



PDHonline Course C314 (6 PDH)

Stormwater – Preparing an Effective Industrial Stormwater Pollution Prevention Plan

Instructor: Jeffrey R. Sotek, PE, CSP, CIH

2020

PDH Online | PDH Center

5272 Meadow Estates Drive
Fairfax, VA 22030-6658
Phone: 703-988-0088
www.PDHonline.com

An Approved Continuing Education Provider

Stormwater Best Management Practices: Where the Rubber Hits the Road in Stormwater Pollution Prevention

Presented by:

Jeffrey R. Sotek, PE, CSP, CIH



Overview – Topics Covered

- Brief Overview of Stormwater Permitting Requirements
- Industrial Activities that Lead to Stormwater Pollution
- Structural and Non-Structural Best Management Practices and Examples
- Avoiding Compliance Pitfalls
- Live Question and Answer Session



Stormwater Permitting – Does it apply to me?

- Facility needs to meet two requirements:
 - Discharge to the “Waters of the United States” via a point source
 - Fall into eleven categories



Waters of the United States

➤ **Definition:**

All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide

Examples

- All interstate waters
- Rivers
- Streams
- Mudflats
- Sandflats
- Wetlands
- Sloughs
- Prairie potholes
- Wet Meadows
- Playa lakes
- Natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce

Waters of the United States



<http://images.google.com/imgres?imgurl=http://www.warrensburgbb.com/images/>

Point Source

Definition:

Any “discernible, confined, and discrete conveyance” of pollutants to a water body.

Includes, but is not limited to, “any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.”

Examples



Applicable Categories/SIC Codes - Examples

Cat (i) – Facilities with Effluent Limits	SIC Code Group 10 – Metal Mining
Cat (ii) - Manufacturing	SIC Code Group 24 – Timber Products
Cat (iii) - TSDFs	SIC Code Group 28 – Chemical & Allied Products
Cat (vii) – Steam Electric Plants	SIC Code Group 33 – Primary Metals
Cat viii – Treatment Works	SIC Code Group 51 – Petroleum Bulk Stations & Terminals

Applicable Categories/SIC Codes

➤ Light Industrial Activity

- Based on facility activities
- Industrial materials and operations must be exposed to storm water
 - Outside storage
 - Loading/unloading
 - Vehicle washing

Stormwater Permitting Requirements

- General Permit for Stormwater Discharges Associated with Industrial Activities
 - Permit required before an industrial facility discharges stormwater
 - At federal level referred to as Multi-Sector General Permit (MSGP)
- General Permit for Stormwater Discharges Associated with Construction Activities
 - Permit required for projects disturbing one acre or more of land

Note: This presently covers Industrial Activity. Some states also have Commercial Permits.

Stormwater Permit – General Permit

➤ Notice of Intent (NOI)

- Request for coverage under the Permit - submitted to the Agency
- Check with authorized agency/permit to determine when NOI is due
- Contains basic facility information


➤ Stormwater Pollution Prevention Plan (SWP3)

- Plan developed to reduce stormwater pollution
- Check with authorized agency/permit to determine when development and implementation of SWP3 are due

SWP3 – Main Components

- Pollution Prevention Team
- Site Description
- Summary of Potential Pollutant Sources
- Spills & Leaks
- Stormwater Controls
- BMPs
- Non-Stormwater Discharges
- Documentation of Permit Eligibility Related to Endangered Species
- Documentation of Permit Eligibility Related to Historic Places

SWP3 – Main Components, cont.

- Sampling Data
 - Routine Inspections
 - Comprehensive Site Compliance Evaluation
 - Signature and Plan Review
 - Responsibility to Maintain a Current SWP3
 - Special Stormwater Pollution Prevention Plan Requirements
 - Monitoring, Reporting and Retention of Records
 - Copy of Permit Requirements
- 

Summary of Potential Pollution Sources

- Identifies & describes each separate area at facility where industrial materials/activities are exposed to stormwater
- Description must include:
 - Activities in area
 - Pollutants
 - Potential presence in stormwater



Activities that Lead to Stormwater Pollution

- Outside storage of chemicals, raw and intermediate materials, and finished product
- Vehicle washing
- Improper loading / unloading
- Dust or particulate generating processes
- Past Spills
- Operation of pollution control equipment (e.g., baghouses)
- Waste storage and generation
- Dumpsters not being covered

