Long-Term Pollution Prevention Plan

81 River Street
Acton, MA

April, 2008

Submitted to:
Acton Conservation Commission
Town of Acton
472 Main Street
Acton, MA 01720

Submitted by:
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Project No:
071033A

GPR Engineering Solutions for Land & Structures

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 existing site contains 2.9± acres on the south side of River Street, between the street and Fort Pond Brook. The current use of the site is an abandoned mill building with a great deal of construction debris such as abandoned trailers, construction material, demo debris, etc. There are at least two historically used entrances from River Street to the subject site. The majority of the site is densely compacted gravel parking that has been traversed for many years. Small areas within the gravel parking have grown in with invasive underbrush, but the underlying material is basically impervious. The site ranges in elevation from 169 feet at the northern property line to elevation 155 feet at the bank of Fort Pond Brook. The entire site is within the 200-foot Riparian Zone of Fort Pond Brook and the majority of the site is also within the 100-foot buffer zone associated with adjacent Bordering Vegetated Wetlands. These resource areas are protected by the Wetlands Protection Act and the Town of Acton Conservation Commission Rules and Regulations.

The proposed development will include the demolition of approximately two-thirds of the existing mill building and renovation of the remaining third to accommodate a four unit, multifamily dwelling. Also proposed on site are five single family dwellings. The subject property will be divided into six lots. The stormwater collection system will be comprised of a combination of Low Impact Development applications including, reduced impervious areas (shared driveways), grassed drainage channels, vegetated filter strips and bioretention cells.

Post-development the site will be divided into 4 drainage subcatchments areas. The first subcatchment preserves the existing flow pattern, but reduces the overall area and the impervious area which contribute to the street drainage

system. The second and third subcatchments contribute to the primary treatment process which is comprised of sloped pavement areas and grassed drainage channels that direct runoff overland to stone diaphragms and vegetated filter strips. The vegetated filter strips allow infiltration and treat the runoff while directing stormwater to bioretention cells. Bioretention cells further treat and exfiltrate runoff prior to discharge. Discharge of the bioretention cells is achieved via a landscape catch basin set at an elevation that allows six inches of ponding within the basin prior to discharge. An emergency outlet, to avoid berm overtopping, is also provided for each bioretention cell as is a wick outlet to allow for complete drainage of the respective cell. The fourth subcatchment consists mainly of undisturbed woodland area and a portion of the existing structure to remain. These areas flow directly to Fort Pond Brook.

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

- Grassed Drainage Channels;
- Stone Diaphragms;
- Vegetated Filter Strips;
- Bioretention Areas with wick outlets and sumped catch basin overflows;

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 by Lothrop Mill LLC, until the title of land upon which they are located is transferred. At that time, a Homeowners Association will most likely be created and 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.

