What's in This Chapter

Section 5.1 provides a brief overview of the potential stormwater hotspot stipulations from Minimum Measure #5 – Controlling Runoff from New Development and Redevelopment – and provides a definition for hotspots.

Section 5.2 provides guidance on common stormwater hotspot generating areas and appropriate best management practice (BMP) design considerations.

Section 5.3 provides a checklist reviewers and designers can use to detail how stormwater runoff from hotspot sites is being managed.

5.1. Stormwater Hotspot Regulatory Requirements

This section provides a brief overview of the Stormwater Hotspot regulatory requirements of Minimum Measure #5 ("Controlling Runoff from New Development and Redevelopment"). Readers are encouraged to consult the MS4 General Permit and associated fact sheet to obtain more detailed information and specific standards.

Stormwater Hotspot Regulatory Requirements

Part II, Section C.b.5.a.ii of the MS4 General Permit outlines the Stormwater Hotspot regulatory requirements of Minimum Measure #5. This section requires the MS4 or permittee to meet the following water quality requirements:

i. A project that is a potential hotspot with reasonable potential for pollutant loading(s) must provide water quality treatment for associated pollutants (e.g., petroleum hydrocarbons at a vehicle fueling facility) before infiltration.
ii. A project that is a potential hotspot with reasonable potential for pollutant loading(s) that cannot implement adequate preventative or water quality treatment measures to ensure compliance with groundwater and/or surface water quality standards, must properly convey stormwater to a National Pollutant Discharge Elimination System (NPDES)-permitted wastewater treatment facility or via a licensed waste hauler to a permitted treatment and disposal facility.

Stormwater Hotspots are defined as commercial, industrial, institutional, municipal, or transport related operations that produce higher levels of stormwater pollutants, and/or present a higher potential risk for spills, leaks or illicit discharges.

Section 5.2. Guidance for Hotspot Land Uses

Table 5.1 presents a list of potential land uses or operations that may be designated as a stormwater hotspot. **Figure 5.1** illustrates several types of stormwater hotspots. Pollution prevention profile sheets for stormwater hotspot operations are found in Novotney and Winer (2008). At each hotspot, the drainage area that contributes higher levels of stormwater pollutants (or hotspot generating areas) may only include a portion of the site (e.g., the vehicle fueling area) while other "clean" non-hotspot generating areas (such as rooftops or travelways that don't "mix" with hotspot generating area runoff) can be treated as a "non-hotspot" area. As such, these requirements only apply to the hotspot generating area on a site, and the non-hotspot generating areas can be diverted away to another runoff reduction practice.

Communities should carefully review development proposals to determine if current or proposed future operations on all or part of the site should be designated as a stormwater hotspot. As recommended in Table 5.1, Infiltration BMPs should be restricted at some potential hotspots and prohibited at others. This largely depends on the relative risk that current or future operations and site activities will lead to harmful spills, leaks, and/or the generation of polluted runoff. At some site, the risk may be relatively low (e.g., a convenience stores, fast food restaurants, car dealerships), and restricted Infiltration can apply. Sites with higher risks (e.g., vehicle maintenance facilities, public works yards) should avoid any type of Infiltration, including unlined practices with an underdrain or infiltration sump (CSN, 2011). The local program may choose to further refine the list in Table 5.1 and/or determine hotspot categories where restricted or prohibited Infiltration may apply.

The designer can best work with the MS4 General Permit requirements by clearly defining hotspot generating areas and selecting appropriate BMPs for the generating areas and non-hotspot generating areas. For instance, the hotspot generating area could be treated by a perimeter sand filter or proprietary oil/water separator device, while the non-hotspot generating areas may use Bioretention, Permeable Pavement, or Swales.

In addition, the site designer should work with the local program authority to balance the need to treat hotspot generating area runoff with an appropriate BMP with the overall site performance standard to achieve runoff volume reduction for 1-inch of rainfall. In many cases, hotspot generating area BMPs (such as sand filters) do not achieve runoff reduction benefits, so the local program must either "waive" the hotspot generating area from the 1-inch requirement (as long as an appropriate BMP is used), overcompensate for runoff reduction on other parts of the site, or use the off-site mitigation or payment-in-lieu options outlined in the general permit.

