

Project: Gary Matzner Park

Flood Routing Description: POST-Development Calculations

Date: 01/13/2025

Client : Village of Pincecrest

Job Number: 13861.00

Design Engineer :

Project Address / Location : 6610 N. Kendall Drive

City: Pinecrest

County: Miami-Dade

State: Florida

Zipcode: 33156

Section/Township/Range: Section 01, Township 55, Range 40

Surfacewater License: N/A

FEMA FIRM Information: Zone: X

12086C0458L , Map Effective Date: 09-11-2009

Project Description: Redevelopment of existing city owned lot with parking area, playground area and landscaping

Total Drainage Basin: 2.890 Acres

Hydrogeologic Information :

Table 1.	1 Day Storm Event			3 Day Storm Event		
RAINFALL DATA	Rainfall Inches	Runoff Inches	Runoff Ac-Ft	Rainfall Inches	Runoff Inches	Runoff Ac-Ft
100 Year Return Period	14.7	9.07	2.185	17.5	11.61	2.797
25 Year Return Period	10.6	5.51	1.328	12.9	7.48	1.801
10 Year Return Period	8.4	3.17	0.763	10.4	5.35	1.288
5 Year Return Period	7.0	2.65	0.639	9.4	4.57	1.099
3 Year Return Period	6.0	1.96	0.473	8.1	3.50	0.842
5 Yr Return Period - 1 Hr	2.9	0.02	0.004			

Runoff estimation - USDA SCS formula

Runoff (in) $Q = \frac{(P-0.2S)^2}{P+0.8S}$

Where: P = accumulated rainfall (in.)
S = Soil Storage Value

Table 2. SUMMARY OF FLOOD ROUTING	Agency maps	SBUH Calculated with Q-1 Day Storm		SBUH Calculated with Q-3 Day Storm		SBUH Calculated *Zero Q-3 Day Storm		Calc. 5Yr 1 hour Peak Stage (ft)
		Peak Stage(ft)	Peak Q (CFS)	Peak Stage(ft)	Peak Q (CFS)	Peak Stage(ft)	Peak Q (CFS)	
100 Year Return Period		9.88	0.00	10.16	0.00	10.16	0.00	Zero Q
25 Year Return Period		9.41	0.00	9.69	0.00	9.69	0.00	(Water Budget)
10 Year Return Period		9.07	0.00	9.38	0.00	9.38	0.00	
5 Year Return Period		8.80	0.00	9.23	0.00	9.23	0.00	7.30
3 Year Return Period		8.59	0.00	9.03	0.00	9.03	0.00	

For 5 yr - 1 hr rainfall, Calculate 5 yr Vol by subtracting Exfil vol in inches from 5 yr 1 h rainfall, then calc Runoff using SCS formula. From stage storage table find Zero Discharge Stage. Uses Max. Elev of Lookup Stage or highest top of EXFIL trench. If exfil vol exceeds 5 year 1 hour vol. Uses Max. Elev of highest top of EXFIL trench.

* Zero Q indicates there is no offsite discharge included in the calculations (only Exfil Trench and Wells). Hypothetical stage calc. for PRE-POST Analysis.

Table 3. WATER QUALITY STORAGE REQUIREMENTS:

Based on Total Drainage Basin Acreage	Ac-Ft
1" x Basin Area	0.241
2.5" x WQPI x (Basin Area 0.52 Inches	0.126
Required Wet Detention (Total basin incl Offsite)	
0.5" Pretreatment-Com. Prjs,x(Basin Area - water area)	0.120
Credit for Inlets in Grass Areas, GAC=0.2" x (TDA	0.048
	N

Table 4. WATER QUALITY STORAGE SOURCE	Basin Storage Elev. (Ac-Ft)	WQ Eq WDV (Ac-Ft)	WQ Eq WDV Inches
Retention (RV) @			
Dry Det. (DDV) @			
Wet Det. (WDV) @			
Equiv WDV=WDV+RV/.5+DDV/.75)		0.000	
Exfil Trench Storage	0.186	0.373	1.55
Total WQ EQ WDV - Provided		0.373	1.55
Total WQ EQ WDV - Required		0.241	1.00

