Stormwater Pollution Prevention Plan

For:

Marshall Simonds Middle School
Athletic Fields Renovation Project
114 Winn Street
Burlington, MA 01803

Operator(s):

T.B.P.

SWPPP Contact(s):

Nesra Engineering, LLC
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SWPPP Preparation Date:

2/12/25
Updated 12/28/25

Estimated Project Dates:

Project Start Date: **Spring 2026**
Project Completion Date: **Fall 2026**

Contents

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 Project/Site Information

Instructions:

- In this section, you can gather some basic site information that will be helpful to you later when you file for permit coverage.
- For more information, see *Developing Your Stormwater Pollution Prevention Plan: A SWPPP Guide for Construction Sites* (also known as the *SWPPP Guide*), Chapter 2
- Detailed information on determining your site's latitude and longitude can be found at www.epa.gov/npdes/stormwater/latlong

Project/Site Name: Marshall Simonds Middle School Athletic Fields Renovation Project

Project Street/Location: 114 Winn Street

City: Burlington State: MA ZIP Code: 01803

County or Similar Subdivision: Middlesex

Latitude/Longitude (Use **one** of three possible formats, and specify method)

Latitude:	Longitude:
1. _ _ º _ _ ' _ _" N (degrees, minutes, seconds)	1. _ _ º _ _ ' _ _" W (degrees, minutes, seconds)
2. _ _ º _ _ . _ _' N (degrees, minutes, decimal)	2. _ _ º _ _ . _ _' W (degrees, minutes, decimal)
3. 42.503213 º N (decimal)	3. -71.180758º W (decimal)

Method for determining latitude/longitude:

☐ USGS topographic map (specify scale: _____) ☐ EPA Web site ☒ GPS

☒ Other (please specify): LatLong.net/Google Maps

Is the project located in Indian country? ☐ Yes ☒ No

If yes, name of Reservation, or if not part of a Reservation, indicate "not applicable." _____

Is this project considered a federal facility? ☐ Yes ☒ No

NPDES project or permit tracking number*: T.B.P.

**(This is the unique identifying number assigned to your project by your permitting authority after you have applied for coverage under the appropriate National Pollutant Discharge Elimination System (NPDES) construction general permit.)*

1.2 Contact Information/Responsable Parties

Instructions:

- List the operator(s), project managers, stormwater contact(s), and person or organization that prepared the SWPPP. Indicate respective responsibilities, where appropriate.
- Also, list subcontractors expected to work on-site. Notify subcontractors of stormwater requirements applicable to their work.
- See *SWPPP Guide*, Chapter 2.B.

Operator(s):
T.B.P.

Project Manager(s) or Site Supervisor(s):
T.B.P.

SWPPP Contact(s):
Nesra Engineering, LLC
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Subcontractor(s):
T.B.P.

Emergency 24-Hour Contact:
T.B.P.

1.3 Nature and Sequence of Construction Activity

Instructions:

- Briefly describe the nature of the construction activity and approximate time frames (one or more paragraphs, depending on the nature and complexity of the project).
- For more information, see *SWPPP Guide*, Chapter 3.A.

Describe the general scope of the work for the project, major phases of construction, etc:

Overall scope of work includes:

- Construction fencing and temporary and permanent erosion/sediment control measures.
- Inlet protection at all catch basins.
- Site preparation and earthwork.
- Excess soil to be properly stockpiled, erosion control measures applied to stabilize, and or removed from site as needed.
- Remove and properly dispose all structures, asphalt, fencing, and other items directly called out in the Drawings and Contract Documents.
- Perform utility work, including drainage and electrical as specified.
- Installation of lighting, concrete curbing, concrete pads, and portable bleachers, seat walls, etc.
- Pavement and surfacing to include bituminous concrete paving for walkways.
- Install synthetic turf field.
- Install athletic structures and appurtenances.
- Place topsoil, fertilizing, and seeding, etc. as indicated in the Drawings and Contract Documents.
- Inspect and maintain grading, erosion control and sediment control practices weekly and immediately after rainstorms with more than ½ inch precipitation in 24 hrs.
- Maintenance of all erosion and sediment control components and installation of additional erosion and sediment control components shall be an ongoing practice and in strict accordance with the contract specifications.

Demolition:

- Work includes demolition, including but not limited to the removal of existing asphalt, concrete pavement, fencing, and other amenities specified in the Drawings.
- Strip, remove, and dispose of grass and topsoil as indicated on Demolition and Erosion control plan. For any topsoil stockpiled on site, associated erosion control measures, like mulch, are to be installed. Excess soil material from site will be removed as needed.
- Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option and in full compliance with all applicable disposal regulations.

Construction:

- Work entails enhanced drainage, two new synthetic turf fields, new ADA parking lot,

ADA walkways, seating, and various appurtenances.

- The new drainage system is designed to enhance stormwater management by both increasing water storage capacity and reducing flow rates. Key components include:
  - Enhanced Storage Capacity: An additional 12 inches of dense-graded stone will be installed beneath the field to significantly increase the volume of water that can be stored.
  - Efficient Conveyance: Laterally installed HDPE perforated pipes, in combination with strategically placed collector pipes, will channel runoff more effectively.
  - System Optimization: Cleaning and upgrading existing drain structures, including the perimeter trench drain system, will further reduce the rate of flow and improve overall drainage.

What is the function of the construction activity?

☐ Residential ☐ Commercial ☐ Industrial ☐ Road Construction ☐ Linear Utility
☒ Other (please specify): Athletic Fields

Estimated Project Start Date: Spring 2025
Estimated Project Completion Date: Fall 2025

1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns

Instructions:

- Describe the existing soil conditions at the construction site including soil types, slopes and slope lengths, drainage patterns, and other topographic features that might affect erosion and sediment control.
- Also, note any historic site contamination evident from existing site features and known past usage of the site.
- This information should also be included on your site maps (See *SWPPP Guide*, Chapter 3.C.).
- For more information, see *SWPPP Guide*, Chapter 3.A.

Soil type(s):

According to USDA Natural Resources Conservation Services Web Soil Survey and National Cooperative Soil Survey the site consists of approximately of:

- Udorthents-Urban Land Complex (656) (indicating filled soils) – 90% of the site.
- Whitman fine sandy loam (73B) – 10% of the site.

Slopes (describe current slopes and note any changes due to grading or fill activities):

Typical site slopes range from 1 to 3 percent. The area has been leveled in the past for use as athletic fields.

Drainage Patterns (describe current drainage patterns and note any changes dues to grading or fill activities):

Currently, runoff originates from the south side of the property and flows northward across the parcel. Stormwater from the building and parking lot divides into two main paths: one portion flows northeast into a vegetated grass field before discharging into a catch basin, while the remainder moves north and northwest over a grassy hill and into a wetland categorized as a wood swamp deciduous wetland by MassDEP—adjacent to walking path that leads to the School. Additional runoff from the field continues north, eventually emptying into a linear wetland along the property's northern and eastern sections.

The proposed construction will include an approximately 12” drainage layer under the synthetic turf field, perforated lateral pipes, and 12” perforated collector pipes. Additionally there will be a rain garden installed to capture stormwater from the proposed ADA parking lot to treat the surface runoff.

Grading activity is proposed to modify the site slopes to 1 percent. The proposed grading will channel the surface water to each of the athletic field while allowing interception into collector pipes in stone trenches.

Vegetation:

Existing vegetation is lined with natural grass, primarily a mix of cool-season grasses such as Kentucky bluegrass and fescue. No tree clearing is anticipated, and appropriate tree protection measures will be implemented for trees designated to be preserved, as indicated in the plans. Any invasive species within the limit of work will be removed. In areas where seeding is to take place, the grass mix will consist of native grasses, such as Kentucky bluegrass and fescue.

1.5 Construction Site Estimates

Instructions:

- Estimate the area to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas.
- Calculate the percentage of impervious surface area before and after construction
- Calculate the runoff coefficients before and after construction.
- For more information, see *SWPPP Guide*, Chapter 3.A and Appendix C.

The following are estimates of the construction site.

