

# Stormwater Management Report

**Lots 1 & 2 (Map R07, Parcel 1-0)**

**Harwood Avenue**

**Littleton, MA**

April 2025

**Prepared for:**

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04/23/25

Project No. 241121  
241121\_Stormwater Report

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Attachment 1: Soils Information

Attachment 2: TSS, Water Quality Volume, and TP Removal Calculations

Attachment 3: Long Term Pollution Prevention Plan and Operation and Maintenance Manual

Attachment 4: Certified List of Abutters

# 1. Introduction

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The Project includes a stormwater management system designed to provide water quality treatment and promote groundwater recharge in accordance with applicable stormwater regulations and the local bylaws of the Town of Littleton. The proposed development consists of two single-family homes that are not part of a larger common plan and do not discharge to a critical area. Therefore, pursuant to the Massachusetts Stormwater Handbook, the Stormwater Management Standards do not formally apply. Nevertheless, the Project incorporates stormwater control measures that meet the Standards to the maximum extent practicable.

## 2. Existing Conditions

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The Site consists primarily of grassy meadow with some woodland vegetation. Previously developed areas include a portion of a driveway located on Lot 2. The Site's topography features a north and west facing hillside that slopes downward to the Street for Lot 1, and slopes to the west for Lot 2. Runoff from the site currently drains to two primary locations: the right-of-way (Harwood Ave) located to the north and to the west, towards vegetated wetlands located off-site.

### 2.1. Regional Watershed

The site is located within the Concord River Watershed, specifically with the Fort Pond Brook sub-watershed. The Concord River Watershed is listed within the statewide TMDL for pathogens. The Project has been designed to comply with the Statewide Total Maximum Daily Load (TMDL) for pathogens through the implementation of multiple measures to prevent and control pollutant sources. Wastewater will be managed through a Title 5-compliant on-site septic system. The Project includes no illicit discharges or connections to the stormwater system. Stormwater runoff from impervious surfaces will be directed to infiltration-based best management practices, which promote groundwater recharge and reduce the potential for pathogen transport. In addition, the Long-Term Pollution Prevention Plan includes homeowner education measures and ongoing maintenance that promote responsible pet waste management.

### 2.2. Impaired Waters

The Project ultimately discharges stormwater runoff to Long Pond, located to the northeast of the site. Long Pond is listed as a category 5 impaired water (a waterbody requiring a TMDL) on the 2022 303(d) list. The impairments include algae, dissolved oxygen, and total phosphorus. The Project is designed to comply with the Town of Littleton standards to remove a minimum of 60% total phosphorus.

### 2.3. Critical Areas

The site is tributary to the bordering vegetated wetland located off-site to the west.

### 2.4. Soils

The on-site soils are classified by the National Resource Conservation Service (NRCS) as Paxton fine sandy loam, slow draining when thoroughly wet, a Hydrologic Class C soil. These soils consist of loamy eolian mantled material underlain by lodgement (dense) till derived from schist, gneiss and granite.

A Site visit conducted by a *Competent Soils Individual* was performed to confirm NRCS soil textures, bedrock depths, estimated seasonal high groundwater elevations, and permeability data for stormwater management system design. Soil inspections revealed topsoil and subsoil layers

with sandy loam textures, underlain by glacial till of fine sandy loam texture. Seasonal high groundwater was observed at 23" below existing grade.

## 3. Proposed Conditions

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The site design prioritizes preserving environmentally sensitive features and minimizing disruptions to natural hydrology. To help retain natural drainage patterns the grading was limited, and the layout was tailored to closely follow the existing terrain wherever feasible.

The stormwater management system addresses flow rate reduction, provides groundwater recharge, and treats runoff from the proposed impervious surfaces. To provide water quality treatment and groundwater subsurface infiltration systems are proposed for roof runoff, a rain garden (bioretention) is proposed for treatment of driveway runoff in Lot 1, and an infiltration basin with associated sediment forebay is proposed for treatment of driveway runoff in Lot 2. Numerous soil borings located throughout Lots 1 and 2 confirm two feet of separation from seasonal high groundwater. The systems contain overflow outlets that discharge into off-site areas during larger storms. All stormwater control measures (SCMs) are designed to treat at least the first 1.0 inch of runoff from impervious areas.

### 3.1. Stormwater Control Measures

#### Subsurface Infiltration System

The subsurface infiltration system consists of underground Stormtech Chambers. The design of the chambers includes a permeable bottom that allows for maximum exfiltration of runoff from the system to the groundwater.

The infiltration system was designed using the Static/Simple Method outlined in Chapter 3 of the Massachusetts Stormwater Handbook. The system utilizes a Rawl's exfiltration rate of 0.27 inches per hour and is sized to meet the water quality volume, ensuring full dewatering within 72 hours.

#### Sediment Forebay

The sediment forebay consists of an excavated area designed to slow incoming stormwater runoff and facilitating the gravity separation of suspended solids. The sediment forebay provides pretreatment of runoff before delivery to other treatment SCMs.

The Sediment Forebay was sized to hold 10% of the WQV for pretreatment.

#### Rain Garden (Bioretention)

The rain garden consists of a shallow depression filled with sandy soil topped with a layer of mulch and planted with dense native vegetation. The runoff percolates through the soil media that acts as a filter.

The rain garden was designed using the Static/Simple Method outlined in Chapter 3 of the Massachusetts Stormwater Handbook. The system utilizes a Rawl's exfiltration rate of 0.27 inches per hour and is sized to meet the water quality volume, and provide 6" of ponding.

### **Infiltration Basin**

The infiltration basin consists of an excavated impoundment designed to exfiltrate incoming stormwater runoff. Runoff from the storm is stored until it exfiltrates through the soil of the basin floor.

The infiltration basin was designed using the Static/Simple Method outlined in Chapter 3 of the Massachusetts Stormwater Handbook. The system utilizes a Rawl's exfiltration rate of 0.27 inches per hour and is sized to recharge the water quality volume, ensuring full dewatering within 72 hours.

## 4. Compliance with the 2008 Handbook Standards

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The stormwater management system complies with the ten (10) Standards outlined in the 2008 Handbook, as summarized below.

### **STANDARD 1: No New Untreated Discharges or Erosions to Wetlands**

Untreated stormwater will not be discharged directly into nearby wetlands or waters of the Commonwealth. Runoff from all impervious surfaces will be routed through SCMs designed for flow rate reduction, groundwater recharge, and water quality treatment being released to the adjacent wetlands.

### **STANDARD 2: Peak Runoff Rate Attenuation**

A formal peak runoff rate analysis has not been provided, as the project involves the construction of two single-family homes and is not part of a larger common plan of development. In accordance with the Massachusetts Stormwater Handbook, the Stormwater Management Standards do not apply to projects limited to the construction of a single-family home or a residential development of four or fewer lots, provided there are no discharges that may affect a critical area. As noted below, the Project does not discharge to a critical area.

The site has been designed to maintain pre-development drainage patterns and avoid concentrated discharges to abutting properties or public rights-of-way. Grading and low-impact stormwater practices have been incorporated to promote water quality treatment and groundwater recharge. These measures are expected to reduce both runoff rates and volumes. The proposed stormwater management system provides a minimum of 1.0 inch of recharge volume across the tributary impervious area, enabling infiltration of approximately 80% of annual storm events in Massachusetts, based on NOAA Atlas 14 data.

### **STANDARD 3: Groundwater Recharge**

The stormwater management system includes subsurface infiltration systems, a rain garden, and an infiltration basin designed to recharge groundwater on-site. Infiltration SCMs were sized using the simple dynamic method to meet the required recharge volume for the post-development site so that the annual recharge from the post-development site will approximate pre-development conditions. Refer to Attachment 2 E for SCM groundwater recharge calculations.

### **STANDARD 4: Water Quality**

The project will comply with Standard 4 water quality requirements through on-site treatment trains achieving 80% TSS removal. See Attachment 2 for TSS removal and TP removal worksheets. SCMs, such as sediment forebays and the infiltration basin, are

designed to capture and treat the first 1.0 inch of runoff from proposed impervious surfaces. All SCMs will be operated and maintained to ensure ongoing water quality treatment.

A Long-Term Pollution Prevention Plan has been developed to outline source control and pollution prevention measures. This plan is integrated with the Operation and Maintenance Plan (Standard 9), which specifies maintenance requirements for the SCMs.

In addition to meeting state standards, the Project satisfies the Town of Littleton's regulatory requirement for phosphorus control by achieving a 60% TP removal rate and a 90% TSS removal rate.

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

This standard does not apply since the project does not involve any LUHPPLs.

#### **STANDARD 6: Critical Areas**

The Project does not discharge to a critical area.