Finally, a multi-sector stormwater general permit may be required for industrial facilities to minimize the operation's impacts to stormwater (See **Chapter 2, Table 2.2**). Operators should confer with West Virginia Department of Environmental Protection (WVDEP) NPDES staff on the applicability of the multi-sector general permit or other industrial stormwater permits for a particular application.

http://www.dep.wv.gov/WWE/Programs/stormwater/multisector/Pages/home.aspx

Table 5.1: Potential Stormwater Hotspot and Site Design Responses (CSN, 2009)

Potential Stormwater Hotspot Operation	Stormwater Pollution Prevention Plan (SWPPP) Required?	Restricted Infiltration for Hotspot Generating Area[1]	Prohibited Infiltration for Hotspot Generating Area[1]
Facilities w/NPDES Industrial permits (multi-sector general permit)	Yes	+	+
Public works yard	Yes		•
Auto and metal recyclers/scrap yards	Yes		•
Petroleum storage facilities	Yes		•
Highway maintenance facilities	Yes		•
Wastewater, solid waste, composting facilities	Yes		•
Industrial machinery and equipment	Yes	•	
Truck and trailer areas or maintenance facilities	Yes	•	
Aircraft maintenance areas	Yes		•
Fleet storage areas	Yes		•
Parking lots (40 or more parking spaces)[2]	No	•	
Gas stations	No		•
Highways (2500 ADT)	No	•	

Potential Stormwater Hotspot Operation	Stormwater Pollution Prevention Plan (SWPPP) Required?	Restricted Infiltration for Hotspot Generating Area[1]	Prohibited Infiltration for Hotspot Generating Area[1]
Construction business (paving, heavy equipment storage and maintenance)	No	•	
Retail/wholesale vehicle/ equipment dealers	No	•	
Convenience stores/fast food restaurants	No	•	
Vehicle maintenance facilities	No		•
Car washes (unless discharged to sanitary sewer)	No		•
Nurseries and garden centers	No	•	
Golf courses	No	•	

Note: For a full list of potential stormwater hotspots, please consult Wright et al. (2005)

Key: + depends on facility • Yes
Shaded Area Facilities or operations not technically required to have NPDES permits, but can be designated as potential stormwater hotspots by the local review authority, as part of their local stormwater ordinance
[1] See below for descriptions of restricted and prohibited infiltration.
[2] The local program may want to distinguish "dirty" parking lots with a higher potential for the deposition of oil/grease, solids, grit, trash, and other pollutants from parking lots with lower potential to accumulate these pollutants.

Figure 5.1: Common Stormwater Hotspot Operations

Vehicle Maintenance Facilities

Restaurant Storage Containers

Nurseries and Garden Center

Gas Station

Public Works Yard

Dumpster Management

If a site is designated as a potential hotspot, a range of stormwater treatment and pollution prevention practices can be applied to prevent contamination of surface or groundwater. Depending on the severity of the hotspot, one or more of the following management strategies identified in Table 5.1 and defined below may be required by the local review authority.

1. Stormwater Pollution Prevention Plan (SWPPP). This plan is required as part of an industrial or municipal stormwater permit, and outlines pollution prevention and treatment practices that will be implemented to minimize polluted discharges from the site. Other facilities or operations are not technically required to have NPDES permits, but can be designated as potential stormwater hotspots by the local review authority, as part of its stormwater ordinance (these are shown in the shaded areas of Table 6.1). It is recommended that these facilities include an addendum to their stormwater plan that details the pollution prevention practices and employee training measures that will be used to reduce contact of pollutants with rainfall or snowmelt.
2. Restricted Infiltration. A minimum of 50% of the total Target Treatment Volume (Tv) must be treated by a Filtration practice, "closed" Bioretention (contains a liner on the bottom), or proprietary device designed for the pollutants of concern prior to any infiltration. For small hotspot generating areas where the primary concern is spill containment, the pre-treatment can consist of a lined containment area sized for a typical tanker truck (5,500 to 9,000 gallons), or the expected volume of spills at the site. Portions of the site that are not associated with the hotspot generating area should be diverted away and treated by an acceptable stormwater practice.
3. Infiltration Prohibition. If a site is classified as a potentially severe hotspot, the risk of groundwater contamination is so great that infiltration of stormwater is prohibited. In these cases, an alternative stormwater practice, such as perimeter sand filters or proprietary devices designed for the pollutants of concern at the facility must be used to treat runoff from the hotspot generating area.

It is important to note that the MS4 General Permit speaks to potential hotspot generating areas that intend to use Infiltration as a stormwater BMP. This would include any practice that has an underdrain with an infiltration sump (stone layer below the underdrain pipe). In many cases, the designer may opt to use a stormwater BMP that is not designed to infiltrate water into the ground and/or does not have an infiltration sump. This is an acceptable approach. The most important thing is to select a practice that addresses the pollutants of concern from the hotspot generating area. For instance, a vehicle maintenance area where the pollutants of concern are hydrocarbons and metals may select a sand filter or proprietary device designed to treat for these pollutants. See Chapter 3 (Tables 3.5 and 3.7) for further guidance on BMP selection. In these cases, the designer should confer with the local program authority on how to integrate these BMP choices with the 1" runoff reduction performance standard, as noted above.

