

# ***NPDES Phase II Municipal Stormwater Permit Requirements***

## **NPDES Permit Appendix 1 – Development Core Elements 1, 2, 3, & 4**

WASHINGTON STATE DEPARTMENT  
OF ECOLOGY

EASTERN WASHINGTON NPDES  
PHASE II STORMWATER  
WORKSHOP

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## Chapter 2 – Core Elements for New Development and Redevelopment

### The Core Elements are:

Core Element 1 – Preparation of a Stormwater Site Plan

Core Element 2 – Construction Stormwater Pollution Prevention

Core Element 3 – Source Control of Pollution

Core Element 4 – Preservation of Natural Drainage Systems

Core Element 5 – Runoff Treatment

Core Element 6 - Flow Control

Core Element 7 – Operations and Maintenance

Core Element 8 – Local Requirements

# Core Element Applicability

## NEW DEVELOPMENT

New Development is the conversion of previously undeveloped or pervious surfaces to impervious surfaces and managed landscape areas.

### All new development projects must comply with:

- Core Element 1 – Preparation of a Stormwater Site Plan
- Core Element 2 – Construction Stormwater Pollution Prev.
- Core Element 3 – Source Control of Pollution
- Core Element 4 – Preservation of Natural Drainage System
- Core Element 8 – Local Requirements

# Core Element Applicability

## **REDEVELOPMENT Sec. 2.1.2**

Redevelopment is the replacement or improvement of impervious surfaces on a developed site.

### **Where replacement of 5,000 s.f. or more of PGIS occurs:**

Core Element 1 – Preparation of a Stormwater Site Plan

Core Element 2 – Construction Stormwater Pollution Prev.

Core Element 3 – Source Control of Pollution

Core Element 4 – Preservation of Natural Drainage System

Core Element 8 – Local Requirements

Note: Core Element 2 and 3 apply to the entire site that is affected by the project activities.

# Core Element 1 (Chap. 3 SMMEW) Preparation of Stormwater Site Plan

Stormwater management is most successful when integrated into project planning and design. Projects are expected to demonstrate compliance with the applicable Core Elements through preparation of a Stormwater Site Plan.

All projects, including projects proposing UIC facilities, that are subject to Core Elements 2, 3, 4, 5, 6, or 8 are expected to complete a Stormwater Site Plan (SSP).

SSP's will be reviewed by the local jurisdictions as part of the project approval and permitting process.

# Stormwater Site Plans (SSP's) cont.



The stormwater site plan is the comprehensive report containing all of the technical information and analysis necessary for regulatory agencies to evaluate a proposed new development or redevelopment project for compliance with stormwater requirements.

Content of SSP will vary with size/type of project, site characteristics, applicability of core elements, etc.

# Stormwater Site Plans (SSP's) cont.

## 4 Steps to Developing a Stormwater Site Plan

### **Step 1 – Collect and Analyze Information**

Physical Info. - Topography, Soils, Groundcover, etc.

Off-site Info. – Up Gradient Basins, Downstream Analysis

Critical Areas – Streams, Wetlands, Floodplains,  
Geological Hazard Areas

# Stormwater Site Plans (SSP's) cont.

## *Step 2 – Determine Applicable Core Elements*

Review the thresholds in Chapter 2 and determine what core elements apply.

Meet with the local jurisdiction and verify requirements before starting design.

# Stormwater Site Plans (SSP's) cont.

## *Step 3 – Prepare a Permanent Stormwater Control Plan*

### Components of the Stormwater Control Plan:

#### **Report:**

Includes the Narrative with summary and background information, geotechnical reports, supporting calculations, basin maps (pre and post developed), soils map, vicinity map.

# Stormwater Site Plans (SSP's) cont.

## **Plans:**

Residential/Road Project would include plan and profile sheets. Commercial Project would include site plan with grading information. Either type of project would include cross sections, construction details, storm drainage facility details, and notes.

***Step 4 – Prepare a Construction Stormwater Pollution Prevention Plan***

# Core Element 2 (Chap. 7 SMMEW) Construction Stormwater Pollution Prevention Plan (SWPPP)

Construction Stormwater Pollution Prevention Plans (SWPPP's) are implemented to protect downstream properties and on-site facilities from adverse stormwater impacts due to construction activity.

Controlling erosion and preventing sediment and other pollutants from leaving the project site during the construction phase is achievable through implementation of selected Best Management Practices (BMP's) that are appropriate both to the site and to the season during which construction activities take place.