Total project area: 5.9 acres

Construction site area to be disturbed: 4.66 acres

1.6 Receiving Waters

Instructions:

- List the waterbody(s) that would receive stormwater from your site, including streams, rivers, lakes, coastal waters, and wetlands. Describe each as clearly as possible, such as *Mill Creek, a tributary to the Potomac River*, and so on.
- Indicate the location of all waters, including wetlands, on the site map.
- Note any stream crossings, if applicable.
- List the storm sewer system or drainage system that stormwater from your site could discharge to and the waterbody(s) that it ultimately discharges to.
- If any of the waterbodies above are impaired and/or subject to Total Maximum Daily Loads (TMDLs), please list the pollutants causing the impairment and any specific requirements in the TMDL(s) that are applicable to construction sites. Your SWPPP should specifically include measures to prevent the discharge of these pollutants.
- For more information, see *SWPPP Guide*, Chapter 3.A and 3.B.
- Also, for more information and a list of TMDL contacts and links by state, visit www.epa.gov/npdes/stormwater/tmdl.

Description of receiving waters:

1) The receiving water for the Marshall Simonds Middle School stormwater system is Maple Meadow Brook, an intermittent waterbody located along the northern perimeter of the site. It serves as the primary conduit for stormwater flowing through the wetlands before discharging off-site. Maple Meadow Brook is characterized by its seasonal flow, draining from west to east, and it plays a critical role in managing runoff from the property.

Description of storm sewer systems:

Existing storm sewer system consists of a catch basins and drain manholes located on both the east and west areas of the site. They eventually tie into a pipe that flows towards the north end of the parcel, where it empties into the nearby wetlands and into Maple Meadow Brook.

Description of impaired waters or waters subject to TMDLs: N/A

No impaired or TMDLs were listed.

1.7 Site Features and Sensitive Areas to be Protected

Instructions:

- Describe unique site features including streams, stream buffers, wetlands, specimen trees, natural vegetation, steep slopes, or highly erodible soils that are to be preserved.
- Describe measures to protect these features.
- Include these features and areas on your site maps.
- For more information, see *SWPPP Guide*, Chapter 3.A and 3.B.

The existing stormwater system at Marshall Simonds Middle School handles runoff primarily from the south side of the property. Water flows from the building and parking lot areas, with part of it moving northeast toward a vegetated grass field, where it discharges into a catch basin. The remainder of the runoff flows north and northwest over a grassy hill and enters a deciduous wood swamp wetland near the school's walking path. Water from the athletic fields moves further north, where it drains into a linear wetland located along the property's northern and eastern perimeters. This system includes intermittent water features such as Maple Meadow Brook, which runs along the northern boundary of the site. Current runoff patterns rely heavily on natural water flow into wetlands and a catch basin, with limited infrastructure in place to manage flow rates and storage capacity. The wetlands are less than approximately less than 50FT from the edge of the exiting field.

The limits of the construction site to the north and east will have a hay bale installed prior to start of construction to protect with migration of silts and sand. Additionally existing catch basins and drainage outlets will be protected with hay bales. Only areas within the limits of the construction fence will be disturbed.

1.8 Potential Sources of Pollution

Instructions:

- Identify and list all potential sources of sediment, which may reasonably be expected to affect the quality of stormwater discharges from the construction site.
- Identify and list all potential sources of pollution, other than sediment, which may reasonably be expected to affect the quality of stormwater discharges from the construction site.
- For more information, see *SWPPP Guide*, Chapter 3.A.

Potential sources of sediment to stormwater runoff:

Clearing, grading, excavation and un-stabilized areas; Paving operations, Demolition and debris

disposal; Dewatering operations; Landscaping operations.

Potential pollutants and sources, other than sediment, to stormwater runoff:

Trade Name Material	Stormwater Pollutants	Location
Pesticides (insecticides, fongicides, herbicides, rodenticides)	Chlorinated hydrocarbons, organophosphates, carbonates, arsenic	Herbicides used for noxious weed control
Fertilizer	Nitrogen, Phosphorous	Newly seeded areas
Asphalt	Oil, petroleum distillates	Walkways
Concrete	Limestone, sand, pH, chromium	Curbing, foundations, slabs
Curing compounds	Naphtha	Curbing, foundations, slabs
Hydraulic oil/fluids	Mineral oil	Leaks or broken hoses from equipment
Gasoline	Benzene, ethyl benzene, toluene, xylene, MTBE	Secondary containment / staging area
Diesel Fuel	Petroleum distillate, oil and grease, naphthalene, xylenes	Secondary containment / staging area
Kerosene	Coal oil, petroleum distillates	Secondary containment / staging area
Antifreeze/coolant	Ethylene glycol, propylene glycol, heavy metals	Leaks or broken hoses from equipment
Sanitary toilets	Bacteria, parasites, and viruses	Staging area

1.9 Endangered Species Certification

Instructions:

- Before beginning construction, determine whether endangered or threatened species or their critical habitats are on or near your site.
- Adapt this section as needed for state or tribal endangered species requirements and, if applicable, document any measures deemed necessary to protect endangered or threatened species or their critical habitats.
- For more information on this topic, see *SWPPP Guide*, Chapter 3.B.
- Additional information on Endangered Species Act (ESA) provisions is at www.epa.gov/npdes/stormwater/esa

Are endangered or threatened species and critical habitats on or near the project area?

☐ Yes ☒ No

Describe how this determination was made:

The latest Natural Heritage & Endangered Species Program Atlas for Estimated and Priority Habitat of Rare Species.

1.10 Historic Preservation

Instructions:

- Before you begin construction, you should review federal and any applicable state, local, or tribal historic preservation laws and determine if there are historic sites on or near your project. If so, you might need to make adjustments to your construction plans or to your stormwater controls to ensure that these historic sites are not damaged.
- For more information, see *SWPPP Guide*, Chapter 3.B or contact your state or tribal historic preservation officer.

Are there any historic sites on or near the construction site?

☐ Yes ☒ No

Describe how this determination was made:

Review of the Inventory of Historic and Archaeological Assets of the Commonwealth.

1.11 Applicable Federal, Tribal, State or Local Programs

Instructions:

- Note other applicable federal, tribal, state or local soil and erosion control and stormwater management requirements that apply to your construction site.

The Contractor will obtain copies of any local and state regulations that are applicable to stormwater management, erosion control and pollution minimization at the job site and will comply with such regulations. The contractor will comply with all conditions of the NPDES Construction General Permit, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allow regulatory personnel access to the job site and to records in order to determine compliance.

1.12 Maps

Instructions:

- Attach site maps. For most projects, a series of site maps is recommended. The first should show the undeveloped site and its current features. An additional map or maps should be created to show the developed site or for more complicated sites show the major phases of development.

These maps should include the following:

- Direction(s) of stormwater flow and approximate slopes before and after major grading activities;
- Areas and timing of soil disturbance;
- Areas that will not be disturbed;
- Natural features to be preserved;
- Locations of major structural and non-structural BMPs identified in the SWPPP;
- Locations and timing of stabilization measures;
- Locations of off-site material, waste, borrow, or equipment storage areas;
- Locations of all waters of the United States, including wetlands;
- Locations where stormwater discharges to a surface water;
- Locations of storm drain inlets; and
- Areas where final stabilization has been accomplished.
- For more information, see *SWPPP Guide*, Chapter 3.C.

Include the site maps with the SWPPP.

All maps are attached in the Appendix.

