



# Construction / Full Stormwater Pollution Prevention Plan (SWPPP) Submittal Checklist and Instructions for Projects Vested on or After January 22, 2016

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PROJECT FILE NUMBER: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

TAX PARCEL: \_\_\_\_\_

Snohomish County Code 30.63A.445 and SCC 30.63A.450 set forth the conditions under which a stormwater pollution prevention plan (SWPPP) must be prepared for a project. Volume II, Chapter 3 of the Snohomish County Drainage Manual (Drainage Manual) describes how to prepare a full SWPPP. Design standards and specifications for full SWPPP Best Management Practices (BMPs) are found in Volume II, Chapter 4 of the Drainage Manual. The following information from the Drainage Manual is provided to assist you in developing a complete SWPPP.

## What is a Stormwater Pollution Prevention Plan (SWPPP)?

The SWPPP is a document that describes the potential for stormwater pollution problems on a construction project. The SWPPP explains and illustrates the measures to be taken on the construction site to control those problems. Snohomish County must review these SWPPPs. For certain small projects, Snohomish County may allow a simpler SWPPP; these requirements are set forth in SCC 30.63A.810.

The SWPPP can be a distinct part of the overall plans and specifications for a project, or it can be a separate document. The SWPPP must be located on the construction site or within reasonable access to the site for construction and inspection personnel, although a copy of the drawings must be kept on the construction site at all times. As site work progresses, the plan must be modified to reflect changing site conditions, subject to the rules for plan modification by Snohomish County.

## What is an Adequate Plan?

SCC 30.63A.445, SCC 30.63A.450 and Drainage Manual Volume II, Chap. 3 contain requirements for development and implementation of SWPPPs. (NOTE: SWPPP requirements for certain small projects are set forth in SCC 30.63A.810 and Drainage Manual Volume I, Appendix 1-F). An adequate SWPPP includes a narrative and drawings. The narrative is a written statement to explain and justify the pollution prevention decisions made for a particular project. The narrative contains concise information about existing site conditions, construction schedules, and other pertinent items that are not contained on the drawings. The drawings and notes describe where and when the various BMPs should be installed, the performance the BMPs are expected to achieve, and actions to be taken if the performance goals are not achieved.

On construction sites that discharge to surface water, the primary concern in the preparation of the SWPPP is compliance with Washington State Water Quality Standards. Each of the 13 elements must be included in the SWPPP unless an element is determined not to be applicable

to the project and the exemption is justified in the narrative. The step-by-step procedure outlined in the Drainage Manual is recommended for the development of a full SWPPP.

On construction sites that infiltrate all stormwater runoff, the primary concern in the preparation of the SWPPP is the protection of the infiltration facilities from fine sediments during the construction phase and protection of ground water from other pollutants. Several of the other elements are very important at these sites as well, such as marking the clearing limits, establishing the construction access, and managing the project.

### **BMP Standards and Specifications**

Volume II, Chapter 4 of the Drainage Manual contains standards and specifications for SWPPP BMPs. Wherever any of these BMPs are to be employed on a site, the specific title and number of the BMP should be clearly referenced in the narrative and marked on the drawings.

### **General Principles**

The following general principles should be applied to the development of the SWPPP.

- The duff layer, native topsoil, and natural vegetation should be retained in an undisturbed state to minimize compaction to the maximum extent practicable in an effort to maintain LID feasibility.
- Prevent pollutant release. Select source control BMPs as a first line of defense. Prevent erosion rather than treat turbid runoff.
- Select BMPs depending on site characteristics (topography, drainage, soil type, ground cover, and critical areas) and the construction plan.
- Divert runoff away from exposed areas wherever possible.
- Limit the extent of clearing operations and phase construction operations.
- Before reseeding a disturbed soil area, amend all soils with compost wherever topsoil has been removed.
- Incorporate natural drainage features whenever possible, using adequate buffers and protecting areas where flow enters the drainage system.
- Minimize slope length and steepness.
- Reduce runoff velocities to prevent channel erosion.
- Prevent the tracking of sediment off-site.
- Select appropriate BMPs for the control of pollutants other than sediment.