#### **STANDARD 7: Redevelopment**

This standard does not apply since the Project is not a redevelopment.

#### **STANDARD 8: Construction Period Pollution Prevention**

The project will disturb more than one acre of land, requiring coverage under the Environmental Protection Agency's Construction General Permit and the development of a Stormwater Pollution Prevention Plan (SWPPP). A SWPPP has been developed or will be developed prior to construction.

#### **STANDARD 9: A Long-Term Operation and Maintenance (O&M) Plan**

An Operation and Maintenance Plan has been developed which specifies maintenance requirements for the SCMs in conjunction with the Long-Term Pollution Prevention Plan which outlines source control and pollution prevention measures.

#### **STANDARD 10: Prohibition of Illicit Discharges**

There will be no illicit discharges to the proposed stormwater management system associated with the proposed project.

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## Attachment 1: Soil Information

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-1 Date: 07/11/18 Time: 12:30 PM Weather: Sunny 80°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Deep Observation Hole Log   |              |                     |                      |                   |  |
|-----------------------------|--------------|---------------------|----------------------|-------------------|--|
| Hole # 718-1                |              | NB 30/34            |                      | Surface El. 310.1 |  |
| Depth from Surface (inches) | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling     | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-7                         | A            | SL                  | 10YR3/2              | @20"              | loose, cr  |
| 7-18                        | B            | SL                  | 10YR 5/4             |                   | vfr, roots   |
| 18-92                       | C            | fsl                 | 2.5 Y 6/4            |                   | abk, vfr, 5% cob, 10%gr                                    |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >92"

Depth to Groundwater: Standing Water in the Hole 92"

Weeping from Pit Face: 78"

Estimated Seasonal High Groundwater in the Hole 20"

Additional Notes

## FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

### On-Site Review

Deep Hole #: 718-2 Date: 07/11/18 Time: 12:45 PM Weather: Sunny 80°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

### Deep Observation Hole Log

| Hole # 718-2 NB 30/34 Surface El. 309.9 |              |                     |                      |               |  |
|---|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)             | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-7                                     | A            | SL                  | 10YR3/2              |               | loose, cr  |
| 7-23                                    | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 23-106                                  | C            | fsl                 | 2.5 Y 6/4            | @23"          | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >106"

Depth to Groundwater: Standing Water in the Hole N/A

Weeping from Pit Face: 80"

Estimated Seasonal High Groundwater in the Hole 23"

Additional Notes

## FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

### On-Site Review

Deep Hole #: 718-3 Date: 07/11/18 Time: 1:00 PM Weather: Sunny 80°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

|                               |                         |
|-------------------------------|-------------------------|
| Open Water Body >100 feet     | Drainage Way >100 feet  |
| Possible Wet Area >100 feet   | Property Line >20' feet |
| Drinking Water Well >100 feet | Other: _____ feet       |

### Deep Observation Hole Log

| Hole # 718-3 NB 30/34 Surface El. 309.4 |              |                     |                      |               |  |
|---|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)             | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-7                                     | A            | SL                  | 10YR3/2              |               | loose, cr  |
| 7-21                                    | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 23-108                                  | C            | fsl                 | 2.5 Y 6/4            | @23"          | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >108"

Depth to Groundwater: Standing Water in the Hole 108"

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole 23"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-4 Date: 07/11/18 Time: 1:15 PM Weather: Sunny 80°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Hole # 718-4 NB 30/37 Surface El. 309.3 |              |                     |                      |               |  |
|---|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)             | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-7                                     | A            | SL                  | 10YR3/2              | @25"          | loose, cr  |
| 7-21                                    | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 23-110                                  | C            | fsl                 | 2.5 Y 6/4            |               | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >110"

Depth to Groundwater: Standing Water in the Hole N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole 25"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-5 Date: 07/11/18 Time: 1:30 PM Weather: Sunny 80°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Hole # 718-5 NB 30/37 Surface El. 308.1 |              |                     |                      |               |  |
|---|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)             | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-8                                     | A            | SL                  | 10YR3/2              | @29"          | loose, cr  |
| 8-20                                    | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 20-112                                  | C            | fsl                 | 2.5 Y 6/4            |               | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >112"

Depth to Groundwater: Standing Water in the Hole

N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole

29"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-6 Date: 07/11/18 Time: 1:45 PM Weather: Sunny 80°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet Drainage Way >100 feet

Possible Wet Area >100 feet Property Line >20' feet

Drinking Water Well >100 feet Other: feet

## Deep Observation Hole Log

| Hole # 718-6 NB 30/37 Surface El. 308.9 |              |                     |                      |               |  |
|---|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)             | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-9                                     | A            | SL                  | 10YR3/2              | @25"          | loose, cr  |
| 9-30                                    | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 30-104                                  | C            | fsl                 | 2.5 Y 6/4            |               | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till Depth to Bedrock: >104"

Depth to Groundwater: Standing Water in the Hole N/A Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole 25"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-7 Date: 07/12/18 Time: 10:00 AM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet Drainage Way >100 feet

Possible Wet Area >100 feet Property Line >20' feet

Drinking Water Well >100 feet Other: feet

## Deep Observation Hole Log

| Hole # 718-7                |              | NB 30/38            |                      | Surface El. 308.2 |  |
|-----------------------------|--------------|---------------------|----------------------|-------------------|--|
| Depth from Surface (inches) | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling     | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-8                         | A            | SL                  | 10YR3/2              | @24"              | loose, cr  |
| 8-24                        | B            | SL                  | 10YR 5/4             |                   | vfr, roots   |
| 24-102                      | C            | fsl                 | 2.5 Y 6/4            |                   | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >102"

Depth to Groundwater: Standing Water in the Hole N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole 24"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-8 Date: 07/12/18 Time: 10:15 AM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Hole # 718-8 NB 30/38 Surface El. 306.9 |              |                     |                      |               |  |
|---|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)             | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-9                                     | A            | SL                  | 10YR3/2              |               | loose, cr  |
| 9-24                                    | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 24-96                                   | C            | fsl                 | 2.5 Y 6/4            | @24"          | abk, vfr, 5% cob, 10%gr                                    |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >96"

Depth to Groundwater: Standing Water in the Hole

N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole

24"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-10 Date: 07/12/18 Time: 10:45 AM Weather: Sunny 85°  
 Location (identify on site plan) See Attached Sketch  
 Land Use Grass/ Field Slope (%) 2% Surfaces Stones few  
 (eg woodland, agricultural field, vacant lot etc...)  
 Vegetation grass  
 Landform Ground Moraine  
 Position on landscape See attached Sketch  
 Distances from:  
 Open Water Body >100 feet Drainage Way >100 feet  
 Possible Wet Area >100 feet Property Line >20' feet  
 Drinking Water Well >100 feet Other:  
 ..... feet

## Deep Observation Hole Log

| Hole # 718-10 NB 30/38 Surface El. 297.2 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-9                                      | A            | SL                  | 10YR3/2              |               | loose, cr  |
| 9-26                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 26-96                                    | C            | fsl                 | 2.5 Y 6/4            | @26"          | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till Depth to Bedrock: >96"  
 Depth to Groundwater: Standing Water in the Hole N/A Weeping from Pit Face: N/A  
 Estimated Seasonal High Groundwater in the Hole 26"  
 Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-11 Date: 07/12/18 Time: 11:00 AM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegatation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet Drainage Way >100 feet

Possible Wet Area >100 feet Property Line >20' feet

Drinking Water Well >100 feet Other: feet

## Deep Observation Hole Log

| Hole # 718-11 NB 30/39 Surface El. 295.1 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-9                                      | A            | SL                  | 10YR3/2              |               | loose, cr  |
| 9-30                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 30-99                                    | C            | fsl                 | 2.5 Y 6/4            | @24"          | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >99"

Depth to Groundwater: Standing Water in the Hole N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole 24"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718.13 Date: 07/12/18 Time: 11:30 AM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Hole # 718.13 NB 30/39 Surface El. 303.4 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-7                                      | A            | SL                  | 10YR3/2              |               | loose, cr  |
| 7-26                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 26-88                                    | C            | fsl                 | 2.5 Y 6/4            | @20"          | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >88"

Depth to Groundwater: Standing Water in the Hole

N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole

20"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-14 Date: 07/12/18 Time: 11:45 AM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Hole # 718-14 NB 30/39 Surface El. 306.2 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-9                                      | A            | SL                  | 10YR3/2              | @28"          | loose, cr  |
| 9-26                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 26-90                                    | C            | fsl                 | 2.5 Y 6/4            |               | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >90"

