time= 5.8 min (729.5 - 723.7)

Volume	Invert	Avail.Storage	Storage Description
#1	151.50'	1,767 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
151.50	1,526	155.2	0	0	1,526
152.50	2,020	174.1	1,767	1,767	2,048

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	149.55'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 149.55' / 149.28' S= 0.0142 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	152.25'	**24-in Nylo Dome X 2.00**

Discarded OutFlow Max=0.09 cfs @ 12.53 hrs HW=151.84' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=151.50' (Free Discharge)
↑—**2=Culvert** (Passes 0.00 cfs of 3.60 cfs potential flow)
↑—**3=24-in Nylo Dome** (Controls 0.00 cfs)

This analysis demonstrates that Bio-Retention Area 1 will infiltrate the required 1" water quality volume

Hydrograph for Pond B-1: Bio Reten 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	151.50	0.00	0.00	**0.00**
2.00	0.00	0	151.50	0.00	0.00	0.00
4.00	0.00	1	151.50	0.00	0.00	0.00
6.00	0.01	2	151.50	0.01	0.01	0.00
8.00	0.01	4	151.50	0.01	0.01	0.00
10.00	0.02	8	151.51	0.02	0.02	0.00
12.00	**0.40**	**171**	**151.61**	**0.09**	**0.09**	0.00
14.00	**0.03**	**302**	**151.69**	**0.09**	**0.09**	0.00
16.00	0.02	6	151.50	0.02	0.02	0.00
18.00	0.01	3	151.50	0.01	0.01	0.00
20.00	0.01	3	151.50	0.01	0.01	0.00
22.00	0.01	2	151.50	0.01	0.01	0.00
24.00	0.01	2	151.50	0.01	0.01	0.00
26.00	0.00	0	151.50	0.00	0.00	0.00
28.00	0.00	0	151.50	0.00	0.00	0.00
30.00	0.00	0	151.50	0.00	0.00	0.00
32.00	0.00	0	151.50	0.00	0.00	0.00
34.00	0.00	0	151.50	0.00	0.00	0.00
36.00	0.00	0	151.50	0.00	0.00	0.00
38.00	0.00	0	151.50	0.00	0.00	0.00
40.00	0.00	0	151.50	0.00	0.00	0.00
42.00	0.00	0	151.50	0.00	0.00	0.00
44.00	0.00	0	151.50	0.00	0.00	0.00
46.00	0.00	0	151.50	0.00	0.00	0.00
48.00	0.00	0	151.50	0.00	0.00	0.00
50.00	0.00	0	151.50	0.00	0.00	0.00
52.00	0.00	0	151.50	0.00	0.00	0.00
54.00	0.00	0	151.50	0.00	0.00	0.00
56.00	0.00	0	151.50	0.00	0.00	0.00
58.00	0.00	0	151.50	0.00	0.00	0.00
60.00	0.00	0	151.50	0.00	0.00	0.00
62.00	0.00	0	151.50	0.00	0.00	0.00
64.00	0.00	0	151.50	0.00	0.00	0.00
66.00	0.00	0	151.50	0.00	0.00	0.00
68.00	0.00	0	151.50	0.00	0.00	0.00
70.00	0.00	0	151.50	0.00	0.00	0.00
72.00	0.00	0	151.50	0.00	0.00	0.00

Summary for Pond B-2: Bio Reten 2

Inflow Area = 0.112 ac,100.00% Impervious, Inflow Depth > 1.00" for WQV-DYN event
Inflow = 0.23 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.04 cfs @ 12.53 hrs, Volume= 0.005 af, Atten= 84%, Lag= 27.6 min
Discarded = 0.04 cfs @ 12.53 hrs, Volume= 0.005 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 159.36' @ 12.53 hrs Surf.Area= 671 sf Storage= 219 cf

Plug-Flow detention time= 22.4 min calculated for 0.005 af (52% of inflow)
Center-of-Mass det. time= 6.3 min (730.0 - 723.7)

Volume	Invert	Avail.Storage	Storage Description
#1	159.00'	730 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
159.00	539	124.2	0	0	539
160.00	940	143.1	730	730	963

Device	Routing	Invert	Outlet Devices
#1	Discarded	159.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	156.00'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 156.00' / 155.00' S= 0.0250 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	159.75'	**24-in Nylo Dome X 2.00**

Discarded OutFlow Max=0.04 cfs @ 12.53 hrs HW=159.36' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=159.00' (Free Discharge)
↑—**2=Culvert** (Passes 0.00 cfs of 5.28 cfs potential flow)
↑—**3=24-in Nylo Dome** (Controls 0.00 cfs)

This analysis demonstrates that Bio-Retention Area 2
will infiltrate the required 1" water quality volume

Hydrograph for Pond B-2: Bio Reten 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	159.00	0.00	0.00	**0.00**
2.00	0.00	0	159.00	0.00	0.00	0.00
4.00	0.00	0	159.00	0.00	0.00	0.00
6.00	0.00	1	159.00	0.00	0.00	0.00
8.00	0.00	1	159.00	0.00	0.00	0.00
10.00	0.01	3	159.01	0.01	0.01	0.00
12.00	**0.16**	**70**	**159.12**	**0.03**	**0.03**	0.00
14.00	**0.01**	**122**	**159.21**	**0.03**	**0.03**	0.00
16.00	0.01	2	159.00	0.01	0.01	0.00
18.00	0.00	1	159.00	0.00	0.00	0.00
20.00	0.00	1	159.00	0.00	0.00	0.00
22.00	0.00	1	159.00	0.00	0.00	0.00
24.00	0.00	1	159.00	0.00	0.00	0.00
26.00	0.00	0	159.00	0.00	0.00	0.00
28.00	0.00	0	159.00	0.00	0.00	0.00
30.00	0.00	0	159.00	0.00	0.00	0.00
32.00	0.00	0	159.00	0.00	0.00	0.00
34.00	0.00	0	159.00	0.00	0.00	0.00
36.00	0.00	0	159.00	0.00	0.00	0.00
38.00	0.00	0	159.00	0.00	0.00	0.00
40.00	0.00	0	159.00	0.00	0.00	0.00
42.00	0.00	0	159.00	0.00	0.00	0.00
44.00	0.00	0	159.00	0.00	0.00	0.00
46.00	0.00	0	159.00	0.00	0.00	0.00
48.00	0.00	0	159.00	0.00	0.00	0.00
50.00	0.00	0	159.00	0.00	0.00	0.00
52.00	0.00	0	159.00	0.00	0.00	0.00
54.00	0.00	0	159.00	0.00	0.00	0.00
56.00	0.00	0	159.00	0.00	0.00	0.00
58.00	0.00	0	159.00	0.00	0.00	0.00
60.00	0.00	0	159.00	0.00	0.00	0.00
62.00	0.00	0	159.00	0.00	0.00	0.00
64.00	0.00	0	159.00	0.00	0.00	0.00
66.00	0.00	0	159.00	0.00	0.00	0.00
68.00	0.00	0	159.00	0.00	0.00	0.00
70.00	0.00	0	159.00	0.00	0.00	0.00
72.00	0.00	0	159.00	0.00	0.00	0.00

Subsurface Infiltration Basin Water Quality Volume Calculations

Summary for Pond 31P: Subsurface Infil. 1

Inflow Area = 1.221 ac,100.00% Impervious, Inflow Depth > 1.00" for WQV-DYN event
Inflow = 2.51 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 0.11 cfs @ 11.10 hrs, Volume= 0.019 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.10 hrs, Volume= 0.019 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.02 hrs
Peak Elev= 154.74' @ 13.00 hrs Surf.Area= 0.047 ac Storage= 0.084 af

Plug-Flow detention time= 33.3 min calculated for 0.018 af (18% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	152.00'	0.043 af	**21.00'W x 96.68'L x 3.50'H Field A** 0.163 af Overall - 0.055 af Embedded = 0.108 af x 40.0% Voids
#2A	152.50'	0.055 af	**ADS_StormTech SC-740 +Cap** x 52 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Rows of 13 Chambers
		0.098 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	152.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	152.00'	**18.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 152.00' / 150.50' S= 0.0417 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	155.10'	**4.0' long x 1.00' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 3.0' Crest Height

Discarded OutFlow Max=0.11 cfs @ 11.10 hrs HW=152.05' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=152.01' (Free Discharge)
↑—**2=Culvert** (Passes 0.00 cfs of 0.00 cfs potential flow)
↑—**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

This analysis demonstrates that subsurface infiltration system 1 will infiltrate the 1" water quality volume

Pond 31P: Subsurface Infil. 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

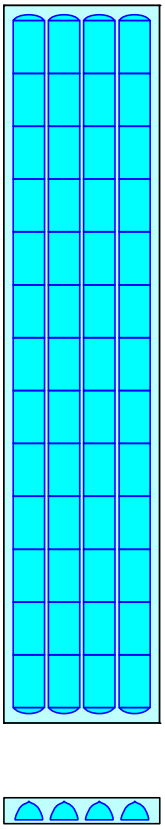
13 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 94.18' Row Length +15.0" End Stone x 2 = 96.68' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 15.0" Side Stone x 2 = 21.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

52 Chambers x 45.9 cf = 2,388.9 cf Chamber Storage

7,105.7 cf Field - 2,388.9 cf Chambers = 4,716.9 cf Stone x 40.0% Voids = 1,886.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,275.6 cf = 0.098 af
Overall Storage Efficiency = 60.2%
Overall System Size = 96.68' x 21.00' x 3.50'

52 Chambers
263.2 cy Field
174.7 cy Stone



Hydrograph for Pond 31P: Subsurface Infil. 1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	152.00	0.00	0.00	**0.00**
2.00	0.00	0.000	152.00	0.00	0.00	0.00
4.00	0.01	0.000	152.00	0.01	0.01	0.00
6.00	0.02	0.000	152.01	0.02	0.02	0.00
8.00	0.05	0.000	152.02	0.05	0.05	0.00
10.00	0.11	0.001	152.04	**0.10**	**0.10**	0.00
12.00	**1.69**	0.031	153.08	**0.11**	**0.11**	0.00
14.00	**0.13**	**0.090**	**155.04**	0.11	0.11	0.00
16.00	0.07	**0.087**	**154.90**	0.11	0.11	0.00
18.00	0.04	0.077	154.49	0.11	0.11	0.00
20.00	0.03	0.065	154.07	0.11	0.11	0.00
22.00	0.03	0.051	153.65	0.11	0.11	0.00
24.00	0.02	0.036	153.23	0.11	0.11	0.00
26.00	0.00	0.018	152.72	0.11	0.11	0.00
28.00	0.00	0.000	152.00	0.01	0.01	0.00
30.00	0.00	0.000	152.00	0.00	0.00	0.00
32.00	0.00	0.000	152.00	0.00	0.00	0.00
34.00	0.00	0.000	152.00	0.00	0.00	0.00
36.00	0.00	0.000	152.00	0.00	0.00	0.00
38.00	0.00	0.000	152.00	0.00	0.00	0.00
40.00	0.00	0.000	152.00	0.00	0.00	0.00
42.00	0.00	0.000	152.00	0.00	0.00	0.00
44.00	0.00	0.000	152.00	0.00	0.00	0.00
46.00	0.00	0.000	152.00	0.00	0.00	0.00
48.00	0.00	0.000	152.00	0.00	0.00	0.00
50.00	0.00	0.000	152.00	0.00	0.00	0.00
52.00	0.00	0.000	152.00	0.00	0.00	0.00
54.00	0.00	0.000	152.00	0.00	0.00	0.00
56.00	0.00	0.000	152.00	0.00	0.00	0.00
58.00	0.00	0.000	152.00	0.00	0.00	0.00
60.00	0.00	0.000	152.00	0.00	0.00	0.00
62.00	0.00	0.000	152.00	0.00	0.00	0.00
64.00	0.00	0.000	152.00	0.00	0.00	0.00
66.00	0.00	0.000	152.00	0.00	0.00	0.00
68.00	0.00	0.000	152.00	0.00	0.00	0.00
70.00	0.00	0.000	152.00	0.00	0.00	0.00
72.00	0.00	0.000	152.00	0.00	0.00	0.00

Roof Runoff Water Quality Volume Calculations

Summary for Pond 1P: Subsurface Infil. 2

Inflow Area = 0.170 ac,100.00% Impervious, Inflow Depth > 1.00" for WQV-DYN event
Inflow = 0.35 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.02 cfs @ 11.12 hrs, Volume= 0.003 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.12 hrs, Volume= 0.003 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.02 hrs
Peak Elev= 152.12' @ 13.00 hrs Surf.Area= 353 sf Storage= 480 cf

Plug-Flow detention time= 29.4 min calculated for 0.003 af (22% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	150.00'	347 cf	**11.00'W x 32.10'L x 3.50'H Field A** 1,236 cf Overall - 368 cf Embedded = 868 cf x 40.0% Voids
#2A	150.50'	368 cf	**ADS_StormTech SC-740 +Cap** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 4 Chambers
		715 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	152.20'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 152.20' / 148.90' S= 0.0660 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 11.12 hrs HW=150.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=150.01' (Free Discharge)
↑**2=Culvert** (Controls 0.00 cfs)

This analysis demonstrates that subsurface infiltration system 2 will infiltrate the 1" water quality volume

Pond 1P: Subsurface Infil. 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

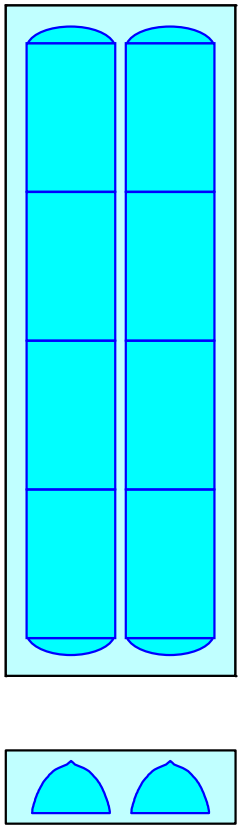
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

8 Chambers x 45.9 cf = 367.5 cf Chamber Storage

1,235.7 cf Field - 367.5 cf Chambers = 868.2 cf Stone x 40.0% Voids = 347.3 cf Stone Storage

Chamber Storage + Stone Storage = 714.8 cf = 0.016 af
Overall Storage Efficiency = 57.8%
Overall System Size = 32.10' x 11.00' x 3.50'

8 Chambers
45.8 cy Field
32.2 cy Stone



Hydrograph for Pond 1P: Subsurface Infil. 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	150.00	0.00	0.00	**0.00**
2.00	0.00	0	150.00	0.00	0.00	0.00
4.00	0.00	0	150.00	0.00	0.00	0.00
6.00	0.00	1	150.01	0.00	0.00	0.00
8.00	0.01	2	150.01	0.01	0.01	0.00
10.00	0.01	4	150.03	**0.01**	**0.01**	0.00
12.00	**0.24**	**164**	**150.85**	**0.02**	**0.02**	0.00
14.00	**0.02**	**492**	**152.18**	0.02	0.02	0.00
16.00	0.01	448	151.98	0.02	0.02	0.00
18.00	0.01	361	151.62	0.02	0.02	0.00
20.00	0.00	256	151.20	0.02	0.02	0.00
22.00	0.00	145	150.78	0.02	0.02	0.00
24.00	0.00	27	150.19	0.02	0.02	0.00
26.00	0.00	0	150.00	0.00	0.00	0.00
28.00	0.00	0	150.00	0.00	0.00	0.00
30.00	0.00	0	150.00	0.00	0.00	0.00
32.00	0.00	0	150.00	0.00	0.00	0.00
34.00	0.00	0	150.00	0.00	0.00	0.00
36.00	0.00	0	150.00	0.00	0.00	0.00
38.00	0.00	0	150.00	0.00	0.00	0.00
40.00	0.00	0	150.00	0.00	0.00	0.00
42.00	0.00	0	150.00	0.00	0.00	0.00
44.00	0.00	0	150.00	0.00	0.00	0.00
46.00	0.00	0	150.00	0.00	0.00	0.00
48.00	0.00	0	150.00	0.00	0.00	0.00
50.00	0.00	0	150.00	0.00	0.00	0.00
52.00	0.00	0	150.00	0.00	0.00	0.00
54.00	0.00	0	150.00	0.00	0.00	0.00
56.00	0.00	0	150.00	0.00	0.00	0.00
58.00	0.00	0	150.00	0.00	0.00	0.00
60.00	0.00	0	150.00	0.00	0.00	0.00
62.00	0.00	0	150.00	0.00	0.00	0.00
64.00	0.00	0	150.00	0.00	0.00	0.00
66.00	0.00	0	150.00	0.00	0.00	0.00
68.00	0.00	0	150.00	0.00	0.00	0.00
70.00	0.00	0	150.00	0.00	0.00	0.00
72.00	0.00	0	150.00	0.00	0.00	0.00

Summary for Pond 7P: Subsurface Infil. 3

Inflow Area = 0.132 ac,100.00% Impervious, Inflow Depth > 1.00" for WQV-DYN event
Inflow = 0.27 cfs @ 12.07 hrs, Volume= 0.011 af
Outflow = 0.02 cfs @ 11.12 hrs, Volume= 0.003 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.12 hrs, Volume= 0.003 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.02 hrs
Peak Elev= 153.11' @ 13.00 hrs Surf.Area= 0.006 ac Storage= 0.009 af

Plug-Flow detention time= 29.1 min calculated for 0.003 af (23% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	151.00'	0.007 af	**15.75'W x 17.86'L x 3.50'H Field A** 0.023 af Overall - 0.006 af Embedded = 0.016 af x 40.0% Voids
#2A	151.50'	0.006 af	**ADS_StormTech SC-740 +Cap** x 6 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 3 Rows of 2 Chambers
		0.013 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	151.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	153.20'	**8.0" Round Culvert** L= 74.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 153.20' / 151.50' S= 0.0230 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.02 cfs @ 11.12 hrs HW=151.04' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=151.01' (Free Discharge)
↑—**2=Culvert** (Controls 0.00 cfs)

This analysis demonstrates that subsurface infiltration system 3 will infiltrate the 1" water quality volume

Pond 7P: Subsurface Infil. 3 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

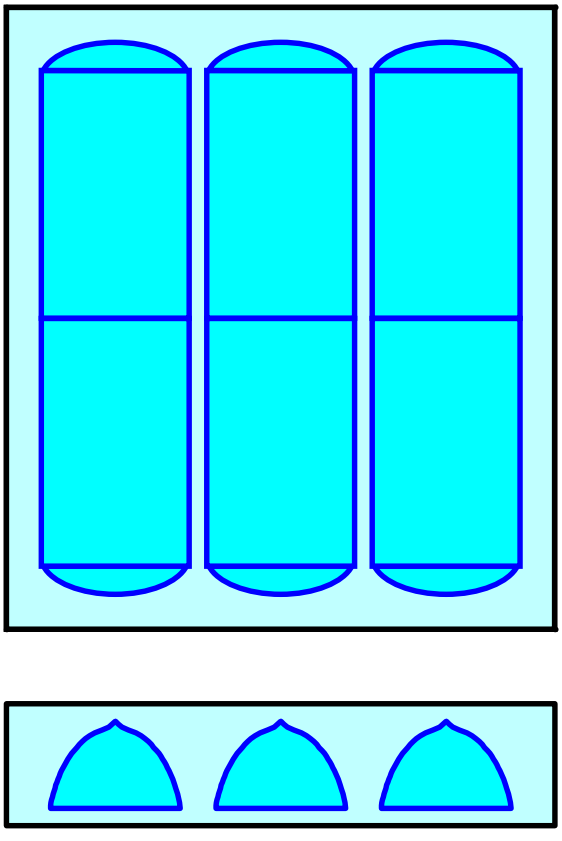
2 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 15.86' Row Length +12.0" End Stone x 2 = 17.86' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

6 Chambers x 45.9 cf = 275.6 cf Chamber Storage

984.3 cf Field - 275.6 cf Chambers = 708.7 cf Stone x 40.0% Voids = 283.5 cf Stone Storage

Chamber Storage + Stone Storage = 559.1 cf = 0.013 af
Overall Storage Efficiency = 56.8%
Overall System Size = 17.86' x 15.75' x 3.50'

6 Chambers
36.5 cy Field
26.2 cy Stone



Hydrograph for Pond 7P: Subsurface Infil. 3

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	151.00	0.00	0.00	**0.00**
2.00	0.00	0.000	151.00	0.00	0.00	0.00
4.00	0.00	0.000	151.00	0.00	0.00	0.00
6.00	0.00	0.000	151.01	0.00	0.00	0.00
8.00	0.01	0.000	151.01	0.01	0.01	0.00
10.00	0.01	0.000	151.03	**0.01**	**0.01**	0.00
12.00	**0.18**	**0.003**	**151.84**	**0.02**	**0.02**	0.00
14.00	**0.01**	**0.009**	**153.15**	0.02	0.02	0.00
16.00	0.01	0.008	152.95	0.02	0.02	0.00
18.00	0.00	0.006	152.57	0.02	0.02	0.00
20.00	0.00	0.004	152.14	0.02	0.02	0.00
22.00	0.00	0.002	151.70	0.02	0.02	0.00
24.00	0.00	0.000	151.04	0.02	0.02	0.00
26.00	0.00	0.000	151.00	0.00	0.00	0.00
28.00	0.00	0.000	151.00	0.00	0.00	0.00
30.00	0.00	0.000	151.00	0.00	0.00	0.00
32.00	0.00	0.000	151.00	0.00	0.00	0.00
34.00	0.00	0.000	151.00	0.00	0.00	0.00
36.00	0.00	0.000	151.00	0.00	0.00	0.00
38.00	0.00	0.000	151.00	0.00	0.00	0.00
40.00	0.00	0.000	151.00	0.00	0.00	0.00
42.00	0.00	0.000	151.00	0.00	0.00	0.00
44.00	0.00	0.000	151.00	0.00	0.00	0.00
46.00	0.00	0.000	151.00	0.00	0.00	0.00
48.00	0.00	0.000	151.00	0.00	0.00	0.00
50.00	0.00	0.000	151.00	0.00	0.00	0.00
52.00	0.00	0.000	151.00	0.00	0.00	0.00
54.00	0.00	0.000	151.00	0.00	0.00	0.00
56.00	0.00	0.000	151.00	0.00	0.00	0.00
58.00	0.00	0.000	151.00	0.00	0.00	0.00
60.00	0.00	0.000	151.00	0.00	0.00	0.00
62.00	0.00	0.000	151.00	0.00	0.00	0.00
64.00	0.00	0.000	151.00	0.00	0.00	0.00
66.00	0.00	0.000	151.00	0.00	0.00	0.00
68.00	0.00	0.000	151.00	0.00	0.00	0.00
70.00	0.00	0.000	151.00	0.00	0.00	0.00
72.00	0.00	0.000	151.00	0.00	0.00	0.00

Appendix C
Stormwater Management System Operation and Maintenance Manual

Highcrest at Meadow Walk Sudbury

Sudbury, Massachusetts

PREPARED FOR

Pulte Homes of New England LLC
115 Flanders Road, Suite 200
Westborough, MA 01581

PREPARED BY

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

Issued: May 2016

Table of Contents

Operations & Maintenance Manual Introduction

This Stormwater Management Operations and Maintenance Manual (O&M Manual) has been prepared to support the multi-family housing portion, referred to as Highcrest at Meadow Walk, of the multi-phase redevelopment proposed for 526-528 Boston Post Road, Sudbury, MA. This O&M Manual incorporates stormwater management features proposed only as part of the Highcrest at Meadow Walk Sudbury phase of redevelopment. Refer to Stormwater O&M Manuals prepared by VHB under separate cover for required O&M of infrastructure proposed by other phases on-site as well as the required O&M of all existing stormwater management features which are to remain. Where applicable, 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

Highcrest at Meadow Walk
Sudbury, Massachusetts

Developer

Pulte Homes of New England LLC

115 Flanders Road, Suite 200

Westborough, MA 01581

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 pavement and 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 NAME: _____ ALTERNATE CONTACT: NAME: _____	PHONE: _____ BEEPER/CELL: _____, _____ HOME PHONE: _____ PHONE: _____ BEEPER/CELL: _____, _____ HOME PHONE: _____
2.	FIRE & POLICE DEPARTMENT	EMERGENCY: **911**
3.	CLEANUP CONTRACTOR: _____ ADDRESS: _____ _____	PHONE: _____
4.	MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)	EMERGENCY PHONE: **(888) 304-1133**
5.	NATIONAL RESPONSE CENTER ALTERNATE: U.S. ENVIRONMENTAL PROTECTION AGENCY	PHONE: (800) 424-8802 EMERGENCY: (800) 424-8802 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 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 & Landscape Drains

The proper removal of sediments and associated pollutants and trash occurs only when catch basin inlets and sumps 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 the redevelopment 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 landscape 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 or when the depth of deposits is greater than one half of the depth from the bottom of the sump to the invert of the lowest connecting pipe.
- Sediment 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 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. 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.2.3 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.

- At a minimum, inspect outfalls annually.

- 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.2.4 Roof Drain Leaders and Rooftop Recharge Systems

Roof runoff is directed to the rooftop recharge system via roof drain leaders. The rooftop recharge system uses perforated pipe to infiltrate clean runoff.

Inspections and Cleaning

- Perform routine roof drain leader and recharge system inspections and cleanings annually.
- Keep roofs clean and free of debris.
- Keep roof drainage systems clear.
- Keep roof access limited to authorized personnel.
- Clean inlets once per year.

D.3 Vegetated Stormwater Management Devices

D.3.1 Surface Basins

All surface stormwater basins shall be inspected annually. The maintenance of surface basins may affect the functioning of stormwater management practices. All sediment and debris shall be removed and disposed according to local, state, and federal regulations. All side slopes shall be maintained.

Initial Post-Construction Inspection

- Bio-retention basins should be inspected after every major storm for the first few months to ensure proper stabilization and function.

Long-Term Maintenance

- Inspect planted areas on a semi-annual basis and remove any litter.
- Regular maintenance includes mowing, keeping the grass no shorter than 3 to 4 inches and no larger than 6-inches.
- Grass clippings, organic matter, and accumulated trash and debris removed, at least twice during the growing season.
- Eroded or barren spots should be reseeded immediately after inspection to prevent additional erosion and accumulation of sediment.
- Deep tilling can be used to break up a clogged surface area.
- Sediment should be removed from the basin as necessary. Removal procedures should not take place until the floor of the basin is thoroughly dry.
- 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.3.2 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 Highcrest at Meadow Walk Sudbury. 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

Highcrest at Meadow Walk– 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

Highcrest at Meadow Walk– 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):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

E.3 Long Term Maintenance/ Evaluation Checklist

Highcrest at Meadow Walk– 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 and Landscape Drains – Inspect 4 times per year, clean when sediment depth >1/2 depth of sump 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)
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	

Date: _____Name of Inspector: _____

Roof Runoff Systems – Inspect once per year and remove all debris at least once per year					
Building Number	Inspected (Y/N)	Sediment Depth (inches)	Cleaning needed (Y/N)	Date Cleaned	Comments (Trash, Oil, Pet waste, Lawn Debris, Damage)
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	

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)
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	
				/ /	

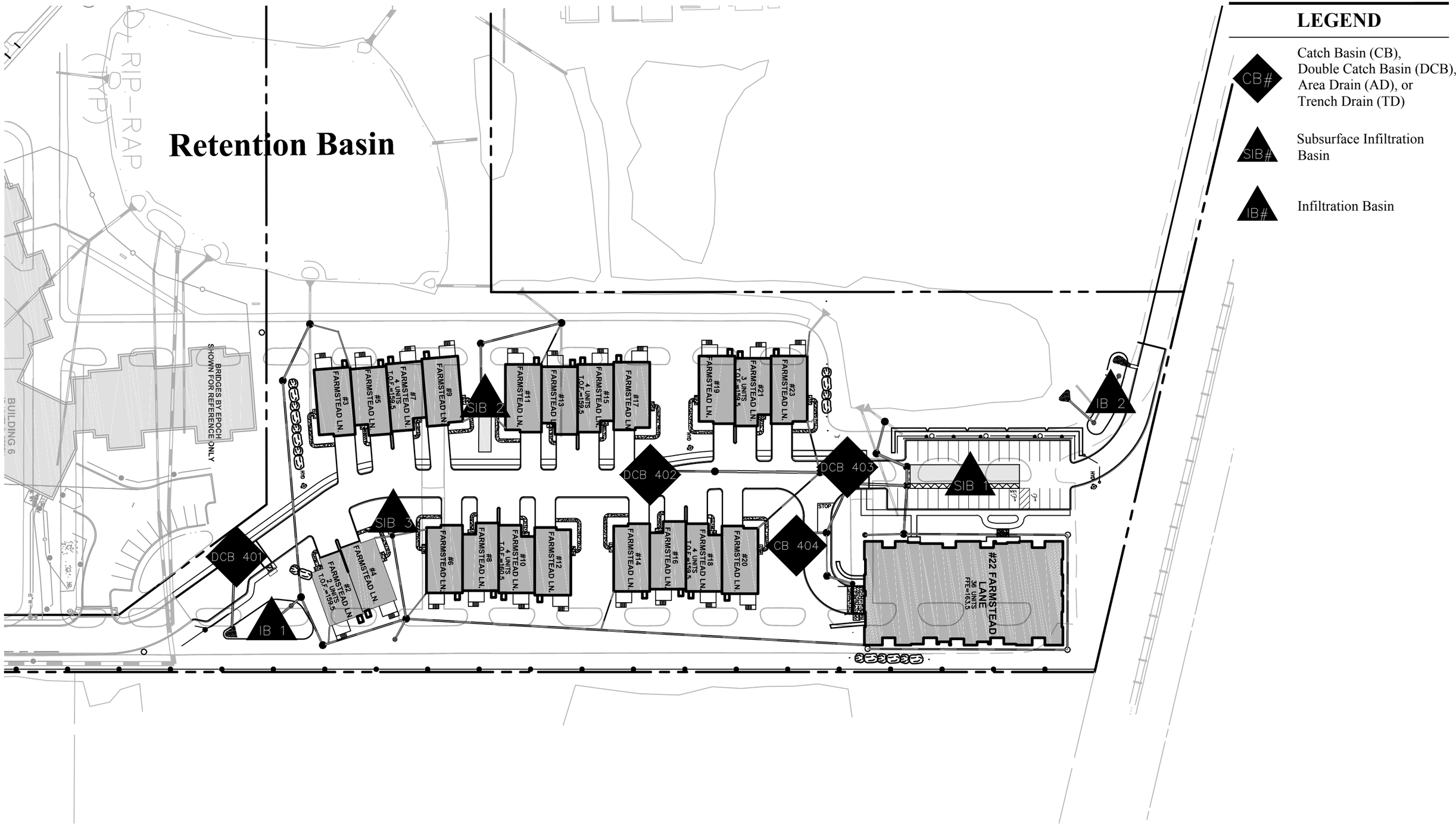
Date: _____Name of Inspector: _____

Subsurface Infiltration Systems – Inspect once 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/Bio-retention 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



