

Local Regulatory Review

Discussion of Standards

p-gen3-12j

Overview

- Status
- Comparison of Regulatory Standards
- Infiltration as the method to meet the standards
- Exceptions
- Alternatives
- Predevelopment CNs
- Maintenance
- Cost Cap
- Alternative Volume Reduction Standard
- Managing for Trout Streams

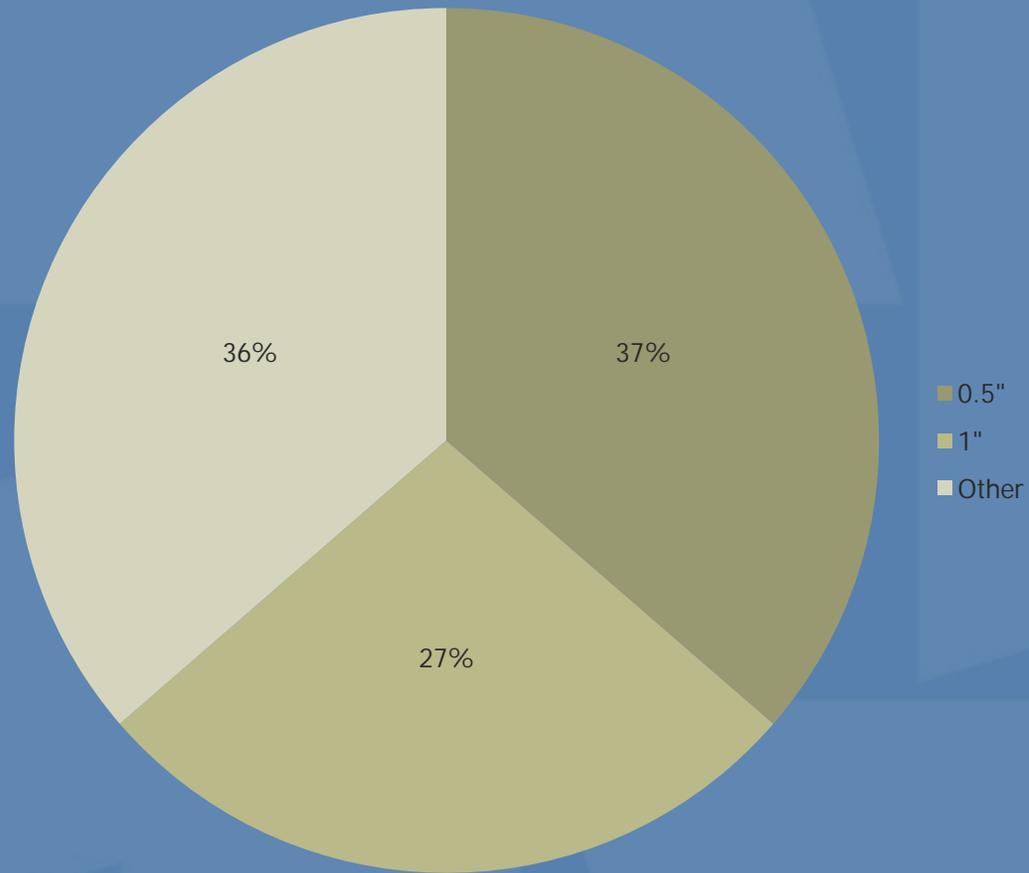
Status

- Regulatory requirements reviewed were all in their final draft format, except MCWD.
- MCWD is currently drafting their rules and the requirements could potentially change including the development of a BMP credit schedule.