SECTION 2: EROSION AND SEDIMENT CONTROL BMPS

Instructions:

- Describe the BMPs that will be implemented to control pollutants in stormwater discharges. For each major activity identified, do the following
  - ✓ Clearly describe appropriate control measures.
  - ✓ Describe the general sequence during the construction process in which the measures will be implemented.
  - ✓ Describe the maintenance and inspection procedures that will be used for that specific BMP.
  - ✓ Include protocols, thresholds, and schedules for cleaning, repairing, or replacing damaged or failing BMPs.
  - ✓ Identify staff responsible for maintaining BMPs.
  - ✓ (If your SWPPP is shared by multiple operators, indicate the operator responsible for each BMP.)
- Categorize each BMP under one of the following 10 areas of BMP activity as described below:
  - ***2.1 Minimize disturbed area and protect natural features and soil***
  - ***2.2 Phase Construction Activity***
  - ***2.3 Control Stormwater flowing onto and through the project***
  - ***2.4 Stabilize Soils***
  - ***2.5 Protect Slopes***
  - ***2.6 Protect Storm Drain Inlets***
  - ***2.7 Establish Perimeter Controls and Sediment Barriers***
  - ***2.8 Retain Sediment On-Site and Control Dewatering Practices***
  - ***2.9 Establish Stabilized Construction Exits***
  - ***2.10 Any Additional BMPs***
- Note the location of each BMP on your site map(s).
- For any structural BMPs, you should provide design specifications and details and refer to them. Attach them as appendices to the SWPPP or within the text of the SWPPP.
- For more information, see *SWPPP Guide*, Chapter 4.
- Consult your state's design manual or one of those listed in Appendix D of the *SWPPP Guide*.
- For more information or ideas on BMPs, see EPA's National Menu of BMPs http://www.epa.gov/npdes/stormwater/menuofbmps

The Erosion and Sediment Control Plans represent the suggested best management practices proposed for the project. The Contractor's approach to controlling stormwater runoff from the site may vary.

The Contractor shall strictly implement and maintain the erosion and sedimentation controls shown on the Drawings to protect adjacent riverfront and wetland resource areas. Any proposed substitutions or modifications to these controls shall be submitted for review and shall not be used unless approved by the Conservation Commission and documented in the applicable section

of this Appendix. The use of erosion and sediment controls are mandatory and must be employed to minimize impacts to adjacent areas during construction.

Once infill (sand and crumb rubber) is installed, any off-site migration or accumulation of crumb rubber and sediment shall be removed promptly, at a frequency sufficient to minimize off-site impacts and following each major storm event.

The control practices which are required to minimize stormwater pollution during construction must remain functional until disturbed areas have been stabilized. Erosion control products are to be installed and maintained in accordance with manufacturer's specifications and good engineering practices.

2.1 Minimize Disturbed Area and Protect Natural Features and Soil

BMP Description: The disturbed area will be limited to the construction area shown on the plans. All areas outside of the construction limits will be preserved. The limits of construction will be marked out with 6-ft chain link temporary fencing. The supports for the fabric will be placed on the ground and weighted down.	
Installation Schedule:	The temporary construction fence will be installed before construction begins at the site
Maintenance and Inspection:	The perimeter construction fence will be inspected weekly to ensure there has not been any breach in the fencing.
Responsible Staff:	Contractor
BMP Description: Topsoil stripped from the immediate construction area will be stockpiled as identified on the plans. The stockpiles will be in areas that will not interfere with construction phases and at least 15 feet away from area of concentrated flows or pavement. The slopes of the stockpile will be roughened by equipment and will not exceed 2:1 to prevent erosion. A silt fence will be installed around the stockpile as necessary.	
Installation Schedule:	Topsoil stockpiles will be established during grading activities. The temporary erosion controls will be installed immediately after the stockpile has been placed.
Maintenance and Inspection:	The area will be inspected weekly for erosion and immediately after storm events. Areas on or around the stockpile that have eroded
Responsible Staff:	Contractor

The contractor is responsible for the maintenance and repair of all erosion control devices on-site. All erosion control devices will be regularly inspected. At no time will silt-laden water be allowed to enter sensitive areas. Any runoff from disturbed surfaces will be directed through a sedimentation process prior to being discharged to the existing on site drainage system.

Additional erosion control techniques proposed include hay bale barriers, inlet sediment traps, a stabilized construction entrance, temporary diversion channels, and temporary sedimentation ponds when applicable. During the growing season, slope stabilization will be achieved by applying topsoil followed by seeding and mulching as soon as final grades are achieved. Organic mulching, jute netting, geo-textiles, or a combination will be used to stabilize slopes completed outside of the growing season.

2.2 Phase Construction Activity

Instructions:

- Describe the intended construction sequencing and timing of major activities, including any opportunities for phasing grading and stabilization activities to minimize the overall amount of disturbed soil that will be subject to potential erosion at one time. Also, describe opportunities for timing grading and stabilization so that all or a majority of the soil disturbance occurs during a time of year with less erosion potential (i.e., during the dry or less windy season). (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 2.) It might be useful to develop a separate, detailed site map for each phase of construction.
- Also, see EPA's *Construction Sequencing BMP Fact Sheet* at http://www.epa.gov/npdes/stormwater/menuofbmps/construction/cons_seq)

The project is anticipated to be constructed in one general phase. The following is a broad outline of the sequence of the major activities that disturb the soil at the site.

1. Install construction fencing around the limits of work.
2. Install hay bales around the proposed work areas, which are upgrdient of sensitive areas such as river front areas, wetlands, additional watercourses, and adjacent properties.
3. Install hay bales and/or filter bags around all existing drainage structures.
4. Install stabilized construction entrance.
5. Perform clearing, grubbing, and topsoil removal as specified.
6. Dust on site shall be minimized by spraying water on dry areas on the site. The use of oils and other petroleum base or toxic liquids for dust suppression is prohibited.
7. Stabilize denuded areas and stockpiles within 14 days of last construction activity in that area.

8. Begin site grading operations.
9. Begin installation of all underground utility lines and chambers as shown on the plans with appropriate erosion control measures to eliminate silt from entering the pipe systems.
10. Installation of bituminous concrete pavement and concrete pads.
11. Installation of synthetic turf field.
12. Remove hay bales and silt fencing only after exposed surfaces are stabilized.
13. Remove temporary construction exists only prior to cleaning up these areas.

2.3 Control Stormwater Flowing onto and through the Project

Instructions:

- Describe structural practices (e.g., diversions, berms, ditches, storage basins) including design specifications and details used to divert flows from exposed soils, retain or detain flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 3.)

BMP Description: Earth Dikes may be constructed horizontally along the uphill perimeter of the southern slope to convey stormwater away from the project site. The dike may be constructed of compacted soil and have a top width of 4 feet, a height of 2 feet and 2:1 side slopes.

Installation Schedule:	Earth dikes will be installed if necessary, prior to anticipated storm events.
Maintenance and Inspection:	Earth dikes will be inspected after each storm event and washouts are to be fixed upon discovery.
Responsible Staff:	Contractor

***BMP Description*:** Diversion Channels may be used to intercept and divert runoff which flows onto and through the project site. These diversions will minimize the development of concentrated runoff down slopes, which would produce gully erosion. Diversions will also be used to collect runoff from construction areas and convey it to temporary sediment basins or traps.

***Installation Schedule*:**	Temporary diversions will be installed as needed and will remain in place until slopes are stabilized or graded level. If vegetation of the diversion channel is required to avoid erosion of the channel, the channel will be temporarily stabilized to ensure viability of the grass seed.

***Maintenance and Inspection*:**	The diversions will be inspected weekly and maintained as necessary to prevent erosion.
***Responsible Staff*:**	Contractor

2.4 Stabilize Soils

Instructions:

- Describe controls (e.g., interim seeding with native vegetation, hydroseeding) to stabilize exposed soils where construction activities have temporarily or permanently ceased. Also describe measures to control dust generation. Avoid using impervious surfaces for stabilization whenever possible. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 4.)
- Also, see EPA's *Seeding BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/seeding

BMP Description: Temporary soil stabilization will be achieved using rip rap, filter fabric, Geotextile or hydro-seeding. The contractor will not disturb more area than can be stabilized within 14 days unless the area is to remain active.

☐ ***Permanent***	☒ ***Temporary***
Installation Schedule:	All disturbed surfaces will be stabilized a minimum of 14 days after construction in any portion of the project site is completed or is temporarily halte4d, unless additional construction is intended to be initiated within 21 days.
Maintenance and Inspection:	Stabilization devises will be inspected weekly and maintained as necessary to prevent washouts.
Responsible Staff:	Contractor

BMP Description: All disturbed areas not under structures will be seeded and maintained until the seed has taken hold.

