Drainage Systems
Operations and Maintenance Plan
for
Mount Ascutney Hospital & Health Center
Helicopter Landing Pad & Emergency Room Entrance
289 County Road
Town of Windsor, Vermont

Stormwater Permit Number 4009-1065

November 27, 2016
Drainage Systems Operations and Maintenance Plan

Mount Ascutney Hospital & Health Center
Helicopter Landing Pad & Emergency Room Entrance
289 County Road
Windsor, VT 05089

This long-term Drainage Operations and Maintenance (O&M) Plan shall be implemented for the drainage system improvements installed as part of the 2005 helicopter landing pad and emergency room entrance project in to ensure that the stormwater management system continues to function as designed and in accordance with Stormwater Permit #4009-9015 issued by the State of Vermont. This Operations and Maintenance Plan is intended to cover on-site drainage structures. The Property Owner, Mount Ascutney Hospital & Health Center (MAHHC) possesses the primary responsibility for overseeing and implementing the O&M Plan and designating a person who will be responsible for the proper operation and maintenance of the stormwater structures. In case of transfer of property ownership, future property owners shall be notified of the presence of the stormwater management system and the requirements for proper implementation of the O&M Plan.

O&M Plan Implementation Manager Contact Information

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1 Drainage System Description

The stormwater system consist of a closed drainage system bypassing existing run-off, and an open and closed drainage system conveying run-off to a grass treatment channel and wet pond for treatment, detention and release.

The bypass system consist of a closed drainage network discharging at a point in common with the wet pond's final discharge. Catch basins along the network that were installed within the new project limits are set high and do not receive concentrated flow.

The closed drainage system that is connected to the wet pond collects roof, sidewalk, and other limited run-off in a closed pipe network that discharges to the forebay of the wet pond for pre-treatment. Most areas of the parking lot & helicopter pad sheet drain to a grass treatment channel for pre-treatment prior to discharging to the forebay of the wet pond.

Final treatment, detention and release of the run-off takes place in the wet pond.
2 Grassed Channels

2(a) Grassed Channel Description Grassed channels are typically designed to provide nominal treatment of runoff. These channels can provide good pre-treatment for other BMPs. They can reduce impervious cover, accent the landscape, provide aesthetic benefits and reduce velocity as compared to other channels. Grass channels remove pollutants from stormwater by filtration through the grasses, settling, and infiltration through soil.

2(b) Grassed Channel Location (Green Shaded Areas – Not To Scale)
2(c) Required Maintenance For Grassed Channels

**Weekly Maintenance** The grass channels shall be cleaned of any trash or debris, and mowed to a height of between 3 and 6 inches as needed during the growing season.

**Monthly Maintenance** The grassed channels shall be monitored by the owner/operator for signs of erosion or die off. This inspection shall include the stone check dams. Repairs or maintenance shall be immediately scheduled as needed. Replacement of stone check dams or grass turf due to age should be scheduled in the following spring prior to the growing season.

**Annual Maintenance** The grassed channels and permanent stone check dams shall be cleaned of sediment in the spring after the snow melt and before the start of the growing season. Further, replacement of stone check dams or turf shall occur at this time if required by inspections.
3 Catch Basins

3(a) Catch Basin Description Catch basins are typically designed to capture run-off and direct it to a subsurface drainage pipe network to prevent surface erosion and flooding. These basins also provide minimal removal of sediments and pollution.

3(b) Catch Basin Locations (Red Shaded Squares)
3(c) Required Maintenance For Catch Basins

**Bi-Annually** The owner/operator shall inspect the catch basins by May 15th. and October 30th. each year for sediment depths and signs of deterioration or leaks. The owner shall immediately schedule repairs if needed and cleaning if the sediment reaches a depth of 12” or ½ the sump depth.
4 Wet Pond

4(a) Wet Pond Description

Wet ponds are stormwater basins that include a permanent pool for water quality treatment and additional capacity above the permanent pool for temporary run-off storage. Typically wet ponds have a minimum drainage area of 5 to 10 acres. This pond with dramatically less area is considered a pocket pond.

Wet ponds typically have a forebay containing 10 to 15% of the total permanent pool volume and are 4-6' deep. Given the extremely limited size of the drainage area and pond with minimal base flows the depth is not met or warranted. However, the typical minimum volume consideration is met.

Vegetation is an integral part of a Wet Pond system. Vegetation in and adjacent to a pond may enhance pollutant removal, reduce algal growth, limit erosion, improve aesthetics, create habitat, and reduce water warming. Given the low base flows and difficulties in maintaining a minimum water elevation during dry periods most vegetation is limited to a thickly established stand of naturally established native species within the pond itself that can withstand dry periods.

4(b) Wet Pond Location (Light Blue Shaded Areas – Not To Scale)
4(c) Required Maintenance For Wet Ponds

**Routine Maintenance** The owner/operator shall conduct visual inspections of the wet pond on a regular basis to ensure that it is clean of debris and sediments, and that it dewater the temporary storage volume between storms. Routine maintenance and cleaning procedures include removing debris, sediment from the inlet area, and invasive species, mowing the grassed surfaces, and addressing any areas of erosion. This routine maintenance should be performed as needed (at least monthly) to keep the wet pond properly functioning.

**Bi-Annual Maintenance** It is a good practice to perform periodic maintenance just before winter to insure that the pond sump and outlet basin are clean and have adequate capacity. Additionally, periodic maintenance may be required following winter to remove any anti-skid materials that may have entered the pond. Proper cleaning procedures would include draining the pond, removing sediment from the pond by hand if possible, or with small equipment if necessary in a manner intended to avoid damage to wetland vegetation as possible. Cleaning of the outlet basin may be performed with a vacuum truck. Further, it is a good practice to perform these maintenance practices before or after the growing season.
## Drainage Operation and Maintenance Log

**Site Maintenance Manager:** Joseph Martaniuk  
**Year:** 2016

<table>
<thead>
<tr>
<th>BMP</th>
<th>Frequency</th>
<th>Date Performed</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Grassed Channels</td>
<td>Annual Inspection</td>
<td>9/14/16</td>
<td>Reviewed by C.D.H., recommends replacing stone check dams in spring and replacing turf for a 30' section near check dams #5 and #6 prior to the growing season in the spring of 2017.</td>
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<tr>
<td>Grassed Channels</td>
<td>Weekly Maintenance</td>
<td>Weekly during growing season.</td>
<td>Reviewed by C.D.H. Recommends educating maintenance staff to insure cut height is no lower than 3&quot;.</td>
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<tr>
<td>Catch Basins</td>
<td>Bi-Annual Inspections</td>
<td>9/14/16, 11/27/16</td>
<td>Basins reviewed 9/14/16 by C.D.H., all maintained. Drain manholes open 11/27/16 and record drawing completed.</td>
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<tr>
<td>Wet Pond</td>
<td>Bi-Annual Inspections</td>
<td>9/14/16, 11/27/16</td>
<td>Reviewed by C.D.H. 9/14/16, two trees recommended to be removed. Reviewed again on 11/27/16, trees removed.</td>
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<tr>
<td>Wet Pond</td>
<td>Routine Maintenance</td>
<td>Weekly during growing season.</td>
<td>Reviewed by C.D.H. 9/14/16, recommends not regularly mowing to within a few feet of pond to allow native wetland species room to propagate.</td>
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<td>Wet Pond</td>
<td>Bi-Annual Maintenance</td>
<td></td>
<td>Addressed in comments above.</td>
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**Year:** ______

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