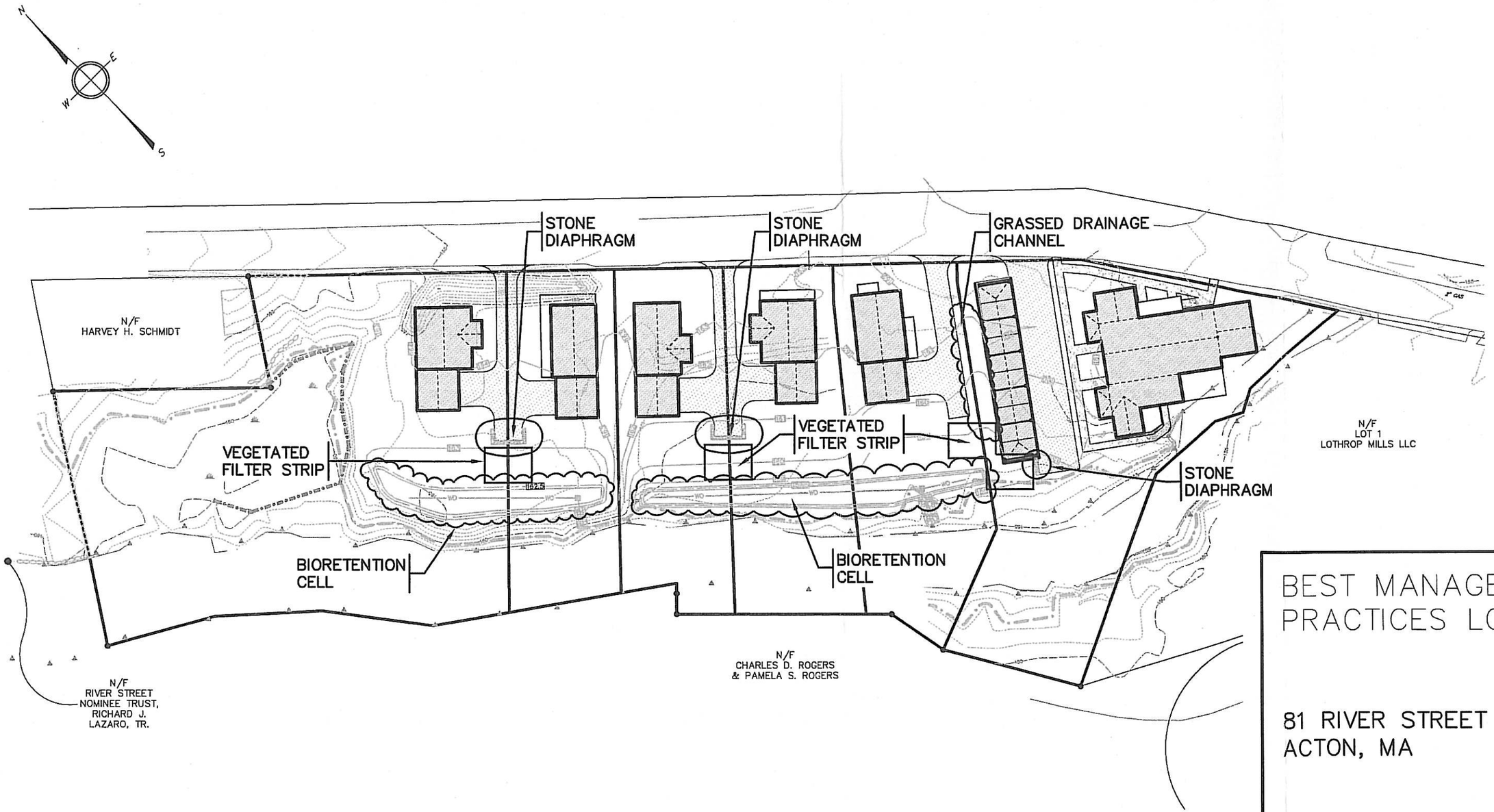
- A maintenance agreement providing for the funding, operation and maintenance of all the stormwater management BMP's shall be provided.

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.

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 MassDEP and/or the Acton Conservation Commission upon request.



BEST MANAGEMENT PRACTICES LOCUS

81 RIVER STREET
ACTON, MA

PREPARED FOR:
LOTHROP MILLS LLC
544 MASSACHUSETTS AVENUE
ACTON, MA 01720

GRAPHIC SCALE

60 0 30 60 120

(IN FEET)
1 INCH = 60 FEET

GPR
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CHK'D BY: MES	PROJECT: 071033A	DWG: BMP LOCUS

4. Operation of Best Management Practices:

Bioretention Area – bioretention is a technique that uses soil, plants, and microbes to treat stormwater before it is infiltrated and/or discharged. Bioretention areas are shallow depressions filled with sandy soil topped with a thick layer of mulch and planted with dense native vegetation that are sometimes divided into sub-areas. Stormwater runoff is directed into the area via sheet flow. The runoff percolates through the sandy soil media that acts like a filter. There are two types of bioretention areas; those designed to function solely as an organic filter, called a filtering bioretention area, and those configured to recharge groundwater in addition to acting as a filter, called an exfiltrating bioretention area. A filtering bioretention area includes an impermeable liner and underdrain that intercepts the runoff before it reaches the groundwater table so that it can be conveyed to a discharge outlet. Some exfiltrating bioretention areas also have an underdrain system designed to enhance exfiltration and allow for proper drainage of the areas. The bioretention areas proposed on-site are this type. The functions of a bioretention area include:

- Provide groundwater recharge and preserves the natural water balance of the site;
- Supply shade, absorbs noise and provides windbreaks;
- Remove other pollutants beside Total Suspended Solids (TSS) including nitrogen, phosphorus and metals.

