

Long Term Pollution Prevention & Stormwater System Operation and Maintenance Plan

*Healy Corner
195 Tahattawan Road
Littleton, MA*

August 2019

Submitted to:
Town of Littleton Planning Board
37 Shattuck Street
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Project No:
171088

LONG TERM POLLUTION PREVENTION AND STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Preface:

The goal of this manual is to improve water quality by initiating performance standards for the operation and maintenance of stormwater management structures, facilities, and recognized practices. The stormwater performance standards are set up to meet the statutory and regulatory authorities of the Department of Environmental Protection, including the Wetland Protection Act, surface water discharge permits under the Clean Waters Act, the 401 certification program for fill in wetlands, and the 401 certification of federal permits based on the water quality standards.

The local Conservation Commission and the Department of Environmental Protection are responsible for ensuring the protection of wetlands through the issuance of permits for activities in flood plains and in or near wetlands, as per the Wetlands Protection Act, MGL c.131 s. 40. Proposed work within a resource area or a one hundred (100') foot buffer zone requires an order of conditions.

Resource areas include freshwater and coastal wetlands, banks, beaches, and dunes bordering on estuaries, streams, riverfront, ponds, lakes, or the ocean; lands under any of these bodies of water; land subject to tidal action, coastal storm flowage, or flooding.

The discharge of pollutants to water of the Commonwealth without a permit is prohibited under the state Clean Waters Act, MGL c. 21, ss 26-53. Stormwater discharges are subject to regulations when two criteria are met under 314 CMR 3.04(2). First, there must be "conveyance or system of conveyances (including pipes, ditches, and channels) primarily used for collecting and conveying stormwater runoff." 314 CMR 3.04(2)(a). Second, the stormwater runoff must be "contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, or oil and grease," or, be designated on a case-by-case basis. Such designations must be made when the "stormwater discharge" is subject to effluent or toxic pollutant limitations, is located in an industrial plant area, or may be a significant contributor of pollutants to waters of the Commonwealth. Any activity resulting in a discharge to waters of the United States must comply with Section 401 of the Federal Clean Water Act and comply with state water quality standards. All stormwater discharges must be set back from the receiving waters or wetlands and best management practices (BMP) must be implemented. A permit is required for any stormwater discharge to an Outstanding Resource Water (ORW) which meets the regulatory definition in 314 CMR 3.04(2). Outstanding Resource Waters are defined under Surface Water Quality Standards 314 CMR 4.06 and include public surface water supplies, coastal and some inland Areas of Critical Environmental Concern (ACECs), and certified vernal pools.

This manual is set up to explain how to operate and maintain Best Management Practices that control erosion and minimize delivery of sediment and other pollutants to surrounding water and air.

- Chapter 1 is an introduction to the site and describes the Best Management Practices used on this site.
- Chapter 2 outlines the inspection and maintenance schedules for the site.
- Chapter 3 shows the location of the Best Management Practices used on-site.
- Chapter 4 outlines the operation and function of the Best Management Practices.
- Chapter 5 describes how and when the Best Management Practices should be inspected and how frequently they must be maintained and cleaned.

1. Introduction:

The proposed residential open space subdivision, Healy Corner, is located at 195 Tahattawan Road in south-central Littleton. The project area consists of one parcel containing a total of $44\pm$ acres approximately 1 and 3/4 of a mile from Littleton Common. The limits of which this manual pertains to are the stormwater management facilities and best management practices (BMP) to be used throughout the site that were designed in accordance with the Massachusetts Stormwater Handbook attendant to the roadway system and overall site development. While the intent of this Manual is to be a freestanding document complying with current stormwater management regulations, the property owner and BMP caretakers should make every effort to incorporate it into any current, applicable operation manuals and care practices.

