

Gateway Medical Plaza, M.O.B., City of Margate. Stormwater Management Calculations

Reference attached SFWMD permit # 06-00846-S

Calculations need to account for ½" of Pre-treatment on VUA, walkways and Greenspace of previously vacant property. The remainder of quality and quantity calculations are handled by connection to the existing SWM system of the main plaza. Part of the property is already developed and remains unchanged.

Total Runoff Area = 53,825SF

Total required pre-treatment volume, $V = 53,825 / 43560 \times 0.5 = 0.618$ Ac-Inches

Use 6'x4' Exfiltration Trench for pre-treatment

$K = 1.1 \times 10^{-4}$ CFS/SF-Ft Head (Soils report)

Control Elevation is +7.25' NAVD

H_2 = Depth to Water Table = 3.75 feet (conservative)

W = Trench Width = 6 feet

D_u = Unsaturated Trench Depth = 2.0 feet

D_s = Saturated Trench Depth = 2.0 feet

Length of Trench,

$$\begin{aligned} L &= \frac{V}{K (H_2 W + 2 H_2 D_u - D_u^2 + 2 H_2 D_s) + 1.39 \times 10^{-4} W D_u} \\ &= \frac{0.618 \times 10^4}{1.1 \times (22.5 + 15 - 4 + 15) + 1.39 \times 12} \\ &= \frac{6180}{88} = 70 \text{ LF} \end{aligned}$$

Length of trench provided -160 feet