Summary of Potential Pollution Sources



Drums



Spills



Vehicle Fueling



Sloppy Housekeeping



Air Emissions




Erosion

Pollutants of concern

Timber Products	Wood preserving	As, Cu, Cr, phenol, TSS,
Mineral Mining	Sand and gravel	Nitrate plus Nitrite, TSS
Fabricated Metal Products		Al, Fe, Zn, TSS, Nitrate plus Nitrite
Scrap Recycling		COD, Al, Fe, Cu, Zn, PB, TSS
Chemical and Allied Product Mfg	Soaps, Deodorants, Perfumes	TSS, Zn, Nitrate plus Nitrite


Pollutants of concern

➤ Other Pollutants:

- Oil and Grease
 - Antifreeze
 - pH
 - Pesticides / Herbicides
 - Antifreeze
 - Salts
 - Other
- 

Stormwater Controls – Best Management Practices (BMPs)

Selection of BMPs should take into consideration:

- 1) Quantity & nature of pollutants; potential to impact water quality
 - 2) Opportunities to combine water quality protection and local flood control benefits
 - 3) Opportunities to offset the impact of impervious areas on ground water recharge and base flows in local streams
- 

BMPs – Non Structural

- Good Housekeeping
- Minimizing Exposure
- Preventive Maintenance
- Spill Prevention and Response Procedures
- Routine Facility Inspections
- Employee Training



BMPs – Non Structural

- Good Housekeeping
 - Routine sweeping and vacuuming
 - Prompt cleanup of spills
 - Orderly and appropriate storage
 - Regular pickup of garbage and waste materials

BMPs – Non Structural

➤ Preventative Maintenance

- Identification of equipment or systems requiring PM (e.g., pumps, pipes, storage tanks, material handling equipment)
- Develop and implement schedule for routine and comprehensive inspections
- Periodic testing of plant equipment
- Prompt repair and replacement

BMPs – Non Structural

- Spill Prevention and Response Procedures
 - Planning (maps, identification of higher risk areas)
 - Types and locations of spill containment equipment (e.g., booms, dikes)
 - Development of response procedures
 - Coordinate with other plans (e.g., SPCC)

BMPs –Non Struct



➤ Two Types

1) Routine Inspections

- Frequency depends on state; quarterly, monthly, etc.
- Trained personnel inspect all areas where industrial materials/activities are exposed to stormwater
- Evaluate existing stormwater BMPs
- Correct any deficiencies in the SWP3 and implement changes according to time frame specified in permit


BMPs – Non Structural

➤ Routine Facility Inspections

- Documented on log
- Identify areas to be reviewed (e.g., loading / unloading, storage areas, fueling, material transfer, process vents)
- Identify frequency
- Assign personnel

BMPs – Non Structural

2) Comprehensive Site Compliance Evaluation (CSCE)

- Frequency dependant on state (annual, semi-annual)
 - Needs to completed during certain time of year
 - Should be completed during/after precipitation event
 - Includes all areas where industrial activities/materials are exposed to stormwater & areas of historical (3 yrs) spills/leaks
- 
- The bottom right portion of the slide features a decorative graphic of several concentric, light blue circles that resemble ripples on water, set against the solid blue background.

BMPs – Non Structural

2) Comprehensive Site Compliance Evaluation (CSCE)

- Inspectors look for:
 - Exposed industrial materials, residue, trash
 - Leaks or spills from equipment, drums, barrels, etc.
 - Unauthorized non-stormwater discharges
 - Off-site tracking of industrial materials or sediment by vehicles
 - Tracking or blowing of raw, final or waste materials to exposed areas
 - Evidence of, or the potential for, pollutants entering drainage system

BMPs – Non Structural

- CSCE Follow-up
 - Modify SWP3 as necessary based on CSCE findings
 - Time frame for revision and implementation dependent upon state

BMPs – Non Structural

➤ Employee Training

- Relay goals and objectives within SWP3
- Ensure responsibilities and understood
- Utilize experience of past spills and inspections
- Clearly define BMPs to be undertaken
- Develop operating procedures
- State spill response procedures

BMPs - Structural

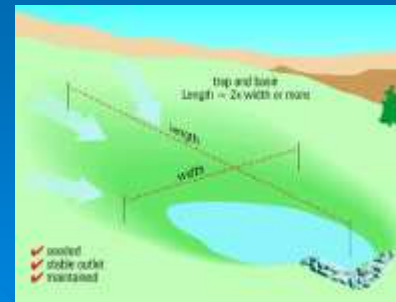
- Sediment and Erosion Control
- Management of Runoff