### **Step-By-Step Procedure**

There are three basic steps in producing a SWPPP:

Step 1 - Data Collection

Step 2 - Data Analysis

Step 3 - SWPPP Development and Implementation

Steps 1 and 2 described below are intended for all projects that require a SWPPP except those small projects to which SCC 30.63A.810 applies and a small project SWPPP is permitted.

#### **Step 1 - Data Collection**

Evaluate existing site conditions and gather information that will help develop the most effective SWPPP. This information should be explained in the narrative and shown on the SWPPP.

**Topography:** Prepare a boundary and topographic survey of the site to show the existing contour elevations at intervals of 1 to 5 feet depending upon the slope of the terrain.

**Drainage:** - Locate and clearly mark existing drainage swales and patterns on the drawing, including existing storm drain pipe systems.

**Soils:** If a Stormwater Site Plan is required for the project, soil analyses shall be conducted in accordance with Drainage Manual Volume II. If only Minimum Requirement 2 (SWPPP) applies to the project, the following procedure is adequate.

Soils must be characterized for permeability, percent organic matter, and effective depth by a qualified soil professional or engineer. These qualities should be expressed in averaged or nominal terms for the subject site or project. This information is frequently available in published literature. For example, the 1983 Soil Survey of Snohomish County lists the following information for each soil mapping unit or designation (e.g., a Sultan silt loam):

- a sieve analysis of the soils
- permeability (in/hr)
- available water-holding capacity (in/in)
- the percent of organic matter

**Ground Cover:** Label existing vegetation on the drawing. Such features as tree clusters, grassy areas, unique or sensitive vegetation, and existing denuded or exposed soil areas should be shown.

**Critical Areas:** Critical areas are defined in SCC 30.91C.340. Delineate critical areas adjacent to or within the site on the drawing. Delineate buffer limits for these features on the drawings. Other related jurisdictional boundaries such as Shorelines Management and the Federal Emergency Management Agency (FEMA) base floodplain should also be shown on the drawings, if applicable.

**Adjacent Areas:** Identify existing buildings, roads, and facilities adjacent to or within the project site on the drawings. Identify existing and proposed utility locations, construction clearing limits and erosion and sediment control BMPs on the drawings.

**Existing Encumbrances:** Identify wells, existing and abandoned septic drainfield, utilities, easements, and site constraints.

**Precipitation Records:** Determine the average monthly rainfall and rainfall intensity for the required design storm events.

## **Step 2 - Data Analysis**

Determine potential limitations of the site based on information gathered in Step 1. The following factors shall be considered.

**Topography:** The primary topographic considerations are slope steepness and slope length. Because of the effect of runoff, the longer and steeper the slope, the greater the erosion potential. Erosion potential should be determined by a qualified engineer, soil professional, or certified erosion control specialist.

**Drainage:** Maintain natural drainage patterns that consist of overland flow, swales, dispersion through vegetated areas and preservation of depressions should be used to convey runoff through the site to avoid constructing an artificial drainage system, wherever possible. Man-made ditches and waterways will become part of the erosion problem if they are not properly stabilized. Care should also be taken to ensure that increased runoff from the site will not erode or flood the existing natural drainage system. Possible sites for temporary stormwater retention or detention should be considered at this point.

Construction should be directed away from areas of saturated soil - areas where ground water may be encountered - and critical areas where drainage will concentrate.

**Soils:** Evaluate soil properties such as surface and subsurface runoff characteristics, depth to impermeable layer, depth to seasonal ground water table, permeability, shrink-swell potential, texture, settlement potential, and erodibility. Develop the SWPPP based on known soil

characteristics. Infiltration sites should be properly protected from clay and silt which will reduce infiltration capacities.