Depth to Groundwater: Standing Water in the Hole

N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole

28"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-15 Date: 07/12/18 Time: 12:00 PM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Hole # 718-15 NB 30/40 Surface El. 306.1 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-8                                      | A            | SL                  | 10YR3/2              | @25"          | loose, cr  |
| 8-26                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 26-92                                    | C            | fsl                 | 2.5 Y 6/4            |               | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >92"

Depth to Groundwater: Standing Water in the Hole

N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole

25"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-16 Date: 07/12/18 Time: 12:45 PM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Hole # 718-16 NB 30/40 Surface El. 303.3 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-8                                      | A            | SL                  | 10YR3/2              | @25"          | loose, cr  |
| 8-28                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 28-106                                   | C            | fsl                 | 2.5 Y 6/4            |               | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >106"

Depth to Groundwater: Standing Water in the Hole N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole 25"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-17 Date: 07/12/18 Time: 1:00 PM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet Drainage Way >100 feet  
Possible Wet Area >100 feet Property Line >20' feet  
Drinking Water Well >100 feet Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

| Hole # 718-17 NB 30/40 Surface El. 306.2 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-9                                      | A            | SL                  | 10YR3/2              | @24"          | loose, cr  |
| 9-29                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 29-109                                   | C            | fsl                 | 2.5 Y 6/4            |               | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >109"

Depth to Groundwater: Standing Water in the Hole

N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole

24"

Additional Notes

## FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

### On-Site Review

Deep Hole #: 718-18 Date: 07/12/18 Time: 1:15 PM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

### Deep Observation Hole Log

| Hole # 718-18 NB 30/41 Surface El. 307.3 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-8                                      | A            | SL                  | 10YR3/2              | @23"          | loose, cr  |
| 8-26                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 26-100                                   | C            | fsl                 | 2.5 Y 6/4            |               | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >100"

Depth to Groundwater: Standing Water in the Hole

N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole

23"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-19 Date: 07/12/18 Time: 1:30 PM Weather: Sunny 85°

Location (identify on site plan) See Attached Sketch

Land Use Grass/ Field Slope (%) 2% Surfaces Stones few

(eg woodland, agricultural field, vacant lot etc...)

Vegetation grass

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >20' feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

| Hole # 718-19 NB 30/41 Surface El. 306.2 |              |                     |                      |               |  |
|--|--------------|---------------------|----------------------|---------------|--|
| Depth from Surface (inches)              | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-9                                      | A            | SL                  | 10YR3/2              | @23"          | loose, cr  |
| 9-18                                     | B            | SL                  | 10YR 5/4             |               | vfr, roots   |
| 18-101                                   | C            | fsl                 | 2.5 Y 6/4            |               | abk, vfr, 5% cob, 10%gr                                    |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >101"

Depth to Groundwater: Standing Water in the Hole N/A

Weeping from Pit Face: N/A

Estimated Seasonal High Groundwater in the Hole 23"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 195 Tahattawan Rd  
Littleton, MA 01460

## On-Site Review

Deep Hole #: 718-20 Date: 07/12/18 Time: 1:45 PM Weather: Sunny 85°  
Location (identify on site plan) See Attached Sketch  
Land Use Grass/ Field Slope (%) 2% Surfaces Stones few  
(eg woodland, agricultural field, vacant lot etc...)  
Vegetation grass  
Landform Ground Moraine  
Position on landscape See attached Sketch  
Distances from:  
Open Water Body >100 feet Drainage Way >100 feet  
Possible Wet Area >100 feet Property Line >20' feet  
Drinking Water Well >100 feet Other: feet

| Deep Observation Hole Log   |              |                     |                      |                   |  |
|-----------------------------|--------------|---------------------|----------------------|-------------------|--|
| Hole # 718-20               |              | NB 30/41            |                      | Surface El. 305.7 |  |
| Depth from Surface (inches) | Soil Horizon | Soil Texture (USDA) | Soil Color (MUNSELL) | Soil Mottling     | Other (Structure, Stones, Boulders, Consistency, % Gravel) |
| 0-9                         | A            | SL                  | 10YR3/2              | @26"              | loose, cr  |
| 9-24                        | B            | SL                  | 10YR 5/4             |                   | vfr, roots   |
| 24-98                       | C            | fsl                 | 2.5 Y 6/4            |                   | abk,vfr, 5% cob, 10%gr                                     |

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till Depth to Bedrock: >98"  
Depth to Groundwater: Standing Water in the Hole N/A Weeping from Pit Face: N/A  
Estimated Seasonal High Groundwater in the Hole 26"  
Additional Notes

---

## Attachment 2: TSS, Water Quality Volume, and Total Phosphorus Removal Calculations

## Stormwater Management Standard 4: TSS Removal

Location: Lot 1 flows to bioretention

| TSS Removal<br>Calculation<br>Worksheet | A            | B                   | C                    | D                       | E                       |
|---|--------------|---------------------|----------------------|-------------------------|-------------------------|
|   | SCM          | TSS Removal<br>Rate | Starting TSS<br>Load | Amount<br>Removed (B*C) | Remaining<br>Load (C-D) |
|   | Bioretention | 0.90                | 1.00                 | 0.90                    | 0.10                    |
|   |              |                     | -                    | -                       | -                       |
|   |              |                     | -                    | -                       | -                       |
|   |              |                     | -                    | -                       | -                       |

Total TSS Removal = 90%

Location: Lot 2 flows to infiltration basin

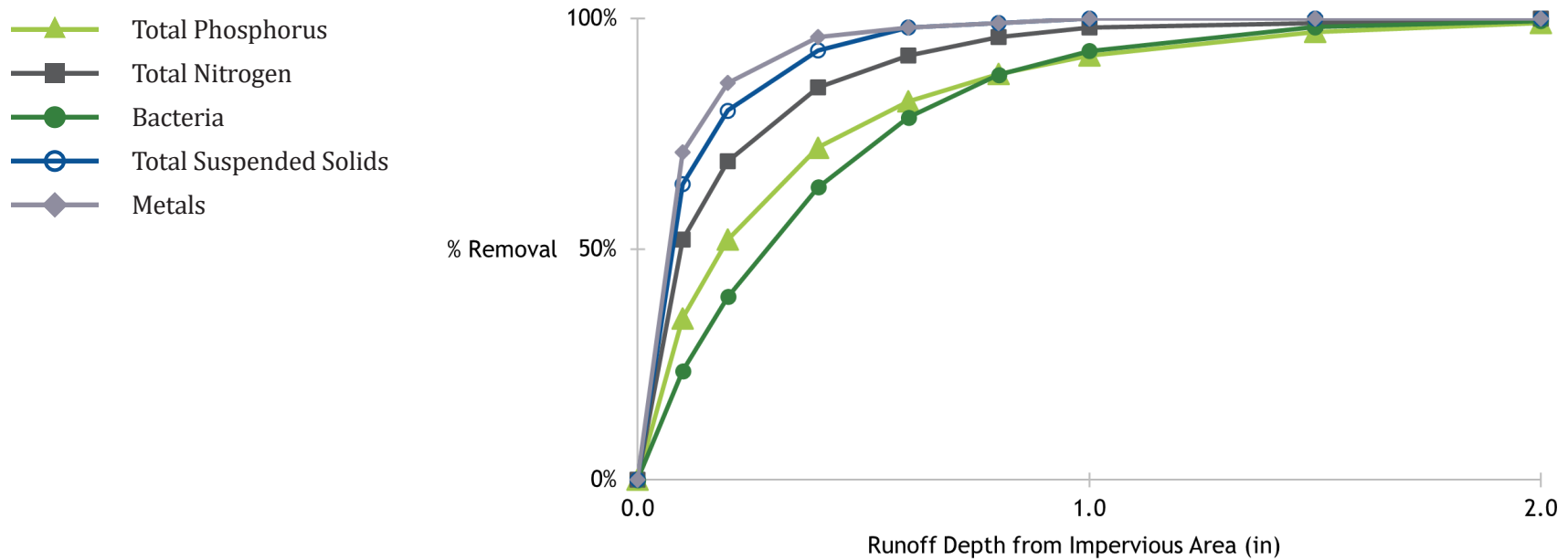
| TSS Removal<br>Calculation<br>Worksheet | A                   | B                   | C                    | D                       | E                       |
|---|---------------------|---------------------|----------------------|-------------------------|-------------------------|
|   | SCM                 | TSS Removal<br>Rate | Starting TSS<br>Load | Amount<br>Removed (B*C) | Remaining<br>Load (C-D) |
|   | Infiltration Basin* | 1.00                | 1.00                 | 1.00                    | 0.00                    |
|   |                     |                     | -                    | -                       | -                       |
|   |                     |                     | -                    | -                       | -                       |
|   |                     |                     | -                    | -                       | -                       |

