

Stormwater Management: Maintenance

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Water Compliance & Enforcement

October 13, 2016

The Clean



The Clog



The Clash

When Stormwater BMP Fails ...



Maintenance

Design

Overview

- * **Stormwater Management: Maintenance Requirements – Rules & Guidelines**
- * **Roles and Responsibilities**
- * **Inspection of Specific Type of BMPs**
- * **NJDEP Maintenance Guidance**



Stormwater Management: Maintenance Requirements- Rules & Guidelines

Maintenance Requirements

NJPDES N.J.A.C. 7:14A-25.6

MS4 Permit

New Jersey Pollutant Discharge Elimination System (NJPDES) for Municipal Separate Storm Sewer System (MS4) requires:

- * Post-Construction Program**
- * Stormwater Facility Maintenance Program**

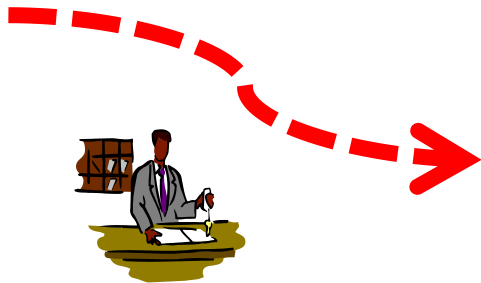
Roles and Responsibilities of Maintenance

Design Engineer

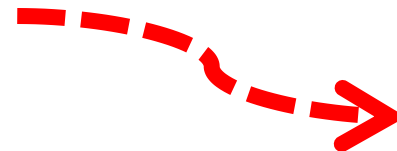
- ✓ Complete Maintenance Plan
- ✓ Handover the Maintenance Plan to **Responsible Party**



Design Engineer



8



Responsible Parties

Roles and Responsibilities

Responsible Party


- ✓ Developer of the development
- ✓ Public entity for public owned and operated BMPs
- ✓ Entities other than the developer
(Transferred under agreement or assigned by ordinances/regulations)
 - ✓ Public agency
 - ✓ Homeowners' association
 - ✓ Owner/ Tenant of an individual property in a **nonresidential** development
 - ✓ Owner/ Tenant of an individual property in a **residential** development (only if the individual owns the **ENTIRE residential development**)

NJDEP Stormwater BMP Maintenance Requirements

Stormwater Management rules at N.J.A.C. 7:8-5.8

- * Maintenance Plan
 - Actions - Preventative and Corrective Maintenance
 - Inspection and Maintenance Records
- * BMP Manual*

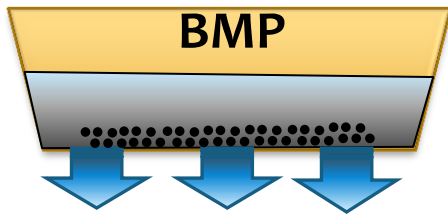




Inspection of Specific Types of BMPs

Stormwater BMPs

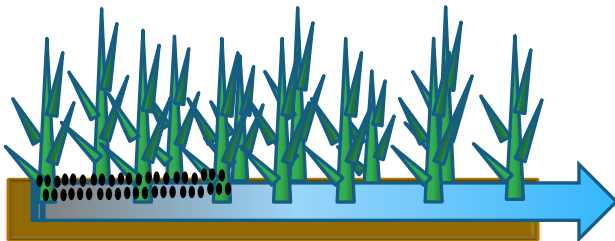
Basic Functions



- ✓ Infiltrate runoff and retain pollutants



- ✓ Retain runoff and settle pollutants



- ✓ Intercept pollutants with vegetation

Types of Stormwater BMPs

Dry-BMP Type

Wet-BMP Type

MTDs

- * **Dry-BMP Type**

- ✓ Infiltration Basin, Sand Filter, Detention Basin, Bioretention System, Dry Well, Pervious Pavement, Grass Swale, Vegetative Filter Strip

- * **Wet-BMP Type**

- ✓ Wet Pond, Constructed Wetlands, Subsurface Gravel Wetlands

- * **MTDs (Manufactured Treatment Devices)**

Determine What Type of BMPs - Don't Judge Too Quickly!