**Ground Cover:** Ground cover is the most important factor in terms of preventing erosion. Existing vegetation that can be saved will prevent erosion better than constructed BMPs. Trees and other vegetation protect the soil structure. If the existing vegetation cannot be saved, consider such practices as phasing construction, temporary seeding, and mulching. Phasing of construction involves stabilizing one part of the site before disturbing another. In this way, the entire site is not disturbed at once.

**Critical Areas:** Critical areas are defined in SCC 30.91C.340. Any critical areas within or adjacent to the development should exert a strong influence on land development decisions. Critical areas and their buffers shall be delineated or designated on the drawings and clearly flagged or protected in the field. Fencing may be more useful than flagging to assure that equipment operators stay out of critical areas. Only unavoidable work should take place within critical areas and their buffers. Such unavoidable work will require special BMPs, permit restrictions, and mitigation plans.

**Adjacent Areas:** An analysis of adjacent properties should focus on areas upslope and downslope from the construction project. Water bodies that will receive direct runoff from the site are a major concern. The types, values, and sensitivities of and risks to downstream resources, such as private property, stormwater facilities, public infrastructure, or aquatic systems, should be evaluated. Erosion and sediment controls should be selected accordingly. Using the proper LID BMPs should lesson impacts to adjoining downstream properties,

**Precipitation Records:** Refer to Volume III of the Drainage Manual to determine the required rainfall records and the method of analysis for design of BMPs.

**Timing of the Project:** An important consideration in selecting BMPs is the timing and duration of the project. Projects that will proceed during the wet season and projects that will last through several seasons must take all necessary precautions to remain in compliance with the water quality standards.

### **Step 3 - SWPPP Development and Implementation**

SCC 30.63A.445 and SCC 30.63A.450 along with Drainage Manual Volume II, Cahp. 3 contain requirements for development and implementation of SWPPPs. All new development and redevelopment shall comply with all applicable SWPPP Elements #1 through #13 below unless specifically exempted in Chapter 30.63A.200 SCC.

#### **SWPPP element 1: preserve vegetation/mark clearing limits.** Relevant BMPs

- BMP C101: Preserving Natural Vegetation
- BMP C102: Buffer Zones
- BMP C103: High Visibility Plastic or Metal Fence
- BMP C104: Stake and Wire Fence

#### **SWPPP element 2: establish construction access.** Relevant BMPs:

- BMP C105: Stabilized Construction Entrance
- BMP C106: Wheel Wash
- BMP C107: Construction Road/Parking Area Stabilization

#### **SWPPP element 3: control flow rates.** Relevant BMPs:

- BMP C240: Sediment Trap
- BMP C241: Temporary Sediment Pond

**SWPPP element 4: install sediment controls.** Relevant BMPs:

- BMP C230: Straw Bale Barrier
- BMP C231: Brush Barrier
- BMP C232: Gravel Filter Berm
- BMP C233: Silt Fence
- BMP C234: Vegetated Strip
- BMP C235: Straw Wattles
- BMP C240: Sediment Trap
- BMP C241: Temporary Sediment Pond
- BMP C250: Construction Stormwater Chemical Treatment
- BMP C251: Construction Stormwater Filtration

**SWPPP element 5: stabilize soils.** Relevant BMPs:

- BMP C120: Temporary and Permanent Seeding
- BMP C121: Mulching
- BMP C122: Nets and Blankets
- BMP C123: Plastic Covering
- BMP C124: Sodding
- BMP C125: Topsoiling
- BMP C126: Polyacrylamide for Soil Erosion Protection
- BMP C130: Surface Roughening
- BMP C131: Gradient Terraces
- BMP C140: Dust Control

**SWPPP Element 6: protect slopes.** Relevant BMPs:

- BMP C120: Temporary and Permanent Seeding
- BMP C130: Surface Roughening
- BMP C131: Gradient Terraces
- BMP C200: Interceptor Dike and Swale
- BMP C201: Grass-Lined Channels
- BMP C204: Pipe Slope Drains
- BMP C205: Subsurface Drains
- BMP C206: Level Spreader
- BMP C207: Check Dams
- BMP C208: Triangular Silt Dike (Geotextile-Encased Check Dam)