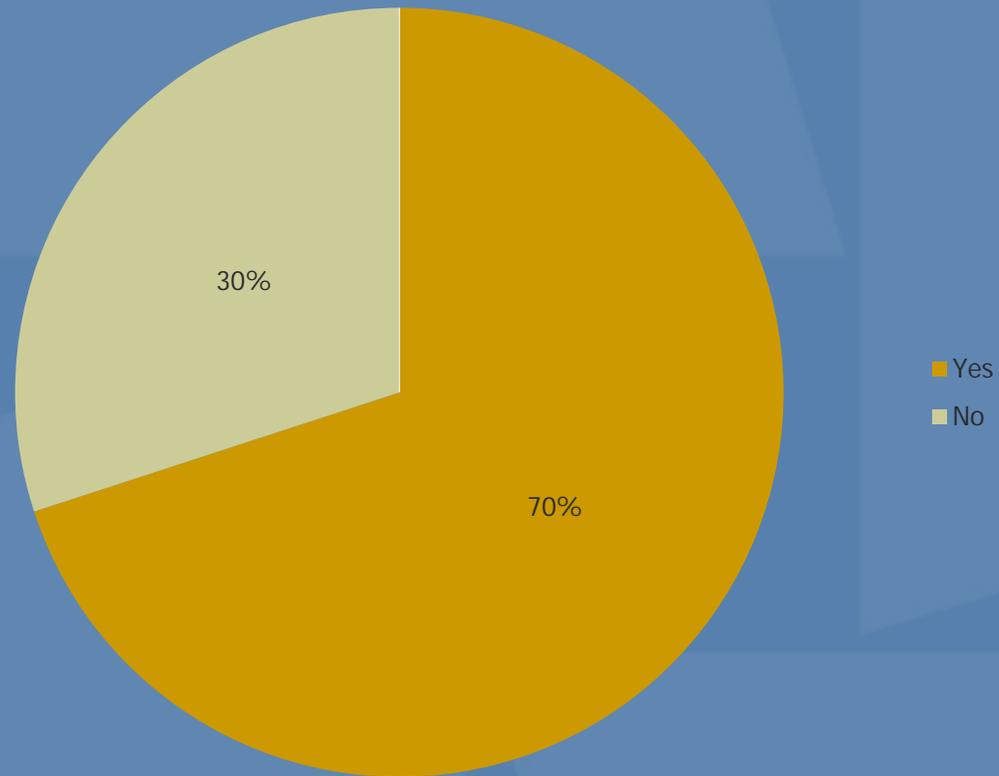
Comparison of Volume Control Standards

Organization	Requirement
BCWMC	Infiltration basin design volume must be no less than 0.5 inches of runoff from the tributary impervious surfaces.
CRWD	Stormwater runoff volume retention shall be achieved onsite in the amount equivalent to the runoff generated from one inch rainfall over the impervious surfaces of the development.
MCWD	The stormwater management plan must provide for the abstraction of the first 1.0 inch of rainfall from the sites impervious surface.
MWMO	Stormwater runoff volume retention shall be achieved onsite in the amount equivalent to the runoff generated from one inch rainfall over the impervious surfaces of the development.
RCWD	Water quality and infiltration BMPs must be sized to infiltrate and/or retain the runoff volume generated within the contributing area by a two-year (2.8-inch) storm under the developed condition.
VRWJPO	Development that creates one acre or more of new impervious surface must incorporate volume control practices into the design sufficient to prevent an increase in the runoff volume for the 2-year 24-hour storm above pre-development conditions.
SWWD	New developments are required to maintain the annual average predevelopment infiltration capacity of the site based on Map 6.2 of the SWMP, which was derived from continuous runoff modeling based on land use and soil type.
Lakeville	All new development and redevelopment, where feasible, must provide for the infiltration or retention on site of 0.5 inch of runoff from all new impervious surfaces on the developed site, except for 1.5 inches in the South Creek drainage district.
St. Cloud	For all new development projects, the volume equivalent to ½ inch of runoff depth over all impervious and pervious surfaces shall be abstracted or otherwise infiltrated.
Woodbury	Require 0.5 inches of runoff from the entire developable area of the site or 1.0 inches of runoff off the impervious surfaces to be infiltrated, whichever is more.

New Development Infiltration Standard



Infiltration Standard Required for Redevelopment



Is infiltration the primary method to meet the standard?

- Infiltration is often the first method that gets listed; however site limitations may lead to alternative design methods being approved.
- Regulatory agencies typically identify the type of alternative BMPs that are considered acceptable.

Exemptions from Infiltration

- Alternatives Analysis
- Potential Contamination
 - Contaminated soils
 - Stormwater hotspots
 - Fueling areas
- Physical Limitations
 - Low soil Permeability (D soils, sometimes C)
 - Bedrock with 3 vertical feet
 - Groundwater within 3 vertical feet
 - Karst Geology
- Land use Limitations
 - Utility locations
 - Vulnerable wellhead protection areas
 - Industrial maintenance areas
 - Zoning and spatial constraints

