



# BMP Maintenance Guidelines and Inspection Checklists

## Description

Stormwater control BMPs need regular inspections to ensure their effectiveness, and many permitting authorities require self-inspection for construction projects. Three types of BMP inspections are performed: routine inspections, inspections performed before rain events, and inspections performed after rain events. Each BMP in this Manual includes maintenance descriptions.

## Routine Inspection

Routine inspections are an integral part of regularly performed maintenance activities--cleaning, repair, and replacement--necessary to ensure the integrity and effectiveness of BMPs. Construction site activities can damage BMPs. Earthmoving equipment, for example, can easily dislodge an entrenched silt fence. Routine inspection and maintenance minimizes the work required to prepare a site before a rain event, and it helps protect a site from unforeseen rains.

## Inspection Forms

Example inspection forms and standard operating procedures can be found at the following websites:

EPA [http://www.epa.gov/npdes/pubs/sw\\_swppp\\_guide.pdf](http://www.epa.gov/npdes/pubs/sw_swppp_guide.pdf),

TDEC <http://www.state.tn.us/environment/wpc/forms/appdxdd.pdf>,

Hamilton County Stormwater <http://www.hamiltontn.gov/stormwater/>

City of Chattanooga (<http://www.chattanooga.gov/Files/NPDES-ConstructionSOP.doc>)

See also **Section 16 – Local Requirement Links.**

## Inspections Before Rain Events

It is critically important that construction site operators pay attention to weather forecasts. See NOAA's website for Chattanooga area weather at: <http://www.srh.noaa.gov/forecast/MapClick.php?CityName=Chattanooga&state=TN&site=MRX> .

Other weather websites can also help keep up with anticipated rain events.

To prepare for impending rains, operators should walk the construction site and ensure that BMPs are cleaned out and operating properly. They should verify that dumpsters are covered, paint and other chemicals are covered, and no oil spills are present. Such housekeeping practices are routinely performed in all good inspection and maintenance programs. Operators should also visually inspect all BMPs when the site will be inactive for several days, such as weekends or holidays. This will help to prepare for rains that might occur when workers are off-site. Planning and preparation minimize the risk of on- or off-site property damage occurring because of inoperative or malfunctioning BMPs.

## Inspections After Rain Events

After a rain event, prepare the site for the next rain event. Typically within 48 hours after rain, inspect, clean, and repair the site's BMPs. This will keep the site "clean" and minimize complaints from nearby residents. To prevent health and safety hazards, remove mud in traffic areas, and remove mosquito-breeding standing water. Clean mud and debris from silt fences and other BMPs. Clogged BMPs will not prevent pollutant releases during subsequent rain events, so clean, repair, or replace them as quickly as possible.

## Applicability

Construction operators are required to comply with federal NPDES construction site stormwater regulations, which are often implemented by state agencies. These regulations include developing stormwater pollution prevention plans and implementing erosion, sediment control, and housekeeping BMPs. Federal construction site stormwater regulations typically apply to sites that are 1 acre or larger. Additionally, construction operators may be subject to local erosion and sediment control requirements, such as requirements for grading permits that apply to sites smaller than 1 acre. Adequate BMP performance requires not only proper installation but also regular maintenance. Maintenance needs are best determined by a self-inspection program.

## Implementation

A construction site operator has several options to ensure that regular inspections are occurring. At small sites, the site superintendent or another management staff member can perform the task. At large sites, a firm with expertise in erosion and sediment control can be contracted to implement an inspection, maintenance, and repair program for the site. TDEC now requires Level I and Level II certification for inspectors, depending on the situation. At least one Level I inspector is required to be on-site for inspections. See <http://www.tnepsc.org/> for training schedules. Regardless of the process selected, it is the responsibility of the construction site operator to assure that a mechanism for regular inspections is established and functioning.

Inspectors must be familiar with the location, design specifications, maintenance procedures, and performance expectations of each BMP. The Stormwater Pollution Prevention Plan (SWPPP), based on TDEC and local requirements, should include specifications for BMP maintenance (e.g., when sediment has reached one-third the height of the silt fence, it must be cleaned out).

Regardless of who performs the inspections, it is critical to maintain proper documentation. Use an inspection form or checklist for each inspection. Log books are often used, but they need to include more information than merely the date of the inspections. Digital photos are an invaluable tool and often used by local inspectors. Permitting authorities require self-inspections, and if they audit the site, they will want to see proof of inspections to document compliance. Permitting authorities may also wish to see inspection and maintenance documentation for each specific BMP. During a project's life, several persons may be responsible for site inspections. Therefore, it is important to keep adequate documentation of dates of inspections, findings, and maintenance and repair of all BMPs.

## Limitations

Construction site operators should allocate adequate time frames and resources for BMP maintenance and repair. Those responsible for inspecting and maintaining BMPs should be trained in their design and operation. This will help ensure that workers know when BMP require cleaning, repair, or replacement. Similarly, as

site conditions change, BMP designs may prove to be inadequate in controlling erosion and sedimentation. A knowledgeable inspector will be able to identify these deficiencies and ensure that necessary improvements are made.

## Effectiveness

The effectiveness of BMP self-inspection and maintenance programs vary according to the amount of resources allocated to the tasks. When made a priority, inspections and maintenance ensure that BMPs function properly and help prevent pollution discharges. Education of on-site personnel is another important factor in an effective program. To recognize and preempt problems, those responsible for maintaining BMPs must be familiar with their design and installation. However, making everyone at the site aware of general erosion and sedimentation control principles can expedite identification of maintenance issues and repairs.

