



Small Residential Project Stormwater Worksheet

Demonstrating compliance with Rule 2.4.1 for residential projects, including subdivision of less than 4 lots, entailing ¼ acre or less of impervious surface.

Project Name _____ Permit Number _____ Date _____

Determine Water Quality and Volume Control Standard

STEP 1: Quantify the Impervious Surfaces¹.

- (a) Existing Impervious: _____ SF
- (b) Existing Impervious Disturbed: _____ SF
- (c) Total Proposed Impervious: _____ SF
- (d) Net Additional Impervious [(c)-(a)]: _____ SF

STEP 2: Will Proposed Activity Trigger the District's Redevelopment Criteria? (Check One)

- If (b) > (a) × 50%, then stormwater management is required for all impervious surface onsite.
Use (c) in STEP 3.
- If (b) < (a) × 50%, then stormwater management is required for net additional impervious surface.
Use (d) in STEP 3.

STEP 3: Determine the Treatment Volume Requirement

_____ (c or d) × (2.0 inches) × (0.9) / 12 = _____ cubic feet (e)

BMP Selection and Siting

STEP 4: Preliminary Identification of Onsite Soils via Soil Survey.

Identify the Hydrologic Soil Group (HSG) of onsite soils based on the current Washington County Soil Survey as published by the Natural Resources Conservation Service available at the District office, from the Washington Conservation District or online at <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

The HSG of onsite soils are predominantly²: A B C D

¹ "Impervious surface" means a surface that has been compacted or covered with a layer of material, or is likely to become compacted from expected use, so that it is highly resistant to infiltration by water (CMSCWD Rule 0.0 Definitions). Treatment volume requirements are waived for private drives on residential lots at least 10 acres in size if the drive is bordered downgradient by vegetated open space or a vegetated filter strip with a minimum width of 5 feet and does not discharge directly to wetland, groundwater-dependent natural resource or public water.

² If more than one HSG is found onsite, attach a map identifying HSG and location.



STEP 5: Select the Appropriate BMP Design.

Treatment volume credit for BMPs are identified in Table 1 on a per unit surface area basis. See companion document, *BMP Design Guidance*, for specific design criteria required to receive the treatment volume credit identified. Most BMP credits are based on the HSG identified in **STEP 4**.

TABLE 1. BMP Treatment Volume Credit.

BMP	Treatment Volume Credit Multiplier (CF/SF unless otherwise noted)				Primary Design Assumptions ¹
	Hydrologic Soil Group (HSG)				
	A	B	C	D	
Native/Adapted Vegetated Buffer	0.04 ²				<ul style="list-style-type: none"> • Minimum width of 25-ft in the direction of flow • Flow path of buffer > flow path of impervious drainage area • Minimum ground cover of 80%
Rain Barrels / Cisterns	Volume of the rain barrel / cistern with storage of up to 1 inch of runoff from contributing area				<ul style="list-style-type: none"> • Volume credit may not exceed the volume of 1 inch of runoff from contributing area
Amended Soils / Soil Restoration	0.15				<ul style="list-style-type: none"> • Final compost-amended soil depth of 8-in • Amended area is contiguous to and receives runoff from impervious surfaces
Raingardens	2.1	1.8	1.5	1.5	<ul style="list-style-type: none"> • Over-excavate 30 in and backfill with engineered planting medium • Under-drain
Vegetated Swale with Check Dams	600 CF / check dam	500 CF / check dam	400 CF / check dam	400 CF / check dam	<ul style="list-style-type: none"> • 4-ft channel bottom with 3:1 side slopes • 2% channel slope with earthen check dam every 60 or 75-ft based on soil HSG • Over-excavate 30 in and backfill with engineered planting medium • Under-drain
Permeable Hard Surfaces (e.g. Permeable Paver Patio, Porous Concrete Driveway)	0.6	0.6	0.4	0.4	<ul style="list-style-type: none"> • 18-in of rock storage • 18-in sand layer required for HSG C and D soils • Under-drain
Infiltration Trench/French Drain	1.2	1.2	0.8	0.8	<ul style="list-style-type: none"> • 3-ft of rock storage • 4-ft wide

¹ See companion document, *BMP Design Guidance*, for specific design criteria to receive treatment volume credit.

² The area used in computation of the volume credit is the square footage of qualified impervious surface draining to the buffer. See companion document, *BMP Design Guidance*, for qualifications of impervious surface.

BMP Siting and Sizing Guidelines: Site BMPs downslope of impervious surfaces in most permeable soils. Site BMPs in HSG A and B soils wherever feasible to maximize credit by providing infiltration of stormwater. Rooftop downspouts provide flexibility to direct runoff to a variety of BMPs. In particular, raingardens must accept rooftop or driveway runoff, where feasible. Where specified, siting and sizing requirements can be found in the companion document, *BMP Design Guidance*.

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Use **TABLE 1** and the BMP siting and sizing guidelines above to fill in the proposed BMP design in **TABLE 2** below. **TOTAL Treatment Volume Credit (f)** must meet or exceed the **Treatment Volume Requirement (e)**.

TABLE 2. Proposed BMP's Treatment Volume Credit.

COLUMN: A	B	C	D	E
BMP¹	HSG	Surface Area of BMP (SF) or Impervious Drainage Area (SF) or No. of Check Dams (No.)	Credit Multiplier from Table 1 (CF/SF or CF/check dam)	Treatment Volume Credit (CF) [Column C x Column D]
<i>Example: Raingarden 1</i>	<i>B</i>	<i>200 SF</i>	<i>1.8</i>	<i>360 CF</i>
TOTAL Treatment Volume Credit (CF)				(f)

¹ For rain barrels / cisterns, simply insert the rain barrel / cistern volume (not exceeding 1-inch of runoff from the contributing area) into Column E.

STEP 6: Onsite Soil Verification

Soil borings are recommended in the locations of proposed BMPs in order to assess the infiltration capacity of the soil as characterized by the hydrologic soil group (HSG). Soil boring results guide the selection of the BMP(s) and helps to ensure the BMP(s) will function properly. In lieu of borings, soil verification may be achieved by review of other applicable data (septic system percolation tests/soil logs, test pits, etc.) and/or field observation/testing by the District Administrator.

STEP 7: Final Siting & Sizing

Revise BMP siting and sizing, as necessary, based on results from the onsite soil verification. Return to **STEP 5** and revise **TABLE 2**.

Does **STEP 5 (f)** meet or exceed **STEP 3 (e)**? Y N (circle one)