

Rainfall Runoff Calculations

1484 Airport Rd New Bedford, MA

Rainfall:

Precipitation Frequencies & rainfall accumulations generated from the following
NOAA Atlas 14, Volume 10, Version 2
New Bedford Municipal Airport
Station ID 19-5251

Duration 2 yr: 3.37 (2.85 – 3.98)
24 hr 10 yr: 5.01 (4.19 – 5.95)
(inches) 100 yr: 7.60 (5.87 – 9.79)

Impervious Area

H.M.A. Pad – Driveway
(78'x116') – (30'x8')
= 8,808 sqft

Rainfall Volume Calcs.

2 yr = (3.98 in)*(.083)*(8,808 sqft) = 2,921.32 ft³
10 yr = (5.95 in)(.083)*(8,808 sqft) = 4,367.30 ft³
100 yr = (9.79 in)*(.083)*(8,808 sqft) = 7,185.86 ft³

*Volume held for minimum design capacity of swale surrounding shed structure.

Volume to Recharge

Soil Texture: Sand, Loamy Sand, or sandy loam
Hydrologic Soil Group: A
Volume to Recharge: 0.60 inches of runoff
Volume to be recharged: 0.60" x 4,367.3 ft³ = 2,620.38 ft³
 $\Delta = \underline{1,746.92 \text{ ft}^3 \text{ (to be retained in swale)}}$

Swale Capacity Volume

Area_{TOP} = 3460.59 ft³
Area_{BOTTOM} = 2,138.16 ft³
 $\Delta = 1,322.43 \text{ ft}^3$
 $\frac{1}{2} \Delta = 661.22 \text{ ft}^3$
TOTAL = 2,138.16 + 661.22 = 2,799.38 ft³

*2,799.38 ÷ 1746.92 = 1.60x the required volume