Below is a general Table of for Maintenance Activities. See specific BMP for more precise information as this Table is more general. Specific BMPs maintenance schedules and activities supersede this Table.

## Reference

Maine Department of Environmental Protection. 2004. Voluntary Contractor Certification Program. <http://www.state.me.us/dep/blwq/training/ip-vccp.htm>. Last updated August 2004. Accessed June 3, 2005.

USEPA, Office of Wastewater Management (OWM). April 09, 2007. "National Menu of Stormwater Best Management Practices". <http://www.epa.gov/npdes/stormwater/menuofbmps>

Table 1 Recommended Inspection Schedule

Type of Practice	Management Practice	Maintenance Activity	Schedule
<i>Detention/Retention Practices</i>	Ponds/wetlands	<ul style="list-style-type: none"> <li>Cleaning and removal of debris after major storm events; (&gt;2" rainfall)</li> <li>Harvesting vegetation when a 50% reduction in the original open water surface area occurs</li> <li>Repairing embankment and side slopes</li> <li>Repairing control structure</li> </ul>	<ul style="list-style-type: none"> <li>Annual or as needed</li> </ul>
		<ul style="list-style-type: none"> <li>Removing accumulated sediment from forebays or sediment storage areas when 60% of the original volume has been lost</li> </ul>	<ul style="list-style-type: none"> <li>5-year cycle</li> </ul>
		<ul style="list-style-type: none"> <li>Removing accumulated sediment from main cells of pond once 50% of the original volume has been lost</li> </ul>	<ul style="list-style-type: none"> <li>20-year cycle</li> </ul>
<i>Infiltration Facilities</i>	Infiltration Trench	<ul style="list-style-type: none"> <li>Cleaning and removing debris after major storm events; (&gt;2" rainfall)</li> <li>Mowing and maintaining upland vegetated areas</li> <li>Sediment cleanout</li> <li>Repairing or replacing stone aggregate</li> <li>Maintaining inlets and outlets</li> </ul>	<ul style="list-style-type: none"> <li>Annual or as needed</li> </ul>
		<ul style="list-style-type: none"> <li>Removing accumulated sediment from forebays or sediment storage areas when 50% of the original volume has been lost</li> </ul>	<ul style="list-style-type: none"> <li>4-year cycle</li> </ul>
	Infiltration Basin	<ul style="list-style-type: none"> <li>Cleaning and removing debris after major storm events; (&gt;2" rainfall)</li> <li>Mowing and maintaining upland vegetated areas</li> <li>Sediment cleanout</li> </ul>	<ul style="list-style-type: none"> <li>Annual or as needed</li> </ul>
		<ul style="list-style-type: none"> <li>Removing accumulated sediment from forebays or sediment storage areas when 50% of the original volume has been lost</li> </ul>	<ul style="list-style-type: none"> <li>3- to 5-year cycle</li> </ul>
<i>Filtration Practices</i>	Sand Filters	<ul style="list-style-type: none"> <li>Removing trash and debris from control openings</li> <li>Repairing leaks from the sedimentation chamber or deterioration of structural components</li> <li>Removing the top few inches of sand, and cultivation of the surface, when filter bed is clogged</li> </ul>	<ul style="list-style-type: none"> <li>Annual or as needed</li> </ul>
		<ul style="list-style-type: none"> <li>Cleaning out accumulated sediment from filter bed chamber once depth exceeds approximately 1/2", or when the filter layer will no longer draw down within 24 hours</li> <li>Cleaning out accumulated sediment from sedimentation chamber once depth exceeds 12 inches</li> </ul>	<ul style="list-style-type: none"> <li>3- to 5-year cycle</li> </ul>

Chattanooga–Hamilton County Area Water Quality Programs

<i>Filtration Practices</i>	Dry Swales, Grassed	<ul style="list-style-type: none"> <li>• Mowing and removing litter/debris</li> <li>• Stabilizing eroded side slopes and bottom</li> <li>• Managing nutrient and pesticide use</li> <li>• Dethatching swale bottom and removing thatching</li> <li>• Discing or aerating swale bottom</li> </ul>	<ul style="list-style-type: none"> <li>• Annual or as needed</li> </ul>
	Channels, Biofilters	<ul style="list-style-type: none"> <li>• Scraping swale bottom and removing sediment to restore original cross section and infiltration rate</li> <li>• Seeding or sodding to restore ground cover (use proper erosion and sediment control)</li> </ul>	<ul style="list-style-type: none"> <li>• 5-year cycle</li> </ul>
	Filter Strips	<ul style="list-style-type: none"> <li>• Mowing and removing litter/debris</li> <li>• Managing nutrient and pesticide use</li> <li>• Aerating soil on the filter strip</li> <li>• Repairing eroded or sparse grass areas</li> </ul>	<ul style="list-style-type: none"> <li>• Annual or as needed</li> </ul>
	Bioretention	<ul style="list-style-type: none"> <li>• Repairing erosion areas</li> <li>• Mulching of void areas</li> <li>• Removing and replacing all dead and diseased vegetation</li> <li>• Watering plant material</li> </ul>	<ul style="list-style-type: none"> <li>• Biannual or as needed</li> </ul>
		<ul style="list-style-type: none"> <li>• Removing mulch and applying a new layer</li> </ul>	<ul style="list-style-type: none"> <li>• Annual</li> </ul>