# SWPPP's continued

## 12 ELEMENTS OF CONSTRUCTION STORMWATER POLLUTION PREVENTION

1. Mark Clearing Limits
2. Establish Construction Access
3. Control Flow Rates
4. Install Sediment Controls
5. Stabilize Soils
6. Protect Slopes
7. Protect Drain Inlets
8. Stabilize Channels & Outlets
9. Control Pollutants
10. Control De-Watering
11. Maintain BMP's
12. Manage the Project



# SWPPP's continued

## Element #1 Mark Clearing Limits

Clearly delineate the limits of the clearing on the SWPPP.

Show any critical areas and their buffers. Should erect orange construction fencing, or equivalent, to protect areas from construction traffic.

## Element #2 Establish Construction Access

Whenever possible limit construction traffic to one access point and route.

Stabilize the construction entrance with quarry spalls or crushed rock.



# SWPPP's continued

## **Element #3 Control Flow Rates**

Properties and waterways downstream shall be protected from erosion due to increased stormwater volume, velocity, and peak flow.

If permanent facilities are used to capture sediment, they must be protected from siltation.

## **Element #4 Install Sediment Controls**

Construct and install selected BMP's (i.e. straw bales, silt fence, sediment traps, etc.)

# SWPPP's continued

## Element #5 Stabilize Soils

Exposed or unworked soils shall be temporarily or permanently stabilized as soon as practicable.



Soil stockpiles shall be protected from erosion.

## Element #6 Protect Slopes

Design and construct slopes to minimize erosion. Consider soil type and its potential for erosion. Reduce the length of the flow path by terracing and diversion. Roughen the slope of larger cuts and fills.

# SWPPP's continued

## Element #7 Protect Drain Inlets

Install storm drain inlet protection on every structure when it is initially installed.

Whenever possible elevate the inlet to create a sediment trap.



## Element #8 Stabilize Channels and Outlets

Temporary on-site conveyance channels shall be designed and stabilized to prevent erosion from the peak flow rate of the 6 month, 3 hour storm (short duration storm) for the developed condition.

# SWPPP's continued

## **Element #9 Control Pollutants**

All pollutants, including waste materials and demolition debris, that occur on-site during construction shall be handled and disposed of in a manner that does not cause contamination of stormwater.

Cover, contain, and protect any hazardous materials on-site.

Specify on the plans, and erect a sign on-site, designating a place for concrete trucks to wash out.

## **Element #10 Control De-Watering**

Handle water from de-watering operations separately from ESC BMP's to control turbidity and contamination.

# SWPPP's continued

## Element #11 Maintain BMPs

Temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function.

Sediment control BMPs shall be inspected by project personnel every day when there is a discharge from the site, and at least weekly when there is no discharge. The inspection frequency for **stabilized**, inactive sites may be reduced to once every month.

Temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed.

# SWPPP's continued

## Element #12 Manage the Project

Phase construction whenever possible.

Check with the local jurisdiction for any seasonal work limitations.

Coordinate with utilities and other contractors to make sure the SWPPP encompasses their work.

All BMPs must be inspected, maintained, and repaired as needed to insure continued performance of their intended function.

A qualified professional in ESC shall be identified in the construction SWPPP and shall be on-site or on-call.

# SWPPP's continued

SWMMEW pg. 7-31 List of BMPs

Source Control  
Runoff Conveyance and Treatment

Each BMP has four sections:

Purpose

Conditions of Use

Design and Installation Specifications

Maintenance Standards

# List of BMPs (SWMMEW Sec 7.3.1)

## Source Control BMPs

BMP C101: Preserving Natural Vegetation Purpose.....	7-32
BMP C102: Buffer Zones .....	7-34
BMP C103: High Visibility Plastic or Metal Fence .....	7-35
BMP C104: Stake and Wire Fence .....	7-36
BMP C105: Stabilized Construction Entrance .....	7-37
BMP C106: Wheel Wash.....	7-39
BMP C107: Construction Road/Parking Area Stabilization.....	7-41
BMP C120: Temporary and Permanent Seeding.....	7-43
BMP C121: Mulching.....	7-56
BMP C122: Nets and Blankets .....	7-57
BMP C123: Plastic Covering.....	7-61
BMP C124: Sodding.....	7-63
BMP C125: Topsoiling.....	7-64
BMP C126: Polyacrylamide for Soil Erosion Protection .....	7-67
BMP C130: Surface Roughening.....	7-72
BMP C131: Gradient Terraces.....	7-75
BMP C140: Dust Control.....	7-77
BMP C150: Materials On Hand.....	7-79
BMP C151: Concrete Handling .....	7-80
BMP C152: Sawcutting and Surfacing Pollution Prevention .....	7-81
BMP C160: Contractor Erosion and Spill Control Lead .....	7-82
BMP C161: Payment of Erosion Control Work .....	7-84
BMP C162: Scheduling .....	7-86
BMP C180: Small Project Construction Stormwater Pollution Prevention .....	7-87