LEGEND

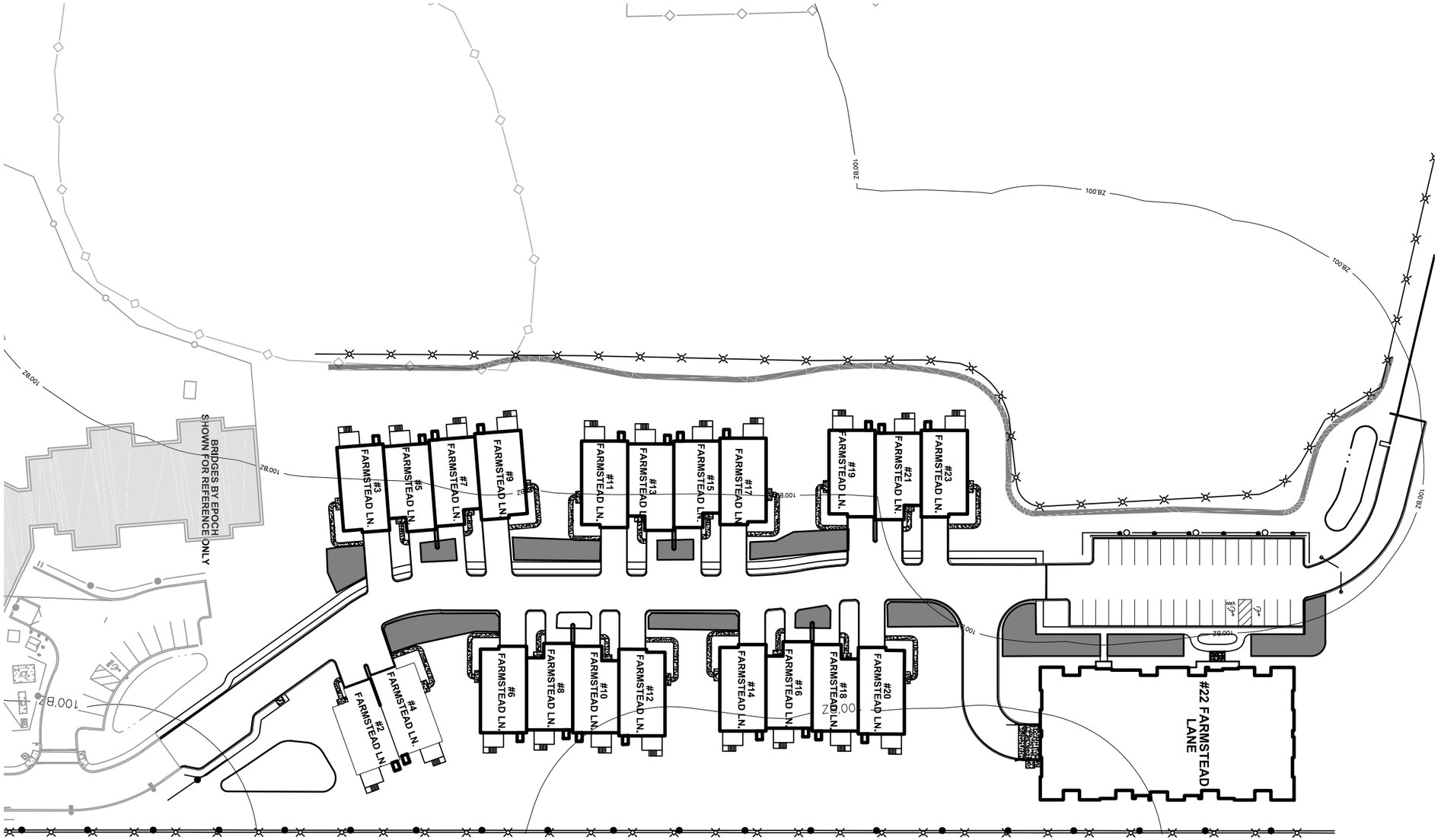
- CB# — Catch Basin (CB), Double Catch Basin (DCB), Area Drain (AD), or Trench Drain (TD)
- SIB# — Subsurface Infiltration Basin
- IB# — Infiltration Basin

Drainage Device Location Map
Highcrest at Meadow Walk
Sudbury, MA

Figure A-1

April 2017

Figure B-1 – Snow Storage Plan



Legend

Approximate Snow Storage Area

Notes

1. The Highcrest at Meadow Walk area has approximately 0.95 acres of paved vehicular area and 0.16 acres of sidewalk. The plan does not include snow storage for the roof or pervious areas.

2. The plan depicts approximately 9,700 SF of area available for snow storage within the Highcrest at Meadow Walk area. This area is estimated to accommodate an approximate 1.5' snowfall, assuming 5:1 compaction and an average snow pile height of 2.5'. Additional snow storage is available in pervious areas throughout the project area such as in between buildings and sidewalks along the roadway.

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

4. Snow storage will be implemented to avoid hydrants, fences, landscaping, and other permanent features.

0 80 160 Feet

Snow Storage Plan
Highcrest at Meadow Walk
Sudbury, MA

Figure B-1

April 2017

Section F – MA Stormwater Handbook BMP and Product Literature

Appendix D
StormCAD

- 25-year Storm Drain Calculations

25-Year Storm Drain Calculations

Project: Highcrest at Meadow Walk | Project #: 13125.08
Location: Sudbury, MA | Sheet: 1 of 1
Calculated By: RLG/KFS | Date: 4/26/2017
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)
RD	DMH-416	155.5	154	0.025	0.012	12	135.2	8.63	(N/A)	(N/A)	1.07	6.13	5.87	163	6.5	162.34	7.34	155.94	155.07
DMH-416	DMH-409	153.8	153.3	0.015	0.012	12	47	8.63	(N/A)	(N/A)	2.14	4.65	2.72	162.34	7.54	160.12	5.82	155.07	154.97
DMH-409	ISO-ROW	152.6	152.5	0.029	0.012	18	15.5	7.436	(N/A)	(N/A)	9.11	38.99	2.58	160.12	6.02	160.19	6.19	154.91	154.9
DMH-408	DMH-409	152.9	152.61	0.006	0.012	18	51.4	7.543	(N/A)	(N/A)	7.05	8.61	3.99	158.87	4.47	160.12	6.01	155.16	154.97
DMH-410	DMH-411	152	151.5	0.017	0.012	18	27.7	8.63	(N/A)	(N/A)	7.92	14.94	8.58	159.78	6.28	159.7	6.7	153.09	152.34
DMH-411	EX-FES	149.6	149.2	0.009	0.013	12	43.6	8.63	(N/A)	(N/A)	6.42	3.41	8.17	159.7	9.1	147.91	-2.3	151.6	150.17
CB-403	DMH-408	155.5	155	0.028	0.012	12	17.7	8.63	0.444	0.689	2.66	6.48	7.84	158.48	1.98	158.87	2.87	156.2	155.49
RD	DMH-416	154.35	154	0.002	0.012	12	39.1	8.63	(N/A)	(N/A)	1.07	1.79	2.38	160.2	4.85	162.34	7.34	155.19	155.07
DMH-407	DMH-408	153.14	153	0.005	0.012	18	27.6	8.13	(N/A)	(N/A)	4.4	8.05	2.49	158.3	3.66	158.87	4.37	155.35	155.31
DMH-413	DMH-408	153.24	153	0.005	0.012	12	48.1	8.084	(N/A)	(N/A)	0.59	2.73	0.75	156.6	2.36	158.87	4.87	155.32	155.31
Subsurface-2	DMH-405	152.2	148.9	0.1	0.012	12	32.9	8.63	(N/A)	(N/A)	0.99	12.2	9.34	157.2	4	153.3	3.4	152.62	149.09
CB-404	DMH-413	153.5	153.34	0.009	0.012	12	17.5	8.63	0.027	0.9	0.21	3.69	0.27	156.5	2	156.6	2.26	155.32	155.32
PUMP CHBR	DMH-413	150	153.5	-0.091	0.01	4	38.4	8.63	(N/A)	(N/A)	0.39	0.75	4.47	154	3.67	156.6	2.77	156.28	155.32
TD	PUMP	149.5	149	0.021	0.012	12	23.4	8.63	0.05	0.9	0.39	5.61	4.11	151.8	1.3	154	4	149.76	149.18
DMH-405	DMH-406	148.8	148	0.011	0.012	12	73.4	8.63	(N/A)	(N/A)	0.99	4.02	4.23	153.3	3.5	152.63	3.63	149.22	148.51
DMH-412	EX-FES	149.55	149.38	0.009	0.013	12	19.5	8.63	(N/A)	(N/A)	1.5	3.32	4.12	152.7	2.15	150.47	0.09	150.07	149.85
DMH-406	EX-FES	148	147.6	0.009	0.013	12	45.8	8.63	(N/A)	(N/A)	0.99	3.35	3.71	152.63	3.63	147.6	-1	148.42	147.97
RD	DMH-407	156	154.24	0.04	0.012	6	46.9	8.63	(N/A)	(N/A)	0.5	1.22	5.9	158.5	2	158.3	3.56	156.36	155.41
RD	DMH-407	156	154.24	0.026	0.012	6	70.7	8.63	(N/A)	(N/A)	0.5	0.98	5.02	158.5	2	158.3	3.56	156.36	155.41
LD-404	FES-402	156	155	0.025	0.012	12	40.1	8.63	(N/A)	(N/A)	0.47	6.09	4.59	159.75	2.75	154	-2	156.28	155.19
DCB-401	FES-401	151.9	151.6	0.005	0.012	12	59.8	8.63	0.447	0.674	2.62	2.73	3.96	154.47	1.57	152.85	0.25	152.68	152.29
LD-402	DMH-400	149.55	149.28	0.024	0.012	12	28.8	8.63	(N/A)	(N/A)	1.05	5.96	1.34	152.5	1.95	153.95	3.68	150.93	150.93
DMH-402	DMH-401	150.08	149.5	0.007	0.012	12	88.7	8.63	(N/A)	(N/A)	2.52	3.12	3.21	153.59	2.51	154	3.5	151.6	151.22
LD-403	DMH-402	150.4	150.3	0.005	0.012	12	20.8	8.63	(N/A)	(N/A)	1.77	2.68	2.25	152.5	1.1	153.59	2.29	151.74	151.7
Subsurface-3	DMH-402	153.2	151.5	0.023	0.012	12	73.5	8.63	(N/A)	(N/A)	0.75	5.87	5.13	158.5	4.3	153.59	1.09	153.56	151.74
DMH-403	DMH-404	148	147.3	0.013	0.012	12	55.6	8.63	(N/A)	(N/A)	3.57	4.33	6.16	153.5	4.5	152.5	4.2	148.81	148.36
DMH-404	EX FES	147.3	146.8	0.013	0.013	12	38.9	8.63	(N/A)	(N/A)	3.57	4.07	5.84	152.5	4.2	146.3	-1.5	148.11	147.53
DMH-411	DMH-412	149.6	149.55	0.002	0.012	12	29.2	8.63	(N/A)	(N/A)	1.5	1.6	0	159.7	9.1	152.7	2.15	150.37	150.32
CB-402	DMH-415	153.98	153.7	0.006	0.012	12	48.1	8.63	0.556	0.746	3.61	2.94	4.59	156.58	1.6	157.2	2.5	155.97	155.55
DMH-415	DMH-407	153.7	153.24	0.005	0.012	18	99.1	8.542	(N/A)	(N/A)	3.57	7.75	2.02	157.2	2	158.3	3.56	155.51	155.41
DMH-401	DMH-400	149.41	149.18	0.005	0.012	12	23.5	8.63	(N/A)	(N/A)	2.52	2.71	3.21	154	3.59	153.95	3.77	151.13	150.93
DMH-400	DMH-403	149.08	148.1	0.005	0.012	12	217.4	8.63	(N/A)	(N/A)	3.57	2.59	4.55	153.95	3.87	153.5	4.4	150.93	149.06

Appendix E
Construction Phase Erosion and Sedimentation Control Draft SWPPP

Highcrest at Meadow Walk

526-528 Boston Post Road

Sudbury, Massachusetts 01776

CONSTRUCTION **Highcrest at Meadow Walk**

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

PREPARED ON BEHALF OF: **Pulte Home Corporation of New England**
115 Flanders Road, Suite #170
Westboro, MA 01581
Contact Name
(###) ###-####
name@email.com

PREPARED FOR: **Contractor Name**
Contractor Address
Town, State Zip
Contractor Contact
(###) ###-####
email@address.com

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

SWPPP Preparation Date: April 2017
Estimated Project Start Date: Season Year
Estimated Project End Date: Season Year

Intentionally blank

Table of Contents

List of Tables

List of Attachments

1

Introduction

Intentionally blank

This Stormwater Pollution Prevention Plan (SWPPP) manual has been prepared to address the requirements of the U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) for Stormwater Discharges from Construction Activity (2017, USEPA). A copy of the 2017 CGP is included in Attachment A.

The CGP gives **Project Operators** of construction activities that meet the eligibility requirements of Part 1.1 of the 2017 CGP, authorization to discharge:

- stormwater as defined in Part 1.2.1 of the 2017 CGP and
- non-stormwater associated with some construction activities as defined in part 1.2.2 of the 2017 CGP

provided that adequate measures are taken to prevent pollution to receiving waters.

This manual is specific to project sites in **Massachusetts,** where the EPA is the permitting authority for stormwater discharges from construction sites.

How to Use this Manual

This manual does not become a CGP-compliant SWPPP until the Project Operators

- finalize the SWPPP by completing the initial activities indicated on the following pages and
- by maintaining the SWPPP during the construction period in accordance with the 2017 CGP.

Before the project activities begin, the Project Operators must review this manual, fill out relevant information in the spaces provided (or attach additional pages as necessary) and update and/or revise as necessary.

What is a Project Operator?

The 2017 CGP provides permit coverage for Project Operators (Operator) to discharge stormwater from construction sites. 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).

Operators are responsible for maintaining compliance with the terms of the 2017 CGP.

All operators who wish to obtain coverage to discharge stormwater under the 2017 CGP must submit and certify their own NOI to the Environmental Protection Agency (EPA).

The Site Owner, the Project Owner, and the site General Contractor, may all be considered Operators. In some cases, project subcontractors may also be considered Operators.

Eligibility for Permit Coverage

To be covered under the 2017 CGP, a party must meet the eligibility conditions and follow the requirements for obtaining permit coverage. To be eligible for coverage:

- You must be an Operator of a construction site for which discharges will be covered under this permit.
- The project's construction activities:
  - will disturb one (1) or more acres of land, or less than one (1) acre of land if the project is part of a larger common plan that will ultimately disturb one (1) or more acres of land.
  - have been designated by EPA as needing permit coverage under 40 CFR 122.26(a)(1)(v) or 40 CFR 122.26(b)(15)(ii).
- Discharges from your site are not already covered by a different NPDES permit for the same discharge or in the process of having coverage under a different NPDES permit for the same discharge denied, terminated, or revoked.
- The project meets the requirements relevant to the Endangerd Species Act (ESA) (Section 9.1).
- The project meets the requirements relevant to preservation of Historic Properties (Section 9.2).
- The project meets the requirements relevant to water quality impacts to designated waters (Section 3.2. Refer to Part 1.1.8 and 1.1.9 of the 2017 CGP).

Project Operators must file and certify an NOI at least fourteen (14) days prior to the start of project activities.
https://www.epa.gov/compliance/npdes-ereporting

Compliance Requirements

Compliance with the 2017 CGP is achieved by:

- Developing a draft SWPPP (this document);
- Identifying project operators and responsible parties and obtaining authorization to perform permit compliance activities. (Section 2.1 and Attachment A);
- Submitting and certifying a Notice of Intent (NOI) to the Environmental Protection Agency (EPA) Construction General Permit Program;
- Installing 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,
    - A contact name and phone number for obtaining additional project information,
    - The location where an EPA inspector or a member of the public may access a copy of the current SWPPP,
    - The statement: "If you observe indicators of stormwater pollutants in the discharge or in the receiving waterbodies, contact the EPA through the following website: https://www.epa.gov/enforcement/report-environmental-violations."
- Updating this SWPPP as necessary and maintaining compliance with the CGP and any and all Orders of Conditions during construction period activities; and
- Maintaining an updated copy of the SWPPP on the project site.

Document Control

A current copy of the following documents:

1. 2017 NPDES CGP,
2. the SWPPP and all attachments and insertions, and
3. EPA-issued authorizations

must be kept **on site** at the Project field office so that they can be made available:

- at the time of an on-site inspection by the EPA
- upon request by EPA; a state; tribal; or local agency that approves stormwater management plans;
- the operator of a storm sewer system receiving discharges from the site;
- or representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).

If an on-site location is unavailable for storing these documents, a notice of the plan's location must be posted near the main entrance of the construction site.

These documents may be made available to the general public by federal, state, or local agencies. These documents must be retained for at least 3 years from the date that the permit coverage expires or is terminated.

The SWPPP is a dynamic document, and must be continually updated by the Operator(s) throughout construction. It is the responsibility of the Operator(s) to update and complete this manual by including the following information and performing ongoing project activity logging as described in the remainder of this document.

Task Completed	Task	See Sections
☐	Designate and Provide Contact Information for the Responsible Parties	Section 1 Attachment B Section 8.8 Attachment N
☐	Provide documentation confirming EPA authorization of the Project	Attachment C
☐	Provide a construction schedule including dates of major earthwork, stabilization and/or erosion control installations.	Table 24 Appendix J
☐	Review the Erosion and Sediment Controls described in this manual and add or update as needed. Document the installation and maintenance of Erosion and Sediment Controls.	Section 7 Attachment E Attachment J Attachment O Attachment S
☐	Identify any chemical treatments that may be applied to the site and describe dosage, application techniques, and training for personnel.	Section 7.12 Attachment P
☐	Identify potential sources of pollution.	Table 48 Section 8.1
☐	Provide documentation of correspondence congruent with the Endangered Species Act	Section 9.1 Attachment F
☐	Provide documentation of correspondence with Massachusetts Historical Commission. Submit the Project Notification Form (PNF) to Massachusetts Historic Commission	Section 9.2 Attachment G
☐	Provide documentation of compliance with DEP regulations 310 CMR 27.00 (Underground Injection Wells)	Section 9.3 Attachment Q

The SWPPP must be kept up to date throughout the construction period 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 Operator(s) for a period of three years.

2

Contact Information and Responsible Parties

Intentionally blank

2.1 Operators(s)

Individuals identified in this section are designated responsible parties for each of the project Operators. Project Operators may include, but not be limited to the site Owner, the project owner, and the general contractor. Amend this Section during the construction period if any ownership changes or any temporary or permanent staff changes occur.

Table 1. Project Role: Owner

Company or Organization:	[TBD]
Name:	[TBD]
Address:	[TBD]
City, State, Zip	[TBD]
Telephone:	[TBD]
Fax/Email:	[TBD]
Title:	[TBD]

Table 2. Project Role: General Contractor

Company or Organization:	[TBD]
Name:	[TBD]
Address:	[TBD]
City, State, Zip	[TBD]
Telephone:	[TBD]
Fax/Email:	[TBD]
Title:	[TBD]

Table 3. Project Role: [Optional 1]

Company or Organization:	[enter]
Name:	[enter]
Address:	[enter]
City, State, Zip	[enter]
Telephone:	[enter]
Fax/Email:	[enter]
Title:	[enter]

Table 4. Project Role: [Optional 2]

Company or Organization:	[enter]
Name:	[enter]
Address:	[enter]
City, State, Zip	[enter]
Telephone:	[enter]
Fax/Email:	[enter]
Title:	[enter]

Insert additional sheets as necessary.

2.2 24-hour Emergency Contact Information

The individuals identified in this Section will be available to respond to emergency conditions on the site 24 hours a day, 7 days a week. Amend this Section during the construction period if any temporary or permanent staff changes occur.

Table 5. 24-hour Emergency Contact (Primary)

Company or Organization:	[TBD]
Name:	[TBD]
Address:	[TBD]
City, State, Zip	[TBD]
Telephone:	[TBD]
Fax/Email:	[TBD]
Title:	[TBD]

Table 6. 24-hour Emergency Contact (Secondary)

Company or Organization:	
Name:	
Address:	
City, State, Zip	
Telephone:	
Fax/Email:	
Title:	

Attach additional sheets as necessary.

2.3 Delegation of Authority

The individual authorized to sign/certify the NOI is granted the authority to sign the

- SWPPP,
- Inspection Reports,
- Corrective Action Reports and
- other permit documents.

Alternatively, the individual may delegate this authority. A duly authorized representative may only sign the documents if:

- This authorization specifies either an individual or a position (e.g., Environmental Compliance Officer) who has the responsibility for the overall operation of the regulated area or who has overall responsibility for environmental matters.
- This SWPPP includes a signed, dated written authorization.

The duly authorized representative cannot be a subcontractor or a third party. A duly authorized third party may conduct inspections and corrective actions and may complete reports, but the NOI signer/certifier or duly authorized representative identified here must sign the reports.

Insert authorization signature pages into Attachment B. Amend this Section and add pages to Attachment B during the construction period if any temporary or permanent staff changes occur.

Table 7. Duly Authorized Representative or Position (Primary)

Company or Organization:	
Name:	
Address:	
City, State, Zip	
Telephone:	
Fax/Email:	
Title:	

Continued on the next page

Table 8. Duly Authorized Representative or Position (Secondary, optional)

Company or Organization:	
Name:	
Address:	
City, State, Zip	
Telephone:	
Fax/Email:	
Title:	

Table 9. Duly Authorized Representative or Position (Tertiary, optional)

Company or Organization:	
Name:	
Address:	
City, State, Zip	
Telephone:	
Fax/Email:	
Title:	

Attach additional sheets as necessary.

2.4 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

All Operators and/or Subcontractors that will use this SWPPP for compliance with the terms of their CGP must provide a certification agreement to do so. The certification agreements are located in Attachment B.

Table 10. Stormwater Team 1

Company or Organization:	**VHB**
Role or Responsibility	1
Name:	Sarah Widing
Address:	101 Walnut St
City, State, Zip	Watertown, Massachusetts, 02471
Telephone:	(508) 513-2720
Fax/Email:	SWiding@vhb.com
Title:	Water Resources Engineer

Continued on the next page

Table 11. Stormwater Team 2

Company or Organization:	**[TBD]**
Role or Responsibility	2, 3, 4, 5, 6, 7, 8
Name:	[TBD]
Address:	[TBD]
City, State, Zip	[TBD]
Telephone:	[TBD]
Fax/Email:	[TBD]
Title:	[TBD]

Table 12. Stormwater Team 3

Company or Organization:	**[TBD]**
Role or Responsibility	2, 3, 4, 5, 6, 7, 8
Name:	[TBD]
Address:	[TBD]
City, State, Zip	[TBD]
Telephone:	[TBD]
Fax/Email:	[TBD]
Title:	[TBD]

Attach additional pages as necessary.

2.5 Personnel Responsible for Inspections

Inspections are to be performed by "qualified personnel" as defined in Part 4.1 of the 2017 CGP. 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 forms are available in Attachment L. Amend this Section during the construction period if any temporary or permanent staff changes occur.

Table 13. Personnel Authorized to Perform Inspections

Name: Title:	
Name: Title:	
Name: Title:	
Name: Title:	
Name: Title:	
Name: Title:	

Attach additional sheets as necessary.

2.6 Personnel Responsible for Completing Corrective Actions

The following personnel are responsible for completing corrective action forms.

Insert authorization signature pages into Appendix K. Amend this Section during the construction period if any temporary or permanent staff changes occur.

Table 14. Personnel Responsible for Completing Corrective Actions (Primary)

Company or Organization:	
Name:	
Address:	
City, State, Zip	
Telephone:	
Fax/Email:	
Title:	

Table 15. Personnel Responsible for Completing Corrective Actions (Secondary, optional)

Company or Organization:	
Name:	
Address:	
City, State, Zip	
Telephone:	
Fax/Email:	
Title:	

Attach additional sheets as necessary.

3

Site Evaluation Assessment and Planning

Intentionally blank

3.1 Project/Site Information

Table 16. Project Name and Address

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

Table 17. Project Coordinates

Type	Latitude	Longitude
Decimal degrees	42.3670 N	-71.4314 W

Table 18. Source for coordinate information

	Source
☐	USGS topographic map
☐	EPA Website
☐	GPS
☒	Other: (Maps.google.com)

Table 19. Horizontal Reference Datum

	Reference
☐	NAD 27
☒	NAD 83 or WGS 84
☐	Unknown

Other: _____

3.1.1.1 Additional Information

Yes	No	
☐	☒	Is the project/site located on **Indian country lands,** or located on a property of religious or cultural significance to an Indian tribe? 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: _____
		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: _____ _____ _____
☐	☒	Are you applying for permit coverage as a **"federal operator"** as defined in Appendix A of the 2017 CGP?

3.2 Discharge Information

Yes	No	
☐	☒	Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?
☒	☐	Are there any surface waters that are located within 50 feet of your construction disturbances?

3.2.1 Receiving Waters

Name(s) of the first surface water(s) that receive 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)

Table 20. Receiving Waters (as labeled on Site Plans)

Number	Name
1	Wetland 1
2	Wetland 2
3	Wetland 3 (Stormwater Basin, indirect discharge to Tributary to Hop Brook)
4	Wetland 9
5	Wetland 10

Add additional sheets if necessary

3.2.2 Impaired Waters

Use the interactive map of the 2014 integrated list of waters to identify impaired waters in the vicinity of the project area. The interactive map is available online at:

http://www.mass.gov/eea/agencies/massdep/water/watersheds/integrated-list-of-waters.html

Table 21. Impaired Receiving Waters

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

Add additional sheets if necessary

3.2.3 Tier 2, 2.5, or 3 Waters

In **Massachusetts**, Tier 2 waters are listed as "High Quality Waters" and all wetlands that are not designated as an Outstanding Resource Water.

In **Massachusetts**, Tier 2.5 waters are listed as Outstanding Resource Water, Public Water Supply, and/or Tributary to Public Water Supply, and all wetlands bordering Outstanding Resource Waters and all vernal pools.

In **Massachusetts**, Tier 3 waters are defined as Special Resource Waters. (As of February 2017, no waters are listed as Special Resource Waters).

Tier 2, Tier 2.5, and Tier 3 waters are identified and listed in the Massachusetts Water Quality Standards 314 CMR 4.00. See 314 CMR 4.06(1)(d)m for definitions. See the Tables and Figures associated with 314 CMR 4.06 available online at:

http://www.mass.gov/eea/agencies/massdep/water/regulations/314-cmr-4-00mass-surface-water-quality-standards.html

To determine applicability of specific antidegradation designations refer to:

http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/antideg.pdf

Table 22. Special Receiving Waters (Tier 2, Tier 2.5 or Tier 3)

	Is this surface water designated as a Tier 2, Tier 2.5 or Tier 3 water?		If you answered yes, specify which Tier (2, 2.5, or 3) the surface water is designated as.
	Yes	**No**	
1	☐	☒	
2	☐	☒	
3	☐	☒	
4	☐	☒	
5	☐	☒	

Add additional sheets if necessary

3.3 Project Description

3.3.1 General Description

The Applicant, Pulte Home Corporation of New England (BPR), is proposing the construction of an age qualified condominium complex at 526/528 Boston Post Road in Sudbury, MA (Attachment E – Site Location Map). This phase is the final phase of a multi-phase site redevelopment plan. The activities proposed in this phase are limited to previously-developed areas and do not involve any direct wetland impacts. Work planned within portions of the Buffer Zone or otherwise subject to the Bylaw includes: (i) the construction of the 7-building condominium complex, site driveway, access road and parking facilities and (ii) improvements to the onsite stormwater management features on the eastern side of the property including new deep sump catch basins and bio-retention features.

Existing Conditions

The activities proposed are limited to areas regulated as 100-foot Buffer Zone under the Wetlands Protection Act and Adjacent Upland Resource Areas to Bordering Vegetated Wetland (BVW) as regulated under the Sudbury Bylaw. As previously noted, construction activities will be confined to previously disturbed areas and will not occur within Areas Subject to Protection under the WPA. Furthermore, wetland resource areas will be protected from impacts during demolition and construction through an erosion and sedimentation control program. This program includes minimizing areas of disturbance through phasing and sequencing, limiting erosion through stabilization, and preventing sedimentation by installing structural controls. Runoff generated from the Project will be collected and treated in accordance with design guidelines developed by Department of Environmental Protection (DEP) and standards contained in the WPA Regulations and the Massachusetts Contingency Plan (MCP). Erosion and sediment controls are described below and detailed on the site plans.

The approximately 8.09-acre Project Site (the Site) for this phase of redevelopment is located in the northeast portion of the 50-acre site (the Overall Site) located at 526/528 Boston Post Road in Sudbury, Massachusetts. The Overall Site refers to the entire property to be redeveloped in multiple phases by the Applicant.

The Project Site includes impervious parking surfaces, existing stormwater control features, and landscaped areas. Approximately 28 acres of the 50-acre Overall Site are impervious. The Overall Site redevelopment will result in a reduction of impervious area as compared to existing conditions.

According to the most recently available data provided by the Massachusetts Natural Heritage and Endangered Species Program (NHESP), the Site is not located within any Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. There are no certified or potential vernal pools located on or adjacent to the Site. No portion of the Site is located within an Area of Critical Environmental Concern (ACEC). According to DEP, the Site is not located in an area designated as an Outstanding Resource Water. The most recently issued Flood Insurance Rate Map (FIRM) for the area indicates that the Project Site is not located within a 100- or 500-

year floodplain (Attachment E – FEMA Flood Insurance Rate Map). The Site is located within a Zone II Interim Wellhead Protection Area and within the water resource protection overlay district (Attachment E – Critical Resources Map).

The Natural Resources Conservation Service soil survey has mapped the Site and surrounding area and classified soils as Udorthents-Urban land complex with Deerfield loamy sand, 3 to 8 percent slopes associated with adjacent resource areas (Attachment E – Soil Map).