☒ ***Permanent***	☐ ***Temporary***
Installation Schedule:	All disturbed surfaces will be stabilized a minimum of 14 days after construction in any portion of the project site is completed.
Maintenance and Inspection:	The grass will be inspected and bare spots will be reseeded.
Responsible Staff:	Contractor

2.5 Protect Slopes

Instructions:

- Describe controls (e.g., erosion control blankets, tackifiers) including design specifications and details that will be implemented to protect all slopes. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 5.)
- Also, see EPA's *Geotextiles BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/geotextiles

BMP Description: Slopes greater than three to one horizontal to vertical will be stabilized with seed, organic mulch, jute fabric, or rip-rap, as appropriate, to prevent erosion during construction.

Installation Schedule:	Slope stabilization measures will be taken once slopes of 3:1 or greater are created.
Maintenance and Inspection:	Slopes will be inspected after storm events to make sure erosion has not taken place. If areas of erosion are discovered, additional measures will be taken to prevent future erosion. After disturbed areas have been stabilized, the temporary erosion control measures will be removed and accumulated sediment will be removed and disposed of properly.
Responsible Staff:	Contractor

2.6 Protect Storm Drain Inlets

Instructions:

- Describe controls (e.g., inserts, rock-filled bags, or block and gravel) including design specifications and details that will be implemented to protect all inlets receiving stormwater from the project during the entire project. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 6.)
- Also, see EPA's *Storm Drain Inlet Protection BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/storm_drain

BMP Description: Hay bale sediment traps will be installed at drainage structures to prevent sediment from entering the structures.

Installation Schedule:	Hay bales will be installed around catch basins and drainage structure inlets prior to start of construction
Maintenance and Inspection:	Hay bales will be replaced if sufficient sediment is accumulated where it may enter the drainage system. BMP will be inspected weekly and after each storm event.
Responsible Staff:	Contractor

BMP Description: As an alternate to hay bales, silt sacks may be installed on drainage structures to prevent migration of silt in to the structures.

Installation Schedule:	Silt sacks will be installed prior to any construction activity.
Maintenance and Inspection:	Silt sacks will be inspected weekly and after all storm events. They will be removed and cleaned as necessary.

2.7 Establish Perimeter Controls and Sediment Barriers

Instructions:

- Describe structural practices (e.g., silt fences or fiber rolls) including design specifications and details to filter and trap sediment before it leaves the construction site. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 7.)
- Also see, EPA's *Silt Fence BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/silt_fences, or *Fiber Rolls BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/fiber_rolls

BMP Description: Hay bales will be installed on the west, north and east sides of the construction site per approved plans. The existing and proposed slopes channel surface runoff to these areas; therefore installation of hay bales is only necessary for that area.

Installation Schedule:	Hay bales will be installed prior to start of construction activity.
Maintenance and Inspection:	Hay bales will be inspected weekly and replaced as necessary to prevent silt migration.
Responsible Staff:	Contractor

2.8 Retain Sediment On-Site

Instructions:

- Describe sediment control practices (e.g., sediment trap or sediment basin), including design specifications and details (volume, dimensions, outlet structure) that will be implemented at the construction site to retain sediments on-site. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 8.)
- Also, see EPA's *Sediment Basin BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/sediment_basins

BMP Description: Hay bales on the down grade of the project site will function to retain sediment on site.

Installation Schedule:	Hay bales will be installed prior to construction activity.
Maintenance and Inspection:	They will be inspected weekly and repaired and cleaned as necessary.
Responsible Staff:	Contractor

BMP Description: A stone trench will be installed which will intercept runoff, remove solids and allow the runoff to infiltrate prior to releasing the excess runoff in to the installed drain lines.	
Installation Schedule:	Stone trench will be installed during the drainage installation for the site.
Maintenance and Inspection:	The trench will be inspected weekly and maintained as necessary to prevent migration of the sediment in to the perforated pipes.
Responsible Staff:	Contractor

2.9 Establish Stabilized Construction Exits

Instructions:

- Describe location(s) of vehicle entrance(s) and exit(s), procedures to remove accumulated sediment off-site (e.g., vehicle tracking), and stabilization practices (e.g., stone pads or wash racks or both) to minimize off-site vehicle tracking of sediments and discharges to stormwater. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 9.)
- Also, see EPA's *Construction Entrances BMP Fact Shee*t at www.epa.gov/npdes/stormwater/menuofbmps/construction/cons_entrance

BMP Description: A stone construction exit will be installed to trap sediment and dirt off the construction vehicle tires.	
Installation Schedule:	Construction entrance/exit will be installed during the initial phases of construction
Maintenance and Inspection:	The area will be inspected weekly, and additional stone will be placed as necessary.
Responsible Staff:	Contractor

SECTION 3: GOOD HOUSEKEEPING BMPS

Instructions:

- Describe the key good housekeeping and pollution prevention (P2) BMPs that will be implemented to control pollutants in stormwater.
- Categorize each good housekeeping and pollution prevention (P2) BMP under one of the following seven categories:
  - ***3.1 Material Handling and Waste Management***
  - ***3.2 Establish Proper Building Material Staging Areas***
  - ***3.3 Designate Washout Areas***
  - ***3.4 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices***
  - ***3.5 Allowable Non-Stormwater Discharges and Control Equipment/Vehicle Washing***
  - ***3.6 Spill Prevention and Control Plan***
  - ***3.7 Any Additional BMPs***
- For more information, see *SWPPP Guide*, Chapter 5.
- Consult your state's design manual or resources in Appendix D of the *SWPPP Guide*.
- For more information or ideas on BMPs, see EPA's National Menu of BMPs http://www.epa.gov/npdes/stormwater/menuofbmps

3.1 Material Handling and Waste Management

Instructions:

- Describe measures (e.g., trash disposal, sanitary wastes, recycling, and proper material handling) to prevent the discharge of solid materials to receiving waters, except as authorized by a permit issued under section 404 of the CWA (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 1.)
- Also, see EPA's *General Construction Site Waste Management BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/cons_wasteman

BMP Description: All waste materials will be collected and disposed of in metal dumpsters in the staging area. Dumpsters will be placed away from stormwater conveyance and drains, and meet all local and state solid-waste management regulations. Only trash and construction debris from the site will be deposited in the dumpsters.

Installation Schedule:	Trash dumpsters will be installed once the staging area has been established.
Maintenance and Inspection:	The dumpsters will be inspected weekly and immediately after storm events. The dumpster will be emptied weekly. If trash and construction debris are exceeding the dumpsters capacity, the dumpster will be emptied more frequently.
Responsible Staff:	Contractor

BMP Description: Temporary sanitary facilities (portable toilets) will be provided at the site in the staging area. The toilets will be away from concentrated flow paths and traffic flow and will have collection pans underneath as secondary containment.	
Installation Schedule:	The portable toilets will be brought to the site once the staging area has been established.
Maintenance and Inspection:	All sanitary waste will be collected from the portable toilets a minimum of once per week by a sanitary service. The toilets will be inspected weekly for evidence of leaking holding tanks. Toilets with leaking holding tanks will be removed from the site and replaced with new portable toilets.
Responsible Staff:	Contractor

3.2 Establish Proper Building Material Staging Areas

Instructions:

- Describe construction materials expected to be stored on-site and procedures for storage of materials to minimize exposure of the materials to stormwater. (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 2.)

BMP Description: Construction equipment and maintenance material will be stored at the staging area and materials storage area. They should be elevated on wood blocks or pallets to minimize contact with runoff.	
Installation Schedule:	The staging and materials storage area will be installed after grading. Material will be stored as it is delivered to the site
Maintenance and Inspection:	Storage area will be inspected weekly and after storm events. Storage areas will be kept clean, and organized. Materials will be kept elevated on wood blocks or pallets.
Responsible Staff:	Contractor

3.3 Designate Washout Areas

Instructions:

- Describe location(s) and controls to eliminate the potential for discharges from washout areas for concrete mixers, paint, stucco, and so on. (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 3.)
- Also, see EPA's *Concrete Washout BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/concrete_wash

BMP Description: Wheel Wash Stations will be provided adjacent to the construction entrance which leads directly to public ways.