Stormwater BMPs

Dry-BMP Type

Wet-BMP Type

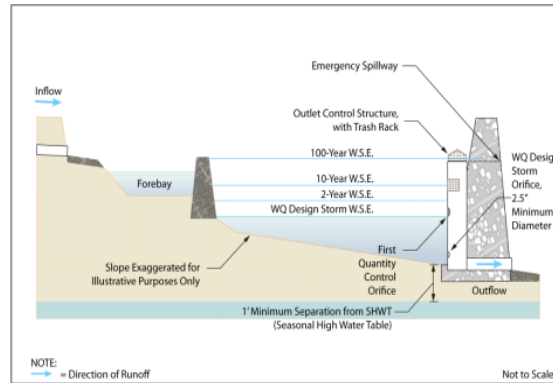
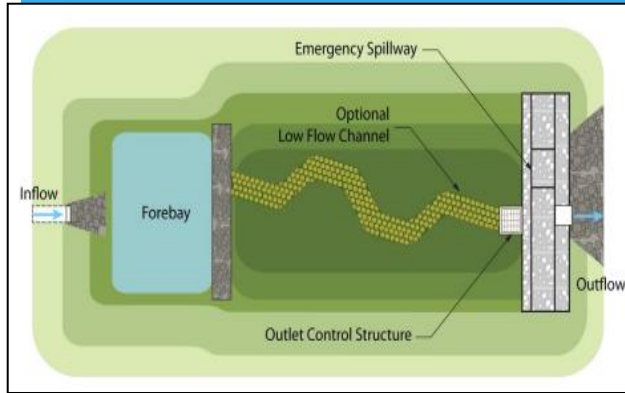
MTDs

* Dry-BMP Type

- ✓ Infiltrates runoff into ground
 - Pollutants captured at the surface
 - **Infiltration Basin, Sand Filter, Detention Basin, Bioretention System, and Pervious Pavement**
- ✓ Uses plants to intercept runoff
 - Plants either take up pollutants or perform as a bio-screen to remove pollutants
 - **Grass Swale or Vegetative Filter Strip**
- ✓ Retains runoff and discharges it slowly (Flood Control)
 - Pollutants settle on the bottom
 - **Extended Detention Basin**

Stormwater BMPs: Dry-Basin Type

Extended Detention Basin



Detention-Infiltration Basin



**No low flow channel
No low flow orifice**



Concrete low flow channel

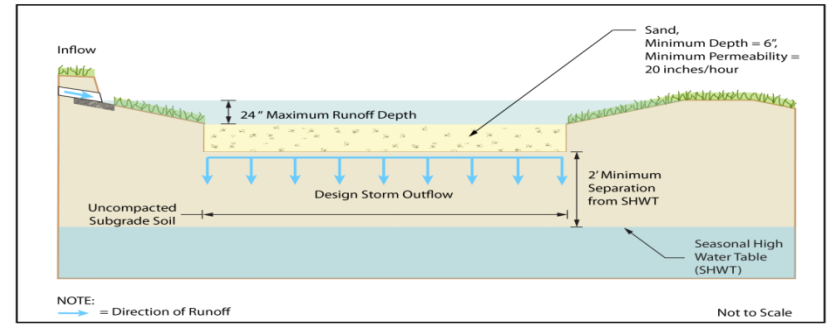
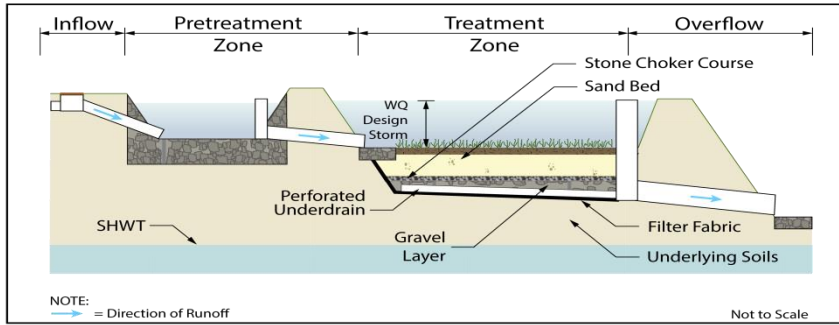
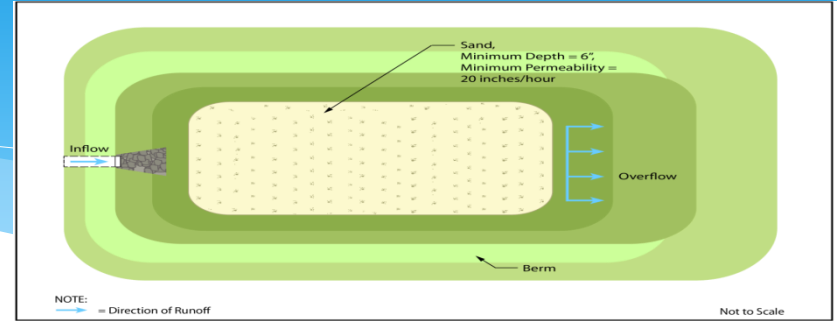
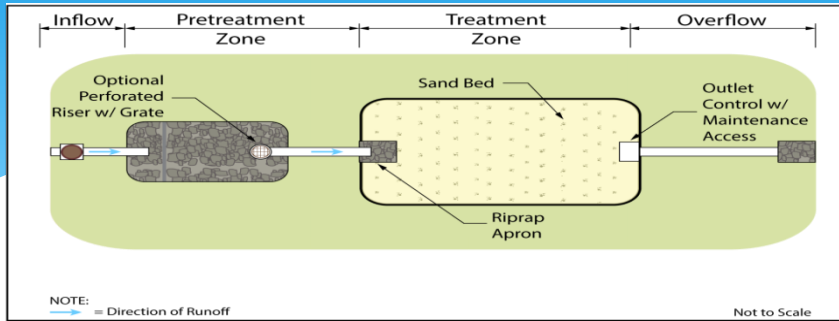