The Overall Site has a generally flat topography sloping down towards the west and is considered a Land Use with Higher Potential Pollutant Loads (LUHPPL) in the existing condition. The Overall Site contains an on-site sewage treatment plant and associated leaching beds, a large central stormwater management retention pond and wetland resource areas. Drainage from the site is directed to a series of vegetated swales, wetlands and a central stormwater retention pond, either by underground pipes or surface runoff. Stormwater flows through these features to the east and is carried in a pipe running south across Boston Post Road and ultimately discharges to a large wetland east of the Sudbury Plaza. This wetland flows to an unnamed stream which ultimately outlets to Hop Brook. Hop Brook is listed as impaired for phosphorous, although no Total Maximum Daily Load (TMDL) has been established for this waterway.

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 existing system is compliant as an existing condition, the water quality treatment is not consistent with current state or local stormwater management standards.

Construction Activities

3.3.2 Site Maps

Attachment D contains the Project Plans for this project.

Attachment E contains Site Maps including the:

- Site Location Map
- FEMA Flood Insurance Rate Map
- Soil Map
- Aerial Map
- Critical Resources Map

Attachment F contains an Endangered Species map for this project.

3.3.3 Size/Footprint of the Project

The project activities will occupy the footprint identified below.

Table 23. Footprint of the Project Area

Area Description	Area (acres)
Total property size	50.0
Total area of construction disturbance	8.1
Maximum area to be disturbed at any one time	8.1

3.3.4 Construction Activities Sequencing and Logging

Construction activities, phasing, and sequencing are generally performed at the discretion of the General Contractor and may be determined or refined during the construction period. Project Operators are responsible for maintaining a construction log that address the following project activities.

3.3.4.1 Projected Construction Sequence

The projected construction sequence presented in this section is the best estimate of the construction sequence at the time that this SWPPP template was prepared. If the general sequence presented here changes during the course of the project, amend the SWPPP to include the revised project construction sequence.

Table 24. Projected Construction Sequence (Phase 1)

Phase 1 – Area of Disturbance 8.1 acres Action	**Projected Date**
Site-mobilization activities commence	
Install construction period stormwater controls	
Earth-disturbance activities commence	
Earth-disturbance activities cease	
Site stabilization measures commence	
Site stabilization measures cease	
Removal of construction period stormwater controls	
Removal of construction equipment and vehicles	
Cessation of pollutant-generating activities	
Construction activities cease	

Refer to the Construction Activities Log for actual construction sequence performance.

3.3.4.2 Construction Activity Logging Requirements

For each phase of construction, document the dates for the following activities:

› 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.

Construction Activity logs are maintained in Attachment J.

3.3.5 Construction Support Activities

Construction support activities are generally performed at the discretion of the General Contractor and may be determined or refined during the construction period. Support activities that are not addressed in the Project Description (Section 3.3) must be identified here:

3.3.6 Allowable Non-Stormwater Discharges

Congruent with Section 1.2.2 of the 2017 CGP, the following non-stormwater discharges associated with construction activities are authorized under this permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on the site and the discharges also meet the requirements of Part 2 of the 2017 CGP.

Table 25. Allowable non-stormwater discharges likely occur at the Project Site

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

4

Inspections, Corrective Actions, and Amendments

Intentionally blank

4.1 Inspection Schedule

Section 4.2 and Section 4.3 of the 2017 CGP specify minimum inspection frequencies. Section 4.2 specifies the minimum inspection frequency for a typical site. Section 4.3 specifies the minimum inspection frequency for locations on the site that discharge to sensitive waters. Sensitive waters are defined as sediment or nutrient-impaired waters or waters that are identified by the State, tribe or EPA as Tier 2, Tier 2.5, or Tier 3.

Table 26. Project Inspection Schedule

Does the project area discharge to sensitive waters?	Inspection Frequency
☐ **Yes**	Once every 7 calendar days AND Within 24 hours of an event 0.25 inches or greater
☐ **No**	**Choose 1 option below**
☐	Once every 7 calendar days
☒	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 Station in Bedford, Massachusetts

For any day of rainfall during normal business hours that measures 0.25 inches or greater, the date and rainfall amount must be recorded in the Construction Activities Log (Section 3.3.4).

The Site Inspection Log and Inspection Forms are maintained in Attachment L.

Record daily rainfall that exceeds 0.25 inches in the Construction Activities Log (Section 3.3.4).

4.1.1 Reductions in Inspection Frequency

Inspection frequency may be reduced to once per month if:

- The stabilization of the contributing area was completed more than one month prior and the stabilization activities are documented in the Construction Activities and the Grading and Stabilization Logs.
- The project is experiencing frozen soil conditions.

Exceptions may also be made for drought-stricken areas, refer to Part 4.4.2 for additional information.

4.1.1.1 Suspension of Construction Activities due to Frozen Conditions

If the project will suspend construction activities due to frozen conditions, the project may temporarily suspend inspections on the site until thawing conditions 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 4.2 or 4.3, if applicable;
- Land disturbances have been suspended; and
- All disturbed areas of the site have been temporarily or permanently stabilized in accordance with Part 2.2.14.a of the CGP.

4.1.1.2 Continuation of Construction Activities Despite Frozen Conditions

If the project will continue construction activities despite frozen conditions, the project may temporarily reduce inspections to once per month until thawing conditions 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 4.2 or 4.3, if applicable;
- Land disturbances have been suspended; and

All disturbed areas of the site have been temporarily or permanently stabilized in accordance with Part 2.2.14.a of the CGP.

Record changes in the inspection frequency in the Construction Activities Log (Section 3.3.4).

4.2 Corrective Action Directives

Project Operators must take corrective action to address any of the following conditions if they appear at the project site:

- A stormwater control needs repair or replacement
- A stormwater control necessary to comply with the permit was not installed, or was installed incorrectly
- A discharge from the project site is causing an exceedance of water quality standards to receiving waters
- A prohibited discharge has occurred (refer to Part 1.3 of the 2017 CGP)

4.2.1 Corrective Action Timelines

For any required corrective action (refer to part 5.1 of the 2017 CGP), project operators must:

- **Immediately** take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events.
- When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the **next business day.**
- When the problem requires a new or replacement control, or significant repair, install the new or modified control by **no later than 7 calendar days** from the time of discovery.
- If it is not possible to complete the action within 7 days, record the extenuating circumstances in detail on a Corrective Action Form (Attachment M).

4.2.2 Corrective Action Reports

For each corrective action taken, complete a corrective action report in accordance with the following (refer to Part 5.4 of the 2017 CGP):

- Within 24 hours of identifying the condition requiring corrective action, document the condition and the date/time it was identified.
- Within 24 hours of completing the corrective action, document the action taken and note whether any modifications to the SWPPP are required.

The Corrective Action Log and Corrective Action Report Forms are maintained in Attachment M.

4.3 Amendments

This SWPPP must be amended and the amendments must be recorded in the amendment log if any of the following conditions apply:

- Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.2.3.f change during the course of construction;
- To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;
- If inspections or investigations by EPA or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;
- Where EPA determines it is necessary to impose additional requirements on your discharge, the following must be included in your SWPPP:
  - A copy of any correspondence describing such requirements; and
  - A description of the controls that will be used to meet such requirements.
- To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the stormwater controls implemented at the site; and
- If applicable, if a change in chemical treatment systems or chemically-enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

The Amendment Log is maintained in Attachment I.

5

Staff Training

5.1 Training

Each Operator or group of Operators must assemble a Stormwater Team to carry out compliance activities associated with the requirements of the 2017 CGP. Prior to the commencement of construction activities, the Operators must ensure that the personnel on the stormwater team understand the requirements of this permit and their specific responsibilities with respect to those requirements.

All of the personnel responsible for the following activities must be trained to understand the relevant requirements under the terms of the 2017 CGP including:

- The design, installation, maintenance, and/or repair of stormwater controls (and pollution prevention controls)
- The application and storage of treatment chemicals (if applicable)
- Conducting and documenting inspections (Part 4 of the 2017 CGP)
- Performing and documenting corrective actions (Part 5 of the 2017 CGP)

Minimum training measures for the stormwater team must include:

- Permit deadlines associated with the installation, maintenance, and removal of stormwater controls and stabilization
- The location of all stormwater controls on the site required by this permit and how they must be maintained
- The proper procedures to follow with respect to the permit's pollution prevention requirements
- When and how to conduct inspections, record findings, and take corrective actions.

All members of the stormwater team must have easy access to an electronic or paper copy of the applicable portions of this permit, the most updated copy of the SWPPP, and other relevant documents associated with the SWPPP including logs and completed forms.

The Training Log and Attendance Records are maintained in Attachment H.

6

Notifications

6.1 Notice of Intent (NOI)

Following the completion of the draft SWPPP, project operators may submit their NOIs to the EPA.

Permit coverage does not begin until 14 calendar days from the date that the NOI is certified by a person authorized in accordance with Appendix I of the 2017 CGP.

Within 14 calendar days, the EPA may notify the Operator(s) that the authorization has been delayed or denied.

Project NOIs and authorizations are maintained in Attachment C.

6.2 Notice of Termination (NOT)

Operators are required to continue to comply with all conditions and requirements in the permit until coverage is terminated under this permit.

To terminate permit coverage, all Operators must submit a complete and accurate NOT to the EPA. The NOT certifies that an Operator has met the requirements for termination as listed in Part 8 of the CGP. Operators must use NPDES eReporting Tool (NeT) to electronically prepare and submit an NOT for the 2017 CGP.

https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting

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.

Project NOTs and authorizations are maintained in Attachment C.

7

Erosion and Sediment Controls

Stormwater controls must be designed, installed, and maintained in compliance with Part 2.1 of the 2017 CGP. If any stormwater controls must be designed (e.g., sediment basins or conveyance channels), the design documentation must be included in Attachment S.

Erosion and Sediment Controls must be implemented to address the requirements of Part 2.2 of the 2017 CGP.

This section of the SWPPP provides general guidance for compliance with the 2017 CGP. Ultimately the project Operators are responsible for making sure sufficient controls are implemented to effecitvlely meet the conditions of the 2017 CGP.

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 describe in this SWPPP 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 2.2.14 of the Permit.

The Contractor will install of stormwater controls prior to the commencement of each phase of earth-disturbing activities per Part 2.1.3 of the 2017 CGP. All manufactured control measures will be installed and maintained in accordance with the manufacturer's specifications. The site Contractor will inspect all erosion and sediment controls in accordance with the applicable requirements in Part 4, document findings in accordance with Part 4, and perform corrective actions in accordance with Part 5 of the 2017 CGP.

The following sections describe the erosion and sedimentation controls that may be used on this site. **The Contractor will implement, modify, and amend the stormwater controls identified in this section as necessary.**

[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.*

7.1 Natural Buffers or Equivalent Sediment Controls

The requirements for natural buffers are described in Part 2.2.1 and Appendix G of the 2017 CGP. This section of the SWPPP describes project compliance activities to maintain natural buffers in compliance with the 2017 CGP.

Documentation of compliance with buffer requirements is located in Attachment O.

7.1.1.1 Buffer Compliance Alternatives

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

☒ YES ☐ NO

If there are surface waters within 50 feet of the project's earth disturbances, continue below:

☐ The project will provide and maintain a 50-foot undisturbed natural buffer.

› Note (1): The project must show the 50-foot boundary line of the natural buffer on the Site Map.

› Note (2): The project must show on the Site Map how all discharges from the 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.

☒ The project 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): The project must show the boundary line of the natural buffer on the site map.

› Note (2): The project must show on the site map how all discharges from the 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 the project will implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

☐ The project qualifies for one of the exceptions described in the 2017 CGP Appendix G, Part G.2. (If this box is checked, provide information on the applicable buffer exception that applies in Section 7.1.1.2.)

7.1.1.2 Buffer Exceptions

Indicate whether any of the following exceptions to the buffer requirements apply to the project site. Refer to Part 2.2.1 and Appendix G.2 of the 2017 CGP for more information.

☐ There is no discharge of stormwater to the surface water that is located 50 feet from my construction disturbances.

› Note: If this exception applies, no further documentation is required under Section 7.1 of this SWPPP Manual.

☐ 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 to achieve compliance with Part 2.2.1.

› 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, the project must comply with Part 2.2.1 and Appendix G.2.2 of the 2017 CGP.

☐ For a "linear project" (defined in Appendix A), site constraints (e.g., limited right-of-way) make it infeasible to implement one of the Part 2.2.1.a compliance alternatives provided that additional measures described in Appendix G.2.2 of the 2017 CGP are met.

☐ The project qualifies as "small residential lot" construction and meets the compliance alternatives described in Appendix G.3 of the 2017 CGP.

☐ Buffer disturbances are authorized under a CWA Section 404 permit.

› Note (1): If this exception applies, no further documentation is required under Section 7.1 of this SWPPP Manual.

› 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 under Section 7.1 of this SWPPP Manual.

7.2 Perimeter Controls

Refer to Part 2.2.3 of the 2017 CGP for information on the requirements for perimeter controls. Some exceptions apply to linear projects.

7.2.1 General Perimeter Controls

Installation of perimeter controls must be completed prior to the commencement of earth-disturbance activities. This section of the SWPPP provides examples of perimeter controls that the General Contractor may use to effectively control stormwater on constructions sites. The General Contractor may select and install perimeter controls at their discretion. The locations of perimeter controls should be clearly identified on the Site Map.

The General Contractor will record activities associated with perimeter controls in the following project logs:

Table 27. Recording Requirements: Perimeter Controls

Action	Recorded in
Installation	Construction Activities Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log

7.2.2 Specific Perimeter Controls

If the General Contractor elects to use controls that are not specified in this SWPPP manual, the contractor will prepare documentation describing the control installation, inspection, maintenance, and removal procedures and record the actions in the appropriate project logs.

7.2.2.1 Straw Wattles

Straw wattles consist of straw loosely encased in natural or synthetic webbing. They are appropriate for use as perimeter controls.

The General Contractor will prepare and install straw wattles in accordance with manufacturer recommendations. Straw wattles may be entrenched to prevent

Inspection and Maintenance Requirements

Inspection and maintenance activities for straw wattles will include:

Table 28. Maintenance Requirements: Straw Wattles

Inspection Item	Condition	Maintenance Activity
Condition	Rotted	Replace
Continuity	Break in continuous perimeter	Re-install existing -or- Install new to close any gaps
Sediment Build-up	Accumulated sediment at one-half the above ground height of the control	Remove the sediment and dispose properly

7.2.2.2 Straw bale and silt-fence

Straw bale and silt-fence erosion control devices are commonly used to intercept, filter, and reduce the velocity of stormwater run-off. They are appropriate for use as perimeter controls.

The General Contractor will place straw bale and silt-fences at the downgradient edge of disturbed areas, especially those adjacent to wetlands, waterways, roadways or at the base of slopes. They are held in place by wooden stakes.

Inspection and Maintenance Requirements

Inspection and maintenance activities for straw bale and silt fences will include:

Table 29. Maintenance Requirements: Straw Bale and Silt Fence

Inspection Item	Condition	Maintenance Activity
Condition	Rotted	Replace
Continuity	Break in continuous perimeter	Re-install existing -or- Install new to close any gaps
Sediment Build-up	Accumulated sediment at one-half the above ground height of the control	Remove the sediment and dispose properly
Placement	Underside of straw bales not in contact with ground surface	Reset, repair and/or re-install

7.3 Sediment Track-out

Refer to Part 2.2.4 of the 2017 CGP for information on the requirements for sediment track-out controls. Some exceptions apply to linear projects.

7.3.1 General Track-out Controls

Sediment track-out controls may be structural or non-structural.

Non-structural controls including:

- Restricting vehicle use to properly designated exit points.
- Sweeping, shoveling, or vacuuming to manually remove sediment from public rights-of-way (hosing or sweeping sediment directly into a stormwater conveyance, storm drain inlet, or surface water is prohibited).

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.

The General Contractor may select and install structural sediment track-out controls at their discretion. The General Contractor shall specify locations of structural controls on the Site Map.

The General Contractor will record activities associated with sediment track-out controls in the following project logs:

Table 30. Recording Requirements: Sediment Track-out Controls

Action	Recorded in
Installation	Construction Activities Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log

7.3.2 Specific Track-out Controls

If the General Contractor elects to use controls that are not specified in this SWPPP manual, the contractor will prepare documentation describing the control installation, inspection, maintenance, and removal procedures and record the actions in the appropriate project logs.

7.3.2.1 Stabilized Construction Entrance/Exit

The General Contractor may grade a cross-slope at the construction entrance to direct runoff to a protected receiving area. If track-out is observed after construction begins, the General Contractor will take additional measures to address sediment track out.

Additional measures could include a wash pad to wash off vehicle wheels before they leave the project site. Wash water discharges will be collected and treated in a manner consistent with the requirements of the 2017 CGP.

Following completion of earth-disturbing activities, the General Contractor will remove the stabilized construction entrance/exit and installing final finishing materials.

Inspection and Maintenance Requirements

Inspection and maintenance activities for sediment track-out controls will include:

Table 31. Maintenance Requirements: Construction Entrance

Inspection Item	Condition	Maintenance Activity
Construction access routes adjacent to the disturbance area	Sediment present on vehicle travel surfaces	Sweep, shovel, or vacuum sediment from the surface, dispose of properly
Construction Entrance Condition	Muddy or sediment-laden	Add a top-dressing of stone or gravel

7.4 Stockpiled Sediment or Soil

Refer to Part 2.2.5 of the 2017 CGP for information on the requirements for stockpile controls.

The Contractor will provide cover or appropriate temporary stabilization to stockpiles that will remain inactive/unused for more than 14 days. Temporary stabilization may be performed using vegetative or non-vegetative stabilization practices. Refer to Section 7.13 for more information on stabilization practices.

7.4.1 General Stockpile Controls

In accordance with Part 2.2.5 of the 2017 CGP, 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 2.2.1 and physically separated from other stormwater conveyances, drain inlets, and areas where stormwater flows are concentrated.
- Protect from contact with stormwater (including run-on) using a temporary perimeter sediment barrier;
- Provide cover or appropriate temporary stabilization to avoid direct contact with precipitation or wind;
- Do not hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance storm drain inlet, or water of the U.S.

Record activities associated with sediment stockpile controls in the following project logs:

Table 32. Recording Requirements: Stockpile Controls

Action	Recorded in
Installation	Construction Activities Log Grading and Stabilization Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log Grading and Stabilization Log

7.4.2 Specific Stockpile Controls

If the General Contractor elects to use controls that are not specified in this SWPPP manual, the contractor will prepare documentation describing the control installation, inspection, maintenance, and removal procedures and record the actions in the appropriate project logs.

7.4.2.1 Vegetative Stabilization

Vegetative stabilization practices may include seeding exposed surfaces with a seed mix containing a blend of rapid germinating grasses that are indigenous to the appropriate region of Massachusetts. Once seeded, areas will be covered with a layer of straw mulch according to the recommendations provided by the manufacturer. Refer to Section 7.13.2.1 for more information.

7.4.2.2 Non-Vegetative Stabilization

Non-vegetative stabilization practices may include applying straw mulch or an erosion control blanket. Refer to Section 7.13.2.2 for more information.

7.5 Minimize Dust

Refer to Part 2.2.6 of the 2017 CGP for information on the requirements for minimizing dust.

The General Contractor will record activities associated with dust controls in the following project logs:

Table 33. Recording Requirements: Dust Controls

Action	Recorded in
Installation	Construction Activities Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log

Soil wetting will be performed, as necessary, to minimize the movement of dust and fine-grained sediment. The General Contractor shall apply water as a fine spray to wet the upper 0.5 inches of soil.

7.6 Minimize the Disturbance of Steep Slopes

Refer to Part 2.2.7 of the 2017 CGP for information on the requirements for controls on steep slopes.

Where a state, tribe, local government, or industry technical manual (e.g., stormwater BMP manual) has defined what is to be considered a “steep slope”, the 2017 CGP automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as those that are 15 percent or greater in grade.

The General Contractor will record activities associated with steep-slope controls in the following project logs:

Table 34. Recording Requirements: Steep Slope Stabilization Controls

Action	Recorded in
Installation	Construction Activities Log Grading and Stabilization Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log Grading and Stabilization Log

7.6.1 General Steep Slope Controls

During the design phase of the project, the design engineers minimized construction impacts to steep slopes to the maximum extent practicable.

Where disturbances to steep slopes are still required, the General Contractor will minimize disturbances through the implementation of erosion and sediment control practices designed for use on steep slopes.

Stabilization practices on steep slopes will occur within 14 days after grading or construction activities have temporarily or permanently ceased.

7.6.2 Specific Steep Slope Controls

If the General Contractor elects to use controls that are not specified in this SWPPP manual, the contractor will prepare documentation describing the control installation, inspection, maintenance, and removal procedures and record the actions in the appropriate project logs.

7.6.2.1 Vegetative controls

Vegetative slope stabilization practices will be used to minimize erosion on slopes of 3:1 or flatter. Temporary, rapid stabilization will be completed using annual grasses, such as annual rye. Permanent stabilization will be completed with the planting of perennial grasses or legumes.

A suitable topsoil, good seedbed preparation, soil amendments, and water will be provided for effective establishment of these vegetative stabilization methods. Vegetation may be applied via hydro seeding or sodding techniques. Mulch may also be applied following permanent seeding activities to protect soil from the impact of falling rain and to increase the capacity of the soil to absorb water.

Refer to Section 7.13.2.1 for inspection and maintenance activities for vegetative stabilization controls.

7.6.2.2 Erosion Control Blanket

Erosion control blankets may be combined with vegetative controls to minimize erosion on slopes 3:1 or steeper. Erosion control blankets shall consist of a non-woven bio-degradable material and shall 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.

Refer to Section 7.13.2.2 for inspection and maintenance activities for non-vegetative stabilization controls.

7.7 Topsoil

Refer to Part 2.2.8 of the 2017 CGP for information on the requirements for the preservation of topsoil.

The General Contractor will record activities associated with topsoil controls in the following project logs:

Table 35. Recording Requirements: Topsoil Controls

Action	Recorded in
Stockpiling	Construction Activities Log Grading and Stabilization Log
Disposal	Construction Activities Log Grading and Stabilization Log

Topsoil will be preserved to the maximum extent practicable. Where it is infeasible to preserve topsoil in place, it will be repurposed throughout the site or stockpiled and disposed of in accordance with local, state and federal regulations, as necessary.

7.8 Soil Compaction

Refer to Part 2.2.9 of the 2017 CGP for information on the requirements for the reduction of soil compaction.

To avoid soil compaction, the General 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 the soil will be inspected to determine if compaction will hinder vegetative growth.

If compaction has occurred, techniques that condition soil to support vegetative growth will be implemented. Soil conditioning techniques shall be specified, as needed by the General Contractor.

7.9 Storm Drain Inlets

Refer to Part 2.2.10 of the 2017 CGP for information on the requirements for the protection of storm drain inlets.

The General Contractor will record activities associated with storm drain inlet protection in the following project logs:

Table 36. Recording Requirements: Stormdrain Inlet Controls

Action	Recorded in
Installation	Construction Activities Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log

7.9.1 General Storm Drain Inlet Controls

Prior to any earth-disturbing activities inlet protection measures will be installed. Storm drain inlet controls are required at all storm drain inlets that carry stormwater flow from the project site to a water of the U.S., even if they are located downgradient from a construction period stormwater BMP.

7.9.2 Specific Storm Drain Inlet Controls

If the General Contractor elects to use controls that are not specified in this SWPPP manual, the contractor will prepare documentation describing the control installation, inspection, maintenance, and removal procedures and record the actions in the appropriate project logs.

7.9.2.1 Siltsack Sediment Traps

The General Contractor may choose to use Siltsack sediment traps at the project site. They may be installed at the inlets of existing and proposed catch basins. At locations where silt sacks are used, the catch basin grates will be placed over the siltsack to secure it into place.

7.9.2.2 Straw Bale and Non-Woven Filter Fabric

The General Contractor may choose to use Straw bale barriers at the project site. They may be installed at the inlets of existing and proposed catch basins. At locations where straw bales are used, a layer of non-woven filter fabric will be placed beneath the grate of each catch basin to secure it into place.

7.9.2.3 Inspection and Maintenance Requirements

Inspection and maintenance activities for storm drain inlet controls includes:

Table 37. Maintenance Requirements: Storm Drain Inlet Controls

Inspection Item	Condition	Maintenance Activity
Sediment accumulation	Sediment buildup at filter layer	Sweep, shovel, or vacuum sediment from the filter surface, dispose of properly
Continuity	Breaks in continuous barrier	Install new or re-install original barrier structure
Clogging	Standing water	Sweep, shovel, or vacuum sediment from the filter surface, dispose of properly. Install new or re-install restored filter layer

7.10 Constructed Stormwater Conveyance Channels

Refer to Part 2.2.11 of the 2017 CGP for information on the requirements for the constructed stormwater conveyance channels.

The General Contractor will record activities associated with constructed stormwater conveyance channels in the following project logs:

Table 38. Recording Requirements: Conveyance Channel Controls

Action	Recorded in
Installation	Construction Activities Log Grading and Stabilization Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log Grading and Stabilization Log

7.10.1 General Conveyance Controls

The General Contractor may select and install constructed stormwater conveyance channels at their discretion. The General Contractor shall specify locations of structural controls on the Site Map.

Constructed Stormwater Conveyance Channels may be used to collect runoff from construction areas and discharge to either sedimentation basins or protected catch basin inlets. The contractor may use erosion controls and velocity dissipation devices within and along the length of any stormwater conveyance channel and at any outlet to slow runoff down and to minimize erosion.

7.10.2 Specific Conveyance Controls

If the General Contractor elects to use controls that are not specified in this SWPPP manual, the contractor will prepare documentation describing the control installation, inspection, maintenance, and removal procedures and record the actions in the appropriate project logs.

7.10.2.1 Diversion Channels

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

Inspection and Maintenance Requirement

Diversion channels will be inspected in accordance with the inspection schedule. If breakout or erosion is observed, the diversion channel shall be reinforced or protected by an erosion control blanket.

Inspection and maintenance activities for conveyance channel controls will include:

Table 39. Maintenance Requirements: Conveyance Channels

Inspection Item	Condition	Maintenance Activity
Surface	Erosion	Reinforce the surface using a vegetative or non-vegetative stabilization measure
Inlet/Outlet	Clogging	Remove Obstruction
Sediment Accumulation	Sediment occupies one half of the storage capacity of the basin	Sweep, shovel, or vacuum sediment from the basin sump and dispose of properly
Embankment/Berm	Cracking	Identify root cause of embankment failure and repair or reconstruct as needed
Embankment/Berm	Erosion	Reinforce the surface using a vegetative or non-vegetative stabilization measure

Inspection Item	Condition	Maintenance Activity
Embankment/Berm	Breakout	Identify root cause of embankment failure and repair or reconstruct as needed

7.11 Sediment Basins

Refer to Part 2.2.12 of the 2017 CGP for information on the requirements for construction period sediment basins.

If the General Contractor elects to use sediment basin controls, the General Contractor will update the Site Map to show their location on the project site.

The General Contractor will record activities associated with sediment basins in the following project logs:

Table 40. Recording Requirements: Sediment Basin Controls

Action	Recorded in
Installation	Construction Activities Log Grading and Stabilization Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log Grading and Stabilization Log

7.11.1 General Sediment Basin Controls

Constructed sediment basins may be used to collect runoff from construction areas to allow for suspended sediments to settle out of stormwater prior to discharge to points downstream. The following design criteria shall apply:

- Sediment basins must be placed outside any water of the U.S. and any natural buffer established under Part 2.2.1 of the 2017 CGP.
- Sediment basins must be designed and constructed to avoid collecting water from wetlands and waterbodies.
- Sediment basins must be designed and constructed to provide storage for either:
  - The volume of runoff generated from a 2-year, 24-hour design storm, or
  - 3,600 cubic feet per acre of contributing area.

› Outlet structures must be designed to withdraw water from the surface of the basin (not the invert), if feasible, see note below.
› Inlets and outlets must be constructed to dissipate velocity and prevent erosion.

Note: If the outlet structure must be designed to withdraw water from a place within the water column other than the surface, the basin must be designed to allow suspended soil particles to settle out of the water column prior to withdrawal.

Inspection and Maintenance Requirements

Inspection and maintenance activities for sediment basins will include:

Table 41. Maintenance Requirements: Sediment Basins

Inspection Item	Condition	Maintenance Activity
Surface	Erosion	Reinforce the surface using a vegetative or non-vegetative stabilization measure
Inlet/Outlet	Clogging	Remove Obstruction
Sediment accumulation	Sediment occupies one half of the storage capacity of the basin	Sweep, shovel, or vacuum sediment from the basin sump and dispose of properly
Embankment/Berm	Cracking	Identify root cause of embankment failure and repair or reconstruct as needed
Embankment/Berm	Erosion	Identify root cause of embankment failure and repair or reconstruct as needed
Embankment/Berm	Breakout	Identify root cause of embankment failure and repair or reconstruct as needed

7.12 Chemical Treatment

Refer to Part 2.2.13 of the 2017 CGP for information on the requirements for chemical treatment.

Record activities associated with chemical treatment in the following project logs:

Table 42. Recording Requirements: Chemical Treatment Controls

Action	Recorded in
Training	Training Log
Installation	Construction Activities Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log

7.12.1 General Chemical Treatment Controls

In general, chemical treatment may only be applied in the following situations:

- Chemicals may only be applied where the treated stormwater is directed to a sediment control (e.g., a sediment basin, perimeter control) prior to discharge.
- Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated.
- If chemicals will be stored on the project site, chemicals must be stored in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures.
- Use of chemicals must comply with applicable state and local requirements affecting the use of the selected treatment chemicals.
- Use of the chemicals must be in accordance with good engineering practices and specifications of the chemical provider/supplier.
  - NOTE: Departures from provider/supplier specifications must be documented in this SWPPP.
- All personnel who handle and/or use treatment chemicals must be undergo appropriate, product-specific training
- There are additional restrictions for the use of cationic chemicals. Prior authorization is required (Part 1.1.9 of the 2017 CG) and authorization is conditioned on compliance with additional measures to ensure that the use of the chemicals will not cause and exceedance of the water quality standards.

7.12.2 Specific Chemical Treatment Controls

The General Contractor will list all treatment chemicals in the table below. If any of the chemicals are cationic, the General Contractor will indicate whether the authorization has been obtained from the Regional Office (EPA). Include correspondence and indicate whether a record of the authorization is included in this SWPPP in Attachment P.

Table 43. List of Treatment Chemicals and Dosage/Use to be used on Site

Chemical	Dosage and Application Details	Cationic Authorization in Attachment P
		☐
		☐
		☐
		☐
		☐
		☐
		☐
		☐
		☐
		☐

Table 44. Departures from Provider/Supplier Specifications

Chemical	Dosage and Application Notes

7.13 Site Stabilization

Refer to Part 2.2.14 of the 2017 CGP for information on the requirements for site stabilization.

