

Calculation for Bioretention (Rain Garden, Bioswale, Tree or Planter Box)

Project Name: _____

Date Submitted: _____

Property Address: _____

Development/Property Name: _____

GMP Number: _____

Design Firm: _____

Design Engineer: _____ Telephone: _____ Email: _____

KY PE No.: _____

MSD Reviewer: _____
 WM No. _____

Step A. Site Planning Recommendation

Define goals and primary function of rain garden/bioswale based on the Rain Gardens/Bioswales fact sheet in section 18.4.1. Refer to this section as needed throughout the remainder of this calculation sheet.

Step B. Calculate the Water Quality Volume Required (VR) of water to be removed by the Bioswale

1. A = Contributing drainage area to bioswale: _____ ft²
2. RE = Required Water Quality Volume Rain Event in inches (minimum 0.6 in): _____ inches
3. I = Impervious cover of the contribution drainage area in percent: _____ %
4. VR = $(1/12)(RE)(A)(0.05 + (0.009)(I)) =$ _____ ft³

Step C. Calculate the Water Quality Volume Provided (VP), or storage capacity of Bioswale

1. W = Width of bioswale _____ ft
2. L = Length of bioswale _____ ft
3. A = Area of bioswale = W * L: _____ ft²
4. p = porosity of media (% void): _____ 40 %
5. M = depth of media _____ ft
6. P = ponding depth of water _____ ft
7. VP = $(A)(M)(p) + (A)(P)$ _____ ft³

Step D. Prepare exhibits A and B for long-term maintenance and operation agreement.