Total TSS Removal = 100%

\*Data from New England Stormwater Retrofit Manual (curve included)

## Infiltration Basin (HSG C)

(Infiltration Rate = 0.17 in/hr)



| Pollutant | Design Storage Volume: Runoff Depth from Impervious Area (in) |      |      |      |      |      |      |      |      |
|-----------|---|------|------|------|------|------|------|------|------|
|           | 0   | 0.10 | 0.20 | 0.40 | 0.60 | 0.80 | 1.00 | 1.50 | 2.00 |
| TP        | 0%  | 35%  | 52%  | 72%  | 82%  | 88%  | 92%  | 97%  | 99%  |
| TN        | 0%  | 52%  | 69%  | 85%  | 92%  | 96%  | 98%  | 99%  | 100% |
| Bacteria  | 0%  | 24%  | 40%  | 63%  | 79%  | 88%  | 93%  | 98%  | 99%  |
| TSS       | 0%  | 64%  | 80%  | 93%  | 98%  | 99%  | 100% | 100% | 100% |
| Metals    | 0%  | 71%  | 86%  | 96%  | 98%  | 99%  | 100% | 100% | 100% |

# Stormwater Management Standard 4: Water Quality Volume

Calculated By: DJG

Date: 4/22/2025

Checked By: EAC

Date: 4/22/2025

DECA - Littleton

Job 241121

$$V_{WQ} = \frac{D_{WQ}}{12 \text{ in/ft}} \times \frac{A_{imp}}{43,560 \text{ sf/acre}}$$

Where:  $V_{WQ}$  = Required Water Quality Volume [cf]

$D_{WQ}$  = Water Quality Depth [in] = 1.0 Inches

1-in for discharges within a Zone II or Interim Wellhead Protection Area, to or near another critical area, runoff from a LUHPPL, or exfiltration to soils with infiltration rate greater than 2.41 in/hr or greater; 0.5-in for other discharges.

$A_{IMP}$  = Proposed Impervious Area (may exclude roof areas) [Ac]

## 1. Required Water Quality Volume:

| Drainage Area/<br>Treatment Train | $A_{IMP}$<br>[Ac] | $D_{WQ}$<br>[in] | $V_{WQ}$<br>[cf] |
|-----------------------------------|-------------------|------------------|------------------|
| SC-1a                             | 0.05              | 1.0              | 197              |
| SC-1b                             | 0.05              | 1.0              | 176              |
| SC-2a                             | 0.06              | 1.0              | 222              |
| SC-2b                             | 0.15              | 1.0              | 527              |

Total Required Water Quality Volume: 1,122 cf

## 2. Provided Water Quality Volume:

| Drainage Area/<br>Treatment Train | Stormwater Control Measure | Water Quality<br>Volume<br>Provided [CF] |
|-----------------------------------|----------------------------|--|
| SC-1a                             | Infiltration Chambers      | 243                                      |
| SC-1b                             | Rain Garden                | 279                                      |
| SC-2a                             | Infiltration Chambers      | 243                                      |
| SC-2b                             | Infiltration Basin         | 626                                      |

Total Provided Water Quality Volume: 1,391 cf

Provided Water Quality Vol. ≥ Req'd Water Quality Vol. Design is Compliant

# Stormwater Management Standard 3: Infiltration SCM Draw Down

Calculated By: DJG  
Date: 4/22/2025

Checked By: EAC  
Date: 4/22/2025

DECA - Littleton  
Job 241121

Drawdown Time =  $\frac{R_v}{K \times \text{Bottom Area of Recharge System}}$  ≤ 72 Hours

Where: Rv = Volume Below Outlet [Ac-Ft]  
K = Infiltration Rate [in/hr]

## Infiltration Basin

Rv: 0.01 Ac-Ft  
K: 0.27 in/hr  
Bottom Area of Recharge System: 0.008 Acres

Drawdown Time: 55.55555556 Hrs.

# Phosphorus Removal

Calculated By: **DJG**

Date: 4/18/2025

Checked By: **EAC**

Date: 4/22/2025

DECA - Littleton

Job 241121

## Estimated Unmitigated Phosphorus Loading

| Land Use                      | Area<br>[ac] | Phosphorus Loading<br>Rate<br>[lbs/ac/yr] | Estimated<br>Annual<br>Phosphorus<br>Load<br>[lbs/yr] |
|-------------------------------|--------------|---|---|
| Commercial and Industrial     | 0.00         | 1.78                                      | -   |
| Multi Family Residential      | 0.00         | 2.32                                      | -   |
| Medium -Density Residential   | 0.00         | 1.96                                      | -   |
| Low Density Residential       | 0.34         | 1.52                                      | 0.51376   |
| Highway                       | 0.00         | 1.34                                      | -   |
| Forest Pervious               | 0.46         | 0.13                                      | 0.06006   |
| Agriculture Pervious          | 0.00         | 0.45                                      | -   |
| Developed Land Pervious HSG A | 0.00         | 0.03                                      | -   |
| Developed Land Pervious HSG B | 0.00         | 0.12                                      | -   |
| Developed Land Pervious HSG C | 2.54         | 0.21                                      | 0.5334  |
| Developed Land Pervious HSG D | 0.00         | 0.37                                      | -   |

**Estimated Unmitigated Phosphorus Loading (TP<sub>1</sub>): 1.10722 lbs/yr**

**Required TP Reduction: 60%**

**Required TP Loading Reduction: 0.664 lbs/yr**

# Phosphorus Removal

## Phosphorus Loading Rate Reduction

| Stormwater Control Measure | Tributary Area [ac] |                                       | Total Tributary Phosphorus Loading Rate [lbs/ac/yr] | TP Removal Rate<br>Per Appendix F Attachment 3 of MS4 Permit | Estimated Annual TP Load Reduction [lbs/yr] |
|----------------------------|---------------------|---------------------------------------|---|--|---|
|                            | Pervious<br>HSG C   | Impervious<br>Low Density Residential |   |  |   |
| Bioretention               | 0.22                | 0.05                                  | 0.12  | 76%  | 0.09  |
| Infiltration Basin         | 1.10                | 0.15                                  | 0.45  | 93%  | 0.42  |
| Lot 2 Chambers             | 0.00                | 0.06                                  | 0.09  | 92%  | 0.08  |
| Lot 1 Chambers             | 0.00                | 0.05                                  | 0.08  | 92%  | 0.07  |

Total Estimated Annual TP Load Reduction =  $TP_{Red}$ : **0.67** lbs/yr

Estimated Annual TP Load =  $TP_1 - TP_{Red}$ : **0.44** lbs/yr

Provided Reduction: **60.2%**

---

## Attachment 3: Long Term Pollution Prevention Plan and Operation and Maintenance Manual

# **Long Term Pollution Prevention & Stormwater System Operation and Maintenance Plan**

**Lots 1 & 2 (Map R07, Parcel 1-0)  
Harwood Avenue  
Littleton, MA**

April 2025

**Prepared for:**

DECA Corporation  
2 Starwood Crossing  
Andover, MA 01810

**Prepared by:**

Goldsmith, Prest & Ringwall, Inc.  
39 Main Street, Suite 301  
Ayer, MA 01432



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Attachments

- Attachment 1: SCM Locus Plan
- Attachment 2: Inspection Logs
- Attachment 3: Subsurface Infiltration Structures Operation and Maintenance Manual

# 1. Preface

---

This Long-Term Pollution Prevention and Stormwater System Operation and Maintenance Plan (O+M Plan) adheres to the 2008 Massachusetts DEP Stormwater Handbook, addressing Standard 4 (Long-Term Pollution Prevention Plan) and Standard 9 (Long-Term Operation and Maintenance Plan). The plan promotes source control awareness, outlines pollution prevention measures, and provides detailed guidance for operating and maintaining stormwater management practices. The effectiveness of Stormwater Control Measures (SCMs) relies on consistent maintenance and proper operation.

The Project's stormwater management system includes the following SCMs:

- Grass Swale
- Sediment Forebay
- Bioretention Area/Rain Garden
- Infiltration Basin
- Subsurface Chambers

## 1.1. Operation and Maintenance Responsibilities

- **Ownership and Responsibility:** The owner or their designated representative shall be responsible for funding, operating, and maintaining the SCMs. At a minimum, the owner shall adhere to the guidelines outlined in this O+M Plan.
- **Maintenance and Training:** Each SCM has specific maintenance requirements to ensure long-term functionality. The O+M Plan will be reviewed with maintenance staff, and training shall include instructions for routine maintenance and emergency response procedures. A qualified professional will conduct regular inspections, operations, and maintenance to ensure all SCMs remain in good working order.
- **Recordkeeping and Reporting:** An Operation and Maintenance log must be maintained for the last three years, noting inspections, repairs, replacements, and disposals for each SCM. For disposals, the log must specify the type of material and disposal location.