The General Contractor will record activities associated with site stabilization in the following project logs:

Table 45. Recording Requirements: Site Stabilization Controls

Action	Recorded in
Installation	Construction Activities Log Grading and Stabilization Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log Grading and Stabilization Log

7.13.1 General Site Stabilization Controls

The contractor will implement and maintain stabilization measures that minimize erosion from exposed portions of the site in accordance with Parts 2.2.14a and 2.2.14b of the 2017 CGP.

- **Timeline:** Initiate stabilization measures **immediately** in any areas of exposed soil where construction activities have ceased and will not resume for 14 or more calendar days. The EPA may propose an accelerated schedule if site conditions warrant additional protection measures. Some exceptions for unforeseen circumstances apply, refer to Parts 2.2.14(a)(iii) of the 2017 CGP. Document any departures from the standard timeline in the construction activities log.
- **Timeline:** for discharges to sediment- or nutrient-impaired waters or to a water that is identified by Massachusetts or the EPA as a **Tier 2, Tier 2.5, or Tier 3** water, complete stabilization as soon as practicable but no later than 7 calendar days after stabilization has been initiated.

Site stabilization practices may be temporary or permanent, vegetative or non-vegetative.

7.13.2 Specific Site Stabilization Controls

This section of the SWPPP describes site stabilization practices that the contractor may use during the course of the work.

If the General Contractor elects to use controls that are not specified in this SWPPP manual, the contractor will prepare documentation describing the control installation, inspection, maintenance, and removal procedures and record the actions in the appropriate project logs.

7.13.2.1 Vegetative Stabilization

Temporary, rapid vegetative stabilization will be completed using annual grasses, such as annual rye.

Permanent stabilization will be completed with the planting of perennial grasses or legumes. Permanent vegetative stabilization will provide uniform perennial cover with a density of 70 percent or more of the natural background cover.

The Contractor will provide a suitable topsoil, good seedbed preparation, soil amendments, and water for effective establishment of these vegetative stabilization methods. Vegetation may be applied via hydro seeding or sodding techniques.

Mulch may also be applied following permanent seeding activities to protect soil from the impact of falling rain and to increase the capacity of the soil to absorb water.

7.13.2.2 Non-Vegetative Stabilization

Non-vegetative stabilization practices may consist of the application of mulch or erosion control blankets.

Mulch Application

If application of mulch is necessary, mulch will be applied 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.

Erosion Control Blanket

Erosion control blankets may consist of bio-degradable or non-biodegradable materials. Biodegradable materials are preferred.

The Contractor may use mulch material encased in plastic netting, mats of woven jute fiber, and/or turf non-woven reinforcement matting (typically used within erodible channels).

Erosion control blankets may be combined with vegetative controls. For permanent stabilization applications, erosion control blankets shall consist of a non-woven bio-degradable material and shall 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. Edges of the blankets must be stapled with approximately 4 inches overlap where 2 or more strip widths are required.

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.

Inspection and Maintenance Requirements

Inspection and maintenance activities for site stabilization will include:

Table 46. Maintenance Requirements: Site Stabilization

Inspection Item	Condition	Maintenance Activity
Surface	Erosion	Reinforce the surface using a vegetative or non-vegetative stabilization measure
SWPPP		Maintain the SWPPP throughout the construction period in accordance with the terms of the 2017 CGP.

7.14 Dewatering Practices

Refer to Part 2.4 of the 2017 CGP for information on the requirements for dewatering.

7.14.1 General Dewatering Practices

If project activities require dewatering, the General Contractor will implement dewatering practices to comply with the following requirements. The General Contractor:

- Will treat dewatering discharges with controls to minimize discharges of pollutants
- Will not discharge visible floating solids or foam
- Will use an oil-water separator or suitable filtration device that is designed to remove oil, grease, or other products if dewatering water is found to contain these materials.
- Will discharge water to vegetated, upland areas of the site to promote infiltration.
- Will comply with velocity dissipation requirements of Part 2.2.11

- Will handle backwash water by either hauling it away or returning it to the beginning of the treatment process
- Will replace and clean the filter media used in the dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

The General Contractor may select and install dewatering controls at their discretion. The General Contractor shall specify locations of structural controls on the Site Map.

The General Contractor will record activities associated with dewatering controls in the following project logs:

Table 47. Recording Requirements: Dewatering Controls

Action	Recorded in
Installation	Construction Activities Log
Inspection	Inspection Log
Maintenance	Corrective Action Log
Removal	Construction Activities Log

7.14.2 Specific Dewatering Practices

If the General Contractor elects to use controls that are not specified in this SWPPP manual, the contractor will prepare documentation describing the control installation, inspection, maintenance, and removal procedures and record the actions in the appropriate project logs.

7.14.2.1 Straw Bale Basin

The straw bale basin is an above-ground structure constructed using walls made of straw bales and a liner made of non-woven geotextile filter fabric and crushed stone. If the straw bale basin will be used as a construction period dewatering control device, construction site water will be pumped into the basin and allowed to drain through the fabric onto relatively-flat, stabilized surfaces.

7.14.2.2 Dewatering Filter Bag

The dewatering filter bag consists of a non-woven geotextile filter fabric placed at the outlet of one (maximum diameter) six-inch discharge hose. If the dewatering filter bag will be used as a construction period dewatering control device, any bags will be placed on relatively flat terrain, free of brush and stumps. If rough ground conditions make punctures likely, a geotextile fabric will be placed beneath the filter bag. Unattended filter bags will be encircled with a straw bale and silt fence barrier.

Inspection and Maintenance Requirements

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. Filter media shall be cleaned and replaced in all dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

8

Pollution Prevention

8.1 Potential Sources of Pollution

The following list identifies pollutant generating activities that are likely to occur on the project site in accordance with Part 7.2.3.g of the 2017 CGP.

Table 48. Pollutant Generating Activities and Pollutants Located on Site

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.

8.2 Fueling and Maintenance of Equipment or Vehicles

When fueling or maintaining equipment or vehicles, the contractor will adhere to the following requirements specified in Part 2.3.1 of the 2017 CGP:

- Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities.
- 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. **Do not clean surfaces by hosing the area down.**

8.3 Washing of Equipment and Vehicles

When washing equipment and/or vehicles, the contractor will adhere to the following requirements specified in part 2.3.2 of the 2017 CGP.

- provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of washing.
- Ensure that there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water.
- 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.

Effective controls may 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.

Refer to Part 2.3.4 of the 2017 CGP for additional requirements for handling wash water associated with concrete, paint, or stucco.

8.4 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

When storing, handling, and disposing of construction products, materials, and wastes, the contractor will adhere to the following good-housekeeping practices specified in part 2.3.3 of the 2017 CGP.

- 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.

8.4.1 Building Products

In accordance with CGP Part 2.3.3.b, 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.

8.4.2 Pesticides, Herbicides, Insecticides

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

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

In accordance with CGP Part 2.3.3.c products stored on site will be contained in water-tight containers with either

- a cover to minimize the exposure of the container to precipitation and to stormwater or
- or a similarly effective means detained to minimize the discharge of pollutants from these areas such as secondary containment

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. The source of the spill will be eliminated to prevent continuation of an on-going discharge.

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.

8.4.4 Hazardous or Toxic Waste

In accordance with CGP Part 2.3.3.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.

8.4.5 Construction and Domestic Waste

In accordance with CGP Part 2.3.3.e, the contractor will provide waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain construction and domestic wastes. Waste containers will be covered to prevent precipitation from entering the container and becoming a source of pollution. Alternatively, the waste container will be kept in secondary containment to prevent discharges of contaminated stormwater.

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 and will be disposed of properly.

The General Contractor will identify the areas to be used for storing dumpsters, compactors or other raw or waste materials on the Site Map.

8.4.6 Large Structures Built or Renovated prior to January 1980

In accordance with CGP Part 2.3.3.f, the contractor will implement controls to minimize the exposure of PCB-containing building materials including paint, caulk, and pre-1980s fluorescent light fixtures to precipitation and stormwater and ensure that disposal of such materials is performed in compliance with applicable state, federal and local laws.

8.4.7 Sanitary Waste

Portable toilets will be placed away from waters of the U.S., stormwater inlets and/or conveyances and will be secured in place so that they will tip or be 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 regulations.

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

In compliance with the prohibition in CGP Parts 2.3.4, 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; and
  - Remove and dispose of hardened concrete waste consistent with handling of other construction wastes in Part 2.3.3.
- 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.

8.6 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 vegetated stabilization measures are established.

As included in CGP Part 2.3.5, the Contractor will adhere to the following requirements 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.i 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.

8.7 Pavement Sweeping

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.

8.8 Spill Prevention and Response

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

The General Contractor is responsible for the daily operations and is also responsible for coordinating spill prevention and cleanup coordination. The General Contractor 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 under 40 CFR 110, 40 CFR 117, or 40 CFR 302, will be reported to the following agencies as soon as the General Contractor has knowledge of the release:

Massachusetts Department of Environmental Protection Division of Hazardous Waste	(617) 292-5851 or (978) 661-7679
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;

A comprehensive Spill Prevention Control and Countermeasure (SPCC) plan will be developed and implemented by the General Contractor and other Operators. 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.

8.8.1 Initial Notification

In the event of a spill the notify the 24-hour Emergency Contact (Section 2.2) immediately.

The 24-hour Emergency Contact or their chosen delegate will immediately notify emergency response services and notify the local boards and commissions at the first possible opportunity:

- Fire Department (immediately)
- the Police Department, (immediately)
- the Board of Health (at first opportunity)
- and the Conservation Commission (at first opportunity)

8.8.2 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.

8.8.3 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 pages.

8.8.4 Reporting

A copy of the Spill Report Template is included in Attachment N.

Table 49. EMERGENCY NOTIFICATION PHONE NUMBERS

1A	**Facility Manager**	Name/Company	T(P): T(S): T(T):	(###) ###-###
1B	**Alternate Contact**	Name/Company	T(P): T(S): T(T):	(###) ###-###
2	**Fire and Police**			911
3	**Cleanup Contractor**	Name/Address	T:	(###) ###-###
4	**MassDEP**		T(P):	(800) 340-1133
5A	**National Response Center**		T:	(800) 424-8802
5B	**USEPA**		T(E): T(B):	(800) 424-8802 (800) 424-8802
6	**Sudbury Board of Health**		T(B):	(978) 440-5479
7	**Sudbury Conservation Commission**		T(B):	(978) 440-5471

(P) = Primary, (S) = Secondary, (T) = Tertiary, (E) = Emergency, (B) = Business

Post this list of emergency contact numbers in the main construction/facility office in a location that is readily accessible to all employees.

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.

Table 50. Emergency Response Equipment

Supply	Quantity	Supplier
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	
Lite-Dri® Absorbent	5 pounds	http://www.forestry-suppliers.com
Shovel	1	Item # 33934 — Shovel (or equivalent)
Pry Bar	1	Item # 43210 — Manhole cover pick (or equivalent)
Goggles	1 pair	Item # 23334 — Goggles (or equivalent)
Heavy Gloves	1 pair	Item # 90926 — Gloves (or equivalent)

9

Compliance with Other Regulations

9.1 Endangered Species

Appendix D of the 2017 CGP describes eligibility requirements with regard to the protection of threatened and endangered species and designated critical habitat.

9.1.1 Eligibility Criterion

Under which criterion listed in Appendix D of the 2017 CGP are you eligible for coverage under this permit?

☐ 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 the 2017 CGP.

› **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 2017 CGP are as follows:

9.1.2 Supporting Documentation

Provide documentation for the applicable eligibility criterion you select in Appendix D of the 2017 CGP, 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 2017 CGP). 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 (NHESP Consultation)

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 federally listed 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 you 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.

Criterion D explanation
Federally listed endangered species that may occur in the project area include the Northern Long-eared Bat. Project submittals included a MESA request form specifically requesting information on NLEB habitat in the project area. NHESP responded with a letter indicating that no state listed species are likely to be affected by the project. State listed species include the NLEB. Furthermore, the project has scheduled tree-clearing activities (potential NLEB habitat) to a period outside the critical roosting period.

Supporting documentation related to project compliance with the Endangered Species Act is provided in Attachment F.

9.2 Historic Preservation

Appendix E of the 2017 CGP describes eligibility requirements with regard to the protection of historic properties, including tribal lands.

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 G.

9.2.1 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 this section of the SWPPP template.)

9.2.2 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 ☐ NO

If yes, no further documentation is required for this section of the SWPPP template. If no, proceed to Appendix E, Step 3.

9.2.3 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.

9.2.4 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 this section of the SWPPP 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: *Response from MHC indicating determination that the proposed project will have no adverse effect on significant historic or archaeological properties is included in Attachment G.*

Supporting documentation related to project compliance with the Historic Preservation is provided in Attachment G.

9.3 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. Copies of correspondence with the MassDEP or the EPA Regional Office should be included in the SWPPP

Supporting documentation related to project compliance with the Safe Drinking Water Act is provided in Attachment Q.

Attachment A
2017 Construction General Permit

Intentionally blank

Attachment B
Certifications

Refer to Section 1 of this SWPPP Manual for more information.

Intentionally blank

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: _____

Intentionally blank

Signatories to the SWPPP

The signatories identified on this sheet are considered Operators of the project described in this SWPPP and will use, update, and maintain this SWPPP to comply with the terms of the 2017 EPA NPDES CGP.

Subcontractors who are not operators may sign the Subcontractor Certification Form.

OWNER	CONTRACTOR	SUBCONTRACTOR (Operator status)
Signature and Date	Signature and Date	Signature and Date
Title	Title	Title
Client Contact	Contractor Contact	Contractor Contact
Client Company	Contractor Company	Contractor Company
### Street Address	Address	Address
Town, State #####	Town, State Zip	Town, State Zip
T: (###) ###-####	T: (###) ###-####	T: (###) ###-####
name@address.com	name@address.com	name@address.com

Add additional sheets as necessary.

"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."

Intentionally blank

Signatories to the SWPPP

The signatories identified on this sheet are considered Operators of the project described in this SWPPP and will use, update, and maintain this SWPPP to comply with the terms of the 2017 EPA NPDES CGP.

Subcontractors who are not operators may sign the Subcontractor Certification Form.

SUBCONTRACTOR (Operator status)	**SUBCONTRACTOR (Operator status)**	**SUBCONTRACTOR (Operator status)**
Signature and Date	Signature and Date	Signature and Date
Title	Title	Title
Client Contact	Contractor Contact	Contractor Contact
Client Company	Contractor Company	Contractor Company
### Street Address	Address	Address
Town, State #####	Town, State Zip	Town, State Zip
T: (###) ###-####	T: (###) ###-####	T: (###) ###-####
name@address.com	name@address.com	name@address.com

Add additional sheets as necessary.

"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."

Intentionally blank

SUBCONTRACTOR CERTIFICATION
(Non-Operator Status)

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: _____

Intentionally blank

Attachment C
EPA NOIs and EPA NOTs

Intentionally blank

Attachment D
Project Plans

Intentionally blank

Attachment E
Site Map

Site Map Requirements (Part 7.2.4 of the 2017 CGP):

1. Boundaries of the area of disturbance
2. 50-foot buffer around the area of disturbance
3. Identify areas of steep slope
4. Locations of stockpiles
5. Locations of construction vehicle access
6. All stormwater discharge points from the area of disturbance (to waterbodies AND to storm drain inlets)
7. All surface waters that the area of disturbance discharges to
8. The location and nature of all erosion and sediment controls
    a. Perimeter controls
    b. Storm drain inlet controls
    c. A note that indicates that the contractor will provide information for any other types of controls required.
9. Location of proposed, post-construction impervious surfaces and structures
10. Location of on-site and off-site construction support activity areas covered by this permit
11. Locations of all waters of the US within and one mile downstream of the site. Also identify if any are listed as impaired, or are identified as Tier 2, Tier 2.5, or Tier 3.
12. Areas of federally listed critical habitat within the site and/or at discharge locations
13. Type and extent of pre-construction cover on the site
14. Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities.
15. Locations of all potential pollutant generating activities.
16. Locations where any chemicals will be used and stored.

0 500 1000 2000 Feet

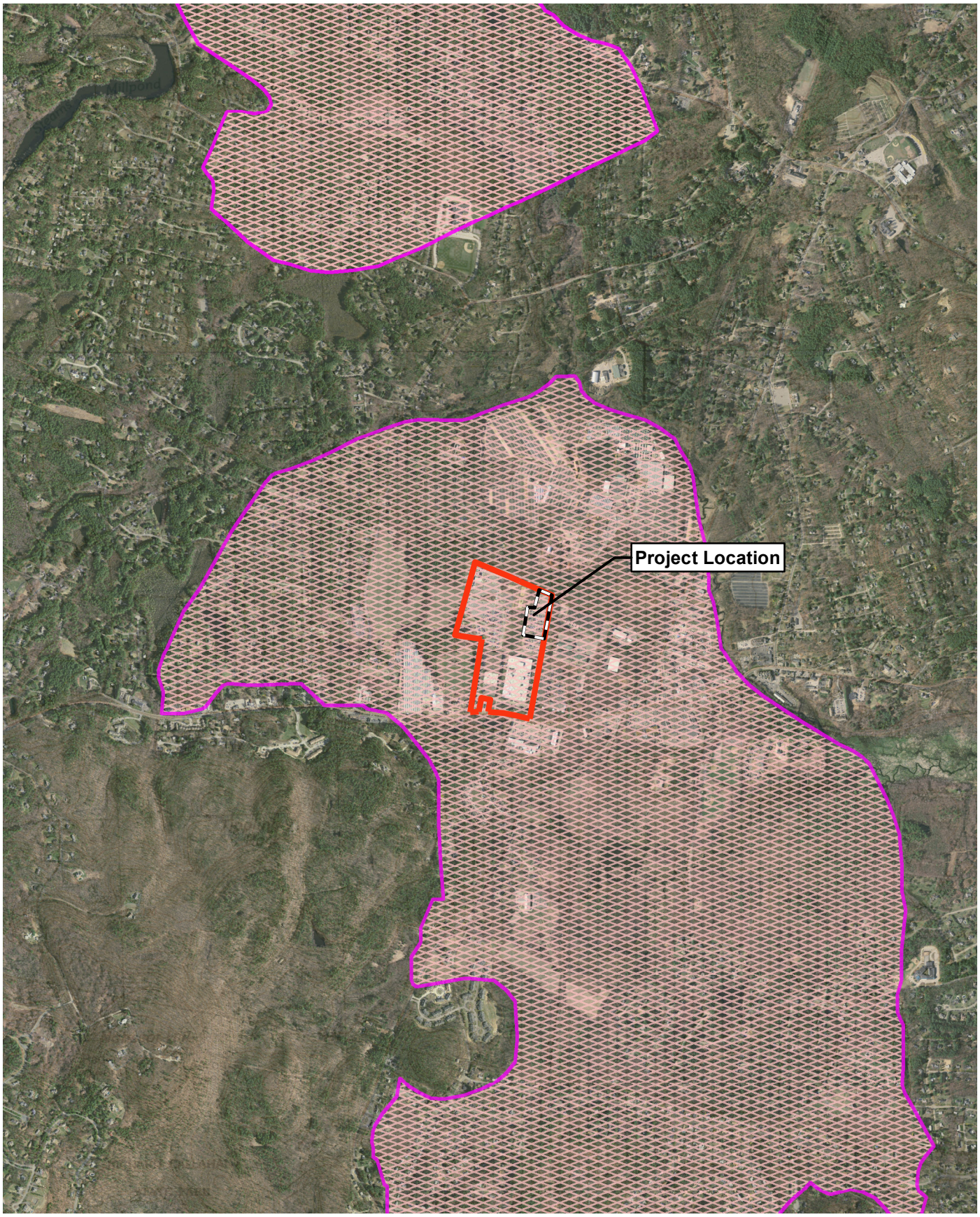
Project Location

Overall Project Site

Highcrest at Meadow Walk
526/528 Boston Post Road Sudbury, MA

Figure 2 - Aerial Map
NOI

Source Info: MassGIS



0 1000 2000 4000 Feet

Project Location

Overall Project Site

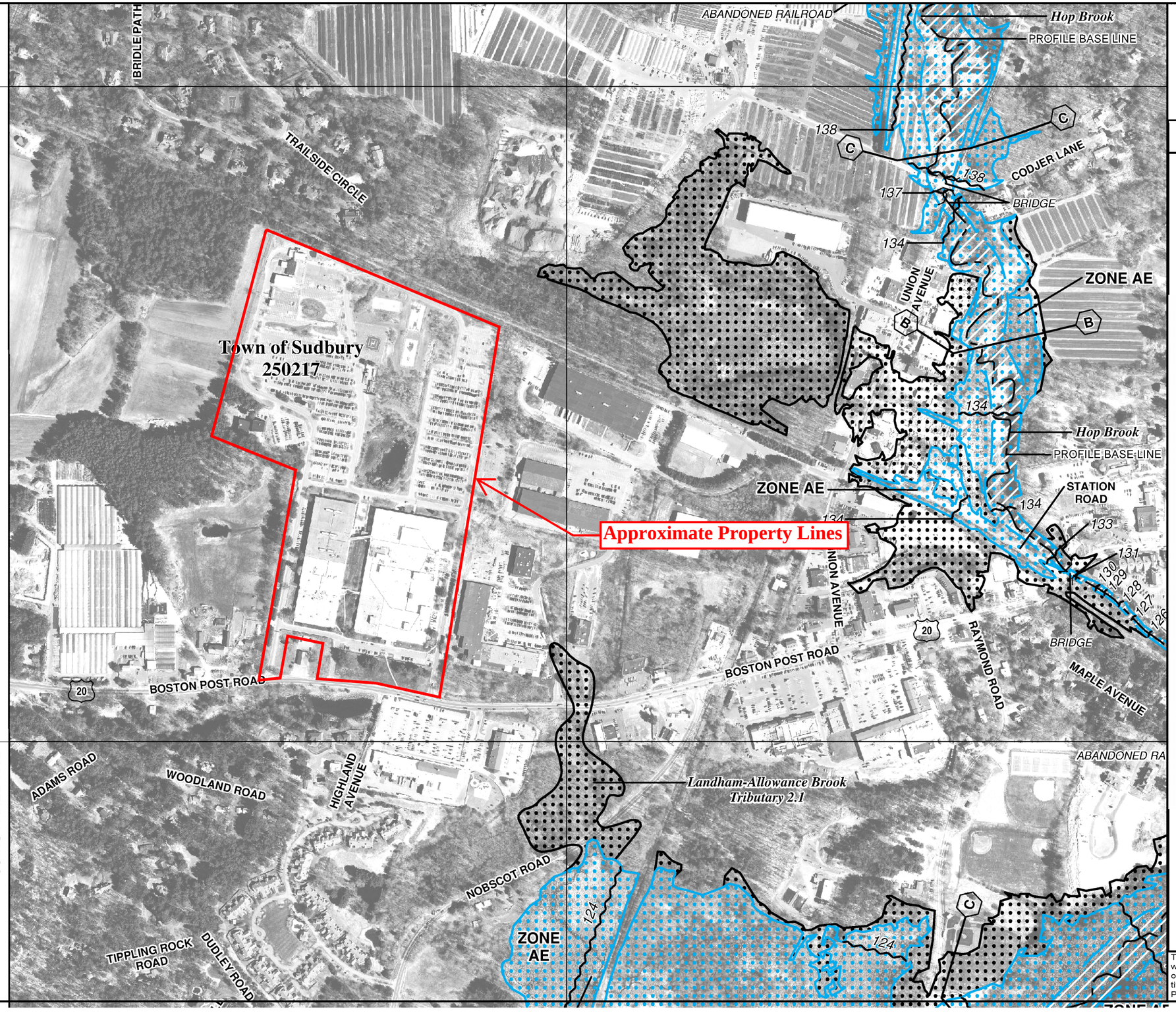
Zone II DEP Wellhead Protection Areas

Resources not Present in the vicinity of the project:
-Areas of Critical Environmental Concern (ACEC)
-Outstanding Resource Waters (ORW)

Highcrest at Meadow Walk
526/528 Boston Post Road Sudbury, MA

Figure 5 - Crtical Resources Map
NOI

Source Info: MassGIS



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:

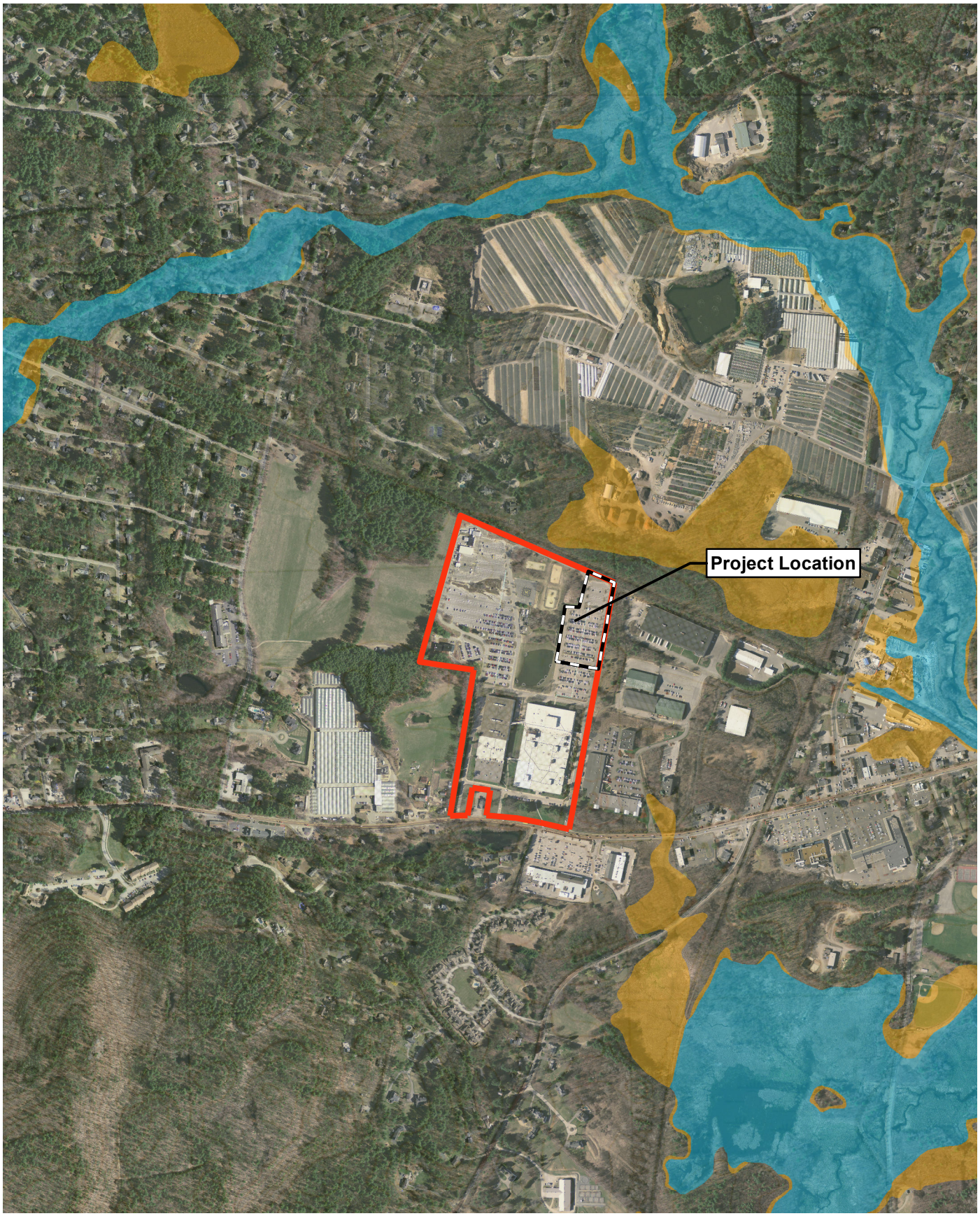
COMMUNITY	NUMBER	PANEL	SUFFIX
FRAMINGHAM, TOWN OF	250193	0506	F
SUDBURY, TOWN OF	250217	0506	F

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



0 500 1000 2000 Feet

Project Location

Overall Project Site

FEMA National Flood Hazard Layer

Flood Zone Designations

100-yr Floodplain

500-yr Floodplain

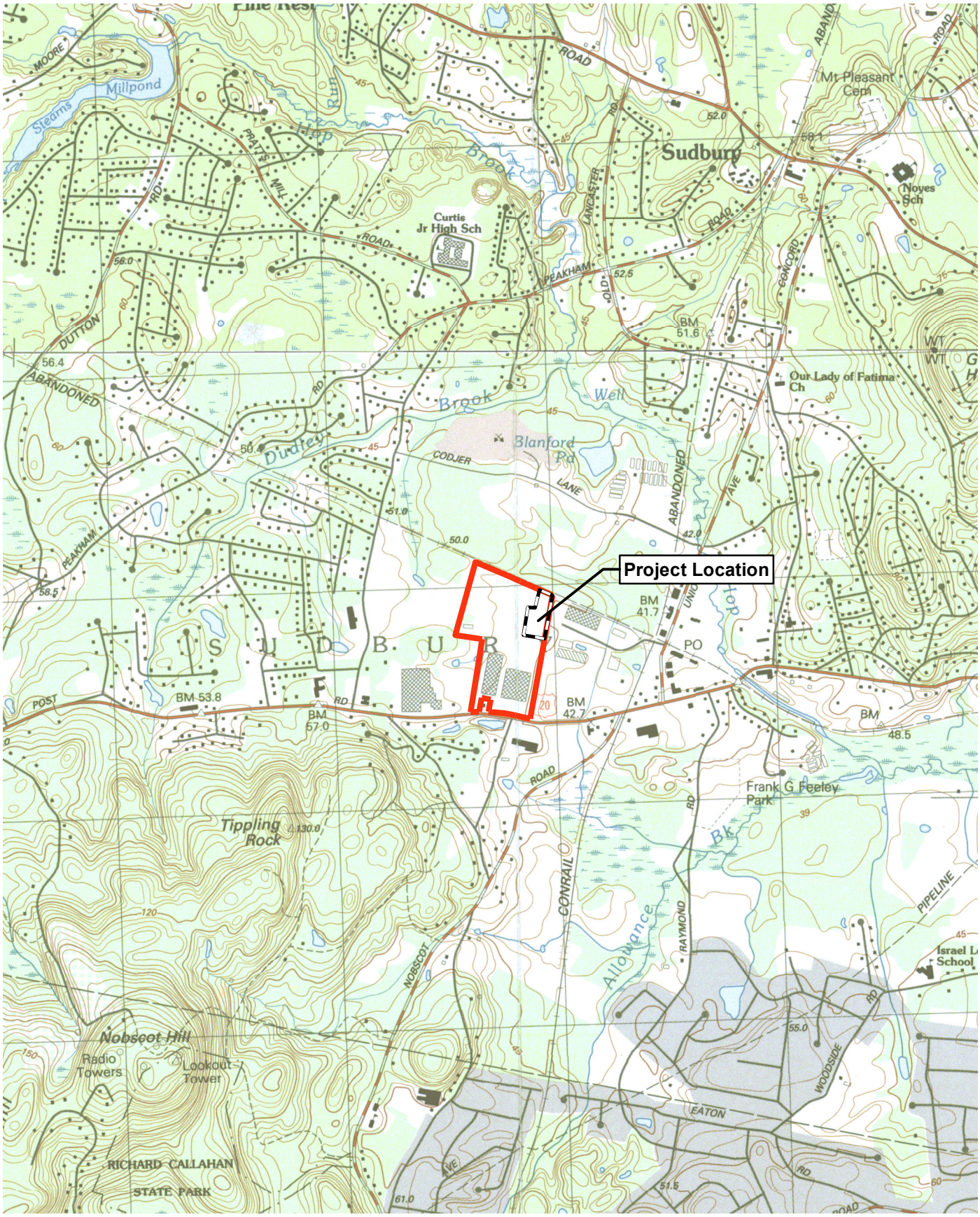
Highcrest at Meadow Walk
526/528 Boston Post Road Sudbury, MA

Figure 4 - FEMA Map
NOI

Source Info: MassGIS

Path: \\vhb\proj\Wat-LD\13125.08 Pulte Sudbury\GIS\Project\Figure1_Locus.mxd

vhb March 13, 2017 **FIGURE #1**



Highcrest at Meadow Walk
526/528 Boston Post Road Sudbury, MA

Figure 1 - Locus Map
NOI

Source Info: USGS

Attachment F
Endangered Species Act

Intentionally blank

Attachment G
Historic Preservation

Intentionally blank

Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only

EEA#: _____

MEPA Analyst: _____

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **526 and 528 Boston Post Road Redevelopment**		
Street Address: **526 and 528 Boston Post Road**		
Municipality: **Sudbury**	Watershed: **Concord (SuAsCo)**	
Universal Transverse Mercator Coordinates: **205,615.64m, 901,477.17m**	Latitude: **42.363804** Longitude: **-71.431824**	
Estimated commencement date: **April 2016**	Estimated completion date: **Dec. 2018**	
Project Type: **Mixed-Use (commercial, retail, residential)**	Status of project design: 50 %complete	
Proponent: **BPR Sudbury Development LLC**		
Street Address: **2310 Washington Street**		
Municipality: **Newton Lower Falls**	State: **MA**	Zip Code: **02462**
Name of Contact Person: **Seth Lattrell**		
Firm/Agency: **VHB**	Street Address: **101 Walnut Street**	
Municipality: **Watertown**	State: **MA**	Zip Code: **02472**
Phone: **617-728-7777**	Fax: **N/A**	E-mail: **slattrell@vhb.com**

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☐Yes ☒**No**

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8)) ☐Yes ☐No
a Special Review Procedure? (see 301CMR 11.09) ☐Yes ☐No
a Waiver of mandatory EIR? (see 301 CMR 11.11) ☐Yes ☐No
a Phase I Waiver? (see 301 CMR 11.11) ☐Yes ☐No
(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?
301 CMR 11.03(6)(b)13.: Generation of 2,000 or more New ADT on roadways providing access to a single location.