Installation Schedule:	Wheel wash stations will be installed after the stabilized construction entrance.
Maintenance and Inspection:	Vehicles will be inspected as they leave the construction site, and the wheels will be washed as necessary to minimize migration of soils on to public ways.
Responsible Staff:	Contractor

BMP Description: Concrete Washouts will be accomplished in specific areas which have been diked and prepared to prevent contact with stormwater runoff. Waste generated from concrete wash water shall not be allowed to flow into drainage ways, inlets, receiving waters o any location other than the designated concrete washout area.

Installation Schedule:	Concrete washout stations shall be prepared prior to concrete work on site.
Maintenance and Inspection:	The hardened residue from the concrete washout dike areas will be disposed of I the same manner as other non-hazardous construction waste materials or may be broken up and used on site as deemed appropriate by the Contractor.
Responsible Staff:	Contractor.

3.4 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices

BMP Description: Equipment fuel storage and refueling operations will be in an upland area at a horizontal distance greater than 100 feet from any recourse boundary. The fueling areas will include secondary containment. Fueling will be done near the staging area, away from any resource and buffer zones.

Installation Schedule:	Fueling station will be prepared prior to any fueling operations on site.
Maintenance and Inspection:	The area will be inspected and cleaned weekly.
Responsible Staff:	Contractor.

3.5 Control Equipment/Vehicle Washing

Instructions:

- Describe equipment/vehicle washing practices that will be implemented to control pollutants to stormwater. (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 5.)
- Also, see EPA's *Vehicle Maintenance and Washing Areas BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/vehicile_maintain

BMP Description: ***N/A***

Installation Schedule:	
Maintenance and Inspection:	
Responsible Staff:	

Vehicle Washing will be done off site.

3.6 Spill Prevention and Control Plan

Instructions:

- Describe the spill prevention and control plan to include ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control. (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 6.)
- Also, see EPA's *Spill Prevention and Control Plan BMP Fact sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/spill_control

1. Employee Training: All employees will be trained via biweekly tailgate sessions

2. Vehicle Maintenance: Vehicles and equipment will be maintained off-site. All vehicles and equipment including subcontractor vehicles will be checked for leaking oil and fluids. Vehicles leaking fluids will not be allowed on-site.

3. Spill Kits: Spill kits will be within the materials storage area and concrete washout areas.

4. Spills: All spills will be cleaned up immediately upon discovery. Spent absorbent materials and rags will be hauled off-site immediately after the spill is cleaned up for disposal at and appropriate landfill. Spills large enough to discharge to surface water will be reported to the appropriate federal, state and or local government agency.

5. Material safety data sheets, material inventory, and emergency contact information will be maintained at the site project trailer.

The spill prevention and control procedures will be implemented once construction begins on-site. All personnel will be instructed during tailgate training sessions, regarding the correct procedure for spill prevention and control.

3.7 Any Additional BMPs

Instructions:

- Describe any additional BMPs that do not fit into the above categories. Indicate the problem they are intended to address.

BMP Description: ***Additional stormwater maintenance components/activities are detailed in the O&M Plan. The table below is provided as a brief reference; refer to the O&M Plan for more information.***

Installation Schedule:	
Maintenance and Inspection:	

Component	Inspection Frequency	Key Maintenance Activities
Synthetic Turf Fields	Monthly Apr–Nov	Inspect surface for settlement, seams, or infill migration; sweep/sanitize as needed.
	Quarterly	Brush/groom turf to redistribute infill and maintain infiltration.
	Annual	Inspect underdrain outlets for clear flow.
Rain Garden	Monthly from Apr–Oct	Inspect vegetation and inflow points; remove sediment/debris.
	Semi-annual	Check mulch depth, replace if < 2 in.; remove invasive species.
	After major storm > 1 in.	Verify ponding drains within 72 hrs; if not, till top 3 in. and restore infiltration.
Underdrain Outlets / Overflow Structures	Quarterly	Flush as needed to prevent clogging.
Sweeping Walkways and Perimeter Edges	Monthly	Sweep debris, inspect curb edges for infill migration; return material to field.
Turf Inspection & Periodic Turf Grooming	Quarterly	Inspect and groom field once per quarter to maintain infill distribution and stability. Inspection and maintenance to be performed after major storm events.
Sanitizing/Spraying Procedures	As Needed	Spot-clean only as needed for spills or bodily fluids. Use a biodegradable, phosphate-free, non-toxic disinfectant/cleaner labeled for synthetic turf. Apply in minimal quantities, prevent runoff, and do not allow wash water or residual cleaners to enter catch basins, drainage inlets, or adjacent resource areas; remove and dispose of contaminated material per manufacturer recommendations.
Upper Parking Lot Sweeping	Semi-annual	Parking lot sweeping to be performed in the parking areas at least 2 times per year. Once in the spring and again in the fall. It should be noted the adjacent road to the parking lot (Locust St.) has a low potential for accumulation of total suspended solids due to the use after construction is completed. The Town/School may need to provide mechanical sweeping based on their predetermined schedule.
Deep Sump Hooded Catch Basins	Quarterly	Conduct inspections at least four times per year. Remove infill & debris to ensure proper flow. Cleaning shall occur at least four times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin. Rehabilitate the basin as needed if it fails due to clogging.
Invasive Species Control & No-mow in Riverfront Areas	Semi-annual	Inspect twice per year (spring/early summer and late summer/early fall). Remove invasives by hand where feasible (pull seedlings/small plants); for woody species, hand-pull or cut at the base with hand tools. Minimize soil disturbance, no grubbing/grading, avoid creating bare soil. No mowing is permitted within the riverfront area. Maintain a no-mow boundary as only passive maintenance is allowed (inspection, hand removal of invasives, and litter/debris removal). Any mowing or mechanical clearing for safety/access requires Con Comm approval.
Snow Stockpile Area	As Needed	Plowing synthetic turf fields is not typical and is not anticipated at the location of the fields. However, if plowing is necessary, snow stockpiling shall be located in the areas designated on the plan and shall not be stored in the resource areas (wetlands, riverfront, or raingarden).
Water Quality Monitoring & Reporting	Annually	Monitoring shall include a visual inspection of the rain garden/overflow points and any discharge locations for evidence of sediment, turbidity, odors, sheen, algae, or erosion. If flowing water is present during the inspection, collect basic field observations (e.g., clarity/turbidity and general condition) and document findings with photos and a brief log (date, weather, antecedent conditions, observed issues, and any corrective actions). Any deficiencies observed (e.g., persistent turbidity, sediment transport, or erosion) shall be addressed promptly through maintenance and/or repairs.

		If applicable, water testing shall be performed if requested by the Town/Conservation Commission under the Order of Conditions. Annual testing for metals, PFAS, 6PPD-q, oil &grease, etc. to be provided to the Conservation Commission on an annual basis.

3.8 Allowable Non-Stormwater Discharge Management

Instructions:

- Identify all allowable sources of non-stormwater discharges that are not identified. The allowable non-stormwater discharges identified might include the following (see your permit for an exact list):
  - ✓ Waters used to wash vehicles where detergents are not used
  - ✓ Water used to control dust
  - ✓ Potable water including uncontaminated water line flushings
  - ✓ Routine external building wash down that does not use detergents
  - ✓ Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
  - ✓ Uncontaminated air conditioning or compressor condensate
  - ✓ Uncontaminated ground water or spring water
  - ✓ Foundation or footing drains where flows are not contaminated with process materials such as solvents
  - ✓ Uncontaminated excavation dewatering
  - ✓ Landscape irrigation
- Identify measures used to eliminate or reduce these discharges and the BMPs used to prevent them from becoming contaminated.
- For more information, see *SWPPP Guide*, Chapter 3.A.

List allowable non-stormwater discharges and the measures used to eliminate or reduce them and to prevent them from becoming contaminated:

Certain types of discharges are allowed under the NPDES General Permit for Construction Activity, and it's the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come into contact with the water prior to or after its discharge. The control measures that have been outlined previous in this SWPPP will be strictly followed to ensure that no contamination of these non-stormwater discharges take place. The following non-stormwater discharges that may occur from the job site include:

1. Discharge from fire-fighting activity
2. Fire Hydrant flushing.
3. Waters used to wash vehicles where detergent are not used.