Gravel low flow channel

Stormwater BMPs: **Dry-BMP** Type

Sand Filter

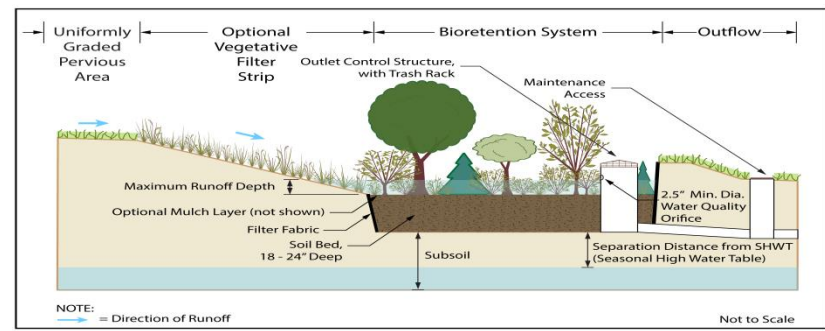
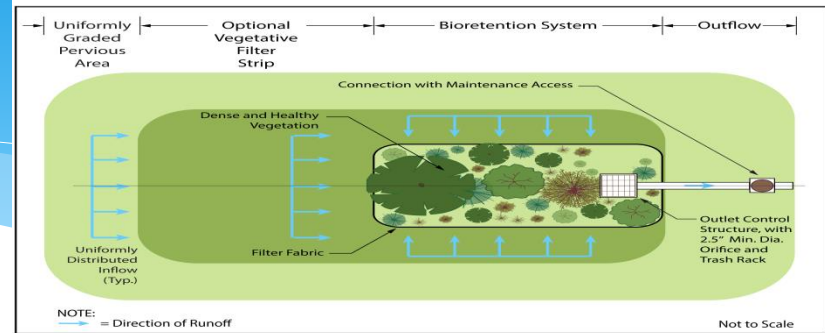
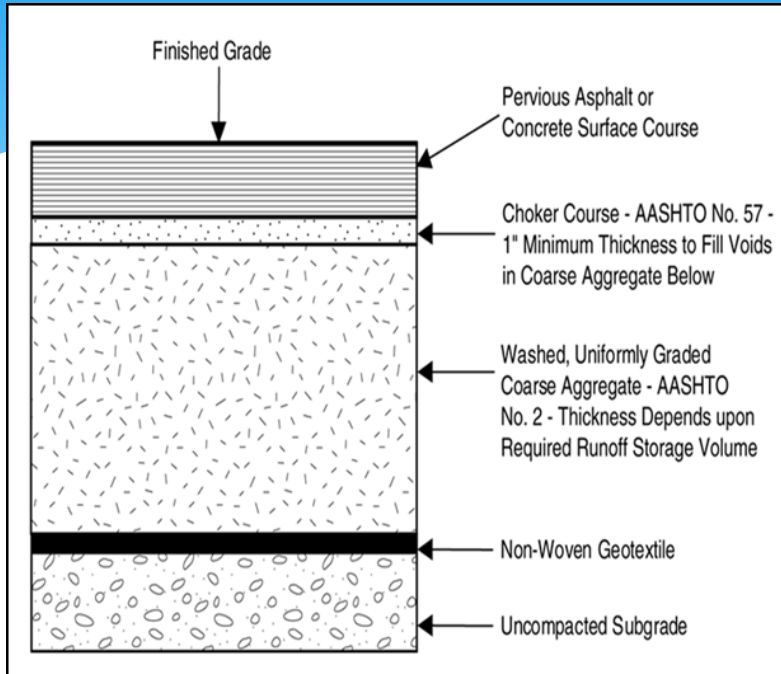
Infiltration Basin