**List of BMPs (Continued)**  
**Sec. 7.3.1 SWMMEW**  
**Runoff Conveyance and Treatment BMPs**

BMP C200: Interceptor Dike and Swale .....7-89

BMP C201: Grass-Lined Channels.....7-91

BMP C202: Channel Lining .....7-95

BMP C203: Water Bars .....7-97

BMP C204: Pipe Slope Drains .....7-99

BMP C205: Subsurface Drains.....7-102

BMP C206: Level Spreader.....7-104

BMP C207: Check Dams.....7-106

BMP C208: Triangular Silt Dike (Geotextile-Encased Check Dam) .....7-109

BMP C209: Outlet Protection.....7-111

BMP C220: Storm Drain Inlet Protection.....7-113

BMP C230: Straw Bale Barrier .....7-120

BMP C231: Brush Barrier .....7-123

BMP C232: Gravel Filter Berm.....7-124

BMP C233: Silt Fence .....7-125

BMP C234: Vegetated Strip .....7-131

BMP C235: Straw Wattles.....7-132

BMP C240: Sediment Trap.....7-135

BMP C241: Temporary Sediment Pond .....7-138



# SWPPP's continued

pg 7-25 Construction Stormwater Pollution Prevention Plan Checklists – one for narrative and one for plans.

Appendix 7B – Recommended Standard Notes for Erosion/Sedimentation Control (ESC) Plans

Erosivity Waiver – Seven Criteria Shown in Permit Appendix



# Core Element 3 (Chap. 8 SMMEW) Source Control

The intent of Source Control BMPs is to prevent pollutants from coming into contact with stormwater. Source control BMPs are a cost effective means of reducing pollutant loading and concentrations in stormwater and should be a first consideration in all projects.

Projects required to meet this core element shall apply all known, available and reasonable source control BMPs.

# Source Control continued

## Content and Organization Source Control Chapter

- Section 8.1 Introduction and defines operational and structural source control BMPs.
- Section 8.2 Identifies stormwater pollutants and their adverse impacts.
- Section 8.3 Presents operational BMPs that are applicable to commercial and industrial establishments.
- Section 8.4 Presents structural BMPs that are applicable to commercial and industrial establishments.
- Appendix 8A Identifies pollutant generating sources at various land uses.
- Appendix 8B Presents BMPs for managing street waste.

# Source Control continued

## Definitions:

Operational Source Control BMPs – non structural practices that prevent or reduce pollutants from entering stormwater.

Structural Source Control BMPs – physical, structural, or mechanical devices or facilities that are intended to prevent pollutants from entering stormwater.

Applicable BMPs – required at new development or redevelopment sites.

Recommended BMPs – not expected to be mandatory, but are offered as approaches that go beyond or complement the minimum applicable BMPs.

# Source Control continued

## Operational BMPs

Preventive Maintenance  
Spill Prevention and Cleanup  
Employee Training  
Inspections  
Record Keeping

# Source Control continued

**Know the list of Pollutant Source Specific BMPs from Section 8.3.2 in the Table of Contents.**

Common BMP Categories Include:

Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots

Fueling at Dedicated Stations

Illicit Connections to Storm Drains

Landscaping and Lawn/Vegetation Management

Maintenance and Repair of Vehicles and Equipment

Maintenance of Public and Private Utility Corridors and Facilities

Maintenance of Roadside Ditches

Maintenance of Stormwater Drainage and Treatment Systems

Parking and Storage of Vehicles and Equipment

Urban Streets

# Source Control continued

## **Appendix 8A – Urban Land Uses and Pollutant Generating Sources**

Broken up into Manufacturing, Transportation & Communication, Retail & Wholesale Business, Service Business, and Public Agency Activities.

Businesses are also listed by 1987 Standard Industrial Classification (SIC).

## **Appendix 8B – Best Management Practices for Managing Street Waste**

# Core Element 4 (Sec 2.2.4 SWMMEW)

## Preservation of Natural Drainage Systems

Natural drainage patterns should be maintained and discharges from the project site should occur at the natural location to the maximum extent practicable.

Stormwater should be discharged in the same manner, at the same location, and at the same flow rate and volume as under the conditions that existed prior to development. Because some change is unavoidable, the preferred options for discharge of excess stormwater are, in order of preference to maintain the natural drainage systems:

# Preservation of Natural Drainage Continued

1. Maintain dispersed sheet flow to match natural conditions.
  1. Infiltrate on-site.
  2. Infiltrate off-site.
  3. Discharge to existing ditch networks, canals, or other dispersal methods that allow for potential groundwater recharge.
  4. Discharge to wetlands, if allowed.
  5. Discharge to existing private or municipally-owned stormwater systems, if allowed.
  6. Evaporate on-site or off-site.
  7. Create a new outfall for discharges to surface waters.



QUESTIONS?



Spokane County