301 CMR 11.03(5)(b)3.a.: Construction of one or more New sewer mains that will: a. that will result in an Expansion in the flow to a wastewater treatment and/or disposal facility by 10% of existing Capacity;

301 CMR 11.03(5)(b)4.c.i.: New discharge or Expansion in discharge to groundwater of 10,000 or more gpd of sewage within an area, zone or district established, delineated or identified as necessary or

appropriate to protect a public drinking water supply, an area established to protect a nitrogen sensitive embayment, an area within 200 feet of a tributary to a public surface drinking water supply, or an area within 400 feet of a public surface drinking water supply;

Which State Agency Permits will the project require?
Vehicle Access Permit from the Massachusetts Department of Transportation (MassDOT), Superseding Order of Conditions from the Massachusetts Department of Environmental Protection (MassDEP) (if required), Groundwater Discharge Permit Application (Modification) from MassDEP.

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

The Proponent will receive bond financing from the Massachusetts Housing Partnership. The amount has not yet been determined.

Summary of Project Size & Environmental Impacts	Existing	Change	Total
LAND			
Total site acreage	**50±**		
New acres of land altered	**-0-**	**-0*-**	
Acres of impervious area	**28.8±**	**(2.5)±**	**26.3±**
Square feet of new bordering vegetated wetlands alteration		**<5000 sf (temp)****	
Square feet of new other wetland alteration		**-0-**	
Acres of new non-water dependent use of tidelands or waterways		**-0-**	
STRUCTURES			
Gross square footage	**563,300±**	**37,000±**	**600,000±**
Number of housing units	**-0-**	**358±**	**358±**
Maximum height (feet)	**44 ± (BELTRAN)**	**16±**	**60±**
TRANSPORTATION			
Vehicle trips per day	**5,110±**	**2,810±**	**7,920±**
Parking spaces	**2,040±**	**(740)±**	**1,300±**
WASTEWATER			
Water Use (Gallons per day)***	**42,200 GPD±**	**Up to 47,800 GPD±**	**Up to 90,000 GPD±**
Water withdrawal (GPD)****	**0**	**35,000±**	**35,000±**
Wastewater generation/treatment (GPD)*****	**50,000 GPD±**	**Up to 40,000 GPD±**	**Up to 90,000 GPD±**
Length of water mains (miles) ***Project includes only privately-owned on-site water mains**	**0.9 MILES±**	**0.5 MILES±**	**1.4 MILES±**

Length of sewer mains (miles) ***Project includes only privately-owned on-site sewer mains**	**0.3 MILES±**	**0.5 MILES±**	**0.8 MILES±**
Has this project been filed with MEPA before? ☐ Yes (EEA #_____) ☒No			
Has any project on this site been filed with MEPA before? ☐ Yes (EEA #_____) ☒No			

*** Entire Project Site has been previously altered**
**** No impact anticipated. See the wetlands section below for additional information.**
***** Existing and proposed water usage is based on Title V wastewater estimates.**
****** Water withdrawal is a preliminary estimate for potential irrigation wells on the Site.**
*******Existing wastewater generation is assumed to be the equivalent of the permitted flow for the existing treatment plant.**

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

Describe the existing conditions and land uses on the project site:

The Project Site totals approximately 50 acres and is bordered by Boston Post Road (Route 20) to the south, to the east by commercial properties, to the west by an agricultural use and open space and to the north by a former railroad right of way. Refer to Figure 1 for a Site location map and Figure 2 for Project context. The Site currently contains over 563,300 square feet of building consisting of a mix of office and research and development space.

The two existing main office buildings fronting Boston Post Road (Route 20) are composed of several smaller connected structures with buildings 2, 3 and 4 to the west, and buildings 1 and 5 to the east. There is also a separate smaller building in the westernmost portion section of the Site which is referred to as the Beltran building. The northern portion of the Site consists of two large parking lots providing a combined 2,040 parking spaces straddling a vegetated area, retention pond, wastewater treatment plant, and helipad. In the northwest corner of the Site there are several small buildings/structures that were previously used for research and development. Refer to Figure 3 for an existing conditions site plan.

Describe the proposed project and its programmatic and physical elements:

The Proponent, BPR Sudbury Development LLC, is proposing to redevelop the existing 50 acre Raytheon parcel with a mixed-use development (the Project). The Project is programmed to include a mix of village- style commercial/retail space, mixed-income residential apartment homes, age-restricted condominiums, and a memory care assisted living community. Refer to Figure 4 for the proposed conditions site plan.

The Project also includes local roadway improvements including pedestrian and bicycle accommodations and a new signalized intersection at the main Site entrance on Route 20, major upgrades to the on-site streetscape and landscaping, new and enhanced public open spaces, improved water quality, and creative integration of existing environmental resources that form the framework for the development. Refer to Figure 5 for the proposed open space and pedestrian connections.

The Project is uniquely positioned to provide substantial benefits to the community through the redevelopment and environmental improvement of a heavily developed office and Rsite. The proposed development program will introduce a mix of uses including new retail/grocery opportunities, provide a broad range of new housing options, and assist the Town in meeting the requirements of the Commonwealth's M.G.L. Chapter 40B housing requirements. The change in use on the Project Site, coupled with roadway and intersection improvements is anticipated to noticeably improve traffic conditions on Boston Post Road in part due to reductions in weekday peak hour traffic. Refer to Attachment D for the complete transportation analysis. New open space, reduced impervious area and improvement of adjacent natural resources will lead to a substantially cleaner, active, and sustainable development.

The Project also benefits from the reuse of an existing private on-site wastewater treatment facility that will be improved and modernized to accommodate the new site uses while implementing enhanced water treatment. A key benefit of the proposed on-site treatment system is that it recharges treated wastewater back into the underlying aquifer instead of transferring water from one watershed to another as is common in a public or municipal sewer system. This benefits the underlying aquifer and regional watershed, as well as minimizes potential impacts on the adjacent wetland resources areas.

Please refer to Section 1 of the attached narrative for additional information on the Project and associated benefits.

NOTE: The project description should summarize both the project's direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

Please refer to Section 1 of the attached narrative for an analysis of Project alternatives.

NOTE*: The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.*

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

The Project is anticipated to improve environmental conditions at the Project Site, provide new retail/grocery opportunities, and create a variety of new housing options, including affordable rental apartments in furtherance of the Town's Housing Production Plan, and M.G.L. Chapter 40B requirements. With improvements in stormwater management, wastewater treatment, pedestrian and bicycle accommodations and connectivity, new open spaces and enhanced wetland buffers, the Project will provide environmental enhancements, provide new community recreational opportunities, and create a meaningful and environmentally beneficial redevelopment in close proximity to the commercial center of Sudbury.

The proposed development program provides a broad range of housing options that advance the

Town's M.G.L. 40B needs and address the specific goals identified in several local and regional planning documents including the 2001 Sustainable Sudbury Plan, the 2012 Sudbury Housing Production Plan, the 2012 Route 20 business district Project Evaluation Report, and the Route 20 Corridor Study. In addition to providing a broad spectrum of much needed housing options and new retail space, the Project will enhance existing site infrastructure and systems (including modernizing the on-site wastewater treatment plan), and replace inefficient and antiquated buildings with high-efficiency buildings and fixtures

The change in use and substantial investment to improve adjacent roadway and intersections, including the construction of a new signalized intersection at the Project's primary access drive, will benefit local and regional traffic conditions by spreading vehicle trips out throughout the day/week to minimize roadway congestion during the busiest times of the day. To further minimize traffic impacts, a robust Transportation Demand Management (TDM) plan has been developed to reduce the overall traffic impact by minimizing the demand for vehicle trips. The plan includes incentives to encourage ridesharing and transit usage, bicycle/pedestrian enhancements, and offers coordination services to residents and visitors of the development.

For additional information on Project mitigation and benefits please refer to Section 1 of the attached narrative.

If the project is proposed to be constructed in phases, please describe each phase:

Construction of the various elements of the Project is planned to occur concurrently; however based on the time required to construct certain components of the Project, as well as existing lease commitments to the current tenant, parts of the Project will start and be completed at different times, described generally as follows.

Subject to receipt of the required permits, site preparation and construction of the Project is anticipated to commence in the Spring of 2016 with building demolition and construction of the grocery store. Once the existing tenant vacates Building 1 and 5 at the end of 2016, construction of the residential uses and the remaining commercial buildings is envisioned to begin. The grocery store opening date is anticipated to be late summer 2017, with the remainder of the Project construction concluding at the end of 2018. Off-site improvements proposed at the site frontage with Boston Post Road, including the traffic signal work, will be constructed as part of the Project's retail/grocery store phase and are expected to be substantially complete concurrent with the grocery store opening.

The overall Project is anticipated to be complete by December 2018.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:

Is the project within or adjacent to an Area of Critical Environmental Concern?

☐ Yes (Specify_____)

☒ No

if yes, does the ACEC have an approved Resource Management Plan? ___ Yes ___ No;
If yes, describe how the project complies with this plan.

_____

Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes ___ No;
If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

_____

RARE SPECIES:

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)

☐ Yes (Specify_____) ☒ No

HISTORICAL /ARCHAEOLOGICAL RESOURCES:
Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☐Yes (Specify_____) ☒No
If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☐Yes (Specify_____) ☐No

WATER RESOURCES:
Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? ___Yes **X** No;
if yes, identify the ORW and its location. _____

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site? ___Yes **X** No; if yes, identify the water body and pollutant(s) causing the impairment:_____.

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? ___Yes **X** No

STORMWATER MANAGEMENT:

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

The Project will comply with the MassDEP Stormwater Management regulations through the following improvements:

- **Increasing open space and groundwater recharge to contribute to re-establishing components of a more natural water cycle (evapotranspiration, groundwater recharge and runoff) on the Site.**
- **Improving the surface water and groundwater quality will further protect the watershed of critical environmental resources.**
- **Protecting and minimizing disruption to existing wetland resource areas and wildlife habitat corridors through the maintenance and enhancement of existing vegetative protective buffers.**
- **Implementing a comprehensive temporary and permanent erosion control system and Long Term Operations and Maintenance Plan.**

Please see Section 3 of the attached narrative for a summary of compliance with specific stormwater standards.

MASSACHUSETTS CONTINGENCY PLAN:
Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes **X** No ___ ; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome classification):_____

Three MCP sites are located in the Project Site area. These have achieved either Temporary or

Permanent Solutions and are summarized below:

RTN 3-3037, 528 Boston Post Road – Pending No Further Action – August 1997
RTN 3-17106, 528 Boston Post Road – Class A-2 RAO filed in September 1998
RTN 3-27243, 528 Boston Post Road – Class C-1 RAO filed in November 2008

Please see Section 2 of the attached narrative for additional information.

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes ___ No _**X**__;
if yes, describe which portion of the site and how the project will be consistent with the AUL:
_____.

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN?
Yes ___ No _**X**_ ; if yes, please describe:_____

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:_

Demolition of existing on-site buildings will be required for the Project. The Project Construction Manager will implement a waste management plan to divert Project-related construction waste material from landfills through recycling and salvaging where practicable. Existing pavement will either be processed on-site for re-use as structural fill or shipped off-site to an asphalt recycling facility.

Should excess soil be generated during construction that requires off-site disposal, analytical testing of the soil will be required so that it can be properly disposed of at an off-site facility. Materials will be handled according to all applicable federal, state, and municipal environmental laws and regulations. In the event that subsurface contamination exceeding MCP reporting thresholds is encountered (although based on thorough analysis and historic monitoring of the Site, none is expected) MassDEP will be notified and the contamination managed in accordance with the MCP, and as outlined in the Release Abatement Measures Plan.

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes _**X**_ No ___ ;
if yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

A hazardous building materials survey was performed for the Project by TRC on in June of 2015. The survey identified detectable levels of hazardous materials on building components, as is typical in buildings of this era. Asbestos and hazardous building materials abatement will be performed prior to demolition of the existing Site buildings in accordance with applicable laws and regulations.

Describe anti-idling and other measures to limit emissions from construction equipment:

The Project will comply with the requirements of the Clean Construction Equipment Initiative to the extent reasonably practicable, including retrofitting diesel construction vehicles, or utilizing vehicles that use alternative fuels, such as ultra-low-sulfur diesel fuel to reduce emissions during temporary construction activities. In addition, the Commonwealth of Massachusetts anti-idling law will be enforced during the construction phase of the Project with the installation of on-site anti-idling signage.

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ No **_X_**;
if yes, specify name of river and designation:

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River? Yes ___ No ___ ; if yes, specify name of river and designation: _____;
if yes, will the project will result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River.
Yes ___ No ___ ;
if yes,describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures proposed.

ATTACHMENTS:

1. List of all attachments to this document.
   See Table of Contents

2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries.
   See Figure 1

3.. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities.
   See Figure 3

4 Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts.
   See Figures 2 and 7

5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase).
   See Figure 4

6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2).
   See Attachment C

7. List of municipal and federal permits and reviews required by the project, as applicable.
   See Table 1.2, Section 1.

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)
___ Yes **_X_** No; if yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	8.8 AC±	-0.3 AC±	8.5 AC±
Internal roadways	4.7 AC±	0.4 AC±	5.1 AC±
Parking and other paved areas	15.3 AC±	-2.6 AC±	12.7 AC±
Other altered areas	20.7 AC±	2.5 AC±	23.2 AC±
Undeveloped areas	0 AC±	0 AC±	0 A±
Total: Project Site Acreage	49.5 AC±	0 AC±	49.5 AC±

B. Has any part of the project site been in active agricultural use in the last five years?
___ Yes **_X_** No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

C. Is any part of the project site currently or proposed to be in active forestry use?
___ Yes **_X_** No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ___ Yes **_X_** No; if yes, describe:

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? ___ Yes **_X_** No; if yes, does the project involve the release or modification of such restriction? ___Yes ___No; if yes, describe:

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ___ Yes **X** No; if yes, describe:

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ No **X** if yes, describe:

III. Consistency

A. Identify the current municipal comprehensive land use plan
Title:_ **Sustainable Sudbury – 2001 Master Plan**

B. Describe the project's consistency with that plan with regard to:
1) economic development
2) adequacy of infrastructure
3) open space impacts
4) compatibility with adjacent land uses

The 2001 Master Plan specifically identifies the Project Site as a key location for redevelopment and expansion once vacated by Raytheon to maintain the tax base and

capitalize on the existing infrastructure available on the Site. The plan notes that the infrastructure, including the wastewater treatment plant, is in place to support continued and expanded development on the Site.

The Project is consistent with the planning goals to preserve open space by redeveloping a previously developed site, and is consistent and compatible with the adjacent land uses. The Project also supports the plan's goal of encouraging a greater diversity of housing opportunities in Sudbury to meet the needs of a changing and diversified population with respect to age, household size and income. The Site is specifically designated as an appropriate location to develop multifamily housing pursuant to M.G.L Ch. 40B and the Project advances this goal.

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)
RPA: Metropolitan Area Planning Council (MAPC)

Title: **MetroFuture** Date **May 2008**

D. Describe the project's consistency with that plan with regard to:
1) economic development
2) adequacy of infrastructure
3) open space impacts

The Town of Sudbury has identified the Site as a preferred location for redevelopment with an expressed desire to include a mix of commercial and residential uses including affordable housing.

Refer to Section 1.8 for additional information.

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? ___ Yes **_X_** No; if yes, specify, in quantitative terms:

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? ___ Yes **_X_** No

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ___ Yes **_X_** No.

D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? ___ Yes **_X_** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? **_X__** Yes **___**No; if yes, specify which permit:
Local Order of Conditions and, if required, a Superseding Order of Conditions from MassDEP

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? **_X_**Yes ___ No; if yes, has a Notice of Intent been filed? **X** Yes __ No; if yes, list the date and MassDEP file number: _10/30/15 (301-1169); if yes, has a local Order of Conditions been issued? **X** Yes ___ No; Was the Order of Conditions appealed? **X** Yes ___ No. Will the project require a Variance from the Wetlands regulations? ___ Yes **X** No.

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

The Project as currently designed is not anticipated to require any permanent impacts to wetlands or waterways. Temporary impacts due to construction may occur in association with the roadway improvements on Boston Post Road. The applicant will utilize construction best practices to minimize construction related impacts and will restore all impacted wetland areas upon completion of construction.

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

Coastal Wetlands	Area (square feet) or Length (linear feet)	Temporary or Permanent Impact?
Land Under the Ocean		
Designated Port Areas		
Coastal Beaches		
Coastal Dunes		
Barrier Beaches		
Coastal Banks		
Rocky Intertidal Shores		
Salt Marshes		
Land Under Salt Ponds		
Land Containing Shellfish		
Fish Runs		
Land Subject to Coastal Storm Flowage		
Inland Wetlands		
Bank (lf)		
Bordering Vegetated Wetlands	**<5,000 sf***	**Temporary**
Isolated Vegetated Wetlands		
Land under Water		
Isolated Land Subject to Flooding		
Borderi ng Land Subject to Flooding		

Riverfront Area _____ _____

*** No impact anticipated**

D. Is any part of the project:

1. proposed as a **limited project**? ___ Yes **_X_**No; if yes, what is the area (in sf)?____
2. the construction or alteration of a **dam**? ___ Yes **_X_**No; if yes, describe:
3. fill or structure in a **velocity zone** or **regulatory floodway**? ___ Yes _X_No
4. dredging or disposal of dredged material? ___ Yes **_X_**No; if yes, describe the volume of dredged material and the proposed disposal site:
5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**? ___ Yes **_X_**No
6. subject to a wetlands restriction order? ___ Yes **_X_**No; if yes, identify the area (in sf):
7. located in buffer zones? **_X_**Yes ___No; if yes, how much (in sf) **330,000 SF±***

***This calculation includes areas were state jurisdictional buffer zones are redeveloped (i.e. new parking or buildings replace old parking lots,) AND where existing pervious and impervious developed areas are replaced with new open space areas. Overall the Project will improve wetland quality by enhancing buffer zones and reducing impervious coverage on the Site.**

E. Will the project:

1. be subject to a local wetlands ordinance or bylaw? **_X_**Yes ___ No
2. alter any federally-protected wetlands not regulated under state law? ___ Yes **_X_**No; if yes, what is the area (sf)?

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? ___ Yes **_X_**No; if yes, is there a current Chapter 91 License or Permit affecting the project site? ___ Yes ___ No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

B. Does the project require a new or modified license or permit under M.G.L.c.91? ___Yes **_X_**No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use? Current ___ Change ___ Total ___
If yes, how many square feet of solid fill or pile-supported structures (in sf)?

C. For non-water-dependent use projects, indicate the following:
Area of filled tidelands on the site:_____
Area of filled tidelands covered by buildings:_____
For portions of site on filled tidelands, list ground floor uses and area of each use:
_____
Does the project include new non-water-dependent uses located over flowed tidelands? Yes ___ No ___
Height of building on filled tidelands_____

Also show the following on a site plan: Mean High Water, Mean Low Water, Water-dependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

D. Is the project located on landlocked tidelands? ___ Yes **_X_**No; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe

measures the project will implement to avoid, minimize or mitigate any adverse impact:

E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ___Yes **_X_** No; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? ___ Yes **_X_** No;
(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)

G. Does the project include dredging? ___ Yes **_X_** No; if yes, answer the following questions:
What type of dredging? Improvement ___ Maintenance ___ Both ____
What is the proposed dredge volume, in cubic yards (cys) _____
What is the proposed dredge footprint ____length (ft) ___width (ft)____depth (ft);
Will dredging impact the following resource areas?
Intertidal Yes__ No__; if yes, ___ sq ft
Outstanding Resource Waters Yes__ No__; if yes, ___ sq ft
Other resource area (i.e. shellfish beds, eel grass beds) Yes__ No__; if yes __ sq ft
If yes to any of the above, have you evaluated appropriate and practicable steps to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation?
If no to any of the above, what information or documentation was used to support this determination?
Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis.
Sediment Characterization
Existing gradation analysis results? __Yes ___No: if yes, provide results.
Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? ___Yes ____No; if yes, provide results.
Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? If yes, check the appropriate option.

Beach Nourishment ___
Unconfined Ocean Disposal ___
Confined Disposal:
Confined Aquatic Disposal (CAD) ___
Confined Disposal Facility (CDF) ___
Landfill Reuse in accordance with COMM-97-001 ___
Shoreline Placement ___
Upland Material Reuse____
In-State landfill disposal____
Out-of-state landfill disposal ____
(NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? ___ Yes **_X_** No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

B. Is the project located within an area subject to a Municipal Harbor Plan? ___ Yes **_X_** No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes **_X_** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ___ Yes **_X_** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? **_X_** Yes ___ No; if yes, specify, in quantitative terms:

301 CMR 11.03(5)(b)3.a.: Construction of one or more New sewer mains that will result in an Expansion in the flow to a wastewater treatment and/or disposal facility by 10% of existing Capacity;

301 CMR 11.03(5)(b)4.c.i.: New discharge or Expansion in discharge to groundwater of 10,000 or more gpd of sewage within an area, zone or district established, delineated or identified as necessary or appropriate to protect a public drinking water supply, an area established to protect a nitrogen sensitive embayment, an area within 200 feet of a tributary to a public surface drinking water supply, or an area within 400 feet of a public surface drinking water supply;

B. Does the project require any state permits related to **wastewater**? **_X_** Yes ___ No; if yes, specify which permit:

Groundwater Discharge Permit Application (Modification) from MassDEP

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	Existing	Change	Total
Discharge of sanitary wastewater	**50,000 GPD**	**40,000 GPD**	**90,000 GPD***
Discharge of industrial wastewater	**N/A**	**N/A**	**N/A**
TOTAL	**50,000 GPD**	**40,000 GPD**	**90,000 GPD***

	Existing	Change	Total
Discharge to groundwater	**50,000 GPD**	**40,000 GPD**	**90,000 GPD***
Discharge to outstanding resource water	**N/A**	**N/A**	**N/A**
Discharge to surface water	**N/A**	**N/A**	**N/A**
Discharge to municipal or regional wastewater facility	**N/A**	**N/A**	**N/A**
TOTAL	**50,000 GPD**	**40,000 GPD**	**90,000 GPD***

***Existing wastewater generation is assumed to be the equivalent of the permitted flow for the existing treatment plant. Wastewater generation for the Project is estimated to be 82k GPD based on Title V estimates for the proposed Project uses. The Proponent is seeking to permit up to 90k GPD of flow (based on Title V estimates) for the enhanced wastewater treatment plant to allow limited additional flexibility within the commercial portion of the Project where tenants have not been identified. Through the use of water conservation measures, it is anticipated that the actual wastewater generation will be substantially less**

than the Title V estimates for the uses proposed, with anticipated reductions of 20-40% percent based on Title V rates, depending on the use.

B. Is the existing collection system at or near its capacity? ___ Yes __X__ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

A new collection system will be constructed within the Site to serve the proposed buildings and uses. The system will be consistent with current standards and as such will serve to dramatically reduce the potential for inflow and infiltration in the collection system.

C. Is the existing wastewater disposal facility at or near its permitted capacity? __X__ Yes___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

The Project proposes to improve and enhance the existing on-site wastewater treatment plant. The upgrades will provide system redundancy and treatment enhancements to maintain an effective and resilient system, and to protect adjacent water resources. Please see Section 3 for additional information on Project wastewater treatment.

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? __X__ Yes ___ No; if yes, describe as follows:

	Permitted	Existing Avg Daily Flow	Project Flow	Total
Wastewater treatment plant capacity (in gallons per day)	**50,000 GPD**	**42,200 GPD***	**90,000 GPD****	**90,000 GPD**

*Per Title V estimates.

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

Not applicable, the Project does not require an interbasin transfer of wastewater.

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? ___ Yes__X__ No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? __X__ Yes ___ No; if yes, what is the capacity (tons per day):

	Existing	Change	Total
Storage	**N/A**	**N/A**	**N/A**
Treatment	**N/A**	**N/A**	**N/A**
Processing	**N/A**	**N/A**	**N/A**
Combustion	**N/A**	**N/A**	**N/A**
Disposal **(treated wastewater)**	**0.05±**	**0.04±**	**0.9±**

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

Water conservation will be implemented throughout the Project to minimize the use of

potable water and subsequent generation of wastewater with an estimated reduction of 20-40% compared to Title V rates. In addition, the construction of new watertight sewer pipes throughout the Site will eliminate any old cracked pipes that may be contributing to inflow and infiltration into the existing system. Refer to Section 3 for additional information.

III. Consistency

A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

The Proponent will prepare and submit a Hydrogeological Evaluation Report to the MassDEP, followed by an application to modify the existing Groundwater Discharge Permit. Through these filings the Proponent will detail compliance with all applicable state, regional, and plans and policies related to wastewater management.

B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ___ Yes__**X**__ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? **__X__** Yes ___ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **state-controlled roadways**? **__X__** Yes ___ No; if yes, specify which permit:

Vehicle Access Permit from MassDOT

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces	**2,040 ±**	**(740) ±**	**1,300 ±**
Number of vehicle trips per day	**5,110**	**2,810**	**7,920**
ITE Land Use Code(s):	**710, 760, 140**	**- * -**	**820, 220, 252, 254**

*** All existing LUCs are replaced by the new LUCs shown in the "Total" category**

B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change	Total
1. Boston Post Rd (Route 20)	**20,500**	**5,200± ***	**25,700±**

*** Based on "unadjusted" trip generation estimates (does not include internal capture and pass-by adjustments)**

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement:

The full-build Project involves the implementation of multi-modal improvement measures (passenger vehicles, trucks, emergency responders, pedestrians and cyclists). Specifically, the Project's retail/grocery store phase will include a signalized Site access that will also improve access for the existing retail plaza across the street (presently unsignalized), geometric improvements, traffic signal coordination, installation of a fire station preemption signal and bicycle and pedestrian measures.

Please see the attached TIAS in Attachment D for details.

D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

Off-site mitigation measures will comply with the requirements of the Heathy Transportation Policy Directive. Specifically, improvement measures associated with the Project's retail/grocery store phase will include new sidewalk, bicycle and signalized crosswalk enhancement on Boston Post Road along the Site frontage that are presently lacking. The Project will also make allowances for an internal pedestrian connection to an

adjacent commercial property as well as potential connections to the future Mass Central Rail Trail.

Please see the attached TIAS in Attachment D for details.

C. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? **X** Yes ____ No; if yes, describe if and how will the project will participate in the TMA:

D. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities? ____ Yes **X** No; if yes, generally describe:

E. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

Not applicable

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

The improvement measures proposed in connection with this Project are consistent with the Town of Sudbury's Route 20 Corridor Study findings as well as MassDOT's Healthy Transportation Policy Directive.

See Section 1 of the attached narrative for additional information.