4. Waters used to control dust in accordance with off-site vehicle tracking
5. Potable water including uncontaminated water line flushing.
6. Routine external building wash down that does not use detergents.
7. Pavement was water where spills or leaks of toxic or hazardous materials have not occurred and where detergents are not used.
8. Uncontaminated air conditioner compressor condensate.
9. Uncontaminated ground water or spring water.
10. Foundation or footing drains where flows are not contaminated with process materials such as solvents.
11. Uncontaminated excavation dewatering.
12. Landscape irrigation.

SECTION 4: SELECTING POST-CONSTRUCTION BMPs

Instructions:

- Describe all post-construction stormwater management measures that will be installed during the construction process to control pollutants in stormwater discharges after construction operations have been completed. Examples of post-construction BMPs include the following:
  - ✓ Biofilters
  - ✓ Detention/retention devices
  - ✓ Earth dikes, drainage swales, and lined ditches
  - ✓ Infiltration basins
  - ✓ Porous pavement
  - ✓ Other proprietary permanent structural BMPs
  - ✓ Outlet protection/velocity dissipation devices
  - ✓ Slope protection
  - ✓ Vegetated strips and/or swales
- Identify any applicable federal, state, local, or tribal requirements for design or installation.
- Describe how low-impact designs or smart growth considerations have been incorporated into the design.
- For any structural BMPs, you should have design specifications and details and refer to them. Attach them as appendices to the SWPPP or within the text of the SWPPP.
- For more information on this topic, see your state's stormwater manual.
- You might also want to consult one of the references listed in Appendix D of the *SWPPP Guide*.
- Visit the post-construction section of EPA's Menu of BMPs at: www.epa.gov/npes/menuofbmps

BMP Description: There are drainage structures, catch basins, drain manholes on site. It is important to inspect these structures to ensure they do not become clogged. After site construction is completed, drainage structures should be inspected at regular intervals and after heavy storms.

Installation Schedule:	N/A
Maintenance and Inspection:	Manholes should be inspected twice a year to remove any intrusions and ensure proper flow. Catch basins and storm clean-out structures should be cleaned of any debris 4 times a year and after heavy storms.
Responsible Staff:	Owner

BMP Description: A Rain Garden is a depressed area in the landscape that collects rainwater from a driveway or street and allows it to soak into the ground. Rain gardens are planted with native grasses and flowering perennials designed to filter and reduce runoff. No rain gardens are proposed at this site.

Installation Schedule:	The rain garden will be installed early in the construction phase to

	provide pre-treatment of the ADA parking lot once it is built.
Maintenance and Inspection:	Years 1 & 2: New rain gardens will need to be watered for the first one or two years until the garden is established. Apply mulch twice per year until groundcover establishes. After the first season, it may be obvious what plants were successful and what plants do not work for your rain garden. Weeding will be needed the first two years. Remove weeds by hand, including their roots. Years 3+: In the third year and beyond, the native grasses, sedges, rushes, and wildflowers will begin to mature and will outcompete the weeds. Weeding isolated patches might still be needed on occasion. After each growing season, the stems and seed heads can be left for winter interest, wildlife cover and bird food. Once spring arrives and new growth is 4-6-inches tall, cut all tattered plants back. If the growth is thick, hand-cut the largest plants and then use a string trimmer to reduce the planting back to a height of six to eight inches. Dead plant material can also be removed with a string trimmer or weed whacker (scythe) and composted or disposed of as appropriate. Then, rake up and compost or properly dispose of the dead plant material. If the mower deck won't rise that high, use a string trimmer or weed-eater to cut the stems at a height of 6-8 inches. On thicker stems, such as cup plant, goldenrods and some asters, a string trimmer may not be strong enough. For these, use hand clippers or pruning shears to cut the individual stems. Since the rain garden serves the purpose of catchment, sediment will tend to accumulate within the garden. Remove sediment as necessary. Core aerate or cultivate bare areas annually if surface becomes clogged with fine sediments. Replant or seed if there are areas of exposed soil. Replace dead or diseased plantings. Evaluate the health of native plantings. Plant more of the successful species in the rain garden as necessary. Replace rocks that may be diverting flow out of the garden.
Responsible Staff:	Owner

SECTION 5: INSPECTIONS

5.1 Inspections

Instructions:

- Identify the individual(s) responsible for conducting inspections and describe their qualifications. Reference or attach the inspection form that will be used.
- Describe the frequency that inspections will occur at your site including any correlations to storm frequency and intensity.
- Note that inspection details for particular BMPs should be included in Sections 2 and 3.
- You should also document the repairs and maintenance that you undertake as a result of your inspections. These actions can be documented in the corrective action log described in Part 5.3 below.
- For more on this topic, see *SWPPP Guide*, Chapters 6 and 8.
- Also, see suggested inspection form in Appendix B of the *SWPPP Guide*.

1. ***Inspection Personnel:*** Identify the person(s) who will be responsible for conducting inspections and describe their qualifications:

Construction personnel will conduct inspections as identified in the inspection and maintenance section of each BMP. Personnel will be trained during tailgate session on the proper inspection and maintenance of the BMPs.

If specified, a representative from Nesra Engineering, LLC will make routine site visits and conduct inspections of the BMPs during the construction process. Additional inspections will be conducted by Nesra after significant storm events during the construction phase.

2. ***Inspection Schedule and Procedures:***

Describe the inspection schedules and procedures you have developed for your site (include frequency of inspections for each BMP or group of BMPs, indicate when you will inspect, e.g., before/during/and after rain events, spot inspections):

Describe the general procedures for correcting problems when they are identified. Include responsible staff and time frames for making corrections: Attach a copy of the inspection report you will use for your site.

As stated above inspections will be conducted by both the contractor's construction personnel and Nesra Engineering LLC representative. Contractor personnel will conduct inspections as required by the Maintenance and Inspection section of each BMP. In addition Nesra's representative will conduct routine inspections.

If a problem is noted during the inspection, a copy of the inspection form will be provided to the Contractor, who will be responsible for correcting the issue that day. In subsequent inspections the area will be re-inspected and corrections will be noted.

A copy of the inspection report to be used is included in the appendix section.

5.2 Delegation of Authority

Instructions:

- Identify the individual(s) or specifically describe the position where the construction site operator has delegated authority for the purposes of signing inspection reports, certifications, or other information.
- Attach the delegation of authority form that will be used.
- For more on this topic, see *SWPPP Guide*, Chapter 7.

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

Nesra Engineering, LLC
Hip Aguilera
111 Washington St.
Plainville, MA 02762
508-723-2403
HA@NersaEng.com

A copy of the signed delegation of authority form is attached in Appendix K.

5.3 Corrective Action Log

Instructions:

- Create here, or as an attachment, a corrective action log. This log should describe repair, replacement, and maintenance of BMPs undertaken as a result of the inspections and maintenance procedures described above. Actions related to the findings of inspections should reference the specific inspection report.
- This log should describe actions taken, date completed, and note the person that completed the work.

Corrective Action Log:

A Copy of the corrective log is included in the Appendix.

SECTION 6: RECORDKEEPING AND TRAINING

6.1 Recordkeeping

Instructions:

- The following is a list of records you should keep at your project site available for inspectors to review:
- Dates of grading, construction activity, and stabilization (which is covered in Sections 2 and 3)
- A copy of the construction general permit (attach)
- The signed and certified NOI form or permit application form (attach)
- A copy of the letter from EPA or/the state notifying you of their receipt of your complete NOI/application (attach)
- Inspection reports (attach)
- Records relating to endangered species and historic preservation (attach)
- Check your permit for additional details
- For more on this subject, see *SWPPP Guide*, Chapter 6.C.

Records will be retained for a minimum period of at least 3 years after the permit is terminated.

Date(s) when major grading activities occur:
T.B.P.

Date(s) when construction activities temporarily or permanently cease on a portion of the site:
T.B.P.

Date(s) when an area is either temporarily or permanently stabilized:
T.B.P.