**SWPPP element 7: protect permanent drain inlets.** Relevant BMP:

BMP C220: Storm Drain Inlet Protection

**SWPPP element 8: stabilize channels and outlets.** Relevant BMPs:

- BMP C202: Channel Lining
- BMP C209: Outlet Protection

**SWPPP element 9: control pollutants.** Relevant BMPs:

- BMP C151: Concrete Handling
- BMP C152: Sawcutting and Surfacing Pollution Prevention

**SWPPP element 10: control dewatering.** Relevant BMPs for uncontaminated dewatering water.

- BMP C203: Water Bars
- BMP C236: Pumped Dispersion Fields

**SWPPP element 11: maintain best management practices.** Relevant BMPs

- BMP C150: Materials on hand
- BMP C160: Certified Erosion and Sediment Control Lead

**SWPPP element 12: manage the project.** Relevant BMPs

- BMP C150: Materials on hand
- BMP C160: Certified Erosion and Sediment Control Lead
- BMP C162: Scheduling

**SWPPP element 13: protect on-site stormwater management BMPs.** Relevant BMPs

- BMP C102: Buffer Zone
- BMP C103: High Visibility Fence
- BMP C200: Interceptor Dike and Swale
- BMP C201: Grass-lined Channels
- BMP C207: Check Dams
- BMP C208: Triangular Silt Dike
- BMP C231: Brush Barrier
- BMP C233: Silt Fence
- BMP C234: Vegetated Strip

# Full Stormwater Pollution Prevention Plan Checklist

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## Section I – SWPPP Narrative

### 1. Stormwater Pollution Prevention Elements

- a. Describe how each of the Stormwater Pollution Prevention Elements has been addressed through the SWPPP.
- b. Identify the type and location of BMPs used to satisfy the required element.
- c. Written justification identifying the reason an element is not applicable to the proposal.

### 12 Required Elements - Stormwater Pollution Prevention Plan

- 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 and Outlets.
- 9. Control Pollutants.
- 10. Control De-Watering.
- 11. Maintain BMPs
- 12. Manage the Project.
- 13. Protect On-site BMPs.

### 2. Project Description

- a. Total project area.
- b. Total proposed hard surface area.
- c. Total proposed area to be disturbed, including off-site borrow and/or fill areas and extent of clearing in square feet or acres.
- d. Total volumes of proposed cut and fill in cubic yards.

### 3. Existing Site Conditions

- a. Description of the existing topography.
- b. Description of the existing vegetation.
- c. Description of the existing drainage.
- d. Does the site drain either via surface or subsurface flow either directly or indirectly to the MS4?

#### 4. Adjacent Areas

I. Description of adjacent areas which may be affected by site disturbance

- a. Streams
- b. Lakes
- c. Wetlands
- d. Residential Areas
- e. Roads
- f. Other

II. Description of the downstream drainage path leading from the site for one quarter mile or to the receiving body of water, whichever is less.

#### 5. Critical Areas

- a. Description of critical areas that are on or adjacent to the site consistent with Chapters 30.62A, 30.62B, 30.62C and 30.65 SCC.
- b. Description of special requirements for working in or near critical areas.

#### 6. Soils

- Description of on-site soils. (In Geotechnical Report)
- a. Soil name(s)
  - b. Soil mapping unit
  - c. Erodibility
  - d. Settlement potential or liquefaction
  - e. Permeability
  - f. Depth to hardpan or winter high water table
  - g. Texture
  - h. Soil Structure
  - i. Organic content

#### 7. Erosion Problem Areas

Description of potential erosion problems on site.

#### 8. Construction Phasing

- a. Construction sequence
- b. Construction phasing (if proposed)

#### 9. Construction Schedule

- I. Provide a proposed construction schedule.
- II. Wet Season Construction Activities
  - a. Proposed wet season construction activities.
  - b. Proposed wet season construction restraints for environmentally sensitive/critical areas.