Chapter 5. Stormwater Hotspots

5.3 Hotspot Plan Review Checklist

Reviewers and designers can use the Stormwater Hotspot Cover Sheet and Stormwater Hotspot Checklist to document how the stormwater runoff from the hotspot is being managed. These two documents should be completed by the operator as part of the site design plan submittal.

Stormwater Hotspot Cover Sheet

Project Name:_____

Applicant Name: _____

Date:_____

Please indicate the appropriate hotspot operations for your project (check all that apply). If none apply check N/A.

Stormwater Hotspot Operations:

___ Vehicle Maintenance and Repair
___ Vehicle/Truck/Aircraft Fueling
___ Vehicle/Truck/Machinery Washing
___ Vehicle/Fleet/Construction Equipment Storage Area
___ Petroleum Storage
___ Auto/Metal Scrap/Recyling
___ Solid Waste/Composting
___ Aircraft Maintenance
___ Grease Traps/Grease Storage
___ Loading and Unloading
___ Outdoor or Bulk Material Storage
___ Storage/Application of Fertilizers/Pesticides

___ Other: _____
___ N/A

Other Stormwater Permits/Plans Required For the Site:

___ Multi-Sector General Permit. Permit #:
___ Other Industrial Stormwater Permit. Permit #:
___ Storm Water Pollution Prevention Plan (SWPPP) Completed. Submit with site plan.

If "N/A" is checked, please include this sheet only with plan submittal.

If a multi-sector general permit, other industrial stormwater permit, or SWPPP is not required for the site, please complete and submit the attached Stormwater Hotspot Checklist with the site plan.

___ Stormwater Hotspot Checklist attached

Stormwater Hotspot Checklist

Instructions: Complete the following site information:

	Requirement	Description
Site Description	List the type of facility and facility address	
Site Operations	Describe the operations to be conducted on-site.	
Receiving Waters	Name(s) of the receiving water(s). If drains to a municipal storm sewer system, include ultimate receiving waters.	
Site Materials	Significant materials to be stored on site (specify indoor or outdoor storage)	
Stormwater Management Practices	List the stormwater management practices being used to treat runoff from the site. Where appropriate, include description of design modifications appropriate for treatment of hotspot runoff	
Spill Prevention and Response	Describe methods to prevent spills along with clean-up and notification procedures.	
Employee Education Program	Description of employee orientation and education program.	

Instructions: Fill in the appropriate page number(s) from the site plans where the following site elements are clearly indicated.

Site elements	Site Plan Sheet Number(s)	Check if N/A	Approved (for official use only)
Material loading and access areas			
Material storage and handling areas			
Cleaning and maintenance areas			
Vehicle or machinery storage areas			
Vehicle or machinery maintenance/service areas			
Treatment or disposal areas for significant materials			
Hazardous waste storage areas			
Areas of outdoor manufacturing			
Stormwater management calculations			
Drainage area outline for each storm water inlet or structure			
Stormwater management practices			
Stormwater management maintenance inspection agreements			
Spill Prevention and Response Kits			
Facility inspection agreements for inspections of areas where potential spills of significant materials or industrial activities can impact stormwater			

For official use only:		
Date of Submission: _____ Date Received: _____	Reviewed by: _____ Reviewed on: _____	Plan Accepted: Y / N

REFERENCES

Wright, T., C. Swann, K. Cappiella, T. Schueler. 2005. Unified Subwatershed and Site Reconnaissance: A User's Manual-Version 2.0. Manual 11 in the Urban Subwatershed Restoration Manual Series. Center for Watershed Protection. Ellicott City, MD.

Chesapeake Stormwater Network (CSN). 2011. Stormwater Design for High Intensity Redevelopment Projects in the Chesapeake Bay Watershed. Version 3.0. CSN Technical Bulletin No. 5. Catonsville, MD

Chesapeake Stormwater Network (CSN). 2009. Stormwater Design Guidelines for Karst Terrain in the Chesapeake Bay Watershed. Version 2.0. CSN Technical Bulletin No. 1. Catonsville, MD.

Novotney, M. and R. Winer. 2008. Municipal Pollution Prevention/Good Housekeeping Practices – Version 1.0. Manual 9 in the Urban Subwatershed restoration Manual Series. Center for Watershed Protection, Inc., Ellicott City, MD.