Stormwater BMPs: **Dry-BMP** Type

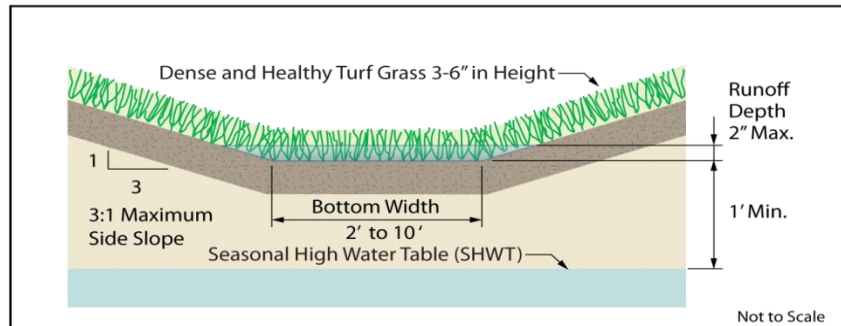
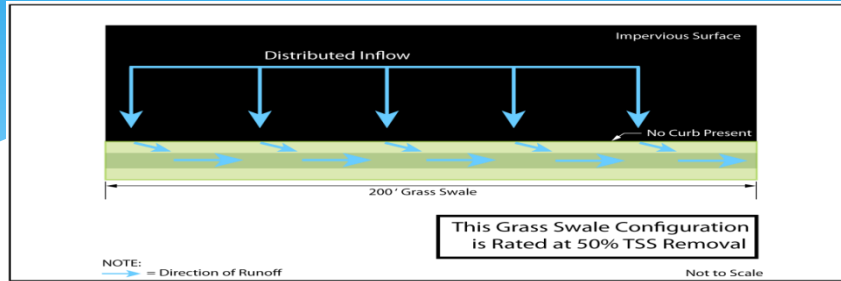
Pervious Pavement

Bioretention System

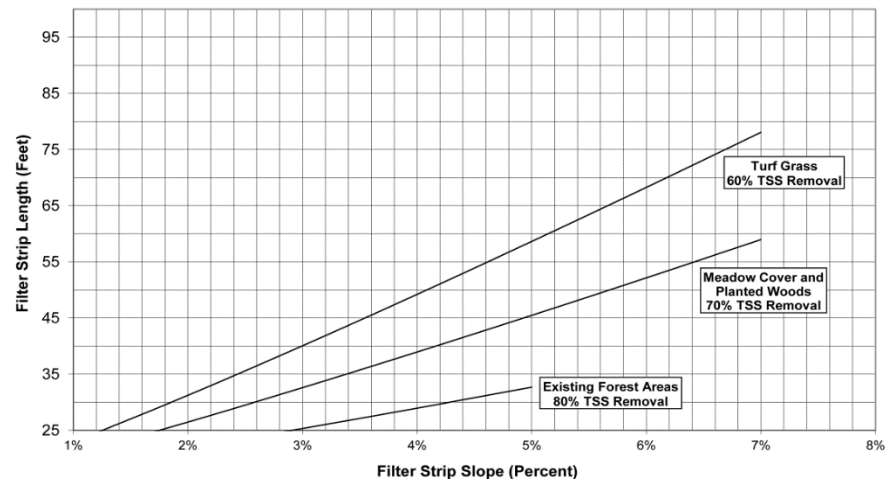
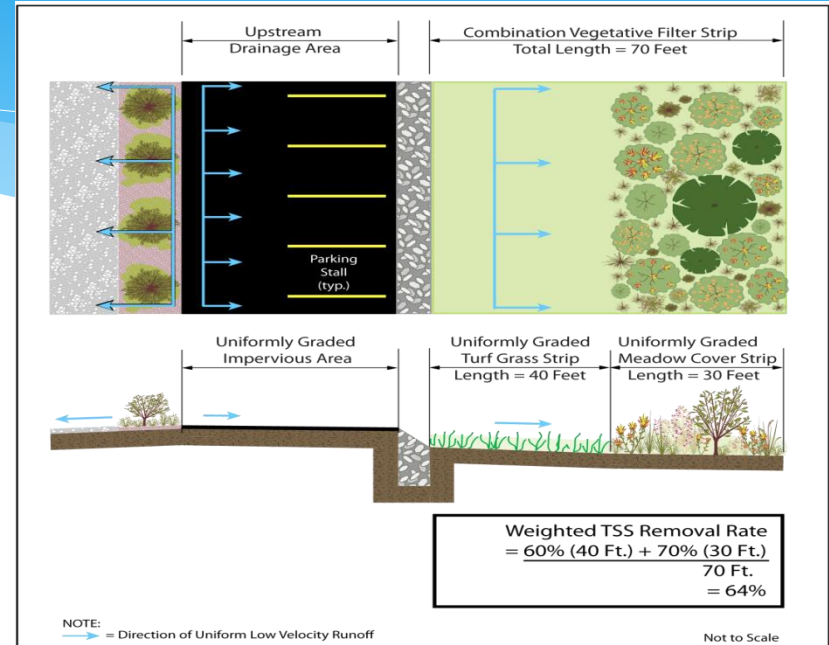