Exfil Vol. in Stage Storage =

(Ac-FT)	(Inches)
0.307	1.27

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Table 5. PRE - POST COMPARISON	PRE-DEVELOP. with Q - 3 Day Storm		POST-DEVELOP. with Q - 3 Day Storm		PRE-DEVELOP. *Zero Q - 3 Day Storm		POST-DEVELOP. *Zero Q - 3 Day Storm	
	Peak Stage(ft)	Peak Q (CFS)	Peak Stage(ft)	Peak Q (CFS)	Peak Stage(ft)	Peak Q (CFS)	Peak Stage(ft)	Peak Q (CFS)
100 Year Return Period					10.53		10.16	
25 Year Return Period					10.18		9.69	
10 Year Return Period					10.00		9.38	
5 Year Return Period					9.90		9.23	
3 Year Return Period					9.76		9.03	

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Routing Results from Analysis ZERO Offsite Discharge

Table 6. STAGE - DISCHARGE INFORMATION 100 - YEAR STORM - ZERO Offsite Discharge

TIME STEP (HOUR)	Rain Fall RATIO	Rain C*P (IN)	Q Scs (IN)	Inst Q In (CFS)	Sbuh Q (CFS)	Tot Q In (AC-FT)	Sumq Out (AC-FT)	Stored Vol (AC-FT)	Stage Lk-Up (FEET)	Inst Q Lkup (CFS)	Avg. Q Out (CFS)	Step Qout (AC-FT)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
4.00	0.02	0.31	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
8.00	0.05	0.63	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
12.00	0.07	0.94	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
16.00	0.10	1.25	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
20.00	0.12	1.57	0.01	0.02	0.02	0.00	0.00	0.00	4.04	0.00	0.00	0.00
24.00	0.15	1.88	0.05	0.05	0.03	0.01	0.00	0.01	4.19	0.00	0.00	0.00
28.00	0.18	2.34	0.15	0.12	0.09	0.03	0.00	0.03	4.56	0.00	0.00	0.00
32.00	0.22	2.79	0.29	0.10	0.11	0.07	0.00	0.07	5.11	0.00	0.00	0.00
36.00	0.25	3.25	0.46	0.12	0.12	0.11	0.00	0.11	5.79	0.00	0.00	0.00
40.00	0.29	3.71	0.66	0.14	0.15	0.16	0.00	0.16	6.61	0.00	0.00	0.00
44.00	0.32	4.17	0.90	0.24	0.18	0.21	0.00	0.21	7.51	0.00	0.00	0.00
48.00	0.36	4.62	1.14	0.17	0.18	0.27	0.00	0.27	8.10	0.00	0.00	0.00
52.00	0.40	5.20	1.48	0.37	0.30	0.35	0.00	0.35	8.36	0.00	0.00	0.00
56.00	0.50	6.39	2.26	0.82	0.75	0.53	0.00	0.53	8.66	0.00	0.00	0.00
58.00	0.57	7.37	2.96	1.21	1.17	0.69	0.00	0.69	8.86	0.00	0.00	0.00
59.00	0.63	8.09	3.50	1.83	1.71	0.81	0.00	0.81	9.00	0.00	0.00	0.00
59.50	0.68	8.73	4.00	2.93	2.65	0.90	0.00	0.90	9.08	0.00	0.00	0.00
59.75	0.85	10.91	5.77	20.66	8.75	1.09	0.00	1.09	9.22	0.00	0.00	0.00
60.00	1.02	13.07	7.63	21.65	17.02	1.44	0.00	1.44	9.50	0.00	0.00	0.00
60.50	1.09	14.01	8.46	4.78	8.06	1.90	0.00	1.90	9.74	0.00	0.00	0.00
61.00	1.13	14.50	8.89	2.54	3.40	2.08	0.00	2.08	9.84	0.00	0.00	0.00
62.00	1.18	15.16	9.48	1.48	1.66	2.25	0.00	2.25	9.92	0.00	0.00	0.00
64.00	1.24	15.95	10.20	0.95	1.02	2.44	0.00	2.44	10.02	0.00	0.00	0.00
68.00	1.31	16.88	11.05	0.55	0.62	2.65	0.00	2.65	10.10	0.00	0.00	0.00
72.00	1.36	17.50	11.61	0.41	0.41	2.79	0.00	2.79	10.16	0.00	0.00	0.00
Peak stage						10.16	At hour	72.00				
Peak discharge						0.00	At hour	72.00				