Vegetated Filter Strips – are uniformly graded vegetated surfaces that receive runoff from adjacent impervious surfaces. Vegetated filter strips typically treat sheet flow or small concentrated flows that can be distributed along the width of the strip using a level spreader, stone diaphragm, or other technique.
The functions of the vegetated filter strip include:

- Slow runoff velocities, Trap sediment and Promote infiltration
- Reduce runoff volumes and rates;
- Pretreatment for bioretention cells;
- Mimic natural hydrology

Grassed Drainage Channel – are traditional vegetated open channels that are designed to provide for non-erosive conveyance of stormwater runoff. The functions of the grassed drainage channels include:

- Vegetated, stormwater conveyence
- Compatible with LID design practices and accents landscaping
- Less expensive than curb and gutter

5. Inspection and Maintenance of Best Management Practices:

Bioretention Areas- at a minimum, the bioretention area shall be inspected after every major storm event for the first six (6) months and monthly thereafter. Miscellaneous trash and litter shall be removed at the time of each inspection. During each inspection, areas of vegetation and soil shall be identified for repair prior to the next inspection.

Grasses within the area will be mowed annually during the fall. Remove grass clippings and other organic matter after mowing. Eroded or barren areas in the mulch layer shall be re-mulched as needed. Prune and remove and replace dead vegetation annually during the spring.

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

Landscape Catch Basins - at a minimum, catch basins inlets shall be inspected four times per year. Inlet inspection should be conducted at the end of the foliage and snow removal seasons. Each catch basin 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. Basins shall be inspected for a buildup of sediments, oils and debris, cracks, breaks, or deformations. Any function of the catch basin 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 will be cleaned by means of hand held shovels, scallop shovel, and or vacuum 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 basins 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 the bioretention area deemed to be contaminated must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

Grassed Drainage Channels- at a minimum, the grass channel shall be inspected after every major storm event for the first six (6) months and twice per year thereafter. Sediment and debris shall be removed from the grass channel once per year. Grass within the channel shall be mowed as necessary to

maintain the grass height between three (3) and six (6) inches. Remove grass clippings and inspect for signs of erosion and the formation of rills and/or gullies. Reseed or re-sod with an alternative grass species if the original grass cover is not successfully established. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket or similar practice to ensure that no scour occurs in the grass channel, while the seeds germinate and develop roots.

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

Vegetated Filter Strips- at a minimum, the vegetated filter strips and associated stone diaphragms shall be inspected after every major storm event for the first six (6) months and twice per year thereafter. Sediment and debris shall be removed once per year. Stone within the diaphragm shall be added as necessary to maintain a level surface discharge. Grass within the strip shall be mowed as necessary to maintain the grass height between three (3) and six (6) inches. Remove grass clippings and inspect for signs of erosion and the formation of rills and/or gullies. Reseed or re-sod with an alternative grass species if the original grass cover is not successfully established. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket or similar practice to ensure that no scour occurs in the grass channel, while the seeds germinate and develop roots.

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

Parking Areas and Driveways - 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] for damage.

Curbing and/or asphalt is to be repaired using similar materials, to prevent erosion to surrounding soils. Paved areas shall be swept a minimum of four times per year. Ideally, the sweeping shall be performed immediately following the 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.

Snow shall not be stockpiled in wetland areas or any of the BMP areas. Every effort shall be made to plow snow so when it melts, the runoff will be toward a best management practice which provides treatment.