Stormwater BMPs: **Dry-BMP** Type

Grass Swale



Vegetative Filter Strip



General Requirements for **Dry-BMPs**

- * Fully drained within 72 hours after rain event (preferred 48 hours)
- * Ground Water Table (Season High Water Table) must have at least 2 foot separation from the bottom of the BMP (1 foot for detention basin/vegetative filter strip/swale)
- * Avoid soil compaction of the bottom of the BMP
- * Take special care to avoid clogging the outlet orifice and trash racks (trash/debris/excessive sediment)
- * Check DEP's BMP manual or the site plan for specific requirements for each type of BMP

Types of Stormwater BMPs

Dry-BMP Type

Wet-BMP Type

MTDs

* Wet-BMP Type

✓ Pollution Control

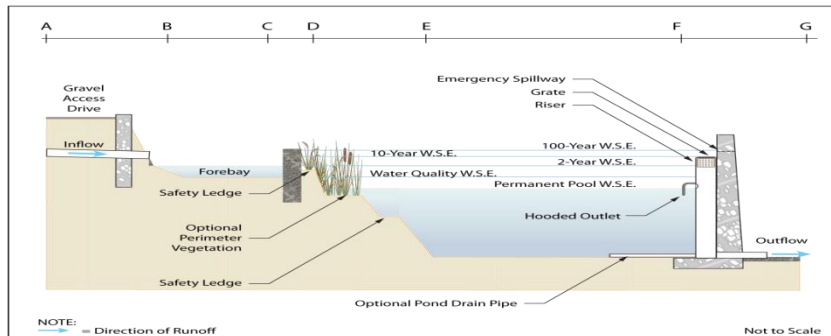
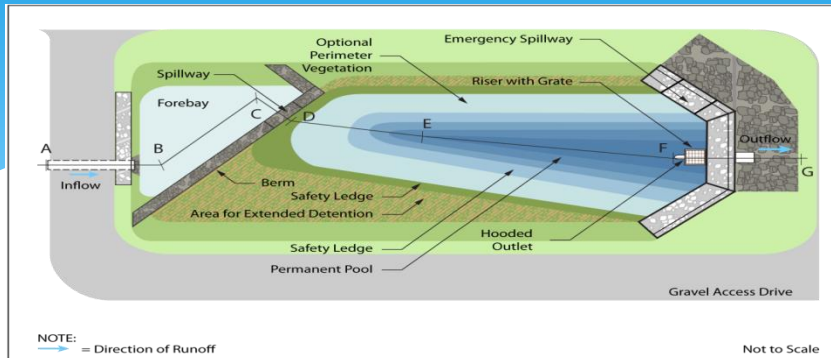
- Settles solids in a pond
- **Wet Pond and Constructed Wetlands**

✓ Flood Control

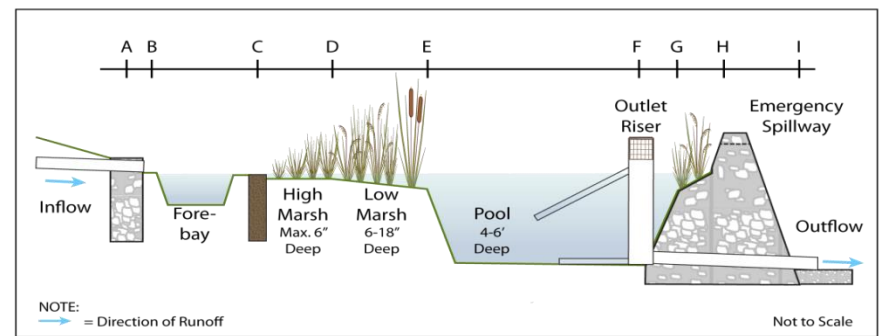
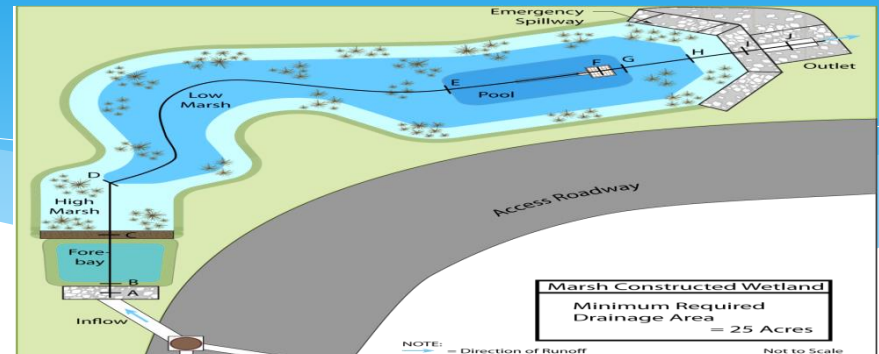
- Detains large amounts of runoff in a pond and discharges it slowly
- **Detention ledge or extra storage for larger events**