## 1.2. Estimated Annual Maintenance Costs

Regular maintenance is essential to ensure the long-term functionality of SCMs. For planning purposes, the following is an estimated annual SMC maintenance budget.

| SCM   | Number of SCMs | O+M Estimate per SCM | Total O+M Estimate |
|---|----------------|----------------------|--------------------|
| Sediment Forebay                              | 2              | \$250                | \$500              |
| Bioretention Areas and Rain Gardens           | 1              | \$500                | \$500              |
| Bio Filter/Grass Swales                       | 1              | \$500                | \$500              |
| Infiltration Basin                            | 1              | \$500                | \$500              |
| Subsurface Infiltration/ Detention Structures | 2              | \$250                | \$500              |
| <b>Total</b>                                  |                |                      | <b>\$2,500</b>     |

## 2. Site Information

---

### 2.1. Site Location

Harwood Avenue  
Lot 1 & 2 (Map R07, Parcel 1-0)  
Littleton, MA

### 2.2. Owner/ Site Supervisor

The OWNER of the SCMs is defined as the individual, trust, corporation, or entity holding title to the land where the SCMs are located. Upon transfer of the property, the new owner assumes all responsibilities outlined in this document. The owner(s) must notify the Town of Littleton Planning Board of any changes in ownership of the property or of any change to the entity or person operating or maintaining the SCMs.

DECA Corporation  
2 Starwood Crossing  
Andover, MA 01810

### 2.3. Site Contact

Name:

---

Phone:

---

Email:

---

### 3. Source Control

---

Source control aims to reduce pollutant generation at its origin, minimizing the entry of contaminants into stormwater systems and supporting water quality preservation.

**Material and Waste Storage and Management:** The site shall be kept free of trash and debris. No hazardous materials, salt, sand, deicing chemicals, herbicides or pesticides shall be stored in outdoor locations.

**Vehicle Washing:** No commercial vehicle washing shall occur on-site.

**Spill Prevention and Response Plan:** In the event of a spill or release of petroleum products or hazardous materials, implement the following:

- a. Initial Notification: Immediately inform the facility supervisor or construction manager. The supervisor shall contact the Fire Department. Additional public officials such as the Police Department, Board of Health, and/ or Conservation Commission may also require notification.

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

- b. Emergency Response for Large Spills: For significant spills, immediately contact MassDEP's Emergency Response at 1-888-304-1133.
- c. Spill Management: All spills or leaks shall be managed according to the material type, spill volume, and location. Mitigation efforts should include:
  - Preventing further spillage,
  - Containing the spilled material in the smallest practical area,
  - Safely removing spilled material in an environmentally responsible manner,
  - Remediating any environmental damage caused by the spill.
- d. It is recommended to keep the following spill response equipment on-site in a secure yet accessible location to enable quick response to any spills:
  - Safety goggles,
  - Chemically resistant gloves and overshoe boots,
  - Water and chemical fire extinguishers,
  - Sand and shovels,

- Suitable absorbent materials, such as Sorbent Pillows, Pads or Socks,
- Storage containers, and
- First aid supplies (e.g., Indian Valley Industries, Inc. 55-gallon Spill Containment Kit or equivalent).

**Maintenance of Lawns, Gardens and other Landscaped Areas:** Lawn and other landscaped areas shall be maintained regularly by the site owner and kept free from trash and debris. Areas of erosion will be stabilized with loam and seed or other acceptable measures as needed.

**Application and Storage of Fertilizer, Herbicides and Pesticides:** Fertilizer application shall be in accordance with 330 CMR 31.00 Ban of Fertilizers containing Phosphorus.

To the extent practicable avoid the application of fertilizers, herbicides and/ or pesticides. Only apply when necessary and in accordance with manufacturer recommendations and federal, state and local requirements. If deemed necessary, apply slow-release fertilizers during anticipated dry weather conditions.

Store fertilizers, herbicides, and pesticides in accordance with manufacturer recommendations and local, state, and federal regulations. Store materials indoors and under cover so that they will not be subject to precipitation.

**Pet Waste:** Pet owners shall dispose of pet waste in the trash.

**Soil Absorption System Maintenance:** The onsite soil absorption system shall be maintained in accordance with 310 CMR 15.00 The State Environmental Code (Title 5).

**Snow Disposal and Deicing Practices:** Plowed snow must be placed, ensuring it remains outside stormwater control measures. Debris and accumulated sediments should be cleared from the site and properly disposed of by the end of the snow season, no later than May 15.

**Deicing Chemical Storage:** In compliance with Massachusetts General Laws, Chapter 85, Section 7A, salt and other deicing chemicals must be stored indoors and handled according to Massachusetts regulations.

**Prohibition of On-Site Storage:** Sand piles or salt storage piles are not permitted on-site.

**Nutrient Management Plan:** A nutrient management plan is required if a Total Maximum Daily Load (TMDL) has been developed that indicates that use of fertilizers containing nutrients or other specific pollutants must be reduced. The proposed project is located within the Fort Pond Brook watershed, which does not have a TMDL associated with it.

## 4. Operation & Maintenance of SCMs

For most SCMs, the maintenance requirements include visual inspections (e.g., inspection of sediment forebays) and physical upkeep (e.g., removing and disposing of sediment, and mowing water quality swales). This section identifies the proposed stormwater control measures for the project and details the associated inspection and maintenance requirements.

### Sediment Disposal

Various SCMs require removal of sediment and debris. All sediments, debris or polluted water removed from SCMs shall be properly disposed of in accordance with local, state and federal requirements. Any sediment and debris deemed to be contaminated must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

### Sediment Forebays

|                    |  |
|--------------------|--|
| <b>Function</b>    | Consists of an excavated pit, bermed area or cast (in-place or pre-) structure combined with a weir, designed to slow incoming stormwater runoff and facilitating the gravity separation of suspended solids prior to flowing to a subsequent SCM.   |
| <b>Inspection</b>  | Inspect after every major storm event (1-inch of rain or greater) for the first six (6) months, then monthly thereafter.   |
| <b>Maintenance</b> | <ul style="list-style-type: none"><li>• Remove sediment and debris four (4) times per year, starting in the spring and spaced at even time increments until the late fall season, thereafter.</li><li>• If standing water is present during inspections, clean or replace the filter stone within the check dam so that the sediment forebay drains within 72 hours after a storm.</li><li>• Mow grass within the sediment forebay, a minimum of twice a year, keeping the height of the grass between three (3) and six (6) inches.</li><li>• Replace any vegetation damaged during cleaning or areas of rilling and gullyng by reseeding or resodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket or similar practice to ensure that no scour occurs in the sediment forebay, while the seeds germinate and develop roots.</li><li>• Remove any woody vegetation (trees or shrubs) from the sediment forebay immediately upon detection.</li></ul> |

### Bioretention Areas and Rain Gardens

|                    |  |
|--------------------|--|
| <b>Function</b>    | Bioretention cells (also called rain gardens) are shallow depressions filled with sandy soil topped with a thick layer of mulch and planted with dense native vegetation. Stormwater runoff is directed into the cell via piped or sheet flow. The runoff percolates through the soil media that acts as a filter.   |
| <b>Inspection</b>  | <ul style="list-style-type: none"> <li>• Inspect and remove trash monthly</li> <li>• Inspect regularly for sediment build-up, structural damage, and standing water.</li> <li>• Inspect soil and repair eroded areas monthly.</li> </ul>   |
| <b>Maintenance</b> | <ul style="list-style-type: none"> <li>• Remove litter and debris monthly or more frequently as needed.</li> <li>• If applicable, mow 2-12 times per year.</li> <li>• Careful plant maintenance is critical. Maintain vegetation as needed to ensure healthy plantings. Remove dead vegetation and prune vegetation twice per year (spring and fall). Replace dead vegetation as needed. Remove invasive species as needed. Treat diseased vegetation as needed.</li> <li>• Replace mulch every two years, in the early spring. As needed re-mulch void areas.</li> <li>• Fertilize in accordance with Section 3.0 of this manual and no more frequently than annually.</li> <li>• Remove sediment from the toe of slope or level spreader and reseed bare spots as necessary.</li> <li>• Periodically, remove sediment that accumulates near the top of the strip to maintain the appropriate slope and prevent formation of a “berm” that could impede the distribution of runoff as sheet flow.</li> <li>• Upon failure, excavate bioretention area, scarify bottom and sides, replace soil media, replant, and mulch.</li> </ul> |