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ___ Yes __**X**__ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **roadways or other transportation facilities**? ___ Yes __**X**__ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))? ___ Yes _**X**_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**? ___ Yes _**X**_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes _**X**_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes _**X**_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes _**X**_ No; if yes, specify, in quantitative terms:

E. Does the project require any state permits related to **solid and hazardous waste**? ___ Yes _**X**_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? ___ Yes _**X**_ No; if yes, attach correspondence. For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? ____Yes ____ No; if yes, attach correspondence

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes _**X**_ No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? ___ Yes ___ No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes _**X**_ No; if yes, does the project involve the destruction of all or any part of such archaeological site? ___ Yes ___ No; if yes, please describe:

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

   Sudbury Town Crier on February 24, 2016

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing NPC (if different from above)

Name (print or type)	Name (print or type)
BPR Sudbury Development LLC	VHB
Firm/Agency	Firm/Agency
2310 Washington Street	101 Walnut Street
Street	Street
Newton Falls/MA/02462	Watertown/MA/02472
Municipality/State/Zip	Municipality/State/Zip
617-527-9800	617-728-7777
Phone	Phone

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Matthew A. Beaton
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

March 25, 2016

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: 526 & 528 Boston Post Road Redevelopment
PROJECT MUNICIPALITY	: Sudbury
PROJECT WATERSHED	: Concord (SuAsCo)
EEA NUMBER	: 15479
PROJECT PROPONENT	: Old Post Road Holdings, LLC
DATE NOTICED IN MONITOR	: February 24, 2016

Pursuant to the Massachusetts Environmental Policy Act (M.G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **does not require** an Environmental Impact Report (EIR).

Project Description

As described in the Environmental Notification Form (ENF), the project consists of redevelopment of a 50-acre site in Sudbury currently and formerly occupied by office and research and development (R&D) buildings for the Raytheon Corporation (Raytheon). The redevelopment project entails demolition of five existing buildings and construction of a mixed-use village-style development that will include commercial/retail space, mixed-income residential apartment homes, age-restricted condominiums, and a memory care assisted living community. The project will also include upgrades and expansion of the existing privately-owned on-site wastewater treatment facility (WWTF), on-site and off-site roadway improvements and pedestrian and bicycle accommodations, enhanced stormwater management

features, and expanded areas of open space and landscaping. Access to the site will be provided via connections to Boston Post Road (Route 20).

The proposed development program is summarized below:

- 250 residential apartment homes (2- to 3- story townhouse buildings (54 units) and 3-story walkup buildings (196 units)) with an ancillary 6,000 square foot (sf) leasing office and 1,500-sf maintenance shop;
- A 48-unit (54 bed) memory care assisted living community;
- A 60-unit active adult residential condominium community;
- Up to 80,000-sf of retail space
    - 45,000-sf grocery store (Whole Foods)
    - 35,000-sf of dry goods and restaurant space.

The apartment homes are proposed for development pursuant to M.G.L. Chapter 40B, Massachusetts' affordable housing statute.

Project Site

The 50-acre project site is located at 526 and 528 Boston Post Road and is bounded by a former railroad right-of-way to the north, commercial and agricultural properties to the east and west, and Boston Post Road to the south. The site currently contains approximately 563,000-sf of office and R&D space, portions of which have recently been vacated by Raytheon. The site contains two main office buildings fronting Boston Post Road, each of which are comprised of smaller, connected buildings: Buildings 2,3, and 4 to the west and Buildings 1 and 5 to the east. The northern portion of the site contains large paved parking lots for up to 2,040 vehicles, a central vegetated area and stormwater retention pond, the WWTF, and a helipad. A small, 7,000-sf structure referred to as the Beltran building is located on the westernmost property line and several small buildings and structures (e.g., radio tower) previously used for R& D are located in the northwest portion of the property.

The project site is within a designated Zone II area for public drinking water supplies. It is not identified as *Priority* or *Estimated Habitat* in the most recent Natural Heritage Atlas (13th edition) and there are no certified or potential vernal pools located on or adjacent to the site. It is not located in a 100-year or 500-year floodplain according to the most recent Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (No. 25017C0506F, dated July 7, 2014). The project site does not contain any structures or locations that are listed in the *State Register of Historic Places* or the *Inventory of Historic and Archaeological Assets of the Commonwealth*. Finally, the project site is not located within a designated Area of Critical Environmental Concern (ACEC) nor does it contain an Outstanding Resource Water, as designated by MassDEP.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires an ENF because it requires State Agency Actions and will generate more than 2,000 average daily trips (adt) on roadways

providing access to a single location (301 CMR 11.03(6)(b)(13), includes the construction of one or more new sewer mains that will result in an expansion of flow to a wastewater treatment and/or disposal facility by 10 percent of existing capacity (301 CMR 11.03(5)(b)(3)(a), and includes new discharge or expansion in discharge to groundwater of more than 10,000 gallons per day (gpd) of sewage within an area, zone or district established, delineated or identified as necessary or appropriate to protect a public drinking water supply...(301 CMR 11.03(5)(b)(4)(c)(i)).

The project requires a Vehicular Access Permit from the Massachusetts Department of Transportation (MassDOT) and a Modification to a Groundwater Discharge Permit from the Massachusetts Department of Environmental Protection (MassDEP).

A group of citizens appealed the Order of Conditions (OOC) for demolition of Buildings 2, 3, and 4 issued by the Sudbury Conservation Commission; therefore, MassDEP must issue a Superseding Order of Conditions (SOC). Other portions of the redevelopment project will likely require an OOC from the Sudbury Conservation Commission, or in the case of an appeal, a SOC from MassDEP.

The project also requires a National Pollutant Discharge Elimination System (NPDES) Construction General Permit from the U.S. Environmental Protection Agency (EPA).

The Proponent will receive Financial Assistance from the Commonwealth in the form of bond financing from the Massachusetts Housing Partnership. Therefore, MEPA jurisdiction for this project is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment as defined in the MEPA regulations.

Environmental Impacts and Mitigation

The project will decrease impervious area on-site by approximately 2.5 acres from 28.8 acres to 26.3 acres. Cumulative floor area within buildings will increase by 37,000 sf from 563,000 sf to 600,000 sf. The project will likely result in temporary impacts to adjacent Bordering Vegetated Wetlands (BVWs) along the Boston Post Road corridor. These impacts will be less than 5,000 sf and contingent upon final design approval from MassDOT. Additional site development work will be limited to the 100-foot buffer zone to BVW with no direct alteration of other wetlands proposed. Water use is expected to increase by approximately 47,800 gpd for a total of 90,000 gpd. An additional 35,000 gpd may be withdrawn on-site if the Proponent pursues the installation of irrigation wells, subject to local approval. Wastewater generation will increase by approximately 40,000 gpd, for a total of 90,000 gpd, to be treated on-site at the upgraded WWTF. On-site, privately-owned water and sewer mains will be extended 0.5 miles each to serve the new buildings. The amount of on-site parking will be reduced by 740 spaces from 2,040 to 1,300. Finally, the project is anticipated to generate an additional 2,810 average daily trips (adt), increasing traffic from approximately 5,110 adt to 7,920 adt (prior to adjustment for internal trip capture and pass-by trips).

Measures to avoid, minimize and mitigate environmental impacts include: installation of a new traffic signal at the primary site driveway, addition of bicycle and pedestrian

accommodations, implementation of a transportation demand management (TDM) program to minimize single occupancy vehicle (SOV) trips, construction of a stormwater management system consistent with MassDEP regulations, and ongoing monitoring consistent with Massachusetts Contingency Plan (MCP) regulations, expansion and operation of a WWTF that meets MassDEP standards for treatment in a Zone II wellhead protection area, and implementation of construction period best management practices (BMPs).

Review of the ENF

The ENF described existing site conditions and the proposed project and its programmatic and physical elements. The ENF presented existing and proposed conditions plans and identified environmental resources and potential impacts.

Alternatives consistency with planning

The ENF identified several alternatives for the project site:

1. A No-Build Alternative that includes the as-of-right re-occupation of the existing 563,000-sf of office space by other office/R&D tenants. This alternative would not include upgrades to the stormwater management system or WWTF. Roadway improvements along Route Boston Post Road would also not be realized.
2. An As-of-Right Alternative that includes 80,000 sf of retail space, 260,000 sf of office space and 230,000 sf of R&D and warehouse space, consistent with the property's Limited Industrial zoning designation. This alternative would not require upgrades to the WWTF and would generate more traffic than the Preferred Alternative, particularly during peak hours. This alternative would reduce parking spaces from 2,040 to approximately 1,850 and would include upgrades to the stormwater management system to meet current MassDEP standards. This alternative is inconsistent with many of the Town's planning goals, described further below.
3. A Preferred Alternative.

The ENF described project consistency with local planning initiatives. Specifically, the project site was identified in the Sudbury Housing Production Plan (HPP) as a preferred location for development of affordable housing. The project site was also identified in the 2001 Sudbury Master Plan as a key location for potential redevelopment. The Town of Sudbury subsequently worked with Raytheon to identify goals and priorities for the project site, all of which will be achieved under the Preferred Alternative. The ENF also noted the project's consistency with a Route 20 Zoning Project (2012) undertaken on behalf of the Town by the Metropolitan Area Planning Council (MAPC) to assist in the development of land use controls for parcels along Route 20 and a 2015 Route 20 Corridor Study that evaluated potential zoning changes to commercial districts along Route 20. Finally, the ENF described how the project will meet many of the planning goals set forth at the regional and state-wide level (i.e., MAPC's Metro Future: Making a Greater Boston Region and Executive Order 385 – Planning for Growth.

Land Impacts

The project site has historically been altered in its entirety, as it features buildings, a large retention pond, parking areas, and a WWTF with open leaching pits. Limited areas of landscaping and trees are located along the property lines and along the site frontage on Boston Post Road. The project will reduce on-site impervious area and will not require extensive grading or earth removal to facilitate redevelopment. The project will provide enhanced open space areas around the retention pond to make it a central feature of the site with improved natural vegetated buffer and additional landscaping and tree plantings throughout.

Traffic and Transportation

The ENF included a transportation study in accordance with MassDOT/EEA *Transportation Impact Assessment (TIA) Guidelines* to evaluate project impacts on the State highway system. The TIA was prepared subsequent to peer review on behalf of the Town of Sudbury during the local review process and in consultation with MassDOT.[1] On October 25, 2015, MassDOT issued a response to a Transportation Scoping Letter (TSL) submitted by the Proponent. A TSL is often submitted prior to initiation of both the MEPA and MassDOT Access Permit review processes to assist a Proponent in the preparation of the TIA. In this TSL response memorandum from MassDOT, guidance was provided on a variety of issues, including but not limited to, the determination of trip generation rates, mode spilt assumptions, and identification of additional study area intersections. I note that the MassDOT memorandum indicated that this guidance is "preliminary and subject to change with the receipt of additional information during the MEPA review periods." MassDOT's comment letter on the ENF indicated that methodologies used in the TIA are generally acceptable to MassDOT and will be accurate in assessing the impact of the project during peak periods.

The transportation study area included the following intersections:

- Boston Post Road at Horse Pond Road;
- Boston Post Road at Dudley Road;
- Boston Post Road at Highland Avenue and Sudbury Plaza (west);
- Boston Post Road at Sudbury Plaza (east);
- Boston Post Road at Nobscot Road (signalized);
- Boston Post Road at Union Avenue (signalized);
- Boston Post Road at Raymond Road;
- Boston Post Road at Concord Road (signalized); and
- Boston Post Road at Landham Road (proposed for signalization by MassDOT)

The transportation study evaluated existing (2015), proposed No-Build (2022) and proposed Build (2022) conditions within the study area. The 2015 Existing Condition assumed re-occupancy of the 563,000-sf of office/R&D space. Traffic volume data collected within the

[1] The peer reviewer, Vanasse and Associates, Inc., (VAI) issued a letter to the Director of the Sudbury Planning and Community Development Department on February 26, 2016 indicated that they are, "satisfied that the Applicant's engineer has addressed the comment that were raised in our review letter." This aforementioned review letter was issued on January 21, 2016 by VAI. The Proponent incorporated VAI's recommendations into the revised TIA submitted as part of the ENF.

study area was used to determine the weekday morning and evening and Saturday midday peak hours. Given the recent vacancies within the Raytheon facility (less than 25 percent), existing traffic generated by the project site was determined using Institute of Transportation Engineers (ITE) land use codes (LUC) for office space (LUC 710), R&D (LUC 760) and Manufacturing (LUC 140) in lieu of extrapolated existing trip generation data. This methodology was vetted and approved by MassDOT. The current adt for the site was estimated at 5,110 adt (2,555 entering, 2,555 exiting).

Currently, there are limited accommodations for bicyclists and pedestrians within the TIA study area. Sidewalks are provided along the north side of Boston Post Road, but only intermittently along the south side. On-street bicycle accommodations are limited to varying width shoulders. The TIA noted future plans for two bicycle trails near the site, one located directly north (the Mass Central Rail Trail) and the Bruce Freeman Rail Trail (to the east of the site). While Sudbury is a member community of the MetroWest Regional Transit Authority (MWRTA), there is no MWRTA service along Boston Post Road.

In analyzing the proposed No-Build and Build 2022 Conditions, the evaluation considered future background growth and known projects, as well as anticipated roadway improvement projects. Specifically, the Boston Post Road/Landham Road intersection is slated for major upgrades, including signalization, by MassDOT. The 2022 conditions assume these upgrades will be constructed at this intersection. An estimation of adt generated by the project in the 2022 Build Condition was made also using ITE data. As is typical practice approved by MassDOT during the MEPA process, daily trip estimates were estimated using LUC 820 (shopping center) for the collective retail square footage, LUC 220 for the apartments, LUC 252 for age-restricted housing, and LUC 254 for the assisted living units.[2] Using this approved methodology, daily trips generated by the project were estimated at 7,920 adt, an increase of 2,810 adt.

More importantly, the TIA assessed peak hour trips to be generated by the project as peak hour impacts allow for an evaluation of worst-case intersection operations within the study area over the course of a given day. MassDOT requested in the TSL response memorandum that the Proponent evaluate an alternative methodology to determine peak hour trip generation rates. MassDOT requested that the Proponent use LUC 850 (supermarket) for the 45,000 Whole Foods and LUC 820 (shopping center) for the remaining 35,000 sf of retail space and compare these estimates with empirical data obtained from at least three comparable shopping centers with grocery stores to determine the most accurate portrayal of the land uses proposed.[3] Subsequent to the issuance of the TSL, but prior to preparation of the ENF TIA, the Proponent submitted these comparison data to MassDOT and received approval to use the empirical data to determine the 2022 Build Condition peak hour trip generation estimates.[4] These are the data presented in the ENF. These data also indicate that the proposed project will generate less entering traffic during the weekday morning peak hour, less exiting traffic during the weekday evening peak

[2] According to ITE, LUC 820 is appropriate for an "integrated group of commercial establishments that is planned, developed, owned and managed as a unit" Furthermore, this LUC considers outparcels that may include uses such as retail stores and restaurants.
[3] ITE considers the use of LUC 850 for free-standing stores only.
[4] Email from Vinod Kalikiri, VHB Inc., to Derek Valentine and Lionel Lucien, MassDOT, dated October 21-22, 2015 and provided to MEPA on March 21, 2016.

hour, and more traffic during the Saturday midday peak hour than the re-occupancy No-Build 2022 Condition (as is expected with a shift from office/R&D use to mixed uses).

Mixed-use developments also benefit from increased efficiencies between uses on-site that further minimize vehicle trips through internal capture or shared trips. The TIA described projected trip generation assumptions including a 15 percent residential trip internal capture rate during the weekday morning and evening peak hours and a 30 percent rate during the Saturday midday peak hour. Pass-by trip adjustments were applied consistent with MassDOT guidelines for the retail trips, consisting of a 42 percent rate for the weekday evening peak hour and a 37 percent rate for the weekday morning peak hour and the Saturday midday peak hour. These assumptions were deemed acceptable by both MassDOT and the Town of Sudbury's peer reviewer.

The TIA included the results of a signal warrant analysis for the Boston Post Road/primary site driveway intersection in the future build condition. This intersection will meet all three traffic volume-based warrants for the installation of a traffic signal. This mitigation measure is discussed later in this Certificate.

Capacity analysis were conducted for the weekday morning peak hour, weekday evening peak hour, and Saturday midday peak hour conditions for the Existing 2015, and the 2022 No-Build and Build Conditions. The 2022 Build Condition assumed the installation of a new traffic signal at the intersection of a relocated primary site driveway and Boston Post Road. The primary site driveway will be relocated opposite the westerly Sudbury Plaza driveway and Highland Avenue (private way) to create a new five-legged intersection. The TIA also noted that under the 2015 Existing Condition, the Raytheon primary site driveway is under police detail control during the weekday evening peak period. This police detail will not be included in the 2022 Build Condition.

The TIA concluded that under the 2022 Build Condition, all signalized intersections within the study area will operate at acceptable levels of service (LOS) (i.e., LOS D or better) with the exception of the following:

- Boston Post Road at Primary Site Driveway/Sudbury Plaza/Highland Avenue during the weekday evening peak period (LOS E); and
- Boston Post Road at Union Avenue/Shopping Plaza during the Saturday midday peak period (LOS E).

The TIA indicated that the proposed Boston Post Road at Primary Site Driveway/Sudbury Plaza/Highland Avenue intersection will include an exclusive phase for Highland Avenue due to its very low traffic volume (less than five trips during the peak hours). The TIA compared intersection LOS when the Highland Avenue phase activation (LOS E, as noted above) and without Highland Avenue phase activation (LOS F). As recommended by MassDOT, the Proponent should initiate discussions with the Sudbury Plaza and Highland Avenue property owners to discuss the feasibility of rerouting Highland Avenue traffic through the Sudbury Plaza west driveway to allow for the elimination of the proposed signal phase for Highland Avenue.

The TIA acknowledges that relatively long vehicle queues are estimated on Boston Post Road at the signalized site driveway despite the reduction in peak hour trip generation, as compared to the 2022 No-Build Condition. These queues will be ameliorated to some degree by proposed signal timing coordination as part of the mitigation package that will improve LOS at the Boston Post Road/Nobscot Road and Boston Post Road/Union Avenue intersections during the weekday evening and Saturday midday peak hours.

Unsignalized intersections between Boston Post Road and Horse Pond Road and Raymond road currently operate at LOS F and will continue to do so in the 2022 Build Condition. Boston Post Road at Landham Road, Sudbury Plaza Driveway (west) and the existing site driveway (east) currently operate poorly and will be placed under signal control under the 2022 Build Condition. Other unsignalized intersections will experience similar poor operating conditions (with the exception of certain movements during certain peak periods) between the 2022 No-Build Condition and the 2022 Build Condition.

Parking

The project will provide approximately 1,300 parking spaces. MassDOT and MAPC comment letters indicate that opportunities likely exist to further reduce overall parking on-site. I encourage the Proponent to evaluate means to minimize overall parking by considering potential parking management programs, banking parking until demand is demonstrated, and/or incentives to discourage the need for parking (e.g., unbundling parking cost from rent, etc.).

Transportation Mitigation

As noted previously, the key transportation mitigation measure will be the installation of a traffic signal at the primary site driveway/Sudbury Plaza west driveway/Boston Post Road/Highland Avenue intersection. The TIA included a conceptual plan for this improvement and improvements to Boston Post Road along the site's frontage. The Proponent will continue to work with the owners of the Sudbury Plaza to coordinate modifications to its west driveway in conjunction with the new traffic signal. These intersection improvements will also include new actuated pedestrian crosswalk and bicycle accommodations and bicycle detection systems.

The sidewalk on the north side of Boston Post Road along the project site frontage will be widened and the limits of the sidewalk on the south side of Boston Post Road will extended from the Sudbury Plaza east driveway to an area opposite the Sudbury Fire Station. The project may also include an addition of five-foot shoulder (which would become part of any future bike lanes) on either side of Boston Post Road within the limits of work. These shoulders will be subject to the availability of rights-of-way and local and State permit approvals.

The secondary site driveway will be maintained in its current location, but modified to accommodate truck turning maneuvers.

The Proponent also intends to install a pre-emption signal in front of the fire station located west of the project site. The proximity of this signal with that proposed at the primary

site driveway will require that they be integrated. The Proponent should address this issue with the Town and MassDOT during final roadway improvement design and approval.

To improve traffic flow along Boston Post Road through the study area the Proponent will implement a time-based coordinated signal system between the primary site driveway, Nobscot Road, and Union Avenue intersections likely using either GPS timers or radio technology.

Finally, the Proponent will implement a TDM program consisting of the following elements:

- Designation of a Transportation Coordinator to manage the TDM program, inform residents, employees and customers of commuting options and coordinate with the Metrowest Transportation Management Association (TMA), MassRides and the MWRTA;
- Membership in the Metrowest TMA;
- Encourage participation by residents and employees in ridesharing programs such as carpools or vanpools;
- Provide accommodations to facilitate bicycle and pedestrian modes of travel including but not limited to, convenient secure bicycle parking on-site, sidewalk improvements along Boston Post Road, future connections to proposed nearby rail trails, and construction of an on-site pedestrian path network.

MassDOT has recommended additional TDM measures that may be feasible for the project. The Proponent should evaluate these recommendations and specifically address whether they will be implemented as part of the project during the MassDOT permitting process. The Proponent should continue to work with the MWRTA, abutters and the Town of Sudbury to explore possible bus service expansion along the Boston Post Road corridor to serve both the project site and adjacent retail/commercial destinations. The project should be designed in a manner that will not preclude on-site transit service.

The Proponent will be required to undertake a traffic monitoring program for a minimum of five years consistent with MassDOT's TIA guidelines. According to the Proponent, a traffic monitoring program will be developed in conjunction with requirements established by the Town of Sudbury and its peer reviewer and the MassDOT permitting process. I encourage the Proponent to establish mode share goals as a means to evaluate the success of the TDM program. These mode share goals should be presented to MassDOT for consideration during its permit review process.

Hazardous Materials

The ENF identified three sites currently or formerly regulated under the MCP:

- Release Tracking Number (RTN) 3-27243 and RTN 3-3037 – 528 Boston Post Road: related to the presence of chlorinated volatile organic compounds (CVOCs), primarily trichloroethylene (TCE) in groundwater in the northeast portion of the property. The

presence of CVOCs was identified between 1990 and 1991 (RTN 3-3037) and achieved regulatory closure (Pending No Further Action status) with MassDEP in 1997. Raytheon continued groundwater monitoring on-site and while groundwater concentrations remained consistent with earlier data, Raytheon notified MassDEP in 2007 as a precautionary measure (RTN 3-27243). In 2008, Raytheon submitted a Class C Response Action Outcome (RAO), which concluded that a Temporary Solution has been achieved and active remediation was not required. Regulatory compliance is maintained through monitored natural attenuation and periodic groundwater monitoring. Raytheon has, and will continue, to be the responsible party for this periodic groundwater monitoring requirement (every five years). The Proponent continues to work with Raytheon to ensure ongoing access post-construction to those monitoring wells necessary to ensure compliance under the MCP.

- RTN 3-3037 – 528 Boston Post Road: related to a 1987 spill of approximately 35 gallons of number 2 heating oil within the former Boresite Building in the west-central portion of the site. Clean-up documentation was provided as part of RTN 3-3037 and included removal of the underground storage tank (UST) and impacted soils. The UST closure report indicated that there is not a significant risk to human health and environment related to this spill.

- RTN 3-17106 – 528 Boston Post Road: related to a 1998 spill of 15 to 20 gallons of hydraulic oil, resulting from an overturned crane. The spill was remediated with absorbent materials and removal of approximately 1.5 cubic yards of impacted soil. A Class A-2 RAO was filed with MassDEP demonstrating that a Permanent Solution (i.e., regulatory closure) had been achieved.

Each of these RTN's has achieved either Temporary or Permanent Solutions as defined by the MCP. No Activity and Use Limitation (AUL) has been established on any portion of the project site. According to the ENF, sampling has occurred on the project site for the past 20 years under the MCP. Forty groundwater monitoring wells were advanced by Raytheon on-site along with the collection of 43 soil samples. Data collected have not identified soil contamination that would pose a health risk to future users/residents. The most recent groundwater sampling was conducted in March 2015. These data indicated that currently three of the 40 groundwater monitoring wells contain concentrations of constituents above applicable MCP standards. No evidence of groundwater significantly impacting off-site receptors or the Town public water supply wells has been detected over the 20-year monitoring efforts on the property. Prior correspondence from MassDEP noted that "at this time there is no information that would suggest that redevelopment of the site should be restricted."[5]

Concentrations of TCE in excess of MCP standards were detected in two monitoring wells (GZ-10D and GZ-202) on the eastern portion of the site. As noted in the ENF, these wells are located below ground surface in deep groundwater (59-91 feet) and TCE was not detected above reporting limits in shallower groundwater at the site. Correspondence in the ENF from

[5] *MassDEP* correspondence from John Miano, Bureau of Waste Site Cleanup dated March 14, 2016, attached to comment submitted by Bob Haarde, dated March 15, 2016.

MassDEP noted that potential for exposures due to solvent vapor migration into buildings is generally not a concern for the proposed location of the residential buildings due to the depth of groundwater contamination.

Testing also detected the presence of Freon 7 at levels in excess of the applicable MCP standards (Method 2 GW-2 standards) in one groundwater well (GZ-106) located along the eastern property line. The ENF stated that Freon 7 levels at GZ-106 are lower than levels detected in 2013 and none of the surrounding wells contain levels that exceed Method 2 GW-2 standards. There are no buildings proposed in the vicinity of GZ-106, limiting the potential for vapor intrusion into occupied spaces. If the site layout is modified to include building near this monitoring well, the Proponent will be required to evaluate for the possibility of Freon vapor intrusion to indoor air.

Data indicate that contaminant concentrations in groundwater have been decreasing over time, with groundwater containing concentrations above the MCP standards representing approximately five percent of the total site area. Water supply will be provided via the public drinking water supply, with no potable water wells to be installed on-site. The Proponent indicated that the potential installation of an irrigation well is still under investigation. If an irrigation well is proposed, it will be located outside and up-gradient of the RTN and will likely be drilled 300 to 500 feet underground to ensure sufficient water pressure. The Proponent will study the location, design and pumping rates of the irrigation well to ensure that it will not draw in groundwater from the contaminated zone.[6]

Wastewater

The project site presently contains a private wastewater collection, treatment, and disposal system because the Town of Sudbury does not provide municipal wastewater service to the area. On-site wastewater is collected via gravity and force sewer mains prior to being treated at the WWTF. The WWTF's main components include a sequencing batch reactor (SBR), ultraviolet (UV) disinfection, and three open sand beds that filter the treated effluent. This facility has been upgraded in the past (1990 and 2009) and is currently permitted to discharge up to 50,000 gpd by MassDEP in accordance with its existing Groundwater Discharge Permit (GWDP).

The proposed development will be connected to the existing WWTF via a series of new gravity and force mains. The WWTF will be upgraded to process the additional flows anticipated from the expanded uses on-site. These upgrades will provide redundancy, improve system reliability, and increase recharge to the underlying aquifer. While the Proponent intends to modify the GWDP to allow for the treatment of up to 90,000 gpd, the proposed development program is projected to generate approximately 82,000 gpd, based on MassDEP Title V flow estimates. The Proponent also expects to reduce project-related wastewater flows on the order of 20 percent through the implementation of water conservation measures.

The ENF indicated that a hydrogeological evaluation is underway to determine: the capacity of the existing sand beds to accommodate the additional flow, if supplemental measures

[6] Email correspondence with Seth Lattrell, VHB, Inc., and Tricia Pinto, Sanborn Head & Associates, Inc., March 21 and March 22, 2016.

will be necessary to increase wastewater treatment capacity to 90,000 gpd, and which WWTF design upgrades may be needed dependent upon the projected capacity capabilities of the sand beds. These design upgrades will be required to maintain all suitable wastewater discharge standards to a Zone II wellhead protection area. The permit application to MassDEP should demonstrate that these standards will be met and address the potential relationship between increased groundwater discharge and possible impacts to areas subject to review and monitoring under the MCP. As requested by the Town of Sudbury, I encourage the Proponent to consider the feasibility of subsurface leaching beds in lieu of the open sand beds during the final design evaluation process as this may facilitate the creation of additional usable open space on-site.

The proposed development plan presented in the ENF includes a reserve area adjacent to the existing sand beds demonstrating that additional land is available if the final WWTF upgrade design indicates that an additional leaching bed is necessary. Finally, the ENF noted that, based on data collected, the proposed changes to the WWTF and disposal system will not affect the residual contamination due to its depth below ground surface and/or the size of the site.

Water

The project will continue to rely upon water from the Sudbury Water District via the existing 12-inch water main located in Boston Post Road. The project will also include the construction of redundant 8-inch water mains and fire hydrants throughout the site to meet domestic water flows up to 90,000 gpd. To minimize overall water usage, the Proponent will implement the following water conservation measures:

- Installation of low-flow plumbing fixtures and high-efficiency appliances;
- Metering and sub-metering of water usage (e.g., residents will be responsible for their own water usage);
- Installation of efficient water heating systems in multi-family units;
- Use of drought-tolerant plans and an irrigation system with efficiency measures such as rain sensors; and
- Limitation of the use of potable water for irrigation.

The Proponent will strive to reduce overall water demand by 20 percent via these conservation measures. I encourage the Proponent to continue to evaluate measures to reduce irrigation demand through reuse measures such as capture of roof runoff and cisterns or rain barrels.

Wetlands

The project site contains several types of wetland resource areas regulated by the Wetlands Protection Act (WPA), including BVW, inland Bank, and Isolated Land Subject to Flooding (ILSF). The ENF characterized these wetland resource areas, noting that several wetland areas drain to a large stormwater basin in the center of the site via underground pipes. Adjacent properties also contain wetland resource areas with 100-foot buffer zones that extend onto the project site. Upland areas in the 100-foot buffer zones are generally previously developed and consist of paved parking lots and driveways and the WWTF leaching beds. As

noted previously, the project site layout limits direct wetland impacts to BVW (less than 5,000 sf) along the Route 20 and 100-foot buffer zone areas on-site (not a State-regulated resource area).

To limit potential impacts to wetland resource areas along Boston Post Road resulting from the widening of the roadway to meet MassDOT Complete Streets guidelines, the Proponent will use retaining walls to avoid placing fill in the wetlands. Unavoidable temporary impacts will be restored to preconstruction conditions upon completion of work. As noted in the ENF, if upon final roadway design approval from MassDOT direct wetland resource impacts cannot be avoided, the Proponent will be required to replicate these wetlands areas in accordance with the WPA regulations, subject to review and approval by the Sudbury Conservation Commission, or in the case of an appeal, MassDEP.

Stormwater

The project site is presently dominated by impervious surfaces (i.e., buildings, parking areas, driveways). The site contains a stomwater management system that predates the current MassDEP stormwater management standards (SMS). Currently, stormwater flows on-site to a centrally located retention pond or to an area that drains via closed pipe system to the municipal stormwater system. Stormwater swales and wetlands located in the southwestern part of the site collect and convey water to the retention pond. Outflows from the retention pond combine with the closed drainage system located in the southern portion of the site and ultimately discharge to a wetland on the south side of Boston Post Road.