The development consists of a 17 residential lot subdivision with 12 proposed dwellings along the proposed roadway, Dennis Circle, and 2 proposed dwellings at the end of the proposed private roadway/private drive, Alfred Trail, and 2 proposed dwellings and 1 existing dwelling having access off Tahattawan Road. The proposed roadway Dennis Circle will provide access to the entire development, continuing $665\pm$ linear feet to a “q” shaped cul-de-sac turnaround. Also, off Dennis Circle is the proposed Alfred Trail private roadway, extending $350\pm$ linear feet from its intersection Dennis Circle, providing driveway access to the 2 proposed dwellings private driveway ($330\pm$ linear feet). The stormwater management system and development has been designed to support the existing wetland resource areas on site. Stormwater runoff from proposed pavement areas within Dennis Circle will be directed into the provided closed drainage system, consisting of catch basin inlets and conveyed to appropriate Best Management Practices (BMP's). Stormwater runoff from proposed pavement areas within Alfred Trail will be directed into the provided open drainage system, consisting of a trench drain and conveyed to appropriate Best Management Practices (BMP's). The wetland resource areas on site is protected by, but not limited to, the Wetlands Protection Act, Massachusetts Department of Environmental Protection and the Town of Littleton Conservation Commission, including the Littleton Regulations for the Wetland Bylaw.

To control erosion and minimize delivery of sediment and other pollutants into the atmosphere and adjacent wetlands, Best Management Practice (BMP) has been provided within the site's stormwater management system. These practices include but are not limited to:

- Street Sweeping
- Catch Basin
- Sediment Forebay
- Infiltration Basin
- Sand Filter

This manual is designed to help responsible parties become aware of urban non-point pollution problems and to provide detailed information about operating and maintaining stormwater management practices. The success of the Best Management Practices is dependent on their continued operations and maintenance.

2. Maintenance Requirements:

BMP's Owners:

- The OWNERS of the BMP's shall be the person, persons, trust, corporation, etc., or their successors who have title to the land on which the BMP is located. It is anticipated that all BMP's will be owned and maintained by the Town of Littleton Department of Public Works once the ways are accepted by the Town with the following exceptions:
 - Proposed trench drain and sand filter located within Alfred Trail is proposed to support the shared driveway to said lots and therefore shall remain the responsibility of the owners of Lot 15 and 16, collectively.
 - Proposed forebay and infiltration basin will be the responsibility of the developer until a Home Owners Association is established, in which case, the Home Owners Association will be responsible.

Should the title of land upon which they are located is transferred the purchaser of the property, at that time, will assume all responsibilities set forth within this document

Operation and Maintenance Responsibilities:

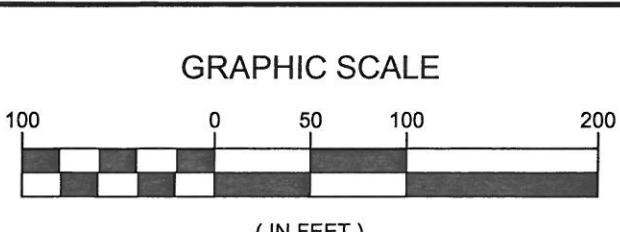
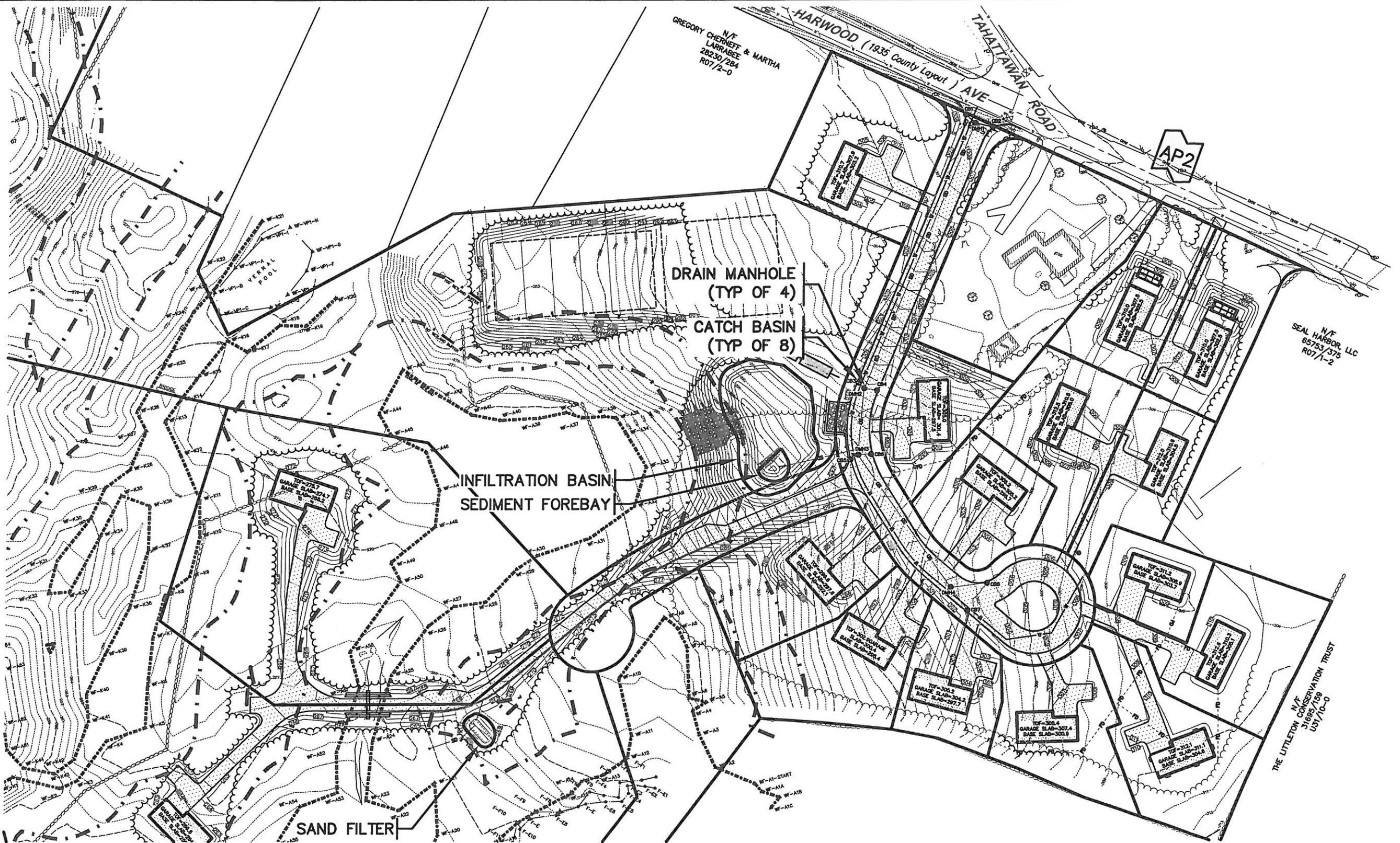
- The party or parties responsible for the funding, operation and maintenance of the BMP's shall be the OWNER or their designees.
- BMP's each have specific maintenance requirements to ensure long-term effectiveness. These stormwater management systems will be operated, inspected and maintained on a regular basis **by a qualified professional with expertise in inspecting drainage system components**. All of the stormwater BMP's shall be kept in good working order at all times.
- A maintenance agreement providing for the funding, operation and maintenance of all the stormwater management BMP's shall be provided.

Source of Funding for Operation and Maintenance:

- The party or parties responsible for the funding, operation and maintenance of the BMP's shall be the OWNER or their designees.
- A maintenance agreement providing for the funding, operation and maintenance of all the stormwater management BMP's shall be provided.
- Approximate estimated annual maintenance costs for the site are:
 - Street sweeping - \$1,000 to \$5,000
(depending on frequency and type of sweeping preformed)
 - Catch Basins \$300 / structure
 - Manholes and connecting pipes \$100 / structure
 - Sediment Forebays \$350
 - Infiltration Basin \$500
 - Sand Filter \$200

Schedule for Inspection and Maintenance:

- * BMP's each have specific maintenance requirements to ensure long-term effectiveness. These stormwater management systems will be operated, inspected and maintained on a regular basis in accordance with this manual. All of the stormwater BMP's shall be kept in good working order at all times.
- * As a minimum, the OWNER shall follow the general guidelines outlined herein for the BMP's provided on this site.
- * An Operation and Maintenance log must be maintained for the last three years, outlining inspections, repairs, replacement and disposal for each Best Management Practice (BMP). In the case of disposal, the log shall indicate the type and material and the disposal location. This rolling log shall be made available to the Mass DEP and/or the Littleton Conservation Commission upon request.



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BMP LOCUS
195 TAHATTAWAN ROAD
LITTLETON, MA

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4. Operation of Best Management Practices:

Street Sweeping – is a nonstructural source control preformed by mechanical means in an effort to limit sediment and particulates from impervious surfaces as an effort to control or limit the sediment migration to other stormwater BMP's during storm events. There are three typical types of sweeping methods, including mechanical, regenerative air and vacuum filter. Mechanical sweepers are the most common and use brooms or brushes to scour the pavement. Regenerative air sweepers blow air onto the impervious surface causing sediment and other fine particles to be blown from the surface so they can be vacuumed. Vacuum filter sweepers are available in wet and dry types. Dry types use brooms to agitate the sediment prior to vacuuming. Wet types work in a similar fashion but use water to suppress dust during the collection activity. The functions of street sweeping include:

- Limit sediment and other fine particulates on impervious surfaces from entering other BMP's;
- Remove and prevent the accumulation of sediment along road and driveway edges.

