



POST-CONSTRUCTION STORMWATER MANAGEMENT

**A Programmatic Overview of Hopewell's Post-
Construction Stormwater Management
Program and Process**



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ACRONYMS

BMP	Best Management Practice
CH	Virginia BMP Clearinghouse
CPESC	Certified Professional in Erosion and Sediment Control
CWA	Clean Water Act
DEQ	Virginia Department of Environmental Quality
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program

1.0 INTRODUCTION AND PURPOSE

Land development disturbs stable vegetated landscapes and increases impervious area, which in turn increases the amount of stormwater runoff to downstream properties and streams. The new impervious surfaces also allow for different types of pollutants to be easily washed away by rainfall. These pollutants can include:

- Excess nutrients nitrogen and phosphorus;
- Incorrectly applied fertilizers (includes), pesticides, and herbicides;
- Metals, oil (polycyclic aromatic hydrocarbons or PAHs), grease, and other materials related to automobiles and trucks;
- Chlorides (salt), and other organic materials that are applied to land surfaces;
- Sediment from construction activities and eroding streams; and
- Bacteria.

Stormwater Best Management Practices (BMPs) are designed and installed to manage the volume of runoff and reduce the pollutant load that flows to our rivers and streams. Ensuring that these facilities function correctly requires long-term inspections and procedures for maintenance when needed. This manual presents the City's standard procedures for performing inspections and maintenance of City and privately owned BMPs.

Regulatory Basis: This Post-Construction Stormwater Management Manual includes a series of written procedures that ensure adequate long-term inspection and maintenance of BMPs and has been developed as part of Minimum Control Measure 6 as described in the City's municipal separate storm sewer system (MS4), Permit. In accordance with the Permit, the City's program is designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable." (In addition to being the name of a permit, MS4 also refers to the storm sewer system itself: the inlets, pipes, and drainage channels on City owned property or public right of way.)

Hopewell's Post-Construction Stormwater Management Program includes three distinct components:

- **Program Documentation** requirements are outlined in Section 2.
- **Inspections** – Section 3 provides a description of the different BMPs and their components involved in the inspection process (OR REFERENCE DEQ). Section 4 outlines the process of conducting an inspection and a description of the City's inspection form. The City's stormwater facility mapping, BMP inventory, a typical inspections form can be found in Appendix A.
- **Maintenance**– Section 5 provides description of routine and corrective maintenance that is performed on stormwater facilities.

2.0 PROGRAM DOCUMENTATION REQUIREMENTS

Documentation of Post-Construction Stormwater Management is important for tracking stormwater BMPs and ensuring that they are regularly inspected and maintained. Documentation is also important for demonstrating compliance with the MS4 permit. All documentation related to post-construction stormwater management is required to be kept for a minimum of 3 years for annual reporting and potential audits.

2.1 Inspection Requirements

For new construction projects with stormwater BMP(s), the owner or developer must record a maintenance agreement outlining the responsibilities for long-term inspections and maintenance of the

BMPs. The maintenance agreement must be stated to run with the land and provide for all necessary access to the property for purposes of maintenance and regulatory inspections.

Prior to final approval by the City, the new BMP(s) must be inspected by a professional registered in the Commonwealth of Virginia, certifying that the BMP(s) have been constructed in accordance with the approved plan.

As required by City ordinance, owners of stormwater BMPs are required to perform and document inspections in accordance with the recorded maintenance agreement. The inspections are intended to ensure that stormwater BMPs are being adequately maintained as designed. The City will conduct a regulatory inspection of private BMPs every 5 years to ensure the BMPs are being properly maintained

2.2 Inspection Forms

Inspection forms provide the necessary documentation to demonstrate when and what is being inspected. This Manual includes an inspection form for the predominant type of stormwater facilities that currently exist within the City: detention, retention and extended detention.

Inspection forms for other types of facilities such as permeable pavement, rain gardens, etc., when needed, can be found within the Virginia Stormwater Management Handbook, latest edition, or contact the City Department of Public Works. For proprietary stormwater practices such as underground vaults and chambers, tree boxes, or other devices, owners should contact the manufacturer for inspection and maintenance guidance.