The project will remove approximately 2.5 acres of impervious area, maintain the existing retention pond, and install additional stormwater management BMPs to collect, convey and treat stormwater in a manner consistent with the SMS. Specific BMPs will include grassed swales, deep-sump hooded catch basins, water quality units, subsurface infiltration equipped with isolator rows, and bioretention ponds. The stormwater management system will achieve a minimum removal of 80 percent of total suspended solids (TSS). Furthermore, consistent with requirements for BMPs in a Zone II wellhead protection area, BMPs will be sized for the first inch of water quality runoff volume and 44 percent pretreatment prior to infiltration. The proposed system will improve the attenuation of the post-development peak discharge rates compared to existing conditions, thereby resulting in a net reduction in stormwater discharge rates to the retention pond while the BMPs will improve the overall water quality of the runoff.

The ENF noted that while the project will meet the standards to be considered a redevelopment project under the SMS, it will be designed to be substantially compliant with the SMS for new development. Depths to groundwater in some locations on-site may impede compliance with the new development SMS standards in their entirety, in which case the Proponent will comply with the applicable redevelopment SMS standard. The Proponent should prepare a comprehensive drainage report and submit it to the Sudbury Conservation Commission as part of the NOI review for the project demonstrating consistency with all applicable SMS and wetland regulations at 310 CMR 10.00

Sustainable Design

The Town of Sudbury is a designated Green Community. As such, the project must be designed to meet the current Stretch Energy Code which requires projects to achieve additional energy reduction measures compared to the State's Energy Code. The ENF indicated that the Proponent is committed to achieving or exceeding Stretch Energy Code requirements applicable at the time of construction. I strongly encourage the Proponent to strive to achieve the maximum energy reductions feasible for all elements of the project, focusing not only on fixed measures (e.g., windows, insulation, HVAC systems), but also tenant-driven operational measures. Construction of energy efficient homes, particularly for affordable housing, can not only reduce a project's greenhouse gas emissions (GHG), but also reduce operating costs for owners or tenants. The Proponent should consider the feasibility of solar photovoltaic (PV) of solar hot water (SHW) in light of the available State and federal incentives that make these systems financially viable for projects of this scale.

Construction

All construction should be managed in accordance with applicable MassDEP Solid Waste and Air Pollution Control regulations pursuant to M.G.L. c.40, §54. The Proponent will implement a demolition and construction period waste management plan. Existing pavement will either be processed on-site for reuse as structural fill or shipped off-site to an asphalt recycling facility. Excess soil generated during construction will be subject to analytical testing prior to off-site disposal to ensure consistency with the applicable disposal regulations. Asbestos and hazardous materials abatement will be performed prior to demolition of the existing buildings consistent with local, State and federal regulations, as applicable. The Proponent should review the MassDEP comments on applicable recycling and construction period air pollution requirements to ensure compliance. The Proponent will prepare a Stormwater Pollution Prevention Plan (SWPPP) to meet EPA NPDES Construction General Permit requirements. I encourage the Proponent and its contractors to comply with MassDEP's Diesel Retrofit Program (DRP) and restrict on and off-road idling to the maximum extent practicable. All construction activities should be undertaken in compliance with the conditions of all State and local permits.

A Licensed Site Professional (LSP) will provide monitoring during the construction period to ensure that all work is performed in accordance with MCP requirements. In preparation for the construction process, the LSP will prepare a Release Abatement Measure (RAM) Plan that identifies the policies and procedures should additional contamination be encountered. The RAM Plan will include requirements for soil management, construction dewatering, duct control, and air monitoring. The Proponent should review recommendations in the MassDEP comment letter regarding potential indoor air impact during the demolition and construction process, installation of new utilities, and general consistency requirements with the MCP. Furthermore, as a conservative approach, the Proponent should consider evaluation of the soil beneath the buildings proposed for demolition if the redevelopment of the site creates the potential for exposure to untested soils.

Conclusion

The ENF has sufficiently defined the nature and general elements of the project for the purposes of MEPA review and demonstrated that the project's environmental impacts will be avoided, minimized and/or mitigated to the extent practicable. Based on review of the ENF and comments received, and in consultation with State Agencies, I have determined that no further MEPA review is required. Outstanding issues should be addressed during the local, State and federal permitting processes.

March 25, 2016
Date

Matthew A. Beaton

Comments Received:

3/11/2016	Joanne Lynch
3/14/2016	Town of Sudbury Planning and Community Development Department
3/15/2016	Massachusetts Department of Environmental Protection – Northeast Regional Office (MassDEP – NERO)
3/15/2016	Bob Haarde
3/15/2016	Bill Schineller
3/15/2016	Robert Abrams on behalf of 28 residents of the Town of Sudbury
3/15/2016	Massachusetts Department of Transportation
3/16/2016	Metropolitan Area Planning Council

MAB/HSJ/hsj

Johnson, Holly (EEA)

From: Joanne Lynch [jjmlynch@gmail.com]
Sent: Friday, March 11, 2016 11:56 AM
To: jjmlynch@gmail.com; Robert Abrams; Tamm, Peter; Dineen, Deborah; Steve Senna; Freed, Rachel (DEP); Johnson, Holly (EEA); Dan DePompei
Subject: Public Comment on Raytheon Sudbury Facility

Ms. Johnson,

I have several comments relating to the environmental conditions at the Raytheon Site Boston Post Road in Sudbury. I have been submitting my concerns to MA DEP since last year - starting with a PIP petition which was essentially denied with DEP stating that the Site was closed - albeit with a Temporary RAO. I have noted four issues below that I don't feel were adequately addressed in the Site characterization reports that I reviewed on the DEP website.

This item keeps popping up on the Agenda at the Town Board of Selectmen meetings and news items regarding proposed housing and the Whole Foods, but I am still concerned about the Site conditions as Raytheon is leaving them.

Specifically, I am concerned about Raytheon's:

- Impact to the Town of Sudbury Zone II Wellhead Protection Area for our main drinking water supply by GW-1 exceedances migrating off the Raytheon Site;
- Impact to the health and safety of town residents and construction workers during any demolition of the current facility by adverse impacts to air from building materials potentially containing asbestos. I have not seen any reports that document the building materials being tested for potential asbestos-containing materials;
- Impact to the health and safety of town residents, construction workers, and future Site users from any potential PCB-containing materials not properly disposed from the current facility. I have not seen any reports that document testing for PCBs at on-Site transformers or in building materials; and
- Impact to future Site residents and future workers in these proposed structures (commercial and residential buildings) from VOC impacts that remain on-Site and are not well-defined. (Please note my comments in emails to MADEP dated 2/3/16, 2/5/16, 2/9/16, and 3/8/16 that include pointing out an LSP statement that a "well-defined on-Site source of the CVOCs in groundwater has not been identified" and my observation that PID hits of VOCs, some in part per million range, were noted in the boring logs at six locations in Appendix E of the Phase II report.)

Thanks in advance for your response and attention to these matters.

Best Regards,
Joanne Lynch
201 Pratt's Mill Road, Sudbury, MA

Town of Sudbury

Planning and Community Development Department

Flynn Building
278 Old Sudbury Rd
Sudbury, MA 01776
978-639-3387
Fax: 978-443-0756

Jody A. Kablack, Director

http://www.sudbury.ma.us/services/planning
kablackj@sudbury.ma.us

March 14, 2016

Secretary Matthew A. Beaton
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston MA 02114

RE: 526 & 528 Boston Post Road Redevelopment, Sudbury, MA
Project #13125.00

Dear Secretary Beaton:

This office provides technical review for all development applications presented to the Town of Sudbury through all the land use permitting boards, including the Zoning Board of Appeals, Planning Board and Board of Selectmen. I have been involved with the redevelopment efforts at the former Raytheon property for the last 19 months, and am very familiar with the proposal and the information submitted to date, including the Environmental Notification Form (ENF). Please accept these comments as you review the above application pursuant to the Massachusetts Environmental Policy Act.

The former Raytheon property has been a subject in many land use planning reports dating back to 2001 when Sudbury's most recent Master Plan was prepared. In that report, it was advised to create a plan for the future use of the Raytheon site if, or when, it was vacated. The 2001 Master Plan also stressed the need increase Sudbury's commercial tax base in a sustainable manner by balancing growth in all sectors, improving infrastructure, creating new bylaws to promote desirable development that does not adversely impact the character of the Town, and to find the right balance of development which provides goods and services the local population needs and wants. This redevelopment project embodies all of these strategies, and presents Sudbury with a unique opportunity to shape the future of its commercial business district.

Efforts over the last fourteen years have set the stage for this project. The Route 20 commercial corridor has been studied multiple times to determine what desirable development looks like, where it will be located, and how it will protect the groundwater which sits directly beneath the business district. New zoning bylaws have been adopted, and existing bylaws modified, to steer commercial development in a positive direction to meet goals identified in local and regional planning studies. In 2012 the former Raytheon property specifically was identified in the 495 MetroWest Development Compact Plan in 2012 as a local Priority development Area.

Fast forward to July of 2014 when Raytheon publicly announced its plans to close the Sudbury facility. Knowing the importance of being actively involved in the redevelopment scheme, the Board of Selectmen and Planning Board immediately mobilized to discuss the range of development options, ultimately unanimously voting to support a mixed use development that met several Town goals – redevelopment which acts as a catalyst for other economic development initiatives along the Route 20 corridor, the construction of rental housing to allow the Town to reach its 10% 40B goal, and the construction of age-restricted housing that minimize impacts on the school system and provides additional housing diversity for a growing senior population. This letter, dated February 25, 2015, was submitted in Appendix B of the ENF.

Town of Sudbury

Planning and Community Development Department

Jody A. Kablack, Director

Flynn Building
278 Old Sudbury Rd
Sudbury, MA 01776
978-639-3387
Fax: 978-443-0756

http://www.sudbury.ma.us/services/planning
kablackj@sudbury.ma.us

Since purchasing the property in December 2015, the project team of National Development and Avalon Bay have been working closely with the Town of Sudbury on the redevelopment plan. It is a large and complicated plan, and the Town, with the assistance, cooperation and financial support of the development team, has been carefully studying the potential impacts of the development. We have conducted a peer review of the proposed traffic signal on Route 20, and are satisfied with the draft design, particularly the reduced width of the cross section to be context sensitive along this narrow stretch of Route 20 and its proximity to groundwater supplies, farms and residences. We will be reviewing the developer's stormwater plan for compliance with DEP and local standards, and are confident that the proposed conditions will provide for significant environmental benefits over the existing use. We are writing a new mixed use overlay district zoning bylaw to allow certain aspects of the development that are currently not contemplated in the Zoning Bylaw. Public use of the property will be significantly improved and will include public parks areas, walking paths, and access to the proposed MassCentral Rail Trail. Negotiations are on-going regarding a development agreement between the parties which will mitigate identified impacts beyond the improvements planned for the property and adjacent areas.

The Town of Sudbury experiences severe wastewater disposal limitations in this sector of town which limit commercial growth, and other divisions of DEP are acutely aware of our long-standing efforts to sewer the commercial districts along Route 20. This property is unique with its own treatment plant. The opportunities to create a vibrant commercial center on this site should not be limited by the existing treatment plant capacity, but should be expanded to a safe level based on the treatment processes available and the physical limitations of the ground. My only request to your department in this regard is to investigate the installation of subsurface leaching beds (instead of open sand beds) for effluent disposal, which would provide for a much needed unstructured recreational use area within the large development.

In conclusion, the redevelopment plan is consistent with local and regional planning efforts, contemplates the redevelopment of an existing disturbed site, and proposes significant environmental benefits by bringing the new development into conformance with current environmental regulations.

Thank you for your consideration of these comments.

Sincerely,

Jody A. Kablack

Jody A. Kablack
Director of Planning and Community Development

cc: Steve Senna, National Development
Conservation Commission
Board of Selectmen
Planning Board

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

March 15, 2016

Matthew A. Beaton, Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

RE: Sudbury
526 & 528 Boston Post Road
Redevelopment
EEA # 15479

Attn: MEPA Unit

Dear Secretary Beaton:

The Massachusetts Department of Environmental Protection Northeast Regional Office (MassDEP-NERO) has reviewed the Environmental Notification Form (ENF) submitted by BPR Sudbury Development LLC to demolish the existing, 563,300 sf of buildings and paved parking areas in order to construct about a 600,000 square foot (sf) mixed-use project consisting of 80,000 sf of commercial/retail space including a 45,000 sf grocery, 250 residential apartments and up to 60 condominiums, and a memory care assisted living facility a 50 acre site in Sudbury (EEA #15479). MassDEP provides the following comments.

Wastewater

At this time, BPR Development Sudbury LLC holds a MassDEP Groundwater Discharge Permit 23-4M, which was transferred to them on December 28, 2015. This permit authorizes the discharge of up to 50,000 gallons per day of treated wastewater to the ground, subject to the effluent limits and terms and conditions of the permit. MassDEP also notes that BPR Development Sudbury LLC is now proceeding with field investigations related to hydrogeological work, pursuant to a MassDEP-approved scope of work. Successful completion of the field investigations, a hydrogeological report, and a subsequent Application for Modification of the MassDEP Groundwater Discharge Permit will be required in order to support a future wastewater design flow of 90,000 gallons per day included in the ENF. The proponent should continue to work with MassDEP to ensure all regulatory requirements are met for modification of the existing groundwater discharge permit.

Wetlands

The ENF includes a plan depicting the wetlands resource areas on and near the site, Figure 7, and it is reported the project will alter less than 5,000 sf of bordering vegetated wetlands (BVW) temporarily and about 330,000 sf of buffer zone to BVW. These impacts are expected for the proposed access that includes reconfiguration of a section of Boston Post Road to the south of the project site and work on existing stormwater inlets or outlets. There are reported to be BVW, bank, and isolated land subject to flooding wetland resource areas on site.

The Notice of Intent relating to the demolition of existing buildings was appealed to MassDEP, and a Superseding Order of Conditions (SOC) is being requested, DEP File # 301-1169. After completion of the MEPA review, MassDEP will issue a decision on the request for an SOC. In addition, a Notice of Intent will be needed for the redevelopment project and proposed roadway improvements.

Stormwater

The ENF indicates that the project will reduce imperviousness from 28.8 acres to 25.3 acres. Since the project is reported to reduce imperviousness, the stormwater management system is proposed under the redevelopment standards in the wetlands regulations, 310 CMR 10.05 (6)(k). The proposed stormwater management system includes catchbasins to capture runoff, water quality units, and subsurface infiltration with isolator rows. Grass swales and bioretention ponds also are identified. However, there is insufficient information to evaluate the stormwater management system for compliance with the applicable stormwater management standards.

The ENF acknowledges that the stormwater management system capturing runoff from parking areas will be designed for compliance with the standards for land uses of higher potential pollutant load. The project site also is within the Zone II for public drinking water supplies, which is a critical area under the Stormwater Management Standard 6. The ENF indicates that the stormwater system will be designed to capture and treat the one inch of runoff water quality volume and provide 44 percent pretreatment prior to infiltration. In addition, for compliance with the critical area standard, stormwater management systems must include shutoff/containment capabilities to avoid release of contaminants into the wetlands and groundwater.

MassDEP also notes that the ENF did not identify Hop Brook as an impaired waterbody. According to the *Massachusetts Year 2014 Integrated List of Waters*, Hop Brook is a Category 5 impaired waterbody, which requires a total maximum daily load for dissolved oxygen saturation, excess algal growth, dissolved oxygen, and total phosphorus.

Recycling

The project includes demolition and construction, which will generate a significant amount of construction and demolition (C&D) waste. MassDEP highly recommends that the proponent make a significant commitment to recycle C&D waste as a sustainable measure for the project, comparable to other similar projects. In addition, the proponent is advised that demolition activities must comply with both Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. Chapter 40, Section 54, which provides:

> "Every city or town shall require, as a condition of issuing a building permit or license for the demolition, renovation, rehabilitation or other alteration of a building or structure, that the debris resulting from such demolition, renovation, rehabilitation or alteration be disposed of in a properly licensed solid waste disposal facility, as defined by Section one hundred and fifty A of Chapter one hundred and eleven. Any such permit or license shall indicate the location of the facility at which the debris is to be disposed. If for any reason, the debris will not be disposed as indicated, the permittee or licensee shall notify the issuing authority as to the location where the debris will be disposed. The issuing authority shall amend the permit or license to so indicate."

For the purposes of implementing the requirements of M.G.L. Chapter 40, Section 54, MassDEP considers an asphalt, brick, and concrete (ABC) rubble processing or recycling facility, (pursuant to the provisions of Section (3) under 310 CMR 16.05, the Site Assignment regulations for solid waste management facilities), to be conditionally exempt from the site assignment requirements, if the ABC rubble at such facilities is separated from other solid waste materials at the point of generation. In accordance with 310 CMR 16.05(3), ABC can be crushed on-site with a 30-day notification to MassDEP. However, the asphalt is limited to weathered bituminous concrete, (no roofing asphalt), and the brick and concrete must be uncoated or not impregnated with materials such as roofing epoxy. If the brick and concrete are not clean, the material is defined as construction and demolition (C&D) waste and requires either a Beneficial Use Determination (BUD) or a Site Assignment and permit before it can be crushed.

Pursuant to the requirements of 310 CMR 7.02 of the Air Pollution Control regulations, if the ABC crushing activities are projected to result in the emission of one ton or more of particulate matter to the ambient air per year, and/or if the crushing equipment employs a diesel oil fired engine with an energy input capacity of three million or more British thermal units per hour for either mechanical or electrical power which will remain on-site for twelve or more months, then a plan application must be submitted to MassDEP for written approval prior to installation and operation of the crushing equipment.

Asbestos removal notification on permit form BWP AQ04 (ANF 001) and building demolition notification on permit form BWP AQ06 must be submitted to MassDEP at least 10 working days prior to initiating work. If any asbestos-containing materials will need to be abated through non-traditional abatement methods, the proponent must apply for and obtain approval from MassDEP, through Application BWP AQ36 - Application for Non-Traditional Asbestos Abatement Work Practice Approval. Except for vinyl asbestos tile (VAT) and asphaltic-asbestos felt and shingles, the disposal of asbestos containing materials within the Commonwealth must be at a facility specifically approved by MassDEP, (310 CMR 19.061). No asbestos containing material including VAT, and/or asphaltic-asbestos felts or shingles may be disposed at a facility operating as a recycling facility, (310 CMR 16.05). In addition, the demolition project contain asbestos, the project proponent is advised that asbestos and asbestos-containing waste material are a special waste as defined in the Solid Waste Management regulations, (310 CMR 19.061). The disposal of the asbestos containing materials outside the jurisdictional boundaries of the Commonwealth must comply with all the applicable laws and regulations of the state receiving the material.

The demolition activity also must conform to current Massachusetts Air Pollution Control regulations governing nuisance conditions at 310 CMR 7.01, 7.09 and 7.10. As such, the proponent should propose measures to prevent and minimize dust, noise, and odor nuisance conditions, which may occur during the demolition. Again, MassDEP must be notified in writing, at least 10 days in advance of removing any asbestos, and at least 10 days prior to any demolition work. The removal of asbestos from the buildings must adhere to the special safeguards defined in the Air Pollution Control regulations, (310 CMR 7.15 (2)).

Waste Ban Regulation – 310 CMR 19.017

Section 310 CMR 19.017 *Waste Bans* of the Massachusetts Solid Waste regulations prohibit the disposal of certain wastes in Massachusetts. These wastes include, but are not limited to, recyclable paper (including cardboard). On October 1, 2014, the Massachusetts Organics Waste Ban on the disposal of commercial organic wastes by businesses and institutions takes effect. It prohibits the disposal of organic wastes from businesses and institutions that generate a ton or more of organic materials per week, which necessitates the composting, conversion (such as anaerobic digestion), recycling or reuse of organic the waste.

As the lead state agencies responsible for helping the Commonwealth achieve its waste diversion goals, MassDEP and EEA have strongly supported voluntary initiatives by the private sector to institutionalize source reduction and recycling into their operations. Adapting the design, infrastructure, and contractual requirements necessary to incorporate reduction, recycling and recycled products into existing large-scale developments has presented significant challenges to recycling proponents. Integrating those components into developments such as the Tyngsboro Crossing and Merrimac Commons project at the planning and design stage enables the project's management and occupants to establish and maintain effective waste diversion programs. For example, facilities with minimal obstructions to trash receptacles and easy access to main recycling areas and trash chutes allow for implementation of recycling programs and have been proven to reduce cleaning costs by 20 percent to 50 percent. Other designs that provide sufficient space and electrical services will support consolidating and compacting recyclable material and truck access for recycling material collection.

By incorporating recycling and source reduction into the design, the proponent has the opportunity to join a national movement toward sustainable design. Sustainable design was endorsed in 1993 by the American Institute of Architects with the signing of its *Declaration of Interdependence for a Sustainable Future.* The project proponent may be aware of organizations that provide additional information and technical assistance, including Reuse Marketplace (http://www.reusemarketplace.org/), USEPA's WasteWise Program (www.epa.gov/wastewise/), and MassRecycle (http://www.massrecycle.org/). The listed organizations and programs are notable for offering valuable and effective waste reduction and recycling assistance, web-based resources, case studies, and tools for C&D projects.

Massachusetts Contingency Plan (MCP)/M.G.L. c.21E

Contaminated Soil and Groundwater: The ENF indicates that the project has been regulated by MassDEP's Waste Site Cleanup Program under the MCP/MGL c21E, Release Tracking Numbers (RTNs) 3-3037, RTN 3-17106, and RTN 3-27243 have been assigned for three

separate conditions. The proponent plans to implement a Release Abatement Measure (RAM) Plan during demolition and construction that will include a soil and groundwater management plan. MassDEP recently completed a review of the Waste Site Cleanup files for the project site. A summary of that review is provided in a memorandum from MassDEP, dated January 22, 2016, which is included in Attachment E with the ENF.

The project proponent is advised that excavating, removing and/or disposing of any contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E (and, potentially, c.21C) and OSHA. If permits and approvals under these provisions are not obtained beforehand, considerable delays in the project may occur. The project proponent cannot manage contaminated media without prior submittal of appropriate plans to MassDEP, which describe the proposed contaminated soil and groundwater handling and disposal approach, and health and safety precautions. If contamination at the site is known or suspected, the appropriate tests should be conducted well in advance of the start of construction and professional environmental consulting services should be readily available to provide technical guidance to facilitate any necessary permits. If dewatering activities are to occur at a site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination, a plan must be in place to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. Dust and/or vapor monitoring and controls are often necessary for large-scale projects in contaminated areas. The need to conduct real-time air monitoring for contaminated dust and to implement dust suppression must be determined prior to excavation of soils. An evaluation of contaminant concentrations in soil should be completed to determine the concentration of contaminated dust that could pose a risk to health of on-site workers and nearby people. If this dust concentration, or action level, is reached during excavation, dust suppression should be implemented as needed, or earthwork should be halted.

Potential Indoor Air Impacts: Parties constructing and/or renovating buildings in contaminated areas should consider whether chemical or petroleum vapors in subsurface soils and/or groundwater could impact the indoor air quality of the buildings. All relevant site data, such as contaminant concentrations in soil and groundwater, depth to groundwater, and soil gas concentrations should be evaluated to determine the potential for indoor air impacts to existing or proposed building structures. Particular attention should be paid to the vapor intrusion pathway for sites with elevated levels of chlorinated volatile organic compounds such as tetrachloroethylene (PCE) and trichloroethylene (TCE). MassDEP has additional information about the vapor intrusion pathway on its website at http://www.mass.gov/dep/cleanup/laws/vifs.htm.

New Structures and Utilities: Construction activities conducted at a disposal site shall not prevent or impede the implementation of likely assessment or remedial response actions at the site. Construction of structures at a contaminated site may be conducted as a Release Abatement Measure if assessment and remedial activities prescribed at 310 CMR 40.0442(3) are completed within and adjacent to the footprint of the proposed structure prior to or concurrent with the construction activities. Excavation of contaminated soils to construct clean utility corridors should be conducted for all new utility installations.

Air Quality

Pre-installation approval from MassDEP, pursuant to regulation 310 CMR 7.02, is required if the project will include any boiler regulated under 310 CMR 7.26(30)-(37), inclusive. Natural gas or distillate fuel oil-fired boilers with an energy input capacity less than 10,000,000 British thermal units per hour (Btu/hr) are exempt from the above listed regulations. In addition, if the project will be equipped with emergency generators equal to or greater than 37 kW, then each of those emission units must comply with the regulatory requirements in 310 CMR 7.26(42).

The MassDEP Northeast Regional Office appreciates the opportunity to comment on this proposed project. Please contact at (978) 694- for further information on the issues. If you have any general questions regarding these comments, please contact Nancy.Baker@state.ma.us , MEPA Review Coordinator at (978) 694-3338.

Sincerely,

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission
Eric Worrall, Rachel Freed, Kevin Brander, John Macauley, Jack Miano, Andrew Friedmann, MassDEP-NERO

Johnson, Holly (EEA)

From: Bob Haarde [rhaarde@comcast.net]
Sent: Tuesday, March 15, 2016 10:57 AM
To: Johnson, Holly (EEA)
Subject: FW: Sudbury, 528 Boston Post Rd, Raytheon, Letter & Memo, 3-3037, 3-17106, 3-27243

Ms. Johnson

Holly,

I am passing along my comments and comments from Sudbury citizens on the MEPA decision for the development of the Raytheon property in Sudbury. I believe today is the deadline. If you could please confirm that you received this email I would appreciate it?

Thank you.

I am a member of the board of selectmen but I am not speaking for the board. A letter was sent from Chuck Woodard, Chairman of the Board of Selectmen, to Raytheon last year when they were considering selling the property outlining some concerns including the statement: "With any project, we expect that all impacts will be fully mitigated, including but not limited to increases in the number of school-age children, potential environmental contamination, traffic and support service needs."

There was a group of citizens who petitioned for a PIP designation for this site but were unsuccessful and then asked if there was something I could do to help them.

These citizens asked that I pass along their concerns. I am not an expert in this area but I have reviewed these concerns and they did seem valid to me and worthy of consideration which are below. Below is also an email from the DEP which outlines some concerns as well.

- The developer plans to install deep irrigation wells which could cause human interaction with contaminants.
- Impacts to the Town of Sudbury Zone II Wellhead Protection Area for our main drinking water supply by GW-1 exceedances leaving the Raytheon Site.
- There were only six water and soil samples taken in 2015 and two samples of TCE and one sample of FREON were discovered and all were above the legal limit.
- The only analysis to date have been conducted by GZA, the LSP for Raytheon, and the LSPs for the developers, but not by an independent LSP representing the general public. During the 2/10 Sanborn Head planning board presentation, TCE was described as a "great industrial solvent." The harmful carcinogenic risks of TCE were not mentioned. An independent LSP who looks at TCE as a potential health risk and not a "great industrial solvent" should be hired.
- Most of the analysis on this site appears to have take place in the 1990s, with the exception of the six recent samples.
- According to the February 10th Planning Board Meeting presentation only 43 soil samples in over 20 years have been analyzed.
- The February 20th Planning Board presentation by National Development and Sanborn Head did not adequately cover the presence nor the plan to deal with PCBs, Asbestos and other harmful contaminants which could be released during demolition/construction and which are likely to be in buildings of this vintage. It appears, based on the 2/10 presentation, that the developers will rely on construction workers to report that something "looks funny or smells funny" in order to then engage a RAM process. There are concerns about this process as it may be too late to prevent contamination to construction workers and nearby residents. This area is very youth-centric with athletic facilities and day care centers directly adjacent to the east of this property.

- Impacts to the health and safety of town residents and construction workers during any demolition of the current facility by adverse impacts to air from building materials potentially containing asbestos. We have not seen any reports that document the building materials being tested for potential asbestos-containing materials;
- Impacts to the health and safety of town residents, construction workers, and future Site users from any potential PCB-containing materials not properly disposed from the current facility. We have not seen any reports that document testing for PCBs at on-Site transformers or in building materials; and
- Impacts to future Site residents and future workers in these proposed structures (commercial and residential buildings) from VOC impacts that remain on-Site and are not well-defined. A previous LSP statement that a "well-defined on-Site source of the CVOCs in groundwater has not been identified" and my observation that PID hits of VOCs, some in part per million range, were noted in the boring logs at six locations in Appendix E of the Phase II report.)

Thank you,

Bob Haarde

37 Belcher Drive

Sudbury, MA 01776

617-909-7477

From: Miano, John (DEP) [mailto:John.Miano@MassMail.State.MA.US]
Sent: Monday, March 14, 2016 9:31 AM
To: Bob Haarde
Cc: 'Joanne Lynch'; Johnson, Stephen (DEP); Worrall, Eric (DEP); Friedmann, Andrew (DEP); health@sudbury.ma.us; customerservice@sudburywater.com
Subject: Sudbury, 528 Boston Post Rd, Raytheon, Letter & Memo, 3-3037, 3-17106, 3-27243

Hi Bob,

Thank you for your email related to the former Raytheon site located at 528 Boston Post Road in Sudbury. Given that the Town of Sudbury will be making some decisions about the project in the near future, you are seeking guidance from MassDEP.

As you are aware, MassDEP has recently reviewed information in our 21E files to determine whether any risk would be posed by the proposed future redevelopment of the site. Based on our review, and the testing done to date, it is important to note that at this time there is no information that would suggest that redevelopment of the site should be restricted. This review included an evaluation of the Sanborn report you reference in your email.

The Sanborn "Phase I Environmental Site Assessment with Subsurface Investigation Report", prepared for ND Acquisitions LLC, dated August 2015, included a historical review of contamination at the site and documented their 2015 subsurface investigation program, which evaluated soil and groundwater at the Site. Groundwater and soil samples were tested from 6 locations in June 2015, for VOCs, petroleum, metals, polychlorinated biphenyls (PCBs) and cyanide. All soil and

groundwater levels were below MassDEP's Reportable Concentrations. The Town of Sudbury website contains a Sanborn Head Letter dated February 4, 2016, to Avalon Bay Communities, Inc., and a Summary of Environmental Conditions Presentation to the Sudbury Planning Board, for 528 Boston Post Road, by Patricia M. Pinto, P.E., LSP. The conclusions presented in the Sanborn Phase 1 Report, the letter to Avalon Bay, and the Presentation to the Planning Board were each consistent with MassDEP's findings and recommendations, as presented in our January 22, 2016 letter.

A quick summary of MassDEP's findings and recommendations follows.