Catch Basins and Drain Manholes – are underground concrete structures which are designed to retain removed trash, debris and coarse sediment from stormwater runoff and serve as temporary spill containment devices for floatables such as oil and greases prior to discharge into a storm sewer pipe. The functions of a deep sump hooded catch basin include:

- A grate and/or vertical notch found in the curbing, that allow stormwater to enter the structure while filtering out larger objects such as trash and leaves;
- A four foot (minimum) sump below the invert of the storm sewer pipe provides an area for detention time which allows sands and other sediments to settle out of the runoff prior to discharge.

Sediment Forebays – is a post-construction practice consisting of an excavated pit, bermed area or cast (in-place or pre-) structure combined with a weir, designed to slow incoming stormwater runoff and facilitating the gravity separation of suspended solids prior to flowing to a subsequent BMP or system discharge. The functions of the sediment forebays include:

- Filter out sediments within the stormwater runoff
- Reduce runoff velocities;
- Reduce peak discharge flows.

Infiltration Basin – is a stormwater runoff impoundment that is constructed over permeable soils which allow for the recharge of treated runoff into the groundwater. The functions of an infiltration basin include:

- Provide groundwater recharge;
- Reduce local flooding;
- Preserve the natural water balance of the site

Sand Filter – are also known as filtration basins, can consist of self-contained sand or organic filter (such as peat) or a combination of these materials within a bed configuration. Runoff is directed the surface of the area and allowed to pond prior to filtering through the sand / organic layer to an underlying perforated underdrain outlet. Excess runoff is

discharged from the area via an overflow spillway.

- Filter out sediments within the stormwater runoff;
- Compatible with LID design practices and accents landscaping;
- Provide moderate to high pollutant removal through sedimentation, filtration, nutrient uptake, and infiltration.

Level Spreader – is a stone structure used to create an outlet from a pipe and/or a basin. The functions of a level spreader include:

- Filter out sediment,
- Reduce runoff velocities,
- Reduce erosion by spreading discharged water over a large area.

5. Inspection and Maintenance of Best Management Practices:

Street Sweeping / Pavement Area - At a minimum, will be inspected every spring to determine if any damage has occurred from snow plowing operations. Additionally, asphalt and curbing should be checked every six (6) months [Spring & Fall] in high traffic areas and truck travel areas for damage.

Curbing and/or asphalt is to be repaired using similar materials, to prevent erosion to surrounding soils.

Vacuum, regenerative air or rotary broom sweepers may be used at the minimum schedule outlined below:

Vacuum Sweeper (wet or dry)	A quarterly average of once per 4 months over the period of each year
Regenerative Air Sweepers	A quarterly average of once per 4 months over the period of each year
Rotary Broom Sweepers	An average of once per month over the period of each year

Regardless of type of sweeper used, sweeping will be scheduled primarily in the spring immediately following winter snowmelt and again prior to the first frost of the year in the fall, with the remaining sweepings at regular intervals between these times. The above schedule may be modified in connection with the use of alternative de-icing methods to impervious surfaces during the winter months, such as brine solutions that are applied as a liquid rather than traditional sand and salt methods.

Catch Basins and Drain Manholes - at a minimum, deep sump hooded catch basins and drain manholes shall be inspected four times per year. Ideally, inspection should be conducted at the end of the foliage and snow removal seasons, with remaining inspections at regular intervals between these times. Each structure should be cleaned whenever the depth of sediment deposits is greater than or equal to one half the depth of the sump from the bottom of the structure to the bottom of the lowest pipe invert, or at a minimum once per year. Structures shall be inspected for a buildup of sediments, oils and debris, cracks, breaks, or deformations. Any function of the catch basin and drain manhole that is not in working order will be replaced with

similar materials, as per the detail, to prevent the storm sewer system from failing.

The catch basins and drain manholes shall be cleaned by means of hand held shovels, scallop shovel and/or vactor truck. The grate opening shall be clear of any foreign or lodged object. Sands and salts used in the winter will be removed from the catch basin sums in the early spring. Leaves, pine needles, and branches brought down by autumn winds, rain, and cold weather will be removed from the catch basin and drain manhole sums in the late fall.