The inspections forms are intended to provide documentation that the facilities were inspected on an annual basis and that any maintenance items were noted. A follow-up inspection should be completed after every noted deficiency with the following information:

- ✓ Facility Number
- ✓ Date of initial inspection
- ✓ Date corrective maintenance performed
- ✓ Description of corrective maintenance performed

2.3 Annual Reporting to DEQ

Hopewell must annually report to the DEQ information pertaining to its Post-Construction Stormwater management efforts. The information is included in the overall MS4 annual report due October 1st of each year. Hopewell must maintain an electronic database or spreadsheet to be submitted annually that includes the following information:

1. The stormwater management facility type;
2. A general description of the facility's location, including the address or latitude and longitude;
3. The acres treated by the facility, including total acres, as well as the breakdown of pervious and impervious acres;
4. The date the facility was brought online (MM/YYYY). If the date is not known, the operator shall use June 30, 2005, as the date brought online for all previously existing stormwater management facilities;
5. The sixth order hydrologic unit code (HUC) in which the stormwater management facility is located;
6. The name of any impaired water segments within each HUC listed in the 2010 §305(b)/303(d) Water Quality Assessment Integrated Report to which the stormwater management facility discharges;
7. Whether the stormwater management facility is publically-owned or privately-owned;

8. Whether a maintenance agreement exists if the stormwater management facility is privately owned;
9. The date of the operator's most recent inspection of the stormwater management facility; and
10. Annually track and report the total number of inspections completed and, when applicable, the number of enforcement actions taken to ensure long-term maintenance.

2.4 Program Updates and Modifications

Modifications to the post-construction stormwater management program may occur as part of an iterative process to protect water quality. Updates and modifications to the Program may be made in accordance with the following procedures:

- Adding (but not eliminating or replacing) practices to the post-construction stormwater management Program outlined in this manual may be made by the City at any time. Additions shall be reported as part of the annual report.
- Updates and modifications to the post-construction stormwater management Program described in this manual are permitted provided that the updates and modifications are done in a manner that:
 - Is consistent with the conditions of the MS4 General Permit;
 - Follow any public notice and participation requirements established in the MS4 General Permit; and
 - Are documented in the annual report.
- Replacing, or eliminating without replacement, any ineffective or infeasible strategies, policies, and practices described in this manual with alternate strategies, policies, and BMPs may be requested at any time. Such requests must include the following:
 - An analysis of how or why the practices, strategies, or policies are ineffective or infeasible, including cost prohibitive;
 - Expectations on the effectiveness of the replacement practices, strategies, or policies;
 - An analysis of how the replacement BMPs are expected to achieve the goals of the practices to be replaced;
 - A schedule for implementing the replacement practices, strategies, and policies;
 - An analysis of how the replacement strategies and policies are expected to improve Hopewell's ability to meet the goals of the strategies and policies being replaced;
 - Requests or notifications must be made in writing to DEQ and signed by a principle executive officer or a duly authorized representative. The duly authorized representative must have overall responsibility of the City operations and written authorization must be provided to the Department.
 - Hopewell follows the public involvement requirements identified in the MS4 General Permit.

3.0 STORMWATER MANAGEMENT FACILITY TYPES

This section provides a brief overview of the types of BMPs that are currently approved through the VDEQ BMP Clearinghouse. At present, the list of City-owned stormwater BMPs include Wet Ponds and Dry (Extended Detention) Ponds. An explanation of these BMP types and key components of each are included in the sections below.

An inventory of private and City owned BMPs is maintained by the Stormwater Program Manager and should be utilized and updated for tracking inspection and maintenance of stormwater facilities.

DEQ Design Specification No. 2
Vegetated Filter Strips



Vegetated Filter Strips are areas that manage runoff from adjacent developed areas by slowing the runoff and allowing sediment and attached pollutants to settle out, filtering runoff through the vegetation, and infiltrating into the existing or amended soils.

- Applies to small commercial and residential impervious areas.
- Critical design elements include maximum allowable contributing impervious area, slope, and minimum dimensions.

