

Drainage Area



- ▶ To determine needed storage volume
- ▶ Find high points around site
- ▶ Draw lines perpendicular to contour lines
- ▶ Find both impervious and pervious areas

Calculate Runoff Volume

- ▶ Use rainfall for design storm, i.e. first flush 1 inch
- ▶ Factor in runoff from impervious and pervious areas

$$Volume = \frac{Rv * Area * Rainfall}{12}$$

Volume = cubic feet Area = square feet Rainfall = inches

Table 9 – Runoff Coefficients for Small Storm Hydrology Method

Rainfall Amount (inches)	Volumetric Runoff Coefficient, Rv					
	Directly Connected Impervious Area			Disturbed Pervious Area		
	Flat Roofs/ Unpaved	Pitched Roofs	Paved	Sandy Soils (HSG A)	Silty Soils (HSG B)	Clayey Soils (HSG C&D)
1.0	0.815	0.965	0.980	0.035	0.120	0.2015

Source: Adapted from SEMCOG (2008). *Low Impact Development Manual for Michigan*, Table 9.3. (R. Pitt (2003). *The Source Loading and Management Model (WinSLAMM): Introduction and Basic Uses*).

Do this for each type of area on your site.

Green Infrastructure Soils

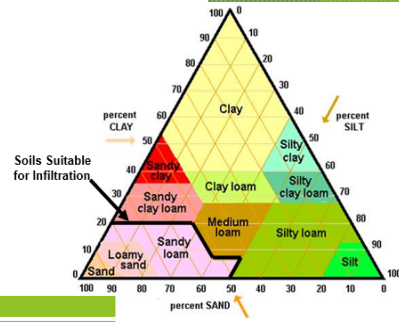


Table 5 - Design Infiltration Rates by USDA Soil Texture Class

Soil Texture Class	Effective Water Capacity (inches per inch)	Design Infiltration Rate ¹ (inches per hour)	HSG ²
Gravel	0.40	3.60	A
Sand	0.35	3.60	A
Loamy Sand	0.31	1.63	A
Sandy Loam	0.25	0.50	A
(Medium) Loam	0.19	0.24	B
Silty Loam / (Silt)	0.17	0.13	B
Sandy Clay Loam	0.14	0.11	C
Clay Loam	0.14	0.03	D
Silty Clay Loam	0.11	0.04	D
Sandy Clay	0.09	0.04	D
Silty Clay	0.09	0.07	D
Clay	0.08	0.07	D

Source: Maryland Department of Environment (2000), Maryland Stormwater Design Manual, Appendix B.1.3, Table B.1.3.1 (Rawls, Brakensiek and Saxton, 1982).
 Source: Wisconsin Department of Natural Resources (2004), Site Evaluation for Stormwater Infiltration (1002), Table 2 (Rawls, 1998). Note: Values are reduced by approximately a factor of 2 from those given in Table B.1.3.1.

Divide Design Infiltration Rate by Factor of 2

Size of Green Infrastructure

GI Area = Drainage Area x Percent in Table 1

Ponding Depth - Maximum Allowable Depth

1. Surface Storage Depth(Ds)
2. Aggregate Void Space Depth(Da)
3. Combination of Both

Volume of GI = GI Area X (Ds+ .35*Da)

How does volume of GI compare to volume of Runoff?