- Based on the presence of solvent contamination remaining in deep groundwater, at levels exceeding the MassDEP Drinking Water Standards, MassDEP recommends that if the project should propose to install drinking water wells in the contaminated areas, a Licensed Site Professional evaluate the possible need for treatment. This recommendation is based on the possibility of a change in MCP groundwater category, depending on whether future drinking water wells are installed.
- Buildings constructed near former groundwater monitoring well GZ-106, where Freon levels were present, should be evaluated for the possibility of Freon vapor intrusion to indoor air. This recommendation is based on the possibility of a newly created indoor air exposure pathway if a building is built in this area.
- Given the past uses of the facility and associated use of hazardous materials, further assessment is recommended to evaluate the soil beneath the buildings if redevelopment of the site creates the potential for exposure to untested soils. Although there is no information to indicate that elevated levels beneath the buildings are present, this recommendation is based on a conservative approach to land use change (to residential), and uncertainty about contaminant levels due to the prior presence of buildings.

In terms of next steps, the project is currently before MEPA and the public comment period closes on March 15, 2016. MEPA will issue its decision on the Environmental Notification Form by March 25, 2016. Once that process is complete, MassDEP will be able to finalize its' decision on the pending wetlands appeal through a Superseding Order of Conditions.

I hope this information is helpful. If you have any other questions, please let me know.
Thanks,
Jack

John F. Miano
Chief, Site Management Section
Bureau of Waste Site Clean-up
205B Lowell St., Wilmington MA 01887
Telephone 978-694-3357
Email john.miano@state.ma.us
MassDEP e-newsletter: mass.gov/dep/public/publications/enews.htm
MassDEP web site: mass.gov/dep

Johnson, Holly (EEA)

From: Bill Schineller [bschineller@yahoo.com]
Sent: Tuesday, March 15, 2016 8:10 AM
To: Johnson, Holly (EEA)
Cc: scac@sudbury.ma.us; KablackJ@sudbury.ma.us; BoardofSelectmen@sudbury.ma.us; rte20sewer@sudbury.ma.us; townmanager@sudbury.ma.us
Subject: Comment on Raytheon Redevelopment project in Sudbury w.r.t. Sewer and Overhead Wires

Hello Ms. Holly Johnson,

Regarding the Raytheon Redevelopment project in Sudbury, I understand that a filing under the Massachusetts Environmental Policy Act (MEPA) has been submitted to the Executive office of Energy and Environmental Affairs for the project and that Comments are due to EOEEA on this application by March 15, 2016.

I wish to comment that a project of this magnitude which will dramatically alter the Rt 20 business district in Sudbury, and place additional stresses on the known drinking water, wetland resources, flood zones, and environmental issues in that area. As such this project MUST provide for the installation of sewers for treatment elsewhere.

Furthermore, all utility lines along Rt. 20 should be buried so that there are no overhead wires.

The Raytheon Redevelopment project should be coordinated with other utility projects (such as the proposed Eversource Sudbury - Hudson power line project) to result in a more beautiful, vibrant, village-friendly downtown business district.

I think there is both a requirement and a tremendous opportunity here. Reference https://sudbury.ma.us/scac/route-20-zoning-recommendations-mapc/

Thank you for including my comments in the public record, and acting upon them.

Sincerely,
Bill Schineller
37 Jarman Road
Sudbury, MA 01776

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Stephanie Pollack, MassDOT Secretary & CEO

massDOT
Massachusetts Department of Transportation

March 15, 2016

Matthew Beaton, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: Sudbury – 526 & 528 Boston Post Road: ENF
(EEA #15479)

ATTN: MEPA Unit
Holly Johnson

Dear Secretary Beaton:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the proposed 526 & 528 Boston Post Road project in Sudbury, as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

Ten Park Plaza, Suite 4150, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

cc: Thomas J. Tinlin, Administrator, Highway Division
Patricia Leavenworth, P.E., Chief Engineer, Highway Division
Jonathan Gulliver, District 3 Highway Director
Neil Boudreau, State Traffic Engineer
Sudbury Planning Board
PPDU Files

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Stephanie Pollack, MassDOT Secretary & CEO

massDOT
Massachusetts Department of Transportation

TO: David J. Mohler, Executive Director

FROM: J. Lionel Lucien, P.E, Manager, Public/Private Development Unit
Office of Transportation Planning

DATE: March 15, 2016

RE: Sudbury – 526 & 528 Boston Post Road: ENF
(EEA #15479)

The Public/Private Development Unit (PPDU) has reviewed the Environmental Notification Form (ENF) for the proposed 526 & 528 Boston Post Road project in the Town of Sudbury. The site is currently a multi-building, 563,300 square-foot research/development and office campus for the defense contractor Raytheon. The site totals 50 acres bordered by Boston Post Road (Route 20) to the south, commercial properties to the east, agricultural/open space to the west, and a former railroad right-of-way to the north.

The proposal is to redevelop the site as a mixed-use development with 250 residential apartment housing units, a 54-bed memory care assisted living facility, 60 active adult condominium units, and up to 80,000 square feet of retail space including restaurants and a grocery store. The site would include 1,300 parking spaces spread across the various land uses.

The site abuts and would be accessed via a state-controlled roadway, Boston Post Road (Route 20), and will therefore require a Vehicular Access Permit from MassDOT. The project also exceeds the Massachusetts Environmental Policy Act (MEPA) threshold for trip generation (1,000 or more new trips) and parking (300 or more new parking spaces). The ENF includes a "Traffic Impact Study" that generally conforms to the current (March 2014) MassDOT/EOEEA *Transportation Impact Assessment (TIA) Guidelines*.

Study Area

The study area for the ENF includes the following intersections and connecting roadway segments:

- Route 20 at Horse Pond Road;
- Route 20 at Dudley Road;
- Route 20 at Highland Avenue/Sudbury Plaza (West);
- Route 20 at Sudbury Plaza (East);
- Route 20 at Nobscot Road;
- Route 20 at Union Avenue;
- Route 20 at Raymond Road;
- Route 20 at Concord Road; and
- Route 20 at Landham Road.

Ten Park Plaza, Suite 4150, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

The study area is generally acceptable and is adequate in capturing the impact of the project on area roadways.

Trip Generation

As presented in the ENF, ITE trip rates for Land Use Code (LUC) 820-Shopping Center, LUC 220-Apartments, LUC 252-Age-Restricted Housing, and LUC 254- Assisted Living were used to determine average weekday AM, weekday PM, and Saturday midday peak hour trip generation for the proposed uses. The Proponent has supplemented ITE data with empirical data at four other area retail plazas with supermarket anchors.

To estimate and take credits for the existing uses on site, the trip generation was calculated using LUC 710-Office Space, LUC 760- Research & Development, and LUC 140-Manufacturing. While we generally prefer the use of empirical data for existing uses, the site is currently less than 25% occupied and extrapolation would not provide the most accurate representation of site trip generation potential at 100% occupancy. The methodology used in the ENF is generally acceptable to MassDOT and will be accurate in assessing the impact of the project during peak periods.

When fully occupied, the project is expected to generate 2,810 net new trips on an average day; including a net decrease of 425 trips during the weekday AM peak hour, a net decrease of 35 trips during the weekday PM peak hour, but a net increase of 645 trips during the Saturday midday peak hour.

Safety

The transportation study includes a summary of crash rates derived from MassDOT and available local data for the continuous five-year period of 2009 through 2013 (most recent). The summary indicates that two study area intersections have crash rates that exceed the MassDOT District 3 average. The Route 20/Highland Avenue/Sudbury Plaza (West) intersection has a crash rate of 0.8 and the Route 20/Landham Road intersection has a rate of 0.94. The Landham Road intersection is currently being redesigned to address the safety and capacity issues.

The Proponent will be required to conduct a Roadway Safety Audit (RSA) at all locations exceeding the District crash average with specific mitigation aimed at improving safety, where necessary. An update must be provided based on the RSAs conducted prior to the issuance of a Highway Access Permit.

Traffic Operations

Capacity analyses were conducted for the weekday morning, weekday evening, and Saturday midday peak hours for existing, future No-Build, and future Build conditions. The analysis shows that all study area intersections would operate at a generally comparable level of service under both 2022 No-Build and 2022 Build conditions, suggesting that the area roadways have adequate capacity to support the project with the following improvements in place:

Site Access Improvements

The existing Raytheon driveway is currently unsignalized and is managed by providing police control during peak periods. The Proponent is proposing signalization at this location. A new site driveway would be constructed opposite Sudbury Plaza western driveway/Highland Avenue (private way). A designated left-turn lane would be added from Boston Post Road eastbound along with pedestrian crosswalks and bicycle accommodations. New sidewalks would be added within the limits of disturbance.

The Highland Avenue leg of the proposed intersection is expected to contribute low traffic volumes (on the order of fewer than five vehicle trips during peak hours). This prompted the Proponent to analyze operations at this location under two scenarios. Scenario 1 would be the typical condition without activation of the Highland Avenue phase and Scenario 2 represents activation of that phase when needed.

Under Scenario 2, this location is expected to operate at LOS "F" which is generally seen as unacceptable. The Proponent should continue to work with the MassDOT Traffic Operations Section and the Highway Division District 3 Office during the access permitting process to develop additional traffic signal timing and phasing schemes along Route 20 that could improve this condition. The Proponent should initiate a discussion with Sudbury Plaza and Highland Avenue property owners to reroute Highland Avenue through the Sudbury Plaza West Driveway to create a more typical intersection configuration. This would allow for the elimination of the proposed signal phase for Highland Avenue.

Fire Station Preemption Signal

The Sudbury Fire Department has expressed interest in having traffic signal preemption on Boston Post Road in front of the fire station located along the Proponent's site frontage. The Proponent would implement preemption, in consultation with MassDOT during the access permitting process.

Traffic Signal Coordination

The Proponent would implement a traffic signal coordination system comprised of the intersections of Route 20 with the site driveway, Nobscot Road, and Union Street. The coordinated system would be tailored with specific timing plans implemented during the peak periods. This improvement is expected to help to improve flow along Route 20 at these intersections and numerous other unsignalized intersections along this segment.

Conceptual Plans

The Proponent should provide sufficiently detailed conceptual plans (at least 80-scale) for proposed roadway improvements in order to verify the feasibility of constructing such improvement. These plans should clearly show proposed lane widths and offsets, layout lines

and jurisdictions, and land uses (including driveways) adjacent to areas where improvements are proposed.

Any proposed mitigation within the state highway layout and all internal site circulation must be consistent with a Complete Streets design approach that provides adequate and safe accommodation for all roadway users, including pedestrians, bicyclists, and public transit riders. Guidance on Complete Streets design is included in the *MassDOT Project Development and Design Guide*. Where these criteria cannot be met, the Proponent should provide justification, and should work with the MassDOT Highway Division to obtain a design waiver.

Parking

According to the ENF, the project is expected to include approximately 1,300 parking spaces to serve the on-site uses. While the Proponent did not provide details on the parking calculations, the supply is high and does exceed ITE recommendations for the proposed land uses. While we acknowledge that the proposed is actually a reduction from the existing site parking supply, it is important to recognize that providing parking at a rate that is disproportionate to what is required by the specific land uses has the undesired effect of encouraging excessive single-occupant vehicle travel. Therefore, a comprehensive transportation demand management plan will be essential.

Multimodal Access and Facilities

The Town of Sudbury is served by MetroWest Regional Transit Authority (MWRTA) with the nearest service approximately three miles from the site. The MWRTA recently undertook a service assessment, which identified priority service expansion within the region. One location that was identified as having growth potential is the Route 20 corridor in the vicinity of the site. The Proponent should continue discussions with the MWRTA regarding this possible service and should explore how the project can be designed so not to preclude on-site transit service.

The Proponent has committed to the following pedestrian/bicycle improvements:

- Widening and reconstructing the sidewalks within the limits of work along both sides of Route 20;
- Provision of five-foot wide shoulders on both sides of Route 20 within the limits of construction to become part of future bicycle lanes;
- Construction of a fully actuated pedestrian crosswalk at the site driveway;
- Installation of bicycle detection at the site driveway intersection;
- A network of sidewalks throughout the site; and
- Future connections to the planned Mass Central Rail Trail.

Transportation Demand Management (TDM) Program

The Proponent has committed to providing a TDM plan including, but not limited to, the following measures:

- Designation of an on-site Transportation Coordinator;
- Membership in the MetroWest/495 Transportation Management Association;
- Ridesharing programs for employees; and
- Secure bicycle parking throughout the site.

In addition, the TDM plan should be expanded to include the following measures that have been successful at reducing single-occupant vehicle trips to similar mixed-use developments:

- Information on transportation options provided via a website that is accessible to all residents and visitors;
- Subsidized transit passes for residents, as appropriate;
- Supporting ride-matching/carpooling through the active promotion of NuRide, the Commonwealth's web-based trip planning and ride-matching system that allows users to earn rewards for taking greener trips;
- Providing a guaranteed ride home program for employees;
- Developing a relationship with a car-sharing program and providing an appropriate number of spaces for these car(s) on-site; and
- Providing preferential parking for carpool and vanpool users.

The Proponent should begin identifying the details of these measures as well as developing additional programs. The Proponent should also consult with MassRIDES, the Commonwealth's Travel Options provider, to help implement the TDM program.

The Proponent should continue consultation with appropriate MassDOT units, including PPDU and the District 3 Office, in advance of the issuance of a Vehicular Access Permit. If you have any questions regarding these comments, please contact me at (857) 368-8862 or Derek Valentine at (857) 368-8885.

MAPC
METROPOLITAN AREA PLANNING COUNCIL

SMART GROWTH AND REGIONAL COLLABORATION

March 22, 2016

Matthew A. Beaton, Secretary
Executive Office of Energy & Environmental Affairs
Attention: MEPA Office – Holly Johnson, MEPA #15479
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: 526 & 528 Boston Post Road Redevelopment, MEPA #15479

Dear Secretary Beaton:

The Metropolitan Area Planning Council (MAPC) regularly reviews proposals deemed to have regional impacts. The Council reviews proposed projects for consistency with *MetroFuture*, the regional policy plan for the Boston metropolitan area, the Commonwealth's Sustainable Development Principles, the GreenDOT initiative, consistency with Complete Streets policies and design approaches, as well as other impacts on the environment.

Located on approximately 50 acres, 526 & 528 Boston Post Road (the Project) is bordered by Boston Post Road (Route 20) to the south, to the east by commercial properties, to the west by agricultural use and open space, and to the north by a former railroad right-of-way in Sudbury. BPR Sudbury Development, LLC (the Proponent) proposes a mixed-use development that will comprise approximately 80,000 square feet of mixed retail use[1] and a range of residential developments. Specifically, the proponent proposes 250 apartment units[2], 60 age-restricted (55 or older) condominium units, and a 54-bed assisted living/memory care facility. The Proponent proposes to demolish the existing buildings on the site, formerly owned by Raytheon, in phases.

The Project will modestly help to meet Sudbury's and the region's housing needs. We are somewhat disappointed that the Project continues a trend we see in much of the region, with most units directed to senior citizens and only a few to households with children. Since 114 of the units are directly or effectively age restricted, and since fully half of the 250 rental apartments are one-bedroom units, a significant majority of residents are likely to be senior citizens. We recognize that Sudbury has a need for increased senior housing, and that many of these units may help seniors who are selling their homes in Sudbury to remain in their community. The Project is consistent with Sudbury's 2012 Housing Production Plan, which specifically identifies the site as one of the top six preferred sites for development of affordable housing.

Nevertheless, the region – and certainly communities in this part of the region – have a serious deficit of affordable rental units for families, and developments of this kind represent a critical opportunity to address this deficit. Although the project has many positive aspects, we believe the Proponent will largely miss this important opportunity to diversify the housing stock of Sudbury, to advance Fair Housing goals and to help meet the housing needs of families.

[1] The 80,000 square feet of retail use will comprise a 45,000 square foot grocery store and 35,000 square feet of restaurant/commercial use.

[2] The 250 apartment units will consist of approximately125 1-bedroom, 100 2-bedroom, and 25 3-bedroom units. 25% percent of the apartment homes permitted under M.G.L. Ch. 40B will be restricted to households earning no more than 80 percent of the Area Median Income.

Moving beyond the housing question, we note that this side has been identified as a Priority Development Area (PDA) locally as part of the 495/MetroWest Development Compact planning process, but it was not chosen as a regional priority by MAPC or as a state priority by the Executive Office of Housing & Economic Development. Sudbury's 2001 Master Plan also identified the site as a key location for redevelopment and expansion once vacated by Raytheon.

526 & 528 Boston Post Road proposes a total of 1,300 parking spaces. This Project is forecast to generate an estimated 7,920 daily vehicle trips, an increase of 2,810 trips compared to the office and research & development uses at the former Raytheon site. The weekday morning and evening peak hour traffic generation is estimated at 264 and 447 vehicle trips respectively. Due to the dispersed impacts of the mixed-use development, it is anticipated that vehicle trips will be distributed throughout the day and generate less traffic during the weekday morning and weekday evening peak hours as compared to the previous land use.

MAPC has a long-term interest in alleviating regional traffic and environmental impacts, consistent with the goals of *MetroFuture*. The Commonwealth also has established a mode shift goal of tripling the share of travel in Massachusetts by bicycling, transit, and walking by 2030. Additionally, the Commonwealth has a statutory obligation to reduce greenhouse gas emissions (GHG) by 25% from 1990 levels by 2020 and by 80% from 1990 levels by 2050. Despite the positive aspect of housing production, this largely auto-dependent development will make it more difficult to attain these goals. Therefore MAPC recommends robust traffic mitigation measures in order to realize the benefits of this mixed use development while minimizing any negative impacts.

MAPC has reviewed the Environmental Notification Form (ENF) and our recommendations primarily address providing bus access as part of the mitigation commitments, reducing the number of parking spaces, and developing mode share goals. Our intent is to encourage a greater shift of auto trips to transit, bicycling, and walking, which will reduce the adverse impacts of this project. MAPC respectfully requests that the Secretary incorporate these recommendations into the Certificate on the ENF.

Thank you for the opportunity to comment on this project.

Sincerely,

Marc D. Draisen
Executive Director

cc: Jody Kablack, Director of Planning and Community Development, Town of Sudbury
David Mohler, MassDOT

Public Transportation
Currently, there is no MetroWest Regional Transit Authority (MWRTA) service on Boston Post Road in Sudbury near the Project. The MWRTA bus routes closest to the Project are located at Hager Street in Marlborough to the west (Route 7C) and at the Nobscot Shopping Center in Framingham to the south (Routes 2 and 3). The closest stops to the Project along these routes are located at a distance of approximately three miles to the west and south, respectively.

A recently completed Comprehensive Service Assessment by the MWRTA[1] identifies service gaps and proposes recommendations for their resolution. The Service Assessment explicitly recommends extending the current weekday service along Route 7C in Marlborough to include Sudbury and Wayland along Boston Post Road. The route, when extended, would provide hourly weekday service along Boston Post Road between 6:00 AM and 8:00 PM. The estimated the cost for this service extension is $220,000 annually. This extension has been identified in the Service Assessment as a Phase 1 project that "increases service levels on the agency's routes with the highest ridership and fills unserved gaps in the system." The Service Assessment states that "MWRTA fully believes that additional resources targeted on these services will strengthen the system as a whole." (p.10)

While the Proponent has committed to a mitigation program for roadway improvements, mitigation for public transportation is not addressed. The Proponent should outline how they will coordinate with the MWRTA, specifically identifying how connections to and from the Project site can be enhanced for bus use. The Proponent should partner with the MWRTA by contributing to the operating costs of area bus lines in an amount that is reasonably related to the Project's additional demand. The Proponent should also collaborate with the owners of other sites along Boston Post Road who could also contribute to the operating costs of extending MWRTA bus lines. Additionally, the Proponent's site design should be able to accommodate MWRTA vehicles.

Overall Parking Supply
MAPC strongly encourages the Proponent to investigate measures to reduce the overall number of parking spaces to deter Single Occupancy Vehicle (SOV) trips. As there is a critical relationship between parking supply and transportation behavior, reducing the amount of parking can contribute towards an overall decrease in automotive traffic and trips related to this project. Although the ENF states there will be a total of 1,300 parking spaces, how the spaces are allocated among the various land uses is not indicated. The EIR should describe the allocation of parking spaces the various land uses. It should be noted that MassDOT's Transportation Scoping Letter (TSL) dated October 20, 2015, states that the Transportation Impact Assessment (TIA) "should explain the derivation of the proposed parking supply for the project. The number of proposed spaces should be compared to the amount required based on information contained in the most recent edition of ITE's Parking Generation as well as the requirements of local zoning codes."

Parking reserves and unbundling are innovative parking strategies that can facilitate the reduction of overall parking supply at this site:

<u>Parking Reserves</u>
Consider banking some of the parking spaces until and unless they are determined to be necessary based on monitoring. A parking reserve would require reducing the number of parking spaces initially built, but land would be held in reserve to provide additional parking spaces if – and only if – they are needed in the future. As long as the additional parking is not needed, the land can be landscaped or used for other amenities such as playgrounds, parks, or stormwater mitigation. MassDOT's TSL also recommended that the Proponent investigate this parking strategy. It should be noted that the Proponent can take advantage of the provision in the Town's Zoning Bylaw which allows for reserve parking spaces[2].

[1] MWRTA, Comprehensive Service Assessment, December 2015.

[2] Town of Sudbury Bylaw, Article IX, 2014, Section 3113. Reserve Parking Spaces.

Unbundling
Unbundle parking from space rent or sales price. Unbundling parking allows renters or owners to purchase only as much parking as they need. It would give residents the opportunity to save money by using fewer parking spaces, and this reduced demand would also enable the developer to save money on parking construction. By changing parking from a required purchase to an optional amenity, vehicle ownership and parking demand can be reduced.

In addition to applying these two parking strategies, the Proponent should be required to implement the following Transportation Demand Management (TDM) measures intended to further reduce trip demand, which, in turn, is a rationale for reducing parking.

- Provide ride-matching/carpooling for residents; and
- Provide car-share vehicles and electric vehicle (EV) charging stations for use by residents, as demand warrants.

Pedestrian and Bicycle Accommodations
MAPC is pleased that the Proponent has identified roadway improvements that include pedestrian and bicycle accommodations as well as proposed pedestrian connections. To further enhance pedestrian and bicycle accommodations, the Proponent should implement the following:

- Ensure connectivity to the two bicycle trails planned within close proximity to Project's site, i.e., the Mass Central Trail along the northern edge of the property and the Bruce Freeman Rail Trail to the east of the site.
- While the ENF mentions that there will be secure bicycle parking at convenient locations on the site, the number and location of parking spaces is not provided. The EIR should specify the number and location of bicycle racks and covered parking throughout the Project site.

Mode Share Goals and Monitoring
MAPC is concerned that the ENF does not address mode share goals or a comprehensive monitoring program. The Proponent needs to clearly define mode share goals (vehicular, transit, bicycling and walking) and commit to conducting regular monitoring and reporting of transportation mode shares. Adoption of modes share goals along with a comprehensive monitoring program would allow the Proponent to adjust the project's TDM program as necessary.

Mode Share Goals
Developing and monitoring mode share goals is a central component of a Traffic Impact Assessment (TIA). The *EOEEA/MassDOT Guidelines for TIAs* states: "The TIA should include an assessment of the mode split assumptions, as well as the Proponent's plan to maximize travel choice, promote non-SOV modes, and achieve the assumed mode shares." (p. 17)

Consistent with these Guidelines, the TDM program should include specific, defined mode share goals that target the highest attainable rates of transit, bicycle, and pedestrian use. Data and analysis of existing modes (including public transportation, walking, and bicycling) should be employed to identify proposed physical improvements and supporting programs to increase these modes. MAPC also notes MassDOT's TSL states, "The Proponent will be expected to set specific mode shift goals, particularly for residents of the residential portion and employees of the retail portion of the project."

Monitoring Program
A monitoring program can help to determine if the defined mode share goals are being achieved. A monitoring program should evaluate achievement of the assumptions originally made in the transportation analysis and determine the effectiveness of the TDM program. With a monitoring program, the actual impacts of a project can be determined and additional mitigation measures identified, if necessary.

We ask the Secretary to require that the Proponent work closely with the Town of Sudbury and MassDOT to define clearly the project's intended mode split, to deploy specific practices intended to achieve that goal, and to develop a comprehensive monitoring program for all modes. The project site should be monitored for a minimum period of five years, as outlined in *MassDOT's TIA Guidelines*. (p. 44).

Attachment H
Training Log and Attendance Forms

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Training Log

This log provides a table of contents for the training forms. Insert training attendance lists into the field binder.

Date of Inspection	Notes:	Initials

Attach additional sheets as necessary

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Stormwater Pollution Prevention Training Attendance Form

Date/Time of Training:	
Instructor (name/title):	
Training Location:	
Training Duration:	

Topics addressed in this training

☐	Sediment and Erosion Controls	☐	Emergency Procedures
☐	Stabilization Controls	☐	Inspections/Corrective Actions
☐	Pollution Prevention Measures	☐	Other: _____

Print Name of Attendee:	**Initials**

Attach additional sheets as necessary

Intentionally blank

Attachment I
SWPPP Amendment Log

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Amendment Log

This log provides a table of contents for the amendments to the SWPPP. Insert supplemental materials (if applicable) into the field binder and note their location.

No.	Date of Amendment	Summarize the changes to the SWPPP and indicate any supplemental materials that have been added	Authorization[3] (Name and Signature)	All Other Operators Notified of the Change
1				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐

Attach additional sheets as necessary.

[3] Amendments must be authorized by an individual who meets the requirements of Appendix I, Part 1.11b of the 2017 CGP.

Intentionally blank

Attachment J
Construction Activities Log

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Construction Activities Log

Record the following activities in the Construction Activities log.

Type of Action:	Information to include in the Construction Activity Log
Site-mobilization activities commence	Record the date
Install construction period stormwater controls	Record the date that each stormwater control identified on the Sediment and Erosion Control Plan is installed. Record the date each control becomes operational.
Earth-disturbance activities commence	Record the date, the location on the site, and the type of activity. Activities that must be recorded include: clearing, grubbing, mass grading, cutting/filling, final grading, stockpiling. Record the activity in the Grading and Stabilization Log.
Earth-disturbance activities cease	Record the date, the location on the site, and the type of activity. Activities that must be recorded include: clearing, grubbing, mass grading, cutting/filling, final grading, stockpiling. Record the activity in the Grading and Stabilization Log.
Site stabilization measures commence (P/T)	Record the date, the location on the site, and the type of site stabilization measure commenced. Indicate if the stabilization measure is temporary or permanent. Record the activity in the Grading and Stabilization Log.
Site stabilization measures cease (P/T)	Record the date, the location on the site, and the type of site stabilization measure that has ceased. Record the date that the stabilization measure becomes operational.Record the activity in the Grading and Stabilization Log.
Removal of construction period stormwater controls	Record the date that each stormwater control identified on the Sediment and Erosion Control Plan is removed.
Removal of construction equipment and vehicles	Record the date that all equipment and vehicles vacate the site.
Cessation of pollutant-generating activities	Record the date that all pollution generating activities on the site cease.
Construction activities cease	Record the date.

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Construction Activities Log

Date:	Type of Action:	Notes:	Supplemental Log Entry Created[4]
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐

Attach additional sheets as necessary.

[4] If the activity type is an earth disturbance activity or a site stabilization measure, then also record the activity in the separate Grading and Stabilization Log

Attachments

Intentionally blank

Attachment K
Grading and Stabilization Log

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Grading and Stabilization Log

Date Grading Activity Initiated	Date Grading Activity Ceased	Description of Grading Activity	Date Stabilization Measure Initiated	Date Stabilization Achieved	P/T	Description of Stabilization Measure

P = Permanent, T = Temporary

Attach additional sheets as necessary

Attachments

Intentionally blank

Attachment L
Inspection Log and Template Forms

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA Inspection Log

This log provides a table of contents for the completed inspection log forms. Insert completed inspection reports into the field binder.

Date of Inspection	Notes:	Initials

Attach additional sheets as necessary

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Site Inspection Form

Complete this inspection report within 24 hours of completing the site inspection. page 1 of ____

Date/Time of Inspection:	**Weather Conditions:**
Recent Precipitation Event:	(record daily rainfall total if 0.25 inches has fallen within the previous 24 hours)
Construction Activities Underway:	
Inspector:	

Status of Existing BMPs

Refer to Part 4.5 of the 2017 CGP to identify areas that must be inspected.
Refer to Part 4.6 for the requirements for inspections.

Erosion Control Measure	**Status – Cleaning or Repair Needed**		**Comments/Notes**
	Yes	**No**	
[Silt Fence]	☐	☐	
[Haybales]	☐	☐	
[Construction Period Swales]	☐	☐	
[Construction Period Basins]	☐	☐	
[Erosion Control Blankets]	☐	☐	
[Catch Basin Sediment Traps]	☐	☐	
[Straw Wattles]	☐	☐	

N/A – Not applicable

Attach additional sheets if necessary

In the event of a spill refer to the **Spill Response Procedure** and contact appropriate agencies. Refer to Section 8.8 of the SWPPP Manual 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:_____

_____

› 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.

Authorizationr:_____ Date:_____

Authorization must be made by personnel identified in the Delegation of Authority and authorized to complete this task.

Attachment M
Corrective Action Log and Template Forms

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Corrective Action Log

This log provides a table of contents for the completed corrective action log forms. Insert completed corrective action reports into the field binder.

Date of Action	Notes:	Initials

Attach additional sheets as necessary

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Corrective Action Form

	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:

"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."

Authorization:_____ Date:_____

Authorization must be made by personnel identified in the Delegation of Authority and authorized to complete this task.

Intentionally blank

Attachment N
Spill Log and Template Forms

Intentionally blank

Highcrest at Meadow Walk, Sudbury, MA
Hazardous Waste & Oil Spill Report

Date____/____/____ Time_____ AM / PM

Exact location (Transformer #)_____

Type of equipment_____ Make_____ Size_____

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_____

Intentionally blank

Attachment O
Buffer Documentation

Intentionally blank

Attachment P
Chemical Information

Intentionally blank

Attachment Q
UIC Well Correspondence

Intentionally blank

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: 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.

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.

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.

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: MassDEP, BRP UIC Program One Winter Street, 5th Floor Boston, MA 02108 **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. 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. 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. 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. 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. 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).

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.

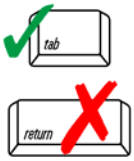
Refer to the Instructions and Supporting Materials document that corresponds to this UIC Registration form for detailed instructions regarding the completion of this form and the required attachments.

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)

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

Intentionally blank

Attachment R
Local Orders of Conditions

Intentionally blank

Attachment S
Design Calculations for Stormwater Erosion Controls

Intentionally blank