DEQ Design Specification No. 3
Grass Channels



Grass Swales are designed as conveyance systems with enhanced design features to also provide a level of stormwater treatment and retention.

- Designs can be cost effective when used in place of curb & gutter, pipes, and other conveyance systems.
- Key design elements include maximum allowable longitudinal slope (or the use of check dams), maximum velocity and depth of flow, large storm conveyance, and trapezoidal cross-section geometry.

DEQ Design Specification No. 5
Vegetated Roof



Vegetated Roofs are an alternative roof surface that typically consists of waterproofing and drainage materials and an engineered growing media that is designed to support plant growth.

- Captures and temporarily stores stormwater within the growing media.
- Provides significant life-cycle cost benefits to the building and the environment beyond the stormwater reduction.

DEQ Design Specification No. 6
Rainwater Harvesting



Rainwater Harvesting systems provide for the capture, storage, and release of rainwater for future beneficial use, either inside or outside the building. Systems usually capture rooftop runoff. Storage tanks can be a variety of materials and either above ground or underground.

- Ideal for sites with a beneficial use of the water, such as irrigation, toilet flushing, cooling towers, vehicle washing, etc.
- Benefits include reducing use of potable water for irrigation and other outdoor uses, flushing, etc.
- Key design elements include establishing a reliable water budget and pretreatment.

DEQ Design Specification No. 7
Permeable Pavement



Permeable Paving materials include concrete, asphalt, and interlocking pavers that allow runoff to filter through voids into a gravel storage reservoir.

- Can be designed as an infiltration practice, extended filtration practice (with an underdrain and stone sump), or a filtering practice (underdrain without sump).
- Key design elements include structural load capacity for traffic, surface slope, and limiting the size of the “external” drainage area (adjacent impervious that “runs onto” the permeable pavement).

DEQ Design Specification No. 8
Infiltration



Infiltration practices utilize temporary surface or underground storage to allow incoming stormwater runoff to infiltrate into underlying soils. Runoff first passes through multiple pretreatment mechanisms to trap sediment and organic matter before it reaches the practice.

- Can be designed as basin, trench, or small-scale practice
- Key design elements include runoff pre-treatment, soil permeability testing, and subsoil conditions – such as groundwater. Strict limitations on use at hotspots or Brownfields.

DEQ Design Specification No. 9
Bioretention



Bioretention is a landscaped practice that uses plants, mulch, and soil to treat runoff. Commonly used in parking lot islands and edges and as part of commercial site plans.

- Can be designed as an infiltration practice or an extended filtration practice (with an underdrain).
- Key design elements include surface ponding volume, soil media depth, and underdrain. Includes several design variations.

DEQ Design Specification No. 14
Wet Ponds



Wet ponds have a permanent pool of water and a landscaped fringe. Runoff from each storm enters the pond and raises the normal water level, and the outlet structure releases the runoff at a slower rate. This “draw down” or holding time allows pollutants to settle to the bottom while also reducing the discharge.

- Design requires a large contributing drainage area or a base flow to sustain the pool during dry periods.
- Key design elements include sediment forebays at the inflow, the embankment or dam, the riser/outlet structure, and the outlet channel.

DEQ Design Specification No. 15
Dry (Extended Detention) Ponds



Dry (Extended Detention) Ponds do not have a permanent pool, and remain dry except during and shortly after storm events. Some extended detention facilities may have a wet marsh with plantings in the bottom for additional pollutant removal.

- Can be designed to address channel protection and flooding requirements
- Key design elements include sediment forebays at the inflow, the embankment or dam, the riser/outlet structure, and the outlet channel.

Regenerative Stormwater Conveyance (RSC) System



The RSC System is an open-channel conveyance structure that encourages surface flow to transition to shallow groundwater flow through a series of step-pools and riffles and an underlying sand/mulch bed. Can be adapted for moderately steep slopes.

- Can be used to retrofit existing degraded outfalls or for new development in some cases.
- Critical design features include storage volume and peak flow design of riffles and pools, adequate energy dissipation and anchoring system, hydraulic design for large storms, and tying into existing stream channels.