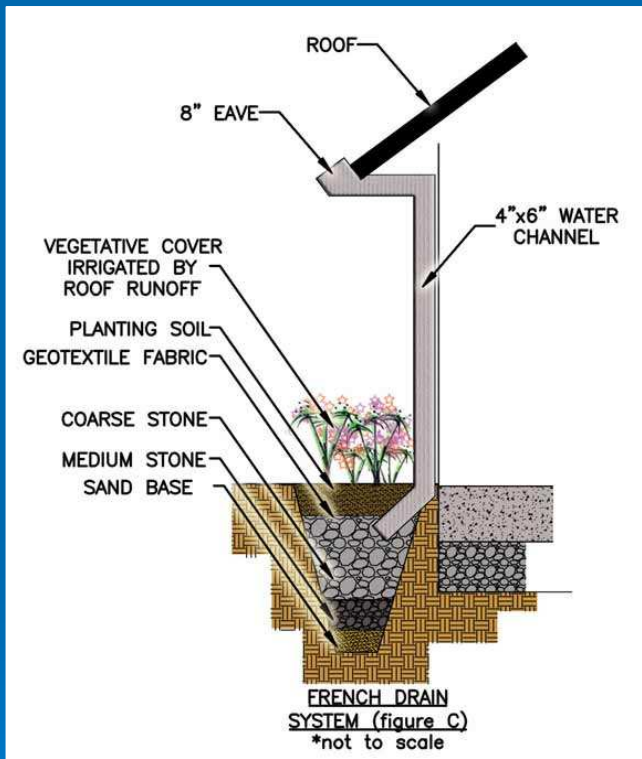
BMPs - Structural

➤ Sediment and Erosion Control

- Stabilization (e.g., seeding)
- Diversion Ditches and Berms
- Silt Fencing
- Sedimentation Basins

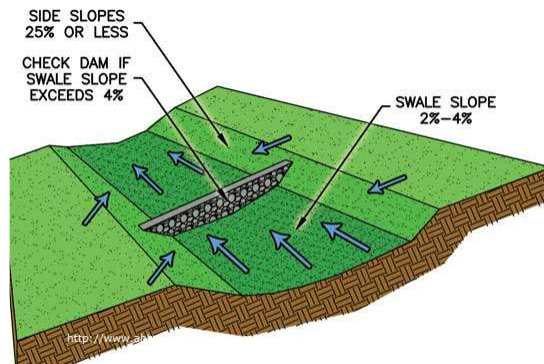


BMPs - Structural



<http://images.google.com/imgres?imgurl=http://www.abbey-associates.com/>

Infiltration Ditch



Stormwater Swale

Natural Vegetated Swale



Stormwater Retention Pond



BMPs - Structural

- Runoff Management
 - Roofs
 - Secondary Containment
 - Storage and Dumpster Covers
 - Interior Storage



Example BMPs

Fueling	Divert stormwater away, secondary containment, roofs, oil / water separators, spill response equipment, overfill alarms
Loading / Unloading Materials	Secondary containment, dock levelers, roofs, drip pans, periodic inspections, overfill alarms, level gauges, spill response equipment and training

