

Appendix 7. Alternative Methods for R_{Pv} Compliance

The following tables may be used to compute the Resource Protection event (R_{Pv}) surface recharge reductions. The BMP Performance percentage is based on the soil classification of the BMP and the Runoff Volume entering the BMP in the R_{Pv} event.

1. Bioswale:

<u>R_{Pv} Bioswale Performance</u>		
<u>Runoff Volume</u> <u>(in/acre)</u>	<u>BMP performance</u>	
	<u>HSG A/B</u>	<u>HSG C/D</u>
<u>> 1.50 in / acre</u>	<u>44%</u>	<u>21%</u>
<u>0.76 - 1.50 in / acre</u>	<u>47%</u>	<u>23%</u>
<u>0.16 - 0.75 in / acre</u>	<u>57%</u>	<u>27%</u>
<u>0.00 - 0.15 in / acre</u>	<u>95%</u>	<u>95%</u>

2. Grassed Channel:

<u>R_{Pv} Grassed Channel Performance</u>		
<u>Runoff Volume</u> <u>(in/acre)</u>	<u>BMP performance</u>	
	<u>HSG A/B</u>	<u>HSG C/D</u>
<u>> 1.50 in / acre</u>	<u>16%</u>	<u>8%</u>
<u>0.76 - 1.50 in / acre</u>	<u>18%</u>	<u>9%</u>
<u>0.16 - 0.75 in / acre</u>	<u>22%</u>	<u>11%</u>
<u>0.00 - 0.15 in / acre</u>	<u>100%</u>	<u>100%</u>

3. Sheet Flow to Turf Filter Strip:

<u>R_{Pv} Turf Filter Strip Performance</u>		
<u>Runoff Volume</u> <u>(in/acre)</u>	<u>BMP performance</u>	
	<u>HSG A/B</u>	<u>HSG C/D</u>
<u>> 1.50 in / acre</u>	<u>21%</u>	<u>8%</u>
<u>0.76 - 1.50 in / acre</u>	<u>23%</u>	<u>9%</u>
<u>0.16 - 0.75 in / acre</u>	<u>28%</u>	<u>11%</u>
<u>0.00 - 0.15 in / acre</u>	<u>100%</u>	<u>100%</u>

4. Sheet Flow to Forested Filter Strip:

<u>RPv Forested Filter Strip Performance</u>		
<u>Runoff Volume</u> <u>(in/acre)</u>	<u>BMP performance</u>	
	<u>HSG A/B</u>	<u>HSG C/D</u>
<u>> 1.50 in / acre</u>	<u>34%</u>	<u>16%</u>
<u>0.76 - 1.50 in / acre</u>	<u>37%</u>	<u>18%</u>
<u>0.16 - 0.75 in / acre</u>	<u>45%</u>	<u>22%</u>
<u>0.00 - 0.15 in / acre</u>	<u>95%</u>	<u>95%</u>

5. Sheet Flow to Turf Open Space:

<u>RPv Turf Open Space Performance</u>		
<u>Runoff Volume</u> <u>(in/acre)</u>	<u>BMP performance</u>	
	<u>HSG A/B</u>	<u>HSG C/D</u>
<u>> 1.50 in / acre</u>	<u>44%</u>	<u>16%</u>
<u>0.76 - 1.50 in / acre</u>	<u>48%</u>	<u>18%</u>
<u>0.16 - 0.75 in / acre</u>	<u>57%</u>	<u>22%</u>
<u>0.00 - 0.15 in / acre</u>	<u>97%</u>	<u>97%</u>

6. Sheet Flow to Forested Open Space:

<u>RPv Forested Open Space Performance</u>		
<u>Runoff Volume</u> <u>(in/acre)</u>	<u>BMP performance</u>	
	<u>HSG A/B</u>	<u>HSG C/D</u>
<u>> 1.50 in / acre</u>	<u>59%</u>	<u>34%</u>
<u>0.76 - 1.50 in / acre</u>	<u>64%</u>	<u>37%</u>
<u>0.16 - 0.75 in / acre</u>	<u>75%</u>	<u>45%</u>
<u>0.00 - 0.15 in / acre</u>	<u>100%</u>	<u>97%</u>

Effective Curve Number CalculationMethod to determine effective curve number after Surface Recharge Reductions.1. Determine Rpv inches of runoff entering BMP.

$$\text{RPv for Contributing Area} = \text{Runoff Volume} / \text{BMP Contributing Area} * 12$$

Where: RPv for Contributing Area = Inches of runoff entering BMP (in.)

Runoff Volume = Runoff Volume Entering BMP (acre feet)

BMP Contributing Area = BMP drainage area (acre)

2. Determine surface recharge BMP R_{Pv} runoff reduction per tables above.

3. Determine R_{Pv} runoff after BMP reduction:

$$\text{RPV runoff after reduction} = \text{RPV for Contributing Area} * (1 - \text{BMP Performance Reduction Percentage})$$

Where:
$$\frac{\text{RPV runoff after reduction} = \text{Inches of runoff existing BMP (in.)}}{\text{RPV for Contributing Area} = \text{Inches of runoff entering BMP (in.)}} = \frac{\text{BMP Performance Reduction Percentage} = \text{Decimal percentage from tables above.}}$$

4. Determine effective Curve Number (CN):

$$\text{Effective CN} = 46.3241 * [\sqrt{(\text{RPV runoff after reduction} + 0.025831) + 0.538054}]$$

Where:
$$\frac{\text{Effective CN} = \text{CN after BMP performance reduction}}{\text{RPV runoff after reduction} = \text{Inches of runoff existing BMP (in.)}}$$

5. Compare effective CN to Native BMP CN:

NOTE: No additional runoff reduction credit can be taken for surface recharge practices once the equivalent CN for BMP reaches the native soil-cover condition (i.e. for Sheet Flow to Turf Filter Strip on B soils cannot be below a 61 CN.).