4.0 INSPECTIONS

Completed inspection forms are required to document all inspections. If the inspection forms are not completed, or not available, then the inspections didn't occur. Inspection forms for (i) Detention, Retention, and Extended Detention Basins, and (ii) Bioretention Basins are provided in Appendix A. Inspection forms for other types of BMPs, as well as information on maintenance recommendations for all types of BMPs can be found at the Virginia BMP Clearinghouse at:

www.vwrrc.vt.edu/swc/NonProprietaryBMPs.html.

4.1 DEQ Stormwater Inspector Certification

Individuals performing inspection of stormwater management facilities for the City of Hopewell are required to maintain a Stormwater Inspector Certification from DEQ. Information regarding the certification requirements is available at the DEQ Stormwater Certification webpage:

www.deq.virginia.gov/ConnectWithDEQ/TrainingCertification.aspx

Individuals performing inspections for privately owned BMPs must be licensed as a professional engineer, architect, landscape architect, or land surveyor pursuant to the Virginia Department of Professional and Occupational Regulation (Article 1 § 54.1-400 et seq. of Chapter 4 of Title 54.1); a person who works under the direction and oversight of the licensed professional engineer, architect, landscape architect, or land surveyor; or a person who holds an appropriate certificate of competence from the board.

4.2 Inspection Frequency

The Virginia Stormwater Management Program, regulations, and the City's MS4 Permit require that the City perform annual inspections of all City owned stormwater management facilities. as well as an inspection after any storm event that exceeds the facility principal spillway, or more specifically, whenever the emergency spillway is engaged. Detailed inspection requirements are provided in the BMP Clearinghouse.

The Virginia Stormwater Management Program, regulations, and the City's MS4 Permit also require that the City perform inspections of all privately owned stormwater management facilities at least once every five years.

4.3 Stormwater Management Facility Information

This describes the general information that shall be documented for all stormwater management facility inspections:

- "Owner": The owner of the facility.
- "Facility Name": This is the name of the facility on the Inventory List and the site mapping
- "Property Address": Address where the facility is located.
- "Date BMP Placed in Service" The date the BMP became functional and was accepted as complete post construction. This is typically at bond release.
- "Latitude (N)" is the GPS latitude reading of the top of the dam at or above the principal spillway.
- "Longitude (W)" is the GPS longitude reading at the top of the dam or above the principal spillway.
- "As-Built Plans Available": Are the original As-Built plans available for reference? Indicate yes or no.

- “Inspection Date”: The date the inspection took place.
- “Date of Last Inspection”: The date the last inspection took place.
- “Inspector(s)”: The name of the inspector performing the inspection.
- “Contact Information”: Contact information for the inspector. Phone numbers and/or email addresses are appropriate.

4.4 Inspection Criteria

The inspection form in Appendix A is designed so that individual components of the stormwater facility are inspected for specific issues. Each numbered heading is a different component of the facility. The lettered items list the issues to evaluate for that are specific to that component of the facility. Facilities may not have all components listed.

Each of the inspection component criteria are rated as either “Yes,” they need repairs, or “No,” they do not need repairs. Recommend maintenance actions based on design plans for the facility, actions recommended in the Virginia Stormwater Management handbook or follow the recommended maintenance actions described in the “Maintenance action” column. Further information on maintenance recommendations for various stormwater BMPs can be found at the Virginia BMP Clearinghouse at:

www.vwrrc.vt.edu/swc/NonProprietaryBMPs.html.

5.0 FACILITY MAINTENANCE

The effectiveness of post-construction stormwater control BMPs depends upon regular inspections and maintenance of all aspects of the facility. There are typically two types of BMP maintenance, referred to as routine maintenance and corrective maintenance. Corrective maintenance consists of repairs performed to correct a deficient part of the BMP facility as identified in the inspection. Maintenance action returns the BMP component to the original design conditions for proper function. These activities are further described below.