### Grassed Channels/ Bio Filter Swales

|                    |   |
|--------------------|---|
| <b>Function</b>    | Grassed Channels (formerly known as Biofilter swales) are treatment systems with a longer hydraulic residence time than drainage channels, typically designed with a sediment forebay.                              |
| <b>Inspection</b>  | Inspect semi-annual for the first year and once per year thereafter to assess slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sediment accumulation. |
| <b>Maintenance</b> | <ul style="list-style-type: none"> <li>• Sediment and debris should be removed as needed using methods to limit the disturbance of vegetation and underlying soils.</li> </ul>                                      |

|  |   |
|--|---|
|  | <ul style="list-style-type: none"> <li>• Mow as necessary to maintain the grass height between three (3) and six (6) inches. Remove grass clippings.</li> <li>• Reseed or re-sod with an alternative grass species if the original grass cover is not successfully established.</li> <li>• When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket or similar practice to ensure that no scour occurs in the grass channel, while the seeds germinate and develop roots.</li> <li>• Protect grass channels from snow removal procedures and off-street parking.</li> </ul> |
|--|---|

### Subsurface Infiltration Structures

|                    |  |
|--------------------|--|
| <b>Function</b>    | Underground systems that capture runoff and gradually infiltrate it into the groundwater through rock and gravel.  |
| <b>Inspection</b>  | Inspect to ensure proper functioning after every major storm during the first 3 months of operation. Thereafter, inspect the infiltration structures twice a year and after every major storm: check inlet and outlet pipes to determine if they are clogged.  |
| <b>Maintenance</b> | <ul style="list-style-type: none"> <li>• Maintain in accordance with manufacture's recommendations and requirements. See attachment 3.</li> <li>• Perform preventative maintenance twice a year: remove any debris that might clog the system, and if the top is grass remove tree seedlings, growing on top of the system before they become firmly established.</li> </ul> |

### Infiltration Basins

|                    |  |
|--------------------|--|
| <b>Function</b>    | Infiltration basins are stormwater runoff impoundments that are constructed over permeable soils. Runoff is stored until it exfiltrates through the soil of the basin floor.   |
| <b>Inspection</b>  | <p>Inspect to ensure proper functioning after every major storm during the first 3 months of operation. Observe how long water remains standing in the basin after a storm; standing water 48 to 72 hours after a storm suggests potential clogging and should be immediately addressed.</p> <p>Inspect twice a year thereafter and when there are discharges through the high outlet orifice. Look for signs of settlement, cracking, erosion, leakage in the embankments, tree growth on the embankments, condition of riprap, sediment accumulation and the health of the turf.</p> |
| <b>Maintenance</b> | <ul style="list-style-type: none"> <li>• Perform preventative maintenance twice a year: Mow the buffer area, side slopes, and basin bottom if grassed floor; rake if stone bottom; remove trash and debris; remove grass clippings and accumulated organic matter.</li> </ul>  |

|  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• Remove tree saplings prior to establishment and any invasive plant species.</li><li>• Use deep tilling to break up clogged surfaces and revegetate immediately.</li><li>• Remove sediment from the basin as necessary but wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer so as to not compact the underlying soil.</li></ul> |
|--|--|

## 5. Emergency Contacts

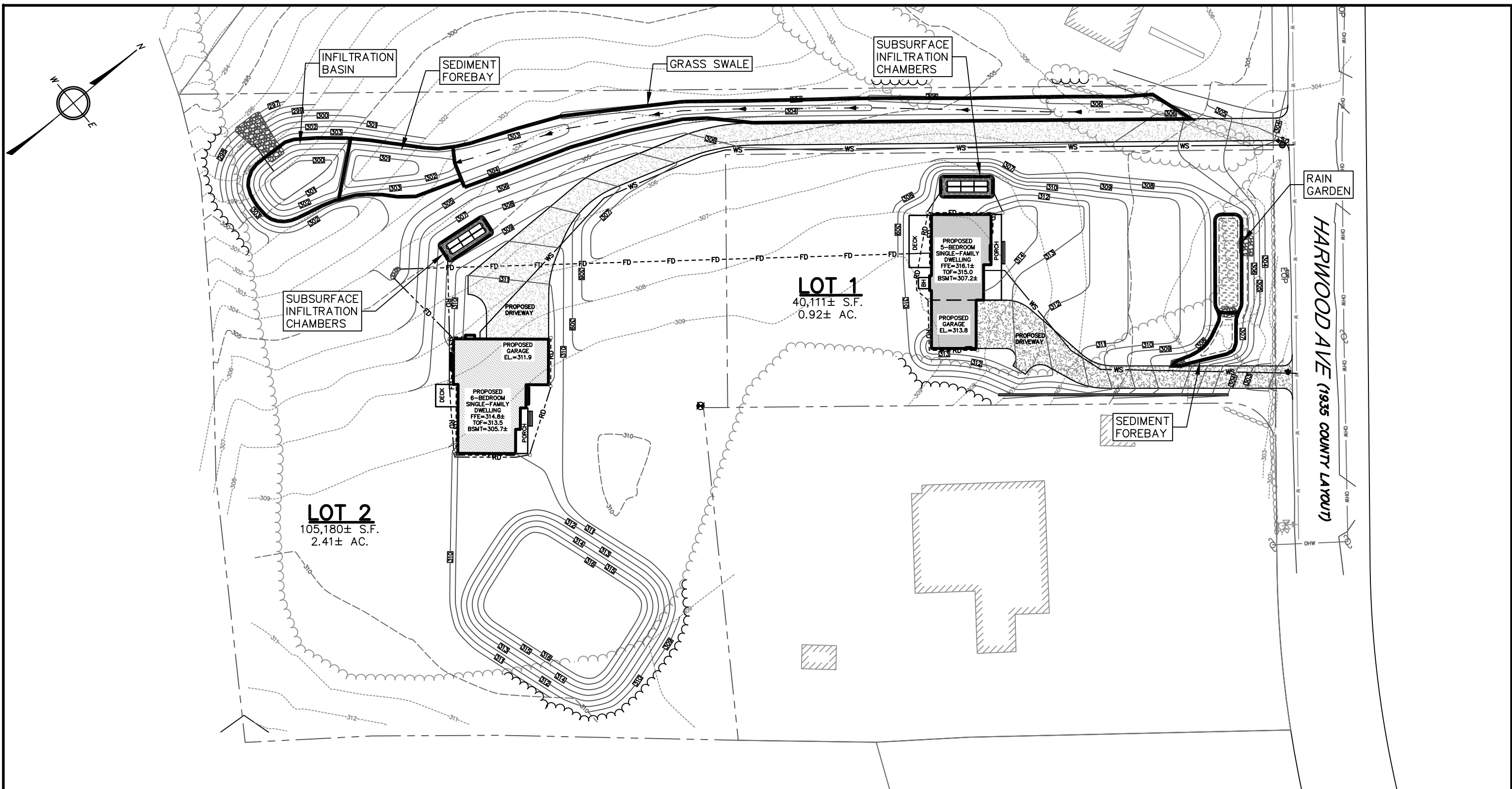
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Oil spills and leaks, the release of hazardous materials, the contamination of drinking water or other threats to the public are Environmental Emergencies and must be reported immediately.

1. **IMMEDIATELY** Call your local fire department: **911**
2. Call MassDEP's Emergency Response at: **1-888-304-1133**
3. Contact Site Owner



## Attachment 1: SCM Locus Plan



|  |  |  |                      |   |                        |   |  |
|--|--|--|----------------------|---|------------------------|---|--|
| <p><b>GRAPHIC SCALE</b></p> <p>50 0 25 50 100</p> <p>(IN FEET)</p> <p>1 INCH = 50 FEET</p> | <p><b>GPR</b></p> <p>Engineering Solutions<br/>for Land &amp; Structures</p> | <p><b>GOLDSMITH, PREST &amp; RINGWALL, INC.</b></p> <p>39 MAIN ST., SUITE 301, AYER, MA 01432<br/>CIVIL ENGINEERING • LAND SURVEYING • LAND PLANNING<br/>VOICE: 978.772.1590 FAX: 978.772.1591<br/>www.gpr-inc.com</p> |                      | <p>PREPARED FOR:</p> <p>DECA CORP<br/>2 STARWOOD CROSSING<br/>ANDOVER, MA 01810</p> |                        | <p><b>STORMWATER CONTOL<br/>MEASURES LOCUS PLAN</b></p> <p>LOTS 1 &amp; 2 (MAP R07, PARCEL 1-0)<br/>HARWOOD AVE<br/>LITTLETON, MA 01460</p> |  |
|  |  | <p>DES'D BY: DJG</p>   | <p>CHK'D BY: EAC</p> | <p>DATE: APRIL 2025</p>   | <p>PROJECT: 241121</p> | <p>1 of 1</p>   |  |



## Attachment 2: Operation and Maintenance Log

The following template is designed to assist in meeting the operation and maintenance log requirements outlined in the 2008 DEP Stormwater Management Handbook. An operation and maintenance log should be completed for all inspections and maintenance and kept on file for at least three years.