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Routing Results from Analysis WITHOUT Offsite Discharge

Table 7. STAGE - DISCHARGE INFORMATION 25 - YEAR STORM - Zero Offsite Discharge

TIME STEP (HOUR)	Rain Fall RATIO	Rain C*P (IN)	Q Scs (IN)	Inst Q In (CFS)	Sbuh Q (CFS)	Tot Q In (AC-FT)	Sumq Out (AC-FT)	Stored Vol (AC-FT)	Stage Lk-Up (FEET)	Inst Q Lkup (CFS)	Avg. Q Out (CFS)	Step Qout (AC-FT)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
4.00	0.02	0.23	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
8.00	0.05	0.47	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
12.00	0.07	0.69	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
16.00	0.10	0.92	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
20.00	0.12	1.16	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
24.00	0.15	1.39	0.00	0.01	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
28.00	0.18	1.73	0.03	0.04	0.03	0.01	0.00	0.01	4.10	0.00	0.00	0.00
32.00	0.22	2.06	0.08	0.04	0.05	0.02	0.00	0.02	4.32	0.00	0.00	0.00
36.00	0.25	2.39	0.16	0.06	0.06	0.04	0.00	0.04	4.63	0.00	0.00	0.00
40.00	0.29	2.73	0.27	0.07	0.08	0.06	0.00	0.06	5.04	0.00	0.00	0.00
44.00	0.32	3.08	0.39	0.13	0.10	0.09	0.00	0.09	5.52	0.00	0.00	0.00
48.00	0.36	3.41	0.53	0.10	0.10	0.12	0.00	0.12	6.08	0.00	0.00	0.00
52.00	0.40	3.83	0.72	0.21	0.18	0.17	0.00	0.17	6.83	0.00	0.00	0.00
56.00	0.50	4.71	1.19	0.51	0.46	0.28	0.00	0.28	8.12	0.00	0.00	0.00
58.00	0.57	5.43	1.63	0.76	0.74	0.38	0.00	0.38	8.44	0.00	0.00	0.00
59.00	0.63	5.96	1.97	1.17	1.09	0.45	0.00	0.45	8.57	0.00	0.00	0.00
59.50	0.68	6.44	2.29	1.90	1.71	0.51	0.00	0.51	8.65	0.00	0.00	0.00
59.75	0.85	8.04	3.46	13.64	5.75	0.63	0.00	0.63	8.79	0.00	0.00	0.00
60.00	1.02	9.63	4.72	14.65	11.35	0.87	0.00	0.87	9.05	0.00	0.00	0.00
60.50	1.09	10.33	5.29	3.28	5.46	1.18	0.00	1.18	9.30	0.00	0.00	0.00
61.00	1.13	10.69	5.59	1.75	2.33	1.30	0.00	1.30	9.40	0.00	0.00	0.00
62.00	1.18	11.17	5.99	1.03	1.15	1.42	0.00	1.42	9.49	0.00	0.00	0.00
64.00	1.24	11.76	6.49	0.66	0.71	1.55	0.00	1.55	9.56	0.00	0.00	0.00
68.00	1.31	12.44	7.08	0.38	0.43	1.70	0.00	1.70	9.64	0.00	0.00	0.00
72.00	1.36	12.90	7.48	0.29	0.29	1.79	0.00	1.79	9.69	0.00	0.00	0.00
Peak stage						9.69	At hour	72.00				
Peak discharge						0.00	At hour	72.00				

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Routing Results from Analysis WITHOUT Offsite Discharge