5.1 Routine Maintenance

Routine maintenance consists of preventative measures that are essential to the ongoing care and upkeep of a BMP facility, and it should be performed regularly to ensure proper function. Additionally, it helps prevent potential nuisances (odors, mosquitoes, weeds, etc.), reduces the need for corrective maintenance, and reduces the chance of polluting stormwater runoff by identifying and repairing problems before they further deteriorate. The failure of structural stormwater BMPs can lead to downstream flooding, which can cause property damage, injury, and even death. This also leads to very costly repairs.

Examples of routine maintenance include:

- Remove any accumulated sediment from the forebays and micro-pools.
- Replace any plantings or vegetation called for in the approved plans that has died or is diseased.
- Repair the stormwater structures for erosion or undercutting as needed.
- Repair any erosion in the facility, including sloughing, animal burrows and slopes.
- Repair any deterioration at the outfall of the facility, including the riprap outlet protection.
- Remove blockages of all trash racks, inlets and outlets.
- Maintain adequate access to the facility and remove woody vegetation as needed.
- Exercise valves to prevent them from locking up where applicable.

- Remove all trash, debris and floatables periodically from the facility.

5.2 Corrective Maintenance

Corrective maintenance is any maintenance that should be addressed for the facility to properly function in accordance with the plans. These items require more intensive repair efforts and should be addressed as a higher priority than routine maintenance. If there are structural deficiencies, or issues that raise the water level in the facility beyond the design requirements, corrective action is required.

Examples of Corrective Maintenance include:

- Repair any deterioration or issues with the principal spillway and riser, such as evidence of spalling, joint failure, leakage, corrosion, etc.
- Extensive sediment removal is required when inspections indicate that 50% of the forebay sediment storage capacity has been filled.
- Control or remove invasive species when their coverage exceeds 15% of a wetland cell as soon as possible. Take care to preserve the designed plantings and vegetation.
- All woody vegetation should be removed from the embankment, if present, to prevent structural damage. Additionally, removal of growth should be considered more frequently if there are impacts to the storage volume (i.e. water levels rise because the vegetation is taking up the water storage space).

Appendix A: Stormwater Facility Inspection Forms

Separate forms are provided for:

- (1) Detention, Retention and Extended Detention Basins
- (2) Bioretention

Note that plans should be referenced for inspection of underground and proprietary BMPs.

City of Hopewell
 BMP Operation & Maintenance Inspection for
 Detention, Retention and Extended Detention Basins

Owner Name:	Facility ID # (See Mapping):
Date of Inspection:	As-built plans available: Y N
Date of Last Inspection:	Inspector:
Were issues identified during the previous inspection that required maintenance?	Y N
If so, was the maintenance performed and recorded on a BMP Maintenance Follow-up Form?	Y N
If no, explain:	
Does the current inspection, as summarized hereon, identified maintenance needs?	Y N
If yes, please complete a BMP Maintenance Follow-up Form and provide to the Stormwater Program Manager upon completion.	

BMP Element	Issue	Yes	No	N/A	Corrective Action
Contributing Drainage Area	Excessive trash/debris				Remove trash/debris and properly dispose.
	Bare exposed soil				Stabilize with seed and mulch. E&S measures may be warranted until stabilized.
	Evidence of erosion				Backfill area, seed, mulch and consider matting. E&S measures may be warranted until stabilized.
	Excessive landscape waste/yard clippings				Remove landscape waste and yard clippings to prevent clogging and properly dispose of them.
Pretreatment / Forebay / Inflow	Excessive trash/debris/sediment or other blockage				Remove trash/debris/sediment or blockages and properly dispose of.
	Dead vegetation, exposed soil				Replace vegetation and stabilize according to plans. E&S measures may be warranted until stabilized.
	Evidence of erosion, undercutting, or bare soils				Backfill area, seed, mulch and consider matting, E&S measures may be warranted until stabilized.
	Structural deterioration of inlets, outfalls or pretreatment overflow weirs into the facility				Repair and restabilize area. Consult plans for approved configuration or an engineer. E&S measures may be warranted until stabilized.
	Animal burrows				Fill in immediately and stabilize.
Aquatic Bench / Vegetation	Plantings inconsistent with approved plans.				Consult approved plans and/or management to ensure no approved plant substitutions were used. Remove unapproved plants and replace any required plantings in kind.
	Dead vegetation/exposed soil				Replace vegetation and stabilize according to plans. E&S measures may be warranted until stabilized.
	Invasive plants, such as cattails and phragmites, exceeds 15% of the planted area.				Invasive plants should be removed immediately. Vegetation may require periodic harvesting for proper long term management.