## Operation and Maintenance Log

Name of Inspector:

Date/ Time of Inspection:

Weather Conditions:

### Notes on Recent Precipitation Events:

[illegible]

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### Attachment 3:

## Subsurface Infiltration Structures Operation and Maintenance Manual

# Isolator Row Plus Inspection/Maintenance

## Inspection

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

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

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

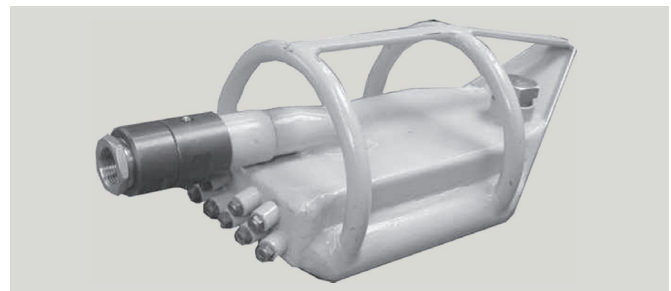
If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3" (75 mm) throughout the length of the Isolator Row Plus, clean-out should be performed.

## Maintenance

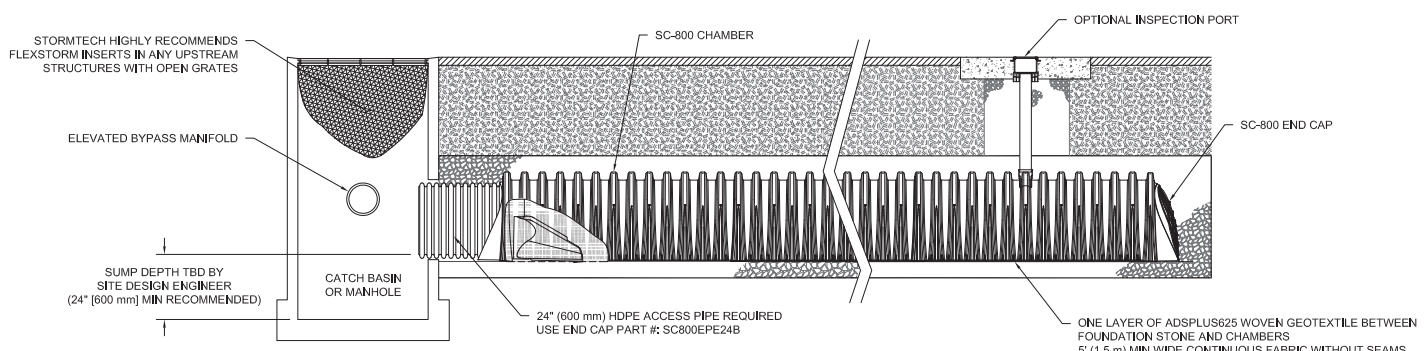
The Isolator Row Plus was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided

via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entry.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row Plus while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. StormTech recommends a maximum nozzle pressure of 2000 psi be utilized during cleaning. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row Plus lengths up to 200' (61 m). **The JetVac process shall only be performed on StormTech Isolator Row Plus that have ADS Plus Fabric (as specified by StormTech) over their angular base stone.**



## StormTech Isolator Row Plus (not to scale)



# Isolator Row Plus Step By Step Maintenance Procedures

## Step 1

Inspect Isolator Row Plus for sediment.

- A) Inspection ports (if present)
  - i. Remove lid from floor box frame
  - ii. Remove cap from inspection riser
  - iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
  - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Row Plus
  - i. Remove cover from manhole at upstream end of Isolator Row Plus
  - ii. Using a flashlight, inspect down Isolator Row Plus through outlet pipe
    - 1. Mirrors on poles or cameras may be used to avoid a confined space entry
    - 2. Follow OSHA regulations for confined space entry if entering manhole
  - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2.  
If not, proceed to Step 3.

## Step 2

Clean out Isolator Row Plus using the JetVac process.

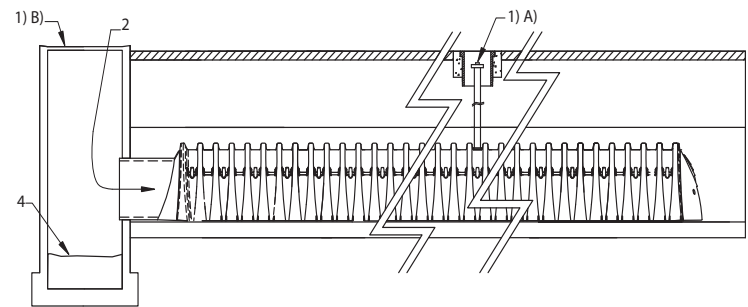
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

## Step 3

Replace all caps, lids and covers, record observations and actions.

## Step 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



## Sample Maintenance Log

| Date    | Stadia Rod Readings                     |   | Sedi-<br>ment<br>Depth<br>(1)-(2) | Observations/Actions  | Inspector |
|---------|---|---|-----------------------------------|---|-----------|
|         | Fixed point<br>to chamber<br>bottom (1) | Fixed point<br>to top of<br>sediment<br>(2) |                                   |   |           |
| 3/15/11 | 6.3 ft                                  | none  |                                   | New installation. Fixed<br>point is CI frame at grade                                 | DJM       |
| 9/24/11 |   | 6.2   | 0.1 ft                            | Some grit felt  | SM        |
| 6/20/13 |   | 5.8   | 0.5 ft                            | Mucky feel, debris visible<br>in manhole and in Isolator<br>Row Plus, maintenance due | NV        |
| 7/7/13  | 6.3 ft                                  |   | 0                                 | System jetted and<br>vacuumed   | DJM       |

---

## Attachment 4: Certified List of Abutters



TOWN OF LITTLETON  
BOARD OF ASSESSORS  
P.O. BOX 1305  
LITTLETON, MA 01460  
(978) 540-2410 FAX: (978) 952-2321

Date: March 25, 2025

Re: **Certified List of Abutters for Planning Board (300 feet - public hearings, special permits)**

Applicant: DECA Corp  
Name of Firm: Goldsmith, Prest & Ringwall, Inc  
Mailing Address: 39 Main Sr #301 Acton MA 01720  
  
Subject Parcel Location: 195 Tahattawan Rd  
Subject Owner: Glavey Family Irrevocable Trust  
Subject Parcel ID: R07 1 0

M.G.L. Chapter 40A, Section 11. "In all cases where notice of a public hearing is required notice shall be given by publication in a newspaper of general circulation in the city or town once in each of two successive weeks, the first publication to be not less than fourteen days before the day of the hearing and by posting such notice in a conspicuous place in the city or town hall for a period of not less than fourteen days before the day of such hearing. In all cases where notice to individuals or specific boards or other agencies is required, notice shall be sent by mail, postage prepaid. **"Parties in interest" as used in this chapter shall mean the petitioner, abutters, owners of land directly opposite on any public or private street or way, and abutters to the abutters within three hundred feet of the property line of the petitioner as they appear on the most recent applicable tax list, notwithstanding that the land of any such owner is located in another city or town, the planning board of the city or town, and the planning board of every abutting city or town.** The assessors maintaining any applicable tax list shall certify to the permit granting authority or special permit granting authority the **names and addresses of parties in interest and such certification shall be conclusive for all purposes.** The permit granting authority or special permit granting authority may accept a waiver of notice from or an affidavit of actual notice to any party in interest or, in his stead, any successor owner of record who may not have received a notice by mail, and may order special notice to any such person, giving not less than five nor more than ten additional days to reply." .....

**I hereby certify the attached list of abutter(s) as stated in the M.G.L. Chapter 40A, Section 11.**

Number of Abutter(s) 37 including the subject parcel(s).