Alternative Methods to Meet Infiltration Standard

- Filtration
- Bioretention
- Vegetated Swales
- Rain Barrels/Cisterns
- Green Roofs/Roof Gardens
- Disconnection of Impervious Surfaces
- Soil Amendments
- Reuse
- Better Site Design
- Wet Detention
- Offsite Infiltration
- Bank credits
- Payment into a Stormwater Fund
- Restoration of Native Vegetation
- Tree Canopy Preservation

Soil Amendments

- RCWD Rules RMP-2 and RMP-3 Section 8, Subpart (c) require volume control measures that may be achieved, among other measures, by soil amendments.
- Soil amendments which shall consist of ripping and tilling to a depth of 12 to 15 inches, and the addition of 20% compost (i.e., compost depth of 2.5 inches with 12-15 inch tillage depth).
- In determining Curve Numbers to model runoff in the post-development condition, the Hydrologic Soil Group (HSG) of areas within construction limits is to be shifted down one classification (or ½ classification for HSG A) to account for the impacts of grading on soil structure unless the project specifications incorporate soil amendments in accordance with District Soil Amendment Guidelines.

Predevelopment CNs

- For predevelopment conditions, the allowable range for a CN to reflect undeveloped conditions should fall within values of 52 – 62 and must not exceed a value of 62.
- Under no circumstances shall predevelopment conditions exceed a curve number of 72.
- A parcel in use for row crop agriculture, new development shall result in no net increase in phosphorus loading from the site as modeled in meadow condition.
- A parcel in use for row crop agriculture, new development shall result in no net increase in the peak runoff rate from the site as modeled in meadow condition.

Predevelopment CNs

The following pre-development curve numbers shall be used to evaluate this standard:

Hydrologic Soil Group	Curve Number
A	49
B	69
C	79
D	84

Maintenance

- Maintenance agreements
 - Access
 - Inspection authority
 - Maintain function in perpetuity
 - Submittal of a maintenance plan describing schedule and responsible parties
- Limited linkage to the MS4 permit requirements (watersheds are typically requiring separate agreements)

Cost Cap

- Specific to linear projects
- Cap is set at \$30,000 per acre of new or reconstructed impervious surface
- Unit costs for construction are set by the organization
- Organization may contribute amount above the cost so that the standard can be met

Alternative Methods

- South Washington Watershed District
- Rice Creek Watershed District

South Washington Watershed District

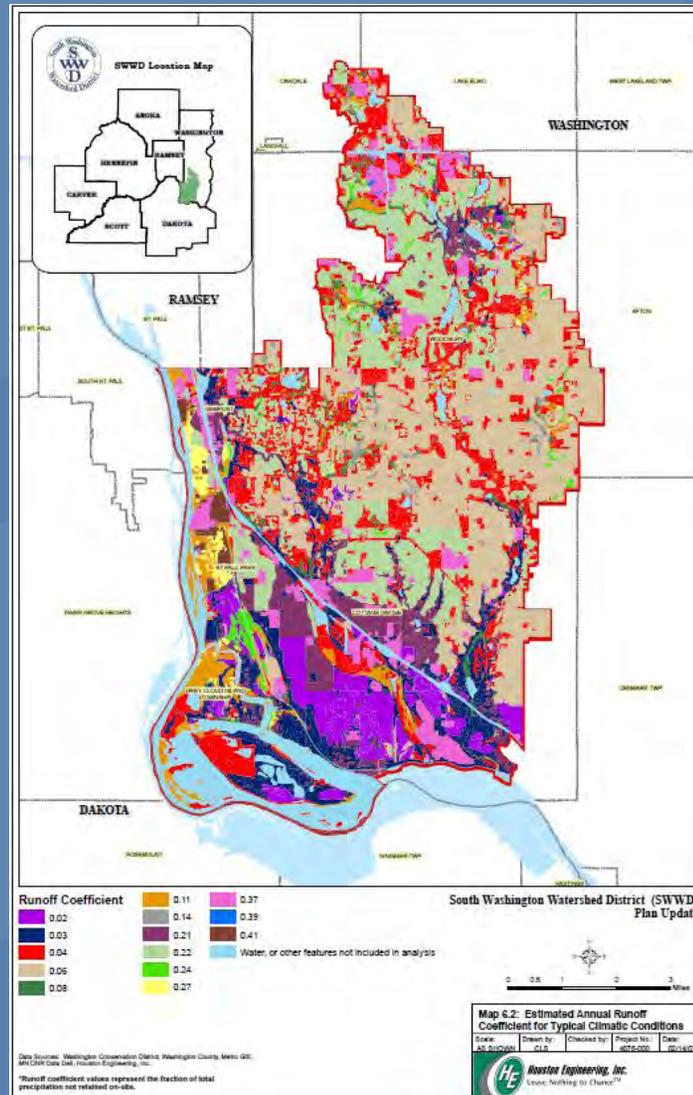
- On-site phosphorus export loads for projects that are within direct subwatersheds of receiving waters must meet the allowable load requirements set for the applicable water body.

