

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

**339 Electric Avenue  
Lunenburg, MA**

**August 2015**

**Submitted to:  
Lunenburg Planning Board  
960 Massachusetts Avenue  
Lunenburg, MA 01462**

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**Project No:  
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# 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 Planning Board is responsible for ensuring the protection of abutting properties and lands through the issuance of permits for activities under the Development Plan Review section of the Town of Lunenburg Protective Bylaw.

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 property is located at 339 Electric Avenue (Route 13), Lunenburg, MA, approximately 1 mile south of Electric Avenue's intersection with Massachusetts Avenue (Route 2A). The proposed development outlined and which this Manual pertains to consists of entire property including the 6,400± square foot mixed used commercial building and 500± square foot shed along the associated parking area and best management practices to provide stormwater management. The project parcel contains 32,364± square feet (0.74± acres) with access off of Electric Ave. The site is relatively flat with steep slopes extending down from the abutting northerly property to the minimally sloped project area before falling again to an existing drainage channel along the southern property boundary. Stormwater runoff from the paved parking area will be directed into the deep sump hooded catch basin prior to discharging into a sediment forebay and infiltration basin. A rip rap protected spillway discharges collected runoff in excess of design volumes to the previously mentioned drainage channel. A stone swale located at the base of the slope extending from the northern property boundary directs runoff from the outdoor fenced play area around the rear of the shed and into the abutting drainage channel.

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

- Deep Sump hooded catch Basin;
- Sediment Forebay
- Infiltration Basin
- Stone Swale

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 339 Electric Ave. Corporation. 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:

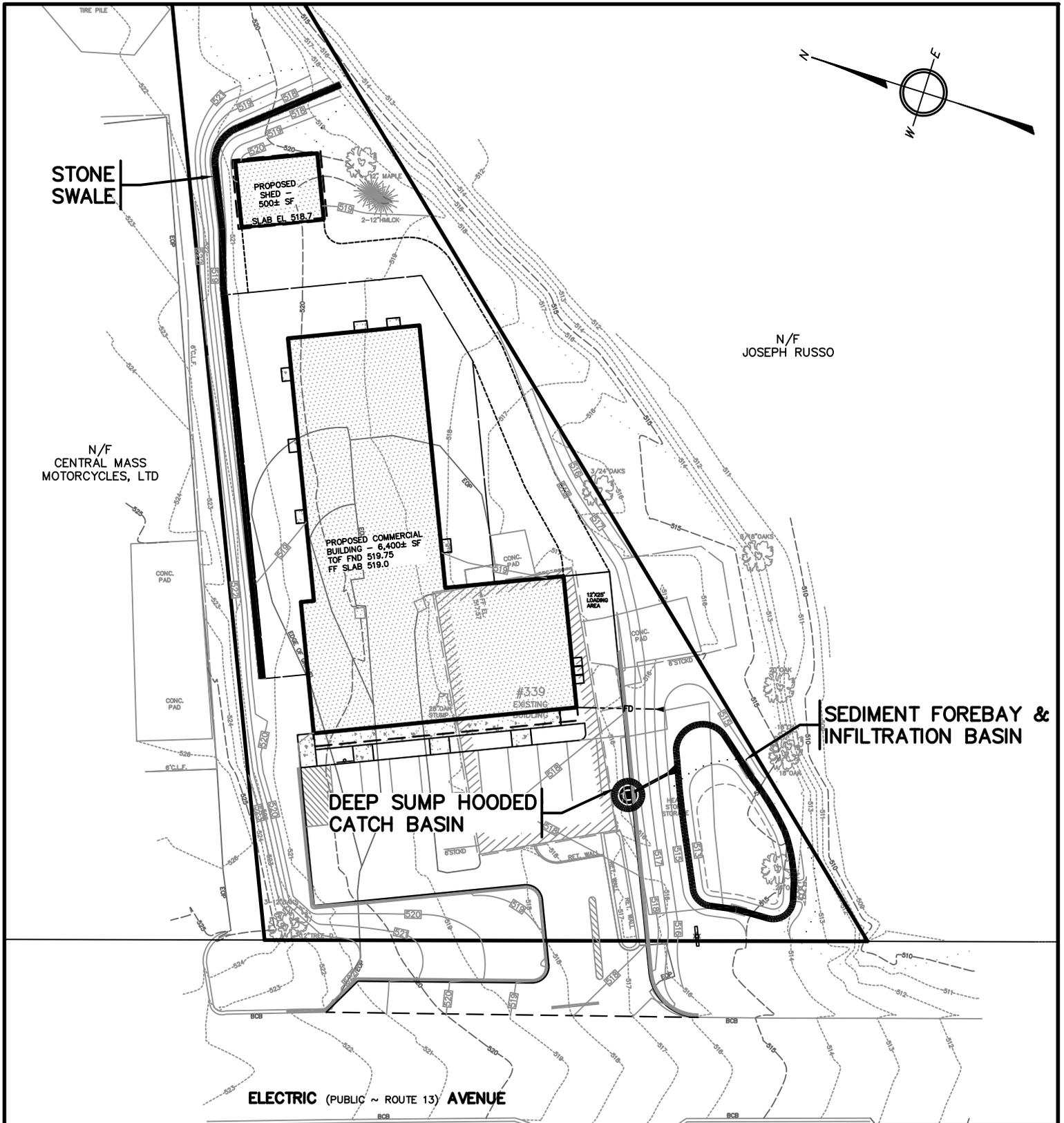
- The party or parties responsible for the funding, operation and maintenance of the BMP's shall be the OWNER or their designees.
- BMP's each have specific maintenance requirements to ensure long-term effectiveness. These stormwater management systems will be operated, inspected and maintained on a 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:
  - Deep Sump Hooded Catch Basin \$200
  - Sediment Forebay / Infiltration Basin \$100
  - Stone Swale \$ 50