Stormwater BMPs – **Wet-BMP** Type

Wet Pond



Constructed Wetlands



General Requirements for **Wet-BMPs**

- * **Water depth must be maintained within specific range (3- 6 feet) for proper function**
- * **Avoidance of anaerobic condition, algae bloom, and mosquito breeding**
- * **Require safety measures**
- * **Check DEP's BMP manual or the site plan for specific requirements for each type of BMP**

Wetland Vegetation

*To kill, or not to kill,
that is the question.*



Prince Hamlet

Hamlet 1844. Public Domain via Wikimedia

- * **Intended wetland vegetation**
 - * standard constructed wetland, subsurface gravel wetland, wet pond
 - * **Follow Landscaping Plan**

 - * **Unintended Wetland Vegetation**
 - * detention , infiltration basin, grass swale. . .
 - * **Remove**

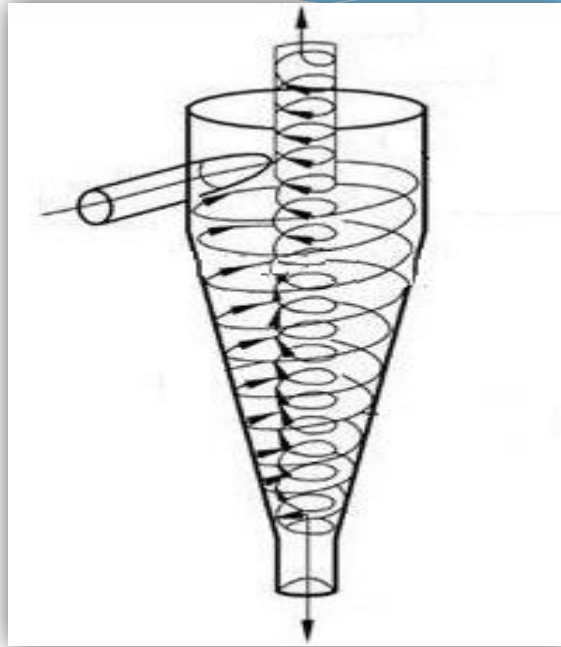
 - * **Permit Information**
 - * Division of Land Use Regulation
 - * [Stormwater Basins](#)
 - * [Ditch and Swale Disturbance](#)
 - * [Mosquito Control Activities](#)
- (<http://www.nj.gov/dep/landuse/activities.html>)

Manufactured Treatment Devices

Dry-BMP Type

Wet-BMP Type

MTDs



Hydrodynamic Separator



Filtration System

Follow Manufacturer's Maintenance Instructions

NJDEP Certified MTDs: <http://www.nj.gov/dep/stormwater/treatment.html>



Maintenance Guidance

Overview of Maintenance Guidance

Stormwater Management Measures

Maintenance Plan & Field Manuals

Development Name _____

Address _____

Block(s) / Lot(s) _____

Township, County _____

Party Responsible for Maintenance:

Address: _____

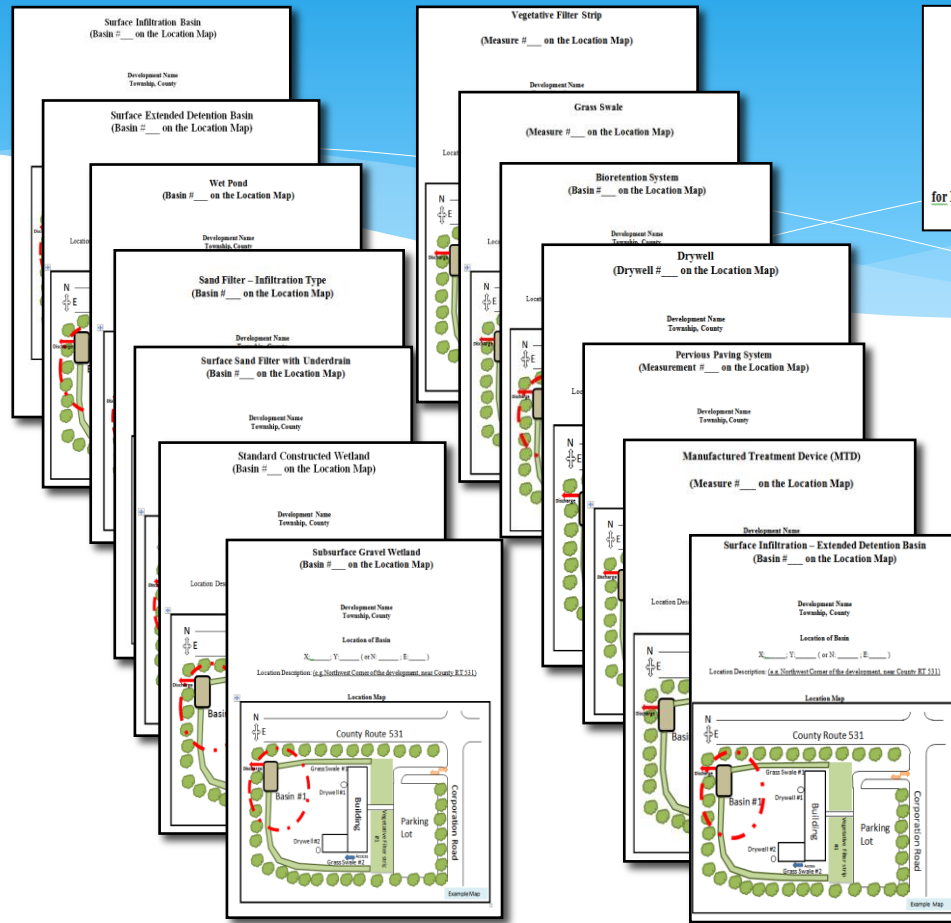
Contact Person(s): _____ Phone: _____

Prepared by: _____ Date: _____

This plan is recorded in
Deed Book # _____ Page # _____ with _____ County Clerk on Date _____

Last Revised on MM / DD / YYYY

January 2011 Sample Stormwater Management Plan and Field Manual



Stormwater Management Measures

Maintenance Plan & Field Manuals

Record Logs
for Inspection Checklists and Maintenance Work Orders

Maintenance Plan

14 Templates of Field Manuals
For Different BMPs

Maintenance Log

Optional and Editable

Field Manual

Components

- * BMP Overview
- * Basic Design Information
- * Visual Aid for Stormwater Basin Inspection
- * Reference Documents
- * Inspection Checklist / Maintenance Actions
- * Preventative Maintenance Record
- * Corrective Maintenance Record

Surface Infiltration Basin
(Basin # ___ on the Location Map)

Development Name
Township, County

Location of Basin
X: _____; Y: _____ (or N: _____; E: _____)

Location Description: (e.g., Northwest corner of the development, near County RT 531)

Location Map

Example Map

January 2015 Surface Infiltration Basin Page 1/20


NJ Stormwater Maintenance Guidance


njstormwater.org

Governor Chris Christie • Lt. Governor Kim Guadagno

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 STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Nj STORMWATER.ORG
Stormwater in New Jersey



NJStormwater.org Home | NJDEP Home | NJDEP Online

Stormwater Management

- ▶ Green Infrastructure in NJ
- ▶ Stormwater Management Rule
- ▶ Stormwater Management Rule FAQs
- ▶ NJ Stormwater BMP Manual
- ▶ Maintenance Guidance
- ▶ Tech Manual Chapters for Comment
- ▶ MTD Certifications and Guidance
- ▶ Additional Guidance Documents

Stormwater Permitting

- ▶ Municipal Stormwater Regulation
- ▶ General Stormwater Permits
- ▶ Individual Stormwater Permits
- ▶ Permit Applications and Checklists

Program Links

- ▶ NJ Stormwater.org Contacts
- ▶ Stormwater Training
- ▶ Bureau of Nonpoint Pollution Control
- ▶ Division of Water Quality
- ▶ Clean Water NJ

Maintenance Guidance

The guidance on this page is intended to assist design engineers and responsible parties with complying with the maintenance requirements for stormwater management measures. The Maintenance Guidance can be customized to allow for specific considerations in design, site conditions, and responsible party needs.

