



Overview: This document serves to clarify the minimum standards that City staff will review to ensure compliance with stormwater regulations for all projects that are classified as ‘Small Projects’. This includes all projects that involve less than 20,000 square feet of ‘Proposed (Increased) Impervious Area’, as defined in the Public Works Design Standards Manual (PWDSM), and have a maximum drainage area of 20 acres. The following criteria can be used if the following statement is included in the SWM narrative: *“This design was completed in accordance with the October 2025 Small Project Criteria, and requests all associated variances.”* See page 3 of this document for additional variance information.

Definition per PWDSM section 8.2.13 (to determine if a project meets these criteria):

“Proposed (Increased) Impervious Area - The total increase in impervious area from existing conditions to proposed conditions within the limits of disturbance associated with the entire project. This includes improvements made both onsite and offsite,

- a. It will be considered an increase in impervious area if drainage area boundaries are modified as part of a project and directs additional existing impervious area into a different stormwater conveyance system.
- b. It will not be considered an increase in impervious area if the project site has been included in a separately approved master planned development, and the total site impervious does not exceed that included in the master planned development.”

CITY STANDARDS / PWDSM

Design Storm and Check Storm – Variance offered if the following statement is included in the SWM narrative:

“This design was completed in accordance with the August 2025 Small Project Criteria, and requests all associated variances.”

See page 3 of this document for additional variance information.

STATE CODE SECTION 9VAC25-875-600

Channel Protection – Rational / Modified-Rational Method, 0.8d for tailwater. Meet **one of the two** following at each point of discharge:

1. 2-year storm analysis to a point where the watershed contributing drainage area (CDA) is 100 times larger than the site’s drainage area (SDA). For private projects, the SDA is almost always the same as the disturbed area associated with the project.
 - a. If the entire flow path in limits of analysis (LOA) is paved (i.e. curb & gutter, concrete ditch, or pipe system) - Calculate maximum peak velocity at point of analysis for conveyance system (based on assumed full flow condition) and verify it’s less than erodible velocity of that conveyance system. Staff will accept any velocity less than 10 feet/second as non-

erodible in this scenario.

- b. If the flow path in limits of analysis includes unpaved sections (i.e. grass or earthen swales or ponds) - Calculate maximum peak velocity through each unpaved section, and verify it's less than erodible velocity listed in VESCH. This is in addition to the calculation at the point of analysis listed above in 'a'.

OR

2. 1-year storm – Meet energy balance equation at point of discharge. This option must be used when discharging to a natural conveyance system, or when the CDA includes a natural conveyance system.

Flood Protection – 10-year, Rational / Modified-Rational Method, 0.8d for tailwater. VDOT H&H spreadsheet is acceptable if no BMP routing. Meet **one of the two** following at each point of discharge:

1. Capacity analysis - Provide reduction in peak flow rate at point of discharge.

OR

2. HGL analysis to a point where the watershed CDA is 100 times larger than the SDA. For private projects, the SDA is almost always the same as the disturbed area associated with the project. Must show no flooding (does not exceed the rim of a grate structure, gutter flowline of a curb inlet, or top of bank in an open channel) at any point within limits of analysis.
 - a. Acceptable to use best available information from City GIS for offsite structures and drainage areas.

Sheet Flow Alternative – Channel Protection and Flood Protection regulations apply to concentrated stormwater flow leaving the site. When there is no concentrated stormwater flow leaving the site in the post-development condition, the following conditions apply:

1. Sheet flow with a decreased runoff volume will generally not require any additional analysis (no need to comply with channel protection or flood protection). Provide hydrologic calculations to verify reduction in runoff, and address in narrative.
2. Sheet flow with an increased runoff volume will not be permitted to use this provision. Such projects shall be analyzed using the same criteria outlined above for channel protection and flood protection.

Pipe/Swale Calculations for Proposed Conveyance Channels – Rational Method

- a. 2-year velocity calculations - Verify non-erosive peak velocity.
- b. 10-year capacity calculations – Verify all flows are contained within the designed conveyance system. This can include designed ponding on-site (i.e. in parking lot), but must include a ponding area map with signed acknowledgment from owner.
- c. All analyses must extend at least 1 structure beyond tie-in location of proposed work.

VARIANCES AND INTERPRETATIONS

The design criteria listed above are based on multiple approved variances and updated regulatory interpretations. By including the standard variance request language listed on Page 1, the variances below will be granted and do not require separate applications.

PWDSM Variances:

1. Section 8.3 – Design Requirements for all drainage components - A variance is granted to eliminate this entire section, with the following exceptions:
 - a. 8.3.B - Storm Depth/duration – If using Rational Method, designer must use values in appendix J.1. For 1-year storm use B=118.7 and D=14.9
 - b. 8.3.G.1 - Upstream / Downstream Analysis –The definition of flooding during design storm will be used in checking adequacy in Flood Protection.
 - c. 8.3.H - Adjacent City review – Coordination with adjacent cities is still required.
2. Section 8.4.A.2.a – Revise language to “Designer may use any design program that utilizes the 24-hour design storm *or Rational Method*.”
3. Section 8.5.A.2 - Revise language to “When a project proposes less than 20,000 square feet of new (increased) impervious area, designer has the option to use any of the following methodologies:
 - a. *Rational Method / Modified Rational Method*
 - b. *Any design program that utilizes the 24-hour design storm*”

CITY CODE APPENDIX D - ESWM Ordinance Interpretations:

1. Section 5.1.D.1 – “Unless otherwise specified, the prescribed design storms are one hundred twenty (120) percent of the one-year, two-year, ten-year, twenty-five-year, fifty-year and one-hundred-year twenty-four-hour storms”
 - a. Staff specifies that Rational Method and Modified Rational Method are acceptable alternatives as long as the design is based on design values in appendix J.1.
2. Section 5.1.D.3 - “The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) synthetic twenty-four-hour rainfall distribution and models, including, but not limited to TR-55 and TR-20; hydrologic and hydraulic methods developed by the U.S. Army Corps of Engineers; or other standard hydrologic and hydraulic methods, shall be used to conduct the analyses described in this part.”
 - a. Staff recognizes that Rational Method and Modified Rational Method are acceptable standard hydrologic and hydraulic methods.

State Code Interpretation:

Rational Method may be used for demonstrating compliance with IIB criteria (channel and flood protection) per 9VAC25-875-620. – “Design storms and hydrologic methods” sections D and E, copied below for reference.

“D. For drainage areas of 200 acres or less, the VESMP authority may allow for the use of the Rational Method for evaluating peak discharges.

E. For drainage areas of 200 acres or less, the VESMP authority may allow for the use of the Modified Rational Method for evaluating volumetric flows to stormwater conveyances.”

To more closely align with state recommended design criteria, Rational Method and Modified Rational Method may only be used to estimate runoff volume for drainage areas from 0 to 20 acres. (VDOT Drainage Manual Chapter 6.3.3).