Example BMPs

Industrial Waste
and
Manufacturing
Areas

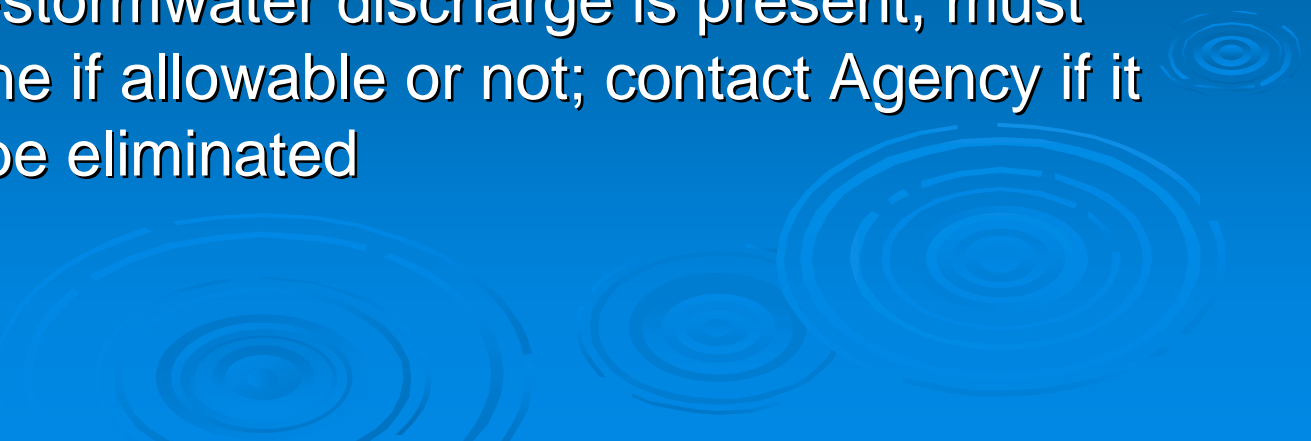
Interior storage, covers and roofs, vacuum transfer systems, PM program, prompt spill cleanup and equipment repair, regular sweeping and material removal, periodic inspections, erosion controls and site selection for land applications, detention ponds, vegetative stabilization

Sampling



- Varies from state to state
- MSGP requires quarterly visual monitoring
 - Generally required on quarterly basis at all facilities covered by permit
 - Samples collected during stormwater events at outfalls and visually examined for odor, color, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, etc.

Non-Stormwater Discharge Certification

- Usually one time certification within SWP3
 - Annual Dry Weather Flow Monitoring (required in some states)
 - Perform and document at least one dry weather flow inspection each year after 3 consecutive days of no precipitation
 - If a non-stormwater discharge is present, must determine if allowable or not; contact Agency if it cannot be eliminated
- 

Employee Training



➤ Must Be Provided to:

- Employees who work in areas where industrial materials/activities are exposed to stormwater
- Employees who are responsible for implementing activities identified in the SWP3 (e.g. inspectors, sampling personnel, maintenance people)

➤ Includes:

- Components and Goals of the SWP3
- Spill Response Procedures
- Good Housekeeping Practices
- Material Management Practices

Exemptions

- Conditional Exclusion for No Exposure
 - Industrial activities and materials are completely sheltered from exposure to rain, snow, snowmelt and/or runoff
 - Qualifying facilities are not required to obtain a general permit
 - Available on facility-wide basis only, **not** applicable to individual outfalls

Exemptions, cont.

- Alternative Certification (available in some states)
 - Annual certification for a given outfall that material handling equipment or activities that are located in areas of the facility within the drainage area of the outfall are not/will not be exposed to stormwater

Common Pitfalls



- **Commercial vehicle washing and detailing** discharges to the storm drainage system
- **Surface cleaning** (pressure washing, steam cleaning, de-greasing, etc.) discharges to the storm drainage system
- Discharges associated with **equipment cleaning**
- Discharges associated with **wet sanding** of auto body fillers
- **Sediment track-out problems** from dirty or unpaved facilities onto public streets
- Outdoor storage of uncovered items such as **oily vehicle parts**
- **Poor waste and/or materials management** resulting in outdoor exposure of pollutants to stormwater contact
- **Poor spill response and leak and spill management** that results in the accumulation of unattended outdoor spills and leaks
- **Inadequate Preventative Maintenance program**

What's New?



➤ State Permits

- Many will expire within the next few years
- Reissued permits will more closely follow the EPA 2006 MSGP
- Will most likely be more sector-specific requirement, shorter time-frames for amending and implementing SWP3 and practices at facility
- Will see more stringent requirement for secondary containment discharges to the stormwater system
- Will include additional requirements if discharging to an MS4

What's New?



➤ **Federal– Proposed 2006 Multi-Sector General Permit (MSGP)**

- Increased site description requirements
- Additional requirement if discharging to an MS4
- Shortened time frames for BMP modifications, notification of inability to provide certification for elimination of unauthorized discharges
- Added requirements for documentation of training and traceable historical record of BMP installation, maintenance, monitoring results, etc.
- Changed initiation of quarterly benchmark monitoring from 2nd year of permit coverage to 1st year of permit coverage
- Increased monitoring for facilities discharging to impaired receiving waters

Questions????



Thank You

Jeffrey R. Sotek, PE, CSP, CIH