Note: Documents were drafted using Microsoft Office® 2010, depending on the user's computer settings, format of the texts and graphics in the files may change.

Introduction of NJDEP Stormwater Maintenance Guidance

This Video provides an explanation of how the Maintenance Guidance materials (Maintenance Plan, Field Manuals, and Maintenance Logs and Inspection Records) work together.

- [Introduction NJDEP Stormwater Maintenance Guidance \(mp4\)](#)

Maintenance Plan

The Maintenance Plan incorporates the rule requirements for maintenance plan contents and additional items addressed in the NJ Stormwater BMP Manual chapters: Structural Stormwater Management Measures and Chapter 8 - Maintenance and Retrofit of Stormwater Management Measures, in the form of a template to assist design engineers with the preparation of their maintenance plans.

- [Maintenance Plan](#)

Field Manuals

Each Field Manual includes templates for basic design information, checklists, visual aids, reference documents, and maintenance records. This provides a systematic method to assist maintenance crews in performing field work and retaining records. Each Field Manual was developed with the consideration of essential maintenance requirements for each type of stormwater measure addressed in the corresponding Structural Stormwater Management Measures subchapters within the [NJ Stormwater Best Management Practices Manual](#).

Field Manuals

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- [Bioretention Systems](#)
- [Dry Wells](#)
- [Grass Swales](#)
- [Infiltration Basins](#)
 - [Surface Infiltration - Extended Detention](#)
 - [Surface Infiltration](#)
- [Manufactured Treatment Devices](#)
- [Pervious Paving Systems](#)
- [Sand Filters](#)
 - [Sand Filter with Infiltration](#)
 - [Sand Filter with Underdrain](#)
- [Standard Constructed Wetlands](#)
- [Subsurface Gravel Wetlands](#)
- [Surface Extended Detention Basins](#)
- [Vegetative Filter Strips](#)
- [Wet Ponds](#)

Maintenance Logs and Inspection Records

- [Maintenance Logs and Inspection Records](#)

Whole Package of the Maintenance Guidance

A compressed zip file containing the Maintenance Plan, all 14 Field Manuals, and the Maintenance Logs and Inspection Records (80.24mb)

[Click here for compressed zip file](#)

State Permits Potentially Required During Maintenance

[Click here](#) for State Permits

Rainfall Information

The National Climatic Data Center provides current and historical precipitation information, which can assist maintenance crews with assessments.

[Click here](#) for Rainfall Information

Stormwater Training for Maintenance of Stormwater Management Measures

[Click here](#) for Stormwater Training

Charging Maintenance Fee *

- Privately owned

- ⊘ Performance or maintenance guaranty
 - ⊘ >2-year or >15% of development cost, or no refund of unused fund
 - ⊘ No! No! Beyond the authorization of Municipal Land Use Law
 - ⊘ *Robert J. Pacilli Homes, LLC v. Pilesgrove Twp. Planning Bd.*, Docket Nos. A-3271-06T2, A-4226-06T2, A-3301-06T2 (App. Div. Feb. 13, 2009), Unpub.
 - ⊘ *Majestic Contr., LLC v. Nunziato*, Doc. No. A-1659-09T3, (App. Div. Nov. 18, 2011), Unpub.

- ✓ Performance or maintenance guaranty in accordance with MLUL.
 - ✓ 15%, 2-year term, refund unused fund

- ✓ Voluntary dedication and bond through contracts with municipality
 - ✓ Under contract, dedication period and bond can be more than 2 years, not limited by 15%, but needs to refund unused fund
 - ✓ *Talcott Fromkin Freehold Associates v. Freehold Tp.*, 383 N.J. Super. 298 (Law Div. 2005)

- ✓ Back-Charge Ordinance
 - ✓ “If the responsible person fails or refuses to perform such maintenance and repair, the municipality may immediately proceed to do so and shall bill the cost thereof to the responsible person.”

Summary

- * **Stormwater Management Measures Maintenance Requirements – Rules & Guidelines**
- * **Roles and Responsibilities**
- * **Inspection of Specific Type of BMPs**
- * **NJDEP Maintenance Guidance**

More Information

- * **Richard Ambrosio, Environmental Specialist III**
- * **Water Compliance & Enforcement – Central Field Office**
- * **401 East State Street**
- * **Mail Code 44-03**
- * **P.O. Box 420, Trenton, NJ 08625-0420**
- * **Cell: 609-273-6179**
- * **Office-Bureau 609-292-3010**
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