<i>Receiving Water</i>	<i>Management Classification</i>	<i>Designated Beneficial Use¹</i>	<i>On Impaired Waters List</i>	<i>Current Total P Load²</i>	<i>Maximum Allowable Total P Load</i>	<i>Maximum Allowable Total P Unit Load</i>	<i>Desired Trophic State Index Range³</i>
Mississippi River [#]	Class A	Class 2C, 3B	Yes	-	-	-	Not applicable
Powers Lake	Class A	Class 2B	No	92 lbs./year *	88 lbs./year	0.06 lbs./ac./yr.	50 – 55
La Lake	Class A	Class 2D	No	134 lbs./year	134 lbs./year	1.65 lbs./ac./yr.	60 – 65
Armstrong Lake	Class B	Class 2B	No	202 lbs./year	101 lbs./year	0.18 lbs./ac./yr.	63 – 66
Ravine Lake	Class B	Class 2B	Yes	238 lbs./year	143 lbs./year	0.04 lbs./ac./yr.	63 – 66
Wilmes Lake	Class B	Class 2B	Yes	455 lbs./year	308 lbs./year	0.10 lbs./ac./yr.	60 – 63
Colby Lake	Class C	Class 2B	Yes	1,461 lbs./year	979 lbs./year	0.34 lbs./ac./yr.	70 – 73
Markgrafs Lake	Class C	Class 2B	Yes	350 lbs./year	264 lbs./year	0.61 lbs./ac./yr.	66 – 70
Bailey Lake**	Class D	Class 2B	No				
Gables Lake**	Class D	Class 2B	No				

South Washington Watershed District

- Demonstration that the standard is met using PONDNET, Simple Method, or P8 Urban catchment model is acceptable.
- Guidance document identified P8 modeling adjustments that should be made.
- New developments are required to maintain the annual average predevelopment infiltration capacity of the site. The application of this requirement is to the entire development site, expressed as the maintaining the total runoff volume determined from typical climatic conditions. Annual average predevelopment runoff volumes will be calculated based on Map 6.2, which was derived from continuous runoff modeling based on land use and soil type.

South Washington Watershed District



Rice Creek Watershed District

- Water quality and infiltration BMPs must be sized to infiltrate and/or retain the runoff volume generated within the contributing area by a two-year (2.8-inch) storm under the developed condition.

Managing for Trout Streams

- Vermillion River JPO
- Lakeville Standards



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Source: MnDNR

Vermillion River JPO

- Development that creates one acre or more of new impervious surface must incorporate volume control practices into the design sufficient to prevent an increase in the runoff volume for the 2-year 24-hour storm above pre-development conditions unless waived in accordance with Runoff Volume Control Criteria 7.
- Post construction runoff criteria for controlling temperature increases relies on the establishment of buffers as specified in section 7.00 above; the prioritization of temperature sensitive BMPs such as infiltration and filtration, and the designation of temperature sensitive wet pond design approaches in section 8.04(B) above; and the control of runoff volume increases and the use of credits as provided in section 8.04(E) below.

City of Lakeville

- All new development and redevelopment, where feasible, must provide for the infiltration or retention on site of 1.5 inches of runoff from all new impervious surfaces on the developed site in the South Creek drainage district.
 - In the South Creek drainage area the system shall infiltrate the required volume in seventy two (72) hours.
 - In the South Creek drainage district stormwater basins shall be set back a distance of seventy five feet (75') from the stream centerline to the edge of a stormwater basin. In the case of distributed infiltration areas, this setback may be varied. Where the stormwater design is such that fifty percent (50%) of the infiltration area volume is beyond one hundred feet (100') from the channel centerline, no setback is required.
 - In the South Creek drainage district effective energy dissipation devices which reduce outlet velocities to four feet (4') per second or less shall consist of riprap, stilling pools or other such measures to prevent erosion at all stormwater outfalls into the basin and at the detention basin outlet.

Thank you.

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