Collected sediment and debris will be properly disposed of per local, state and federal requirements. Any sediment and debris removed from a catch basin deemed to be contaminated must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

Sediment Forebays - at a minimum, the sediment forebays shall be inspected after every major storm event (1-inch of rain or greater) for the first six (6) months, then monthly thereafter. Sediment and debris should be removed a minimum of four (4) times per year, starting in the spring and spaced at even time increments until the late fall season, thereafter. If standing water is present during inspections, the filter stone within the check dam may need to be cleaned or replaced so that the sediment forebay drains within 72 hours after a storm.

Grass vegetation within the sediment forebay shall be mowed, at a minimum of twice a year, keeping the height of the grass between three (3) and six (6) inches. Inspections should identify areas of rilling and gulling or other areas which need to be reestablished. Replace any vegetation damaged during cleaning by reseeding or resodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket or similar practice to ensure that no scour occurs in the sediment forebay, while the seeds germinate and develop roots. Remove any woody vegetation (trees or shrubs) from the sediment forebay immediately upon detection.

Collected sediment and debris will be properly disposed of per local, state and federal requirements. Any sediment and debris removed from the sediment forebay deemed to be contaminated must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

Infiltration Basin – At a minimum shall be inspected after every major storm event (1-inch of rain or greater) for the first six (6) months, then in the spring and fall of every year, thereafter. Note how long water remains standing in basin after a storm; standing water within the basin >72 hours after storm events suggests potential clogging and should be immediately addressed. Also, check for signs of differential settlement, cracking, erosion, leakage in embankments, tree growth in embankments, condition of riprap, sediment accumulation and the health of the turf.

Infiltration basins shall be mowed a minimum of twice per year. Grass clippings and accumulated organic matter should be removed to a non-sensitive area. Repairs and reseeding should be done as required. Sediment and debris should be removed manually when infiltration basin is thoroughly dry, a minimum of once per year or when the sediment level reaches a depth of 3".

Collected sediment and debris will be properly disposed of per local, state and federal

requirements. Any sediment and debris removed from the infiltration basin deemed to be contaminated must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

Sand Filters – At a minimum shall be inspected after every major storm event (1-inch of rain or greater) for the first six (6) months, then in the spring and fall of every year, thereafter to ensure proper function. Note how long water remains standing in basin after a storm; standing water within the basin >24 hours after storm events suggests potential clogging and should be immediately addressed.

At a minimum, the sand filter should be inspected for trash and other debris four times per year. The surface should be raked to maintain permeability a minimum of twice per year with any accumulation of sediment removed prior to raking. Schedule one media raking and sediment accumulation after the spring thaw. Replenish the mulch layer annually during the post spring thaw raking.

Finer sediment will eventually penetrate into the sand filter layer through normal use, requiring the removal of the top layer (several inches depending on use) of the sand filter. Collected sediment and debris will be properly disposed of per local, state and federal requirements. Any sediment and debris removed from the infiltration galley area deemed to be contaminated must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

Level Spreader – at a minimum, level spreader shall be inspected after every major storm event and in the spring and fall of every year.

Level spreaders shall be cleaned and maintained annually. Loose or missing stones shall be replaced. Sand, silt leaves, pine needles and other debris shall be removed either by hand or vacuum. Removed materials shall be properly disposed of offsite.

Best Management Practices (BMP) Inspection Log

Site-specific BMPs

- *The structural BMPs are identified on the BEST MANAGEMENT PRACTICES LOCUS included within the LONG TERM POLLUTION PREVENTION & STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN. Carry a copy of the Locus map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Long Term Pollution Prevention &
Stormwater System Operation & Maintenance Plan Inspection Form
Healy Corner, Littleton, MA

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are discharge points and receiving waters free of any sediment deposits?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Are storm drain inlets properly working?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3	Is trash/litter from site areas collected and placed in covered dumpsters?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Are materials that are potential stormwater contaminants stored inside or under cover?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	(Other)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Non-Compliance

Describe any incidents of non-compliance not described above:

Long Term Pollution Prevention &
Stormwater System Operation & Maintenance Plan Inspection Form
Healy Corner, Littleton, MA

CERTIFICATION STATEMENT

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

Print name and title: _____

Signature: _____ **Date:** _____