

OPERATIONS AND MAINTENANCE MANUAL

November 2004

BEST MANAGEMENT PRACTICES

Garner, NC

Project Name: _____ Date: _____

Property Owner/Responsible Party: _____

Address: _____

Telephone: _____

The maintenance of any Best Management Practice (BMP) installed to achieve nitrogen loading and/or flow attenuating requirements for a development shall be the responsibility of the property owner or other identified responsible party. In the case of residential or commercial subdivisions, Home Owners Associations or Merchants Associations must be established in order to identify the responsible party.

This manual establishes general procedures for maintenance and operation of the allowed BMP types in accordance with the Town of Garner Stormwater Program for Nitrogen Control. It is important to note that only general maintenance tasks are identified here. All devices shall be maintained to original design standards. This agreement shall be signed and notarized by the responsible party to perform the tasks specified in the plan, including inspections, operation, and any needed maintenance activities.

I. BMP

Identify the types of BMPs located on the site and give a brief description on their design. If you need additional space please attach separate pages to this document.

BMP Type	Check which apply	Brief Description
Wet Pond		
Stormwater Wetland		
Sand Filter		
Bioretention		
Grass Swale		
Vegetated Filter Strip w/Level Spreader		
50' Restored or Additional Riparian Buffer w/Level Spreader		
Dry Detention		

II. Maintenance

A. Wet Pond – Maintenance requirements are as follows:

1. Debris and litter control checks for inlet, outlet, and orifice obstruction after every storm producing runoff.
2. Provisions for routine vegetation management/mowing and a schedule for these activities.
3. Checks every 6 months, or more frequently, for:
 - a. Sediment buildup and the need for removal.
 - b. Erosion along the bank and the need for reseeding or stabilization and, if reseeding is necessary, a reseeding schedule.
 - c. Erosion at the inlet and outlet and methods of stabilization.
 - d. Seepage through the dam.
 - e. Operation of any valves or mechanical components.

B. Stormwater Wetland – Maintenance requirements are as follows:

1. Wetlands will tend to collect debris, and it should be removed whenever it accumulates, or at least twice annually.
2. Wetlands should be inspected annually after a rain even to ensure that the basin is operating as designed.
3. At a minimum, items that should be included in the inspection are:
 - a. Clogging of the outlet or too rapid a release.
 - b. Erosion on the banks.
 - c. Erosion at the inlet and outlet.
 - d. Sediment accumulation and the need for removal.
 - e. Condition of the emergency spillway.
 - f. Woody vegetation in the embankment.

C. Sand Filter – Maintenance requirements are as follows:

1. At least once a year each filter must be inspected after a storm to determine if the filter bed is passing the runoff as expected.
2. Maintenance operations must be performed when storms of approximately one inch are not passing through the filter within 24 hours. Maintenance consists of removing the first two or three inches of discolored sand, and replacing this with new sand. The sand that has been removed would then be dewatered, if necessary, and then landfilled.
3. At the same time that maintenance is performed on the sand chamber, the sediment chamber should also be pumped and cleaned. It is most likely that the sediment removed from the first chamber will need to be dewatered before it is allowed to be dumped at a landfill.

D. Bioretention – Maintenance requirements are as follows:

1. Visually inspect and repair soil erosion on a monthly basis.
2. Remulch any void area whenever necessary. Replacement of mulch layers may be necessary every two or three years. Mulch should be replaced in the spring. When the mulch layer is replaced, the previous layer should be removed first.
3. Remove and replace all dead and diseased vegetation considered beyond treatment. This should be done twice a year, once in the spring and once in the fall. Treat all diseased trees and shrubs that are not beyond treatment as needed.

- E. Grass Swale – Maintenance requirements are as follows:
1. At least once annually, remove excess sediment, especially from the upstream edge, to maintain original contours and grading.
 2. At least once annually, repair any erosion and regrade the swale to ensure that the runoff flows evenly in a thin sheet through the swale.
 3. At least once annually, inspect vegetation and revegetate the swale to maintain a dense growth of vegetation.
 4. Grassed swales shall be mowed at least twice annually to a minimum height of six inches.
- F. Vegetated Filter Strip with Level Spreader – Maintenance requirements are as follows:
1. At least once annually, remove deposited sediment, especially from the upstream edge, to maintain original contours and grading.
 2. Repair channels that form and regrade the filter strip to ensure that the runoff flows evenly in a thin sheet over the filter strip.
 3. Repair level spreader whose disrepair can cause the formation of channels in the filter strip.
 4. Reseed and regrade the filter strip to maintain a dense growth of vegetation, especially if the strip has been used for sediment control.
 5. Grassed filter strips shall be mowed at least twice annually to a minimum height of six inches.
- G. 50' Restored or Additional Riparian Buffer with Level Spreader – Restored or additional riparian buffers used for nitrogen reduction should be left in an undisturbed condition. Only maintenance activities allowed by the buffer rules would be allowed. Any level spreaders used to diffuse flow into the buffer should be maintained as required in section II.F.
- H. Dry Detention – Maintenance requirements are as follows:
- a. All grassed areas of a dry detention basin should be mowed at least twice annually.
 - b. Dry detention basins will tend to collect debris, and it should be removed whenever it accumulates, or at least twice annually.
 - c. Pond should be inspected annually after a rain event to ensure that the basin is operating as designed.
 4. At a minimum, items that should be included in the inspection are:
 - a. Clogging of the outlet or too rapid a release.
 - b. Erosion on the banks.
 - c. Erosion at the inlet and outlet.
 - d. Sediment accumulation and the need for removal.
 - e. Condition of the emergency spillway.
 - f. Woody vegetation in the embankment.

The Town will inspect BMPs on an annual basis and forward a list of any required deficiencies or repairs to the property owner/responsible party. The property owner/responsible party will have 90 days to correct all deficiencies and make all repairs to the satisfaction of the Town Engineer. Failure to satisfactorily complete the repairs within the 90 days will cause the BMP to be declared a nuisance as provided for in Section 6-17 of the Garner Town Code. Abatement of the nuisance will proceed as provided for in Chapter 6, Article II of the Garner Town Code.

**STORMWATER BEST MANAGEMENT PRACTICES
OPERATIONS AND MAINTENANCE AGREEMENT**

Property Owner/Responsible Party

Sign: _____

Print: _____

STATE OF NORTH CAROLINA

COUNTY OF WAKE

I, _____, a Notary Public for said County and State, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, _____.

Official Seal

Notary Public

My commission expires _____.