Certified by:

Kim Prehl, Office Assistant

NOTE: This **abutters list** will be **valid** for three (3) months from the date of signature. Please be aware that per **Massachusetts** General Law (G. L. c 66, § 10) this office has up to 10 calendar days to fulfill this request.

|  |           |
|--|-----------|
| 559 B NEWTOWN RD   | R05 21 0  |
| LITTLETON TOWN OF<br>CONSERVATION COMM<br>P.O. BOX 1305<br>LITTLETON, MA 01460                 | LUC: 932  |
| 65 GRIMES LN   | R06 1 0   |
| PEEKE DOUGLAS E<br>PEEKE MARTHA JANE<br>65 GRIMES LN<br>LITTLETON, MA 01460                    | LUC: 0167 |
| 195 TAHATTAWAN RD  | R07 1 0   |
| GLAVEY FAMILY IRREVOCABLE TRUS<br>GLAVEY PAUL J - TRUSTEE<br>PO BOX 381<br>LITTLETON, MA 01460 | LUC: 101  |
| 269 HARWOOD AV   | R07 1 1   |
| OBORSKI CHRISTINE E<br>OBORSKI JUSTIN A<br>269 HARWOOD AVE<br>LITTLETON, MA 01460              | LUC: 101  |
| 307 HARWOOD AV   | R07 1 2   |
| HOMELIT REALTY TRUST<br>GALLAGHER MARK P - TRUSTEE<br>307 HARWOOD AV<br>LITTLETON, MA 01460    | LUC: 101  |
| 275 HARWOOD AV   | R07 2 0   |
| CROWLEY, RYAN S<br>WHITE, ELIZABETH S<br>275 HARWOOD AV<br>LITTLETON, MA 01460                 | LUC: 101  |
| 273 HARWOOD AV   | R07 2 1   |
| OSMOND ROGER<br>273 HARWOOD AV<br>LITTLETON, MA 01460  | LUC: 101  |
| 271 HARWOOD AV   | R07 2 2   |
| BRIAN AND MARIE BEAM LIVING TR<br>BEAM BRIAN TRUSTEE<br>271 HARWOOD AV<br>LITTLETON, MA 01460  | LUC: 101  |
| HARWOOD AV   | R07 3 0   |
| LITTLETON TOWN OF<br>TOWN FOREST<br>PO BOX 1305<br>LITTLETON, MA 01460                         | LUC: 930  |
| OFF HARWOOD AV   | R07 4 0   |
| LITTLETON TOWN OF<br>TOWN FOREST<br>PO BOX 1305<br>LITTLETON, MA 01460                         | LUC: 930  |

|   |          |
|---|----------|
| OFF HARWOOD AV  | R07 9 0  |
| LITTLETON TOWN OF<br>TOWN FOREST<br>PO BOX 1305<br>LITTLETON, MA 01460                                      | LUC: 930 |
| TAHATTAWAN RD   | U31 10 0 |
| LITTLETON CONSERVATION TRUST<br>P O BOX 594<br>LITTLETON, MA 01460  | LUC: 950 |
| 315 HARWOOD AV  | U31 11 0 |
| WEITEKAMP AARON M<br>WEITEKAMP JULIE E<br>315 HARWOOD AVE<br>LITTLETON, MA 01460                            | LUC: 101 |
| 237 TAHATTAWAN RD   | U31 7 0  |
| FITZGERALD RICHARD<br>FITZGERALD COLLEEN<br>237 TAHATTAWAN RD<br>LITTLETON, MA 01460                        | LUC: 101 |
| TAHATTAWAN RD   | U31 7 1  |
| LITTLETON CONSERVATION TRUST<br>P O BOX 594<br>LITTLETON, MA 01460  | LUC: 950 |
| 219 TAHATTAWAN RD   | U31 9 0  |
| MUELLER FRANK E L/E<br>MUELLER LOIS A L/E<br>219 TAHATTAWAN RD<br>LITTLETON, MA 01460                       | LUC: 101 |
| 181 TAHATTAWAN RD   | U32 1 0  |
| JOYCE STEVEN E<br>JOYCE DIANE W<br>181 TAHATTAWAN RD<br>LITTLETON, MA 01460                                 | LUC: 101 |
| 178 TAHATTAWAN RD   | U32 15 0 |
| TIRONE-RICHARD P+ TIRONE D TRS<br>MARGARET-ELLEN TIRONE IRRV TR<br>178 TAHATTAWAN RD<br>LITTLETON, MA 01460 | LUC: 101 |
| 184 TAHATTAWAN RD   | U32 17 0 |
| COONEY JOHN P<br>COONEY LAURIE K<br>184 TAHATTAWAN ROAD<br>LITTLETON, MA 01460                              | LUC: 101 |
| 186 TAHATTAWAN RD   | U32 18 0 |
| BELANGER MICHAEL STEPHEN<br>MACDONALD DANIELLE ALICE<br>186 TAHATTAWAN RD<br>LITTLETON, MA 01460            | LUC: 101 |

|  |          |
|--|----------|
| 192 TAHATTAWAN RD  | U32 19 0 |
| MIGHTY SMALL TRUST<br>MANN KYLE<br>13 WINGED COVE RD<br>LITTLETON, MA 01460                            | LUC: 101 |
| 177 TAHATTAWAN RD  | U32 2 0  |
| BORGES RONALD J<br>LIU NINA S<br>177 TAHATTAWAN RD<br>LITTLETON, MA 01460                              | LUC: 101 |
| 268 HARWOOD AV   | U32 2 B  |
| BERGER KARL E<br>BERGER BERNADETTE DELOURDES<br>268 HARWOOD AVE<br>LITTLETON, MA 01460                 | LUC: 101 |
| 300 HARWOOD AV   | U32 20 0 |
| MARY LEE DONOVAN FAMILY TRUST<br>TRUSTEE DONOVAN MARY LEE<br>300 HARWOOD AVENUE<br>LITTLETON, MA 01460 | LUC: 101 |
| 304 HARWOOD AV   | U32 21 0 |
| WARD ERIC<br>WARD CASEY<br>304 HARWOOD AV<br>LITTLETON, MA 01460                                       | LUC: 101 |
| 308 HARWOOD AV   | U32 22 0 |
| LYNCH PETER<br>VANSLETTE ROXANNE<br>308 HARWOOD AVE<br>LITTLETON, MA 01460                             | LUC: 101 |
| 320 HARWOOD AV   | U32 24 0 |
| VASCONCELOS POLIANA<br>LIN ALEX L<br>320 HARWOOD AV<br>LITTLETON, MA 01460                             | LUC: 101 |
| 20 CONCORD DR  | U32 26 0 |
| 2024 PAULA BLANCHARD TRUST<br>BLANCHARD PAULA TRUSTEE<br>20 CONCORD DR<br>LITTLETON, MA 01460          | LUC: 101 |
| 1 WORCESTER RD   | U32 28 0 |
| CARLISLE SARA B<br>1 WORCESTER RD<br>LITTLETON, MA 01460   | LUC: 101 |
| LEXINGTON PL   | U32 28 1 |
| LITTLETON TOWN OF<br>PO BOX 1305<br>LITTLETON, MA 01460  | LUC: 930 |

|     |                         |          |
|-----|-------------------------|----------|
| 270 | HARWOOD AV              | U32 2A 1 |
|     |                         | LUC: 101 |
|     | BABERS JOHN             |          |
|     | BABERS DARCY            |          |
|     | 270 HARWOOD AVE         |          |
|     | LITTLETON, MA 01460     |          |
| 272 | HARWOOD AV              | U32 2A 2 |
|     |                         | LUC: 101 |
|     | RASSIAS MICHAEL         |          |
|     | RASSIAS TIMALYN         |          |
|     | 272 HARWOOD AVE         |          |
|     | LITTLETON, MA 01460     |          |
| 169 | TAHATTAWAN RD           | U32 4 0  |
|     |                         | LUC: 101 |
|     | LALIBERTE KATHLEEN T    |          |
|     | ERN ELLIOT M            |          |
|     | 169 TAHATTAWAN RD       |          |
|     | LITTLETON, MA 01460     |          |
|     | TAHATTAWAN RD           | U32 5 0  |
|     |                         | LUC: 132 |
|     | LALIBERTE KATHLEEN T    |          |
|     | ERN ELLIOT M            |          |
|     | 169 TAHATTAWAN RD       |          |
|     | LITTLETON, MA 01460     |          |
| 165 | TAHATTAWAN RD           | U32 6 0  |
|     |                         | LUC: 101 |
|     | LUCAS DEBORAH           |          |
|     | 165 TAHATTAWAN RD       |          |
|     | LITTLETON, MA 01460     |          |
| 119 | TAHATTAWAN RD           | U33 2 0  |
|     |                         | LUC: 932 |
|     | TOWN OF LITTLETON       |          |
|     | CONSERVATION COMMISSION |          |
|     | 119 TAHATTAWAN RD       |          |
|     | LITTLETON, MA 01460     |          |
| 146 | TAHATTAWAN RD           | U33 34 A |
|     |                         | LUC: 101 |
|     | CATALANOTTO LOUIS       |          |
|     | CATALANOTTO MARY        |          |
|     | 146 TAHATTAWAN RD       |          |
|     | LITTLETON, MA 01460     |          |