

Calculations for Stormwater Runoff Volume Control

SITE NAME: _____



Total Site Disturbed Area: _____ acres

2-Year, 24-Hour Rainfall): _____ in (See Rainfall Tab for regional rainfall value or site specific rainfall event may be substituted with DNRE approval)

Pre-Development Conditions

Cover Type	Soil Type	Area (sf)	Area (ac)	CN (from TR-55)	S	Q Runoff ¹ (in)	Runoff Volume ² (ft ³)
					$\frac{1000}{CN} - 10$	$(P - 0.2S)^2$ $(P - 0.8S)$	$Q \times 1/12 \times A$
Woods / Meadow	A	0		30	23.3	1.166666667	0
Open Space	A	0		39	15.6	0.782051282	0
Woods	B	0		55	8.2	0.409090909	0
Meadow	B	0		58	7.2	0.362068966	0
Open Space	B	0		61	6.4	0.319672131	0
Woods	C	0		70	4.3	0.214285714	0
Meadow	C	0		71	4.1	0.204225352	0
Open Space	C	0		74	3.5	0.175675676	0
Woods	D	0		77	3.0	0.149350649	0
Meadow	D	0		78	2.8	0.141025641	0
Open Space	D	0		80	2.5	0.125	0
Impervious	N/A	0		98	0.20	0.010204082	0
Other:		0				NA	NA
TOTAL:	N/A	0.0	0.0	N/A	N/A	N/A	0

Post-Development Conditions

Cover Type	Soil Type	Area (sf)	Area (ac)	CN*	S	Q Runoff ¹ (in)	Runoff Volume ² (ft ³)
Impervious	N/A	0		98	0.2	0.010204082	0
		0			0.0	0	0
		0			0.0	0	0
		0			0.0	0	0
TOTAL:	N/A		0.0	N/A	N/A	N/A	0

Runoff Volume Increase (ft³): 0

Runoff Volume Increase = (Post-Dev. Runoff Volume) MINUS (Pre-Dev. Runoff Volume)

1. Runoff (in) = $Q = (P - I_a)^2 / (P - I_a) + S$

$I_a = 0.2S$ therefore;

Runoff (in) = $Q = (P - 0.2S)^2 / (P + 0.8S)$

Where: P = 2-Year, 24-Hour Rainfall (in)

S = $1000 / CN - 10$

CN = Curve Number

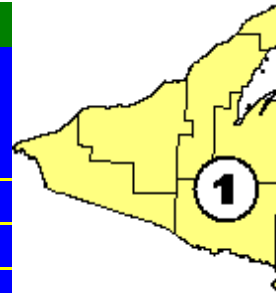
Q = Runoff (in)

Area = Area of specific land cover (ft²)

2. Runoff Volume (ft³) = $Q \times 1/12 \times \text{Area}$

* Runoff Volume must be calculated separately for pervious and impervious areas (without using a weighted CN)

24 Hour Precipitation in inches for Michigan Regions						
Section	2 Year	5 Year	10 Year	25 Year	50 Year	100 year
1	2.39	3.00	3.48	4.17	4.73	5.32
2	2.09	2.71	3.19	3.87	4.44	5.03
3	2.09	2.70	3.21	3.89	4.47	5.08
4	2.11	2.62	3.04	3.60	4.06	4.53
5	2.28	3.00	3.60	4.48	5.24	6.07
6	2.27	2.85	3.34	4.15	4.84	5.62
7	2.14	2.65	3.05	3.56	3.97	4.40
8	2.37	3.00	3.52	4.45	5.27	6.15
9	2.42	2.98	3.43	4.09	4.63	5.20
10	2.26	2.75	3.13	3.60	3.98	4.36



Taken from "Rainfall Frequency Atlas of the Midwest, Bulletin 71,
Midwestern Climate Center, 1992