6.2 Log of Changes to the SWPPP

Instructions:

- Create a log here, or as an attachment, of changes and updates to the SWPPP. You should include additions of new BMPs, replacement of failed BMPs, significant changes in the activities or their timing on the project, changes in personnel, changes in inspection and maintenance procedures, updates to site maps, and so on.

Log of changes and updates to the SWPPP
Updated on 12/28/25 (See Log).

6.3 Training

Instructions:

- Training your staff and subcontractors is an effective BMP. As with the other steps you take to prevent stormwater problems at your site, you should document the training that you conduct for your staff, for those with specific stormwater responsibilities (e.g. installing, inspecting, and maintaining BMPs), and for subcontractors.
- Include dates, number of attendees, subjects covered, and length of training.
- For more on this subject, see *SWPPP Guide*, Chapter 8.

Individual(s) Responsible for Training:

Contractor. Additional info T.B.P.

Describe Training Conducted:

- General stormwater and BMP awareness training for staff and subcontractors:
- Detailed training for staff and subcontractors with specific stormwater responsibilities:

SECTION 7: FINAL STABILIZATION

Instructions:

- Describe procedures for final stabilization. If you complete major construction activities on part of your site, you can document your final stabilization efforts for that portion of the site. Many permits will allow you to then discontinue inspection activities in these areas (be sure to check your permit for exact requirements). You can amend or add to this section as areas of your project are finally stabilized.
- Update your site plans to indicate areas that have achieved final stabilization.
- Note that dates for areas that have achieved final stabilization should be included in Section 6, Part 6.1 of this SWPPP.
- For more on this topic, see *SWPPP Guide*, Chapter 9.

BMP Description: Installation and establishment of hydroseeded areas outside of the limits of the athletic field

Installation Schedule:	After installation of the drainage improvements, structures specified in the contract documents and final grading.
Maintenance and Inspection:	Maintenance and inspection of the installed natural turf areas will be in accordance with the design drawings and specifications.
Responsible Staff:	Contractor

SECTION 8: CERTIFICATION AND NOTIFICATION

Instructions:

- The SWPPP should be signed and certified by the construction operator(s). Attach a copy of the NOI and permit authorization letter received from EPA or the state in Appendix D.

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: _____ Title: _____

Signature: _____ Date: _____

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – General Location Map

Appendix B – Site Maps

Appendix C – Construction General Permit

Appendix D – NOI and Acknowledgement Letter from EPA/State

Appendix E – Inspection Reports Template

Appendix F – Corrective Action Log (or in Part 5.3)

Appendix G – SWPPP Amendment Log (or in Part 6.2)

Appendix H – Subcontractor Certifications/Agreements

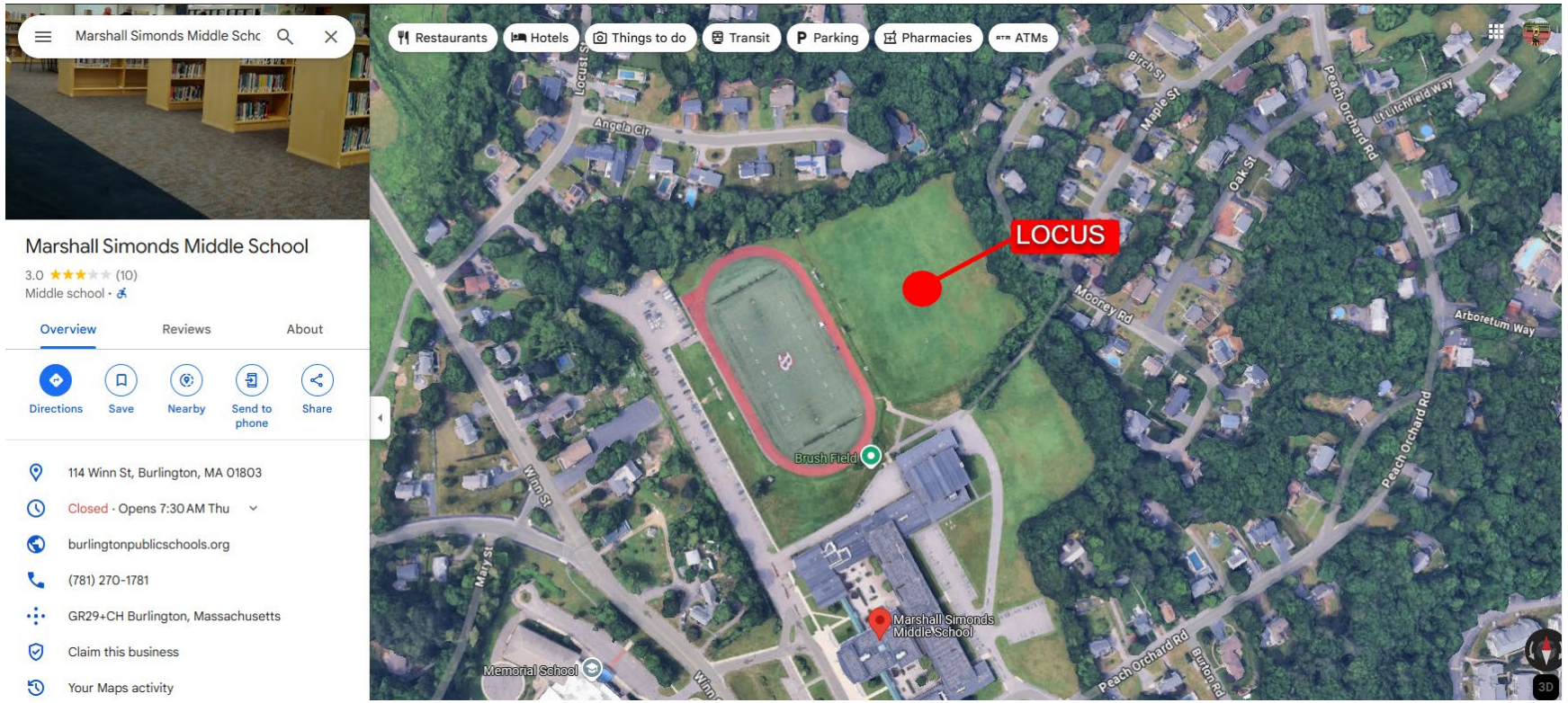
Appendix I – Grading and Stabilization Activities Log (or in Part 6.1)