### 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 Lunenburg Planning Board (or designated Board or Commission) upon request.



SCALE : 1" = 40'



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339 ELECTRIC AVENUE  
 LUNENBURG, MASSACHUSETTS

**BEST MANAGEMENT  
 PRACTICE LOCUS**

JOB: 091058

BY: NMP | CHK: DEM

DATE: AUG. 2015

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## 4. Operation of Best Management Practices:

**Deep Sump Hooded Catch Basins** – 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

**Stone Swale** – is a stormwater conveyance channel filled with crushed stones to act as a filtering media designed to treat provide energy dissipation while conveying runoff without erosion or transporting suspended solids. The functions of the stone swale include:

- Stable stormwater conveyance;
- Reduce peak rate velocities

**Parking Area / Street Sweeping** – is a nonstructural source control preformed by mechanical means 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 parking area edges.

## 5. Inspection and Maintenance of Best Management Practices:

**Deep Sump Hooded 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 sumps 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 sumps 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 gulying 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 reseeded 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.

**Stone Swale** - At a minimum, the stone swale shall be inspected after every major storm event (1-inch of rain or greater) for the first six (6) months and twice per year thereafter. Inspect crushed stone surface for potential clogs during inspections, and note whether standing water is present within stone swale more than 72 hours after a rain event. Sediment and debris shall be removed from the stone swale once per year. Sediment should be removed from the swale by hand methods in a manner to limit the disturbance of crushed stone. Remove any vegetation growing within the limits of the crushed stone as needed to prevent the vegetation from clogging the stone swale.

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

**Source Control Pollution Prevention / Snow Storage** – all efforts shall be made to limit the introduction of contaminants to stormwater runoff. The requirement for the use of fertilizer and pesticides should be at a minimum and shall be limited to maintaining landscaping. The use of road salt and other deicers shall be limited as much as possible without compromising safety. In the event any pollutants are inadvertently introduced to the stormwater system, contain the pollutants as quickly as possible and contact a professional.

Snow shall be stockpiled locations shown on the provided design plans. Snow shall be stockpiled so that the snow melt drains towards stormwater BMP's. Snow shall not be stockpiled where snow melt would drain directly to an abutting property.

## Best Management Practices (BMP) Inspection Log

General Information			
Project Name	339 Electric Ave. Corporation		
Location	339 Electric Ave., Lunenburg, MA		
Date of Inspection		Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications			
<b>Type of Inspection:</b> <input type="checkbox"/> Regular <input type="checkbox"/> Emergency			
Weather Information			
<b>Weather at time of this inspection?</b> <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Fog <input type="checkbox"/> Snowing <input type="checkbox"/> High Winds <input type="checkbox"/> Other: _____    Temperature: _____			
<b>Are there any discharges at the time of inspection?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>If yes, describe:</b> <div style="border: 1px solid black; height: 40px; margin-top: 5px;"></div>			

### 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	

**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.*

	<b>BMP/activity</b>	<b>Implemented?</b>	<b>Maintenance Required?</b>	<b>Corrective Action Needed and Notes</b>
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:
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**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:** \_\_\_\_\_