

Stormwater Management Report

RAM Oakland Park

Preliminary Area Calculations

Development - Areas

Description	Area		Percentage
	(SF)	(Acres)	
<u>Residential</u>	402,075	9.23	100%
<u>Impervious Area</u>	292,558	6.72	73%
Building	83,227	1.91	21%
Pavement	209,331	4.81	52%
<u>Pervious Area</u>	109,517	2.51	27%
Open Space	109,517	2.51	27%

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Water Quality Requirements - RESIDENTIAL

Post Development

a) **Criteria 1 = 1/2 inch of Runoff Over the Project Site:**

$$0.5 \text{ inch} \times 1\text{-ft}/12\text{-in} \times \frac{9.23}{\text{Project Area (acres)}} = \frac{0.38}{\text{Dry Pre-treatment Volume}} \text{ ac-ft}$$

WATER QUALITY CALCULATIONS PER SFWMD

b) **Per SFWMD, Water Quality shall be provided to meet Criteria 2 or 3, whichever is greater:**

Criteria 2 = 1 inch of Runoff Over the Project Site:

$$1 \text{ inch} \times 1\text{-ft}/12\text{-in} \times \frac{9.23}{\text{Project Area (acres)}} = \frac{0.77}{\text{WQ Treatment Volume}} \text{ ac-ft}$$

Criteria 3 = 2.5 Inches Times the Percent Impervious:

$$\text{Site Area for WQ: } \frac{9.23}{\text{Project Area (acres)}} - \left(\frac{0.00}{\text{Lakes (acres)}} + \frac{0.00}{\text{Wetlands (acres)}} + \frac{1.91}{\text{Roofs (acres)}} + \frac{0.00}{\text{Preserve (acres)}} \right) = \frac{7.32}{\text{Site Area for WQ}}$$

Impervious Area for WQ:

$$\frac{7.32}{\text{Site Area for WQ (acres)}} - \frac{2.51}{\text{Pervious Area (acres)}} = \frac{4.81}{\text{Impervious Area for WQ (acres)}}$$

Percent Imperviousness for WQ:

$$\frac{\text{Impervious Area for WQ}}{\text{Site Area for WQ}} = \frac{4.81}{7.32} = 65.7\%$$

2.5-in x % Impervious:

$$2.5 \text{ Inches} \times \frac{65.7\%}{\text{Percent Impervious}} = \frac{1.64}{\text{Inches to be Treated}}$$

Treated Volume:

$$1\text{-ft}/12\text{-in} \times \frac{1.64}{\text{Inches to be Treated (inches)}} \times \left(\frac{9.23}{\text{Project Area (acres)}} - \frac{0.00}{\text{Lakes (acres)}} - \frac{0.00}{\text{Wetlands (acres)}} - \frac{0.00}{\text{Preserve (acres)}} \right) = \frac{1.26}{\text{Treated Volume}} \text{ ac-ft}$$

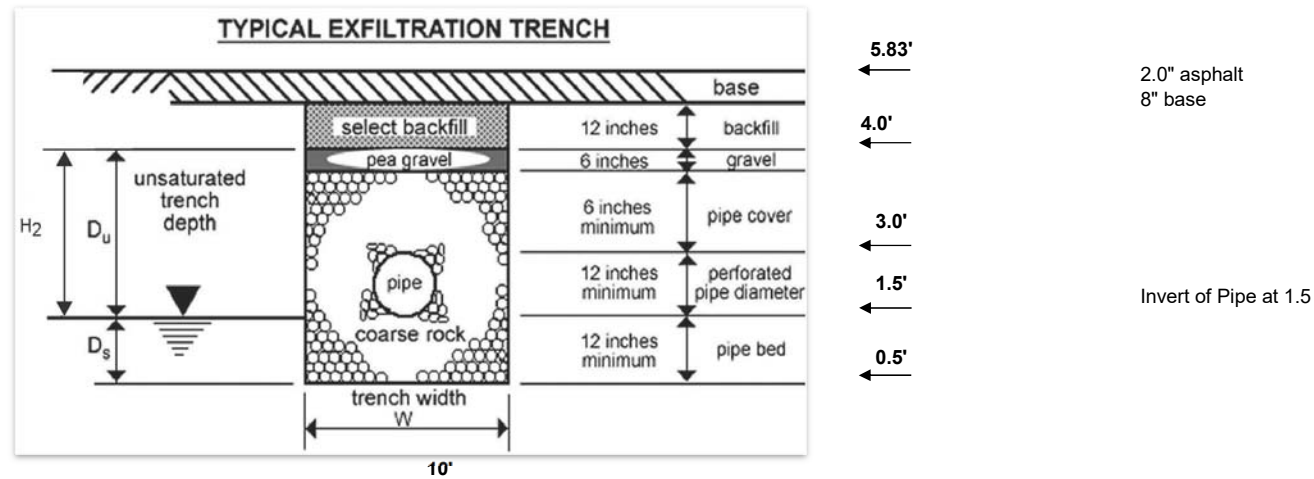
SFWMD Required Water Quality Volume	1.26 ac-ft
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RAM Oakland Park

CALCULATIONS

$$L = \frac{FS[(\%WQ)(V_{WQ}) + V_{add}]}{K(H_2W + 2H_2D_u - D_u^2 + 2H_2D_s) + (1.39 \times 10^{-4})WD_u} \quad (\text{Section G: EQ 7})$$

K	=	5.08E-04 cfs/ft ² (average)	K ₁	=	6.30E-04 cfs/ft ²	K ₃	=	5.60E-04 cfs/ft ²	K5	=	5.50E-04 cfs/ft ²	K7	=	1.80E-04 cfs/ft ²
			K ₂	=	6.80E-04 cfs/ft ²	K ₄	=	7.30E-04 cfs/ft ²	K6	=	6.00E-04 cfs/ft ²	K8	=	1.30E-04 cfs/ft ²



FS	=	2	
%WQ	=	50	%
V _{WQ}	=	1.26	ac-ft = 15.15 ac-in
V _{add}	=	0	ac-ft = 0.00 ac-in
Pipe	=	18	inches
EL _{TOP}	=	4	feet, NAVD (Top of Trench Elevation)
EL _{INV}	=	4	feet, NAVD (Weir Elevation, No Bleeder)
CE	=	1.5	feet, NAVD
EL _{BOT}	=	0.5	feet, NAVD
W	=	10	feet
D _U	=	2.5	feet
D _S	=	1	feet
H ₂	=	2.5	feet

$$L = 693 \text{ feet}$$