Appendix J – Training Log

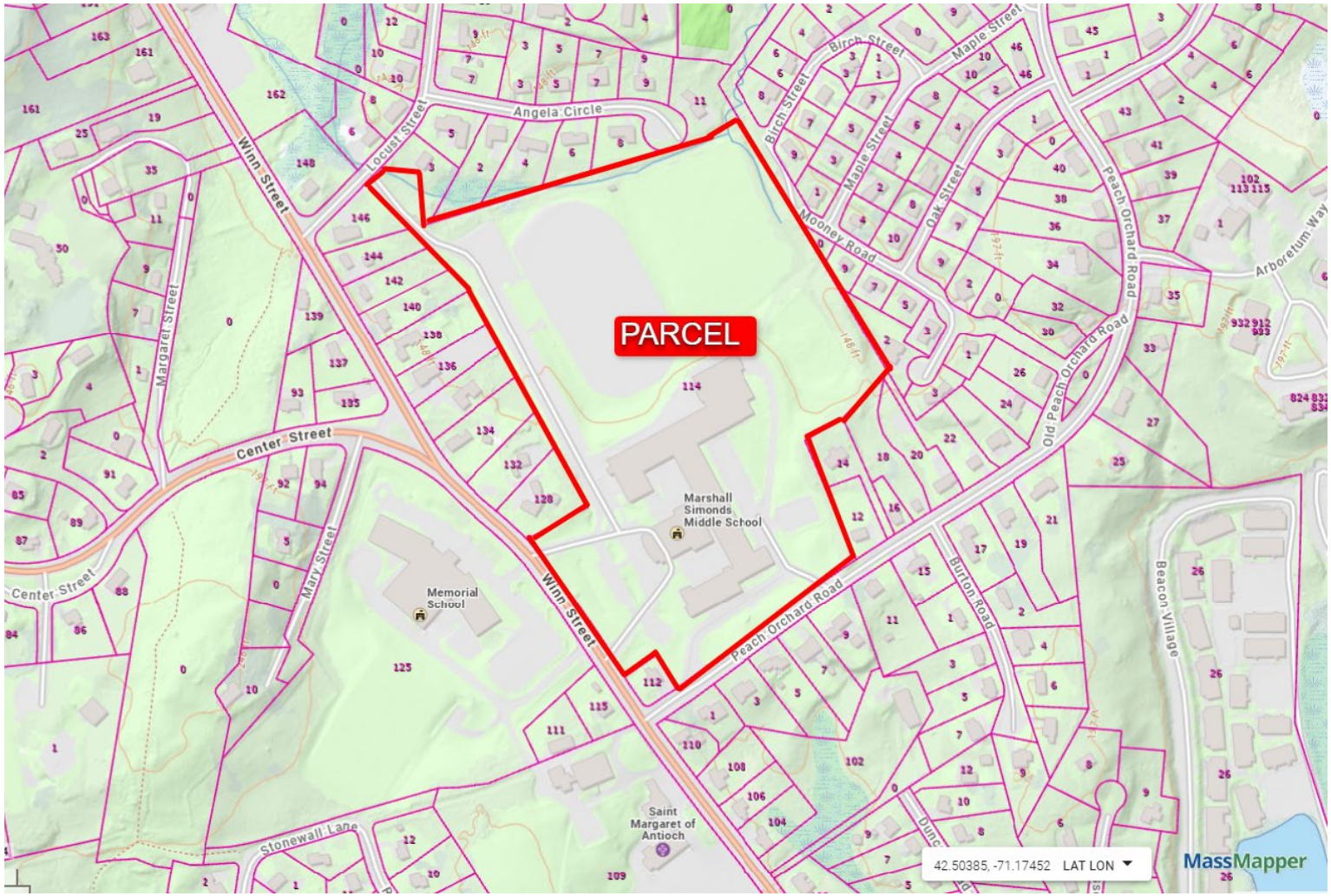
Appendix K – Delegation of Authority

Appendix L – Additional Information (i.e., Endangered Species and Historic Preservation Documentation, Soil Report)

Appendix A – General Location Map



Appendix B – Site Maps



Appendix C – Construction General Permit

To be provided by the contractor.

Appendix D – NOI and Acknowledgement Letter from EPA/State

- *T.B.P.*

Appendix E – Inspection Reports

Stormwater Construction Site Inspection Report

General Information	
Project Name:	
Location:	
Date of Inspection:	Start/End Time:
Inspector's Name:	
Inspector's Title: P.E.	
Inspector's Contact Information:	
Describe present phase of construction:	
Type of Inspection: ☐ Regular ☐ Pre-storm event ☐ During storm event ☐ Post-storm event	

Weather Information
Has there been a storm event since the last inspection? ☐Yes ☐ No If yes, provide: Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection? ☐ Clear ☐ Cloudy ☐ Rain ☐ Sleet ☐ Fog ☐ Snowing ☐ High Winds : ☐ Other: Temperature:
Have any discharges occurred since the last inspection? ☐ Yes ☐ No If yes, describe:
Are there any discharges at the time of inspection? ☐Yes ☐ No If yes, describe:

Overall Site Issues

General site locations/issues assessed during inspection.

BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1. All inactive slopes and disturbed areas have been stabilized.	☐ Yes ☐ No	☐ Yes ☐ No	
2. Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	☐ Yes ☐ No	☐ Yes ☐ No	
3. Are all sanitary waste receptacles placed in secondary containment and free of leaks?	☐ Yes ☐ No	☐ Yes ☐ No	

4. Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	☐ Yes ☐ No	☐ Yes ☐ No	
5. Are discharge points and receiving waters free of any sediment deposits?	☐ Yes ☐ No	☐ Yes ☐ No	
6. Are storm drain inlets properly protected?	☐ Yes ☐ No	☐ Yes ☐ No	
7. Is the construction exit preventing sediment from being tracked into the street?	☐ Yes ☐ No	☐ Yes ☐ No	
8. Is trash/litter from work areas collected and placed in covered dumpsters?	☐ Yes ☐ No	☐ Yes ☐ No	
9. Are vehicle and equipment fueling,	☐ Yes ☐ No	☐ Yes ☐ No	

cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?			
10. Are materials that are potential stormwater contaminants stored inside or under cover?	☐ Yes ☐ No	☐ Yes ☐ No	
11. Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ No	☐ Yes ☐ No	
12. (Other)	☐Yes ☐ No	☐Yes ☐ No	N/A

Certification Statement

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____.

Signature of Inspector *Date*

Appendix F – Corrective Action Log

Project Name:
SWPPP Contact:

Inspection Date	Inspector Name(s)	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible person

Appendix G – SWPPP Amendment Log

Project Name:
SWPPP Contact:

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]
1	SWPPP Created.	2/12/25	Hipolito Aguilera, CSI, CSL Construction Supervisor
2	Updates to Erosion and Sediment Control and BMPs.	12/28/25	Hipolito Aguilera, CSI, CSL Construction Supervisor

Appendix H – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

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

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

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and 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: _____

Appendix I – Grading and Stabilization Activities Log

Project Name:
SWPPP Contact:

Date Grading Activity Initiated	Description of Grading Activity	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures are Initiated	Description of Stabilization Measure and Location

Appendix J – SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: *(check as appropriate)*

- ❑ **Erosion Control BMPs**
- ❑ **Emergency Procedures**
- ❑ **Sediment Control BMPs**
- ❑ **Good Housekeeping BMPs**
- ❑ **Non-Stormwater BMPs**

Specific Training Objective:_____

_____

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

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Appendix K – Delegation of Authority Form

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 or 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 _____ (Reference State Permit), and that the designee above meets the definition of a "duly authorized representative" as set forth in _____ (Reference State Permit).

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: _____

Appendix L – Additional Information

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Middlesex County, Massachusetts

Marshall Simonds Athletic Fields Renovation Project

February 12, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 24, Aug 27, 2024

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
73B	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	1.7	21.9%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	0.0	0.0%
656	Udorthents-Urban land complex	6.1	78.1%
Totals for Area of Interest		**7.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Middlesex County, Massachusetts

73B—Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w695
Elevation: 0 to 1,580 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Whitman, extremely stony, and similar soils: 81 percent
Minor components: 19 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitman, Extremely Stony

Setting

Landform: Drumlins, ground moraines, hills, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: peat
A - 1 to 10 inches: fine sandy loam
Bg - 10 to 17 inches: gravelly fine sandy loam
Cdg - 17 to 61 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 7 to 38 inches to densic material
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY041MA - Very Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Ridgebury, extremely stony

Percent of map unit: 10 percent
Landform: Drumlins, depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 3 percent
Landform: Marshes, bogs, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge, extremely stony

Percent of map unit: 1 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

631C—Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: vr1g
Elevation: 0 to 1,000 feet
Mean annual precipitation: 32 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 110 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton and similar soils: 45 percent
Urban land: 35 percent
Hollis and similar soils: 10 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Friable loamy eolian deposits over friable loamy basal till derived from granite and gneiss

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 22 inches: sandy loam
H3 - 22 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Description of Hollis

Setting

Landform: Hillslopes, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Friable, shallow loamy basal till over granite and gneiss

Typical profile

H1 - 0 to 2 inches: fine sandy loam

H2 - 2 to 14 inches: fine sandy loam
H3 - 14 to 18 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Canton

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope, toeslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Udorthents, loamy

Percent of map unit: 2 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave

Scituate

Percent of map unit: 1 percent
Landform: Hillslopes, depressions
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Montauk

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Head slope, nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

656—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 995k
Elevation: 0 to 3,000 feet
Mean annual precipitation: 32 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 110 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 45 percent
Urban land: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Minor Components

Canton

Percent of map unit: 10 percent

Landform: Hills
Landform position (two-dimensional): Backslope, toeslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Terraces, plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Paxton

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

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