Berm/ Embankment	Overgrown, including woody growth 5' beyond the outfall pipe and/or embankment.			Removal of woody species near or on the embankment is critical for proper function and long term stability. Remove all woody growth including stumps. Consult an engineer for backfill specifications. Mow thick growth.
	There is sparse vegetative cover and erosion channels are present.			Backfill area with structural fill and consult engineer for proper specifications. Stabilize with seed and mulch, consider matting. E&S measures may be warranted until stabilized.
	Cracking, bulging, sloughing and seepage			Consult an engineer immediately to prevent failure.
	Evidence of animal burrows.			Fill in immediately and stabilize.
Riser	Structural condition of the riser is deteriorating.			Consult an engineer to recommend a repair and review the approved plans.
	Adjustable control valve inaccessible and inoperable (if present).			Repair valve to be operational.
	Pieces of the riser are broken or missing.			Repair immediately in accordance with the approved plans. Consult an engineer as needed.
	Riser or low flow orifice is blocked.			Remove blockage and properly dispose of.
	Riser provides inadequate conveyance out of facility.			Repair to properly convey drainage to the outfall per the approved plan. Consult an engineer as needed.
	Evidence of erosion or undermining at/around riser.			Repair erosion. Consult engineer for structural repairs as needed.
Structural deterioration			Consult engineer for proper repair procedures.	
Outlet / Outfall	Exposed rebar, joint failure, loss of joint material, misalignment, leaking or corrosion			Repair concrete to cover rebar. Consult engineer for all other structural repairs.
	Excessive trash/debris/sediment or blockages.			Remove trash/debris/sediment/blockages and properly dispose of.
	Evidence of erosion and bare soil.			Backfill area, seed, mulch and consider matting, E&S measures may be warranted until stabilized.
	Valves, manholes or locks cannot be opened or operated (if present).			Repair/replace any broken fixtures.
	Erosion of outfall channel or riprap deterioration.			Repair and/or supplement riprap outlet protection in accordance with the approved plans.
	Outlets provide inadequate conveyance out of facility.			Repair to properly convey drainage to the outfall per the approved plan. Consult an engineer as needed.
Overall	Access to the facility is in need of repair.			Restore access for maintenance equipment per the approved plans.
	Encroachment on facility or easement by buildings or other structures.			Contact Operations and Maintenance or Plant Services Division
	Evidence of oil/chemical accumulation, odor, algae, color or pollution.			Report to management and consult IDDE manual.
	Fences and/or safety signage is inadequate.			Repair fences and signage for public safety.
	Trash in the pool			Remove immediately and observe safety procedures.
	Additional notes:			

City of Hopewell
BMP Operation & Maintenance Inspection for **Bioretention**

Owner Name:	Facility ID # (See Mapping):
Date of Inspection:	As-built plans available: Y N
Date of Last Inspection:	Inspector:
Were issues identified during the previous inspection that required maintenance? Y N	
If so, was the maintenance performed and recorded on a BMP Maintenance Follow-up Form? Y N	
If no, explain:	
Does the current inspection, as summarized hereon, identified maintenance needs? Y N	
If yes, please complete a BMP Maintenance Follow-up Form and provide to the Stormwater Program Manager upon completion.	