#### 10. Financial/Ownership Responsibilities

- a. Identify the property owner responsible for the initiation of bonds and/or other financial securities. (Mark Reichin, Propeller Airports Paine Field, LLC)

- b. Describe bonds and/or other evidence of financial responsibility for liability associated with erosion and sedimentation impacts. (Owner will obtain and provide the necessary bonds)

## 11. Engineering Calculations

1. Provide Design Calculations.
- a. Sediment Ponds/Traps (wetvault calculations, provided in the Stormwater Site Plan)
  - b. Diversions or maintain exit points from site.
  - c. Conveyance system sizing (pipes, ditches or channels) (Provided in the Stormwater Site Plan)
  - d. Runoff/Stormwater Detention Calculations (using WWHM or equivalent model) (Provided in the Stormwater Site Plan)

## Section II - Erosion and Sediment Control Plans

### 1. General

- a. Vicinity Map
- b. Clearing and Grading Approval Block
- c. Erosion and Sediment Control Notes

### 2. Site Plan

- a. Legal description of subject property.
- b. North Arrow
- c. Indicate boundaries of existing vegetation, e.g. tree lines, pasture areas, etc.
- d. Identify and label areas of potential erosion problems.
- e. Identify any on-site or adjacent surface waters, critical areas and associated buffers.
- f. Identify FEMA base flood boundaries and Shoreline Management boundaries (if applicable)
- g. Show existing and proposed contours.
- h. Indicate drainage basins and direction of flow for individual drainage areas.
- i. Label final grade contours and identify developed condition drainage basins.
- j. Delineate areas that are to be cleared and graded.
- k. Show all cut and fill slopes indicating top and bottom of slope catch lines.
- l. Location of proposed LID stormwater facilities. (Refer to the pilot infiltration test results provided in the Geotechnical Report)

### 3. Conveyance Systems

- a. Designate locations for swales, interceptor trenches, or ditches.
- b. Show all temporary and permanent drainage pipes, ditches, or cut-off trenches required for erosion and sediment control.
- c. Provide minimum slope and cover for all temporary pipes or call out pipe inverts.
- d. Show grades, dimensions, and direction of flow in all ditches, swales, culverts and pipes.
- e. Provide details for bypassing off-site runoff around disturbed areas.
- f. Indicate locations and outlets of any dewatering systems.

### 4. Location of Detention BMPs

- a. Identify location of detention BMPs.

### 5. Erosion and Sediment Control Facilities

- a. Show the locations of sediment trap(s), pond(s), pipes and structures. (Wetvault and baker tank locations are shown)
- b. Dimension pond berm widths and inside and outside of pond slopes.
- c. Indicate the trap/pond storage required and the depth, length, and width dimensions.
- d. Provide typical section views through pond and outlet structure. (No ponds onsite. Provided wetvault details)
- e. Provide typical details of gravel cone and standpipe, and/or other filtering devices.

- NA f. Detail stabilization techniques for inlet/outlet.
- NA g. Detail control/restrictor device location and details.
- NA h. Specify mulch and/or recommended cover of berms and slopes.
- NA i. Provide rock specifications and detail for rock check dam(s), if applicable.
- NA j. Specify spacing for rock check dams as required.
- NA k. Provide front and side sections of typical rock check dams.
- l. Indicate the locations and provide details and specifications for silt fabric.
- m. Locate the construction entrance and provide a detail.

## **6. Detailed Drawings**

- NA a. Any structural practices used that are not referenced in the Snohomish County Drainage Manual should be explained and illustrated with detailed drawings.

## **7. Other Pollutant BMPs**

- a. Indicate on the site plan the location of BMPs to be used for the control of pollutants other than sediment, e.g. concrete wash water.

## **8. Monitoring Locations**

- a. Indicate on the site plan the water quality sampling locations to be used for monitoring water quality on the construction site, if applicable.