BMP Element	Problem	Yes	No	N/A	Corrective Action
Contributing Drainage Area	Excessive trash/debris				Remove trash/debris and properly dispose of.
	Bare exposed soil				Stabilize with seed and mulch. E&S measures may be warranted until the area is stabilized.
	Evidence of erosion				Backfill area, seed, mulch and consider matting. E&S measures may be warranted until stabilization.
	Excessive landscape waste/yard clippings				Remove landscape waste and yard clippings to prevent clogging and properly dispose of them.
Pretreatment (if applicable) & Inlets	Excessive trash/debris/sediment				Remove trash/debris/sediment and properly dispose of.
	Evidence of clogging				Rake material to determine level of clogging, removed clogged material and replace with clean material per the plan specifications.
	Dead vegetation, exposed soil				Replace vegetation and stabilize with seed and mulch according to plans. E&S measures may be warranted until area is stabilized.
	Evidence of erosion				Backfill area, seed, mulch and consider matting. E&S Measures may be warranted until stabilized.
	Evidence of ponding, noticeable odors, water stains, presence of algae or floating aquatic vegetation				Determine source of issue and remove/repair it. Consult management and the IDDE manual as needed.
	Inlets provide inadequate conveyance into facility				Repair inlets to drain to facility per plans.
	Presence of invasive species/weeds				Remove invasive species/weeds

Underdrain/pea gravel filter	Perforated pipe is not delivering conveyances as designed			Check if pipe is clogged with debris or woody root punctures. Manually clear out or replace pipe immediately.
	Evidence of standing water. Does not dewater between storms. Water ponds on the surface of basin for more than 48 hours after an event			This is an indication that underlying soil interface is clogged. This should be promptly investigated and addressed.
	Evidence of blockage			Determine source of blockage and promptly remove and dispose of.
	Litter is present within the practice			Remove immediately. Maintain contributing areas free of litter.
Outlet/ overflow spillway	Filter media is too low, compacted, or inconsistent with design specifications.			Consult an engineer or approved plans for the proper media mix specifications and placement guidance for repairs.
	Mulch is older than 3 years or in poor condition			Mulch shall be removed and replaced every 2-3 years.
Filter media	Chemicals, fertilizer and/or oil are present			No dumping of yard wastes into practice. Remove oil/grease from practice immediately and consult the IDDE Manual.
	Sediments are greater than 20% of design depth			Check plant health, manually remove sediment immediately without damaging plants.
	Exposed/bare soil			Stabilize with seed and mulch. E&S measures may be warranted until stabilization.
	Filter bed is blocked and/or filled inappropriately			Check blockage level by raking the layer and check the deposit depth. Consult the approved plan specifications and/or an engineer.
	Outlets provide inadequate conveyance out of facility			Repair conveyance. Consult engineering as needed.
	Excessive trash/debris/sediment accumulation at inlet			Remove trash/debris/sediment and properly dispose of.
	Evidence of erosion at/around inlet			Repair erosion and stabilize - consider matting.
	Maintenance access to facility in need of repair			Restore access for inspections and construction maintenance equipment.
Outlet	Access road needs maintenance to convey construction maintenance equipment.			Restore access for inspections and construction maintenance equipment.
	Structural components in need of repair			Consult Engineer and approved design plans.
	Hydraulic control components in need of repair			Consult Engineer and approved design plans.
Overall	Excessive trash/debris/sediment			Remove trash/debris/sediment and properly dispose of.
	Evidence of erosion			Backfill area, seed and mulch -consider matting, E&S Measures may be warranted until stabilized.
	Evidence of oil/chemical accumulation, odor, algae or color.			Report to management and consult IDDE manual.
	Encroachment on facility by buildings or other structures			Contact Operations and Maintenance or Plant Services Division
	Additional Notes:			

Appendix B: BMP Maintenance Follow-up Form

BMP Maintenance Follow-up FORM

To be completed by inspector

Location: _____ BMP ID # (see BMP Inventory map): _____

Was the maintenance need generated from an inspection? _____ If yes, date on inspection form: _____

Description of required maintenance: _____

Is maintenance critical to the function of the BMP? Yes No Not sure

To be completed by the Stormwater Program Manager

Individual performing or overseeing maintenance: _____

Requested date for maintenance to be completed by: _____

Date(s) maintenance completed: _____

Did maintenance solve the identified problem? Yes No Not sure

If no or not sure, describe further necessary maintenance and a date for the additional maintenance to be performed:

Description of maintenance performed: _____

Attach photographs to this form and retain for records.