Table 8. STAGE - DISCHARGE INFORMATION 10 - YEAR STORM - Zero Offsite Discharge

TIME STEP (HOUR)	Rain Fall RATIO	Rain C*P (IN)	Q Scs (IN)	Inst Q In (CFS)	Sbuh Q (CFS)	Tot Q In (AC-FT)	Sumq Out (AC-FT)	Stored Vol (AC-FT)	Stage Lk-Up (FEET)	Inst Q Lkup (CFS)	Avg. Q Out (CFS)	Step Qout (AC-FT)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
4.00	0.02	0.18	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
8.00	0.05	0.37	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
12.00	0.07	0.56	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
16.00	0.10	0.74	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
20.00	0.12	0.93	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
24.00	0.15	1.12	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
28.00	0.18	1.39	0.00	0.01	0.01	0.00	0.00	0.00	4.00	0.00	0.00	0.00
32.00	0.22	1.66	0.02	0.02	0.02	0.00	0.00	0.00	4.08	0.00	0.00	0.00
36.00	0.25	1.93	0.06	0.03	0.03	0.01	0.00	0.01	4.22	0.00	0.00	0.00
40.00	0.29	2.20	0.11	0.04	0.04	0.03	0.00	0.03	4.45	0.00	0.00	0.00
44.00	0.32	2.48	0.19	0.08	0.06	0.04	0.00	0.04	4.73	0.00	0.00	0.00
48.00	0.36	2.75	0.27	0.06	0.06	0.06	0.00	0.06	5.06	0.00	0.00	0.00
52.00	0.40	3.09	0.40	0.14	0.11	0.09	0.00	0.09	5.54	0.00	0.00	0.00
56.00	0.50	3.80	0.71	0.34	0.31	0.16	0.00	0.16	6.71	0.00	0.00	0.00
58.00	0.57	4.38	1.00	0.53	0.51	0.23	0.00	0.23	7.84	0.00	0.00	0.00
59.00	0.63	4.81	1.25	0.82	0.76	0.28	0.00	0.28	8.14	0.00	0.00	0.00
59.50	0.68	5.19	1.48	1.35	1.21	0.33	0.00	0.33	8.29	0.00	0.00	0.00
59.75	0.85	6.48	2.32	9.89	4.15	0.41	0.00	0.41	8.53	0.00	0.00	0.00
60.00	1.02	7.77	3.26	10.86	8.30	0.59	0.00	0.59	8.74	0.00	0.00	0.00
60.50	1.09	8.33	3.68	2.46	4.06	0.82	0.00	0.82	9.01	0.00	0.00	0.00
61.00	1.13	8.62	3.91	1.32	1.75	0.91	0.00	0.91	9.09	0.00	0.00	0.00
62.00	1.18	9.01	4.22	0.78	0.87	1.00	0.00	1.00	9.16	0.00	0.00	0.00
64.00	1.24	9.48	4.59	0.50	0.54	1.10	0.00	1.10	9.23	0.00	0.00	0.00
68.00	1.31	10.03	5.04	0.29	0.33	1.21	0.00	1.21	9.32	0.00	0.00	0.00
72.00	1.36	10.40	5.35	0.22	0.22	1.28	0.00	1.28	9.38	0.00	0.00	0.00
Peak stage						9.38	At hour	72.00				
Peak discharge						0.00	At hour	72.00				

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Routing Results from Analysis WITHOUT Offsite Discharge

Table 10. STAGE - DISCHARGE INFORMATION 3 - YEAR STORM - Zero Offsite Discharge

TIME STEP (HOUR)	Rain Fall RATIO	Rain C*P (IN)	Q Scs (IN)	Inst Q In (CFS)	Sbuh Q (CFS)	Tot Q In (AC-FT)	Sumq Out (AC-FT)	Stored Vol (AC-FT)	Stage Lk-Up (FEET)	Inst Q Lkup (CFS)	Avg. Q Out (CFS)	Step Qout (AC-FT)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
4.00	0.02	0.14	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
8.00	0.05	0.29	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
12.00	0.07	0.43	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
16.00	0.10	0.58	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
20.00	0.12	0.73	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
24.00	0.15	0.87	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
28.00	0.18	1.08	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
32.00	0.22	1.29	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
36.00	0.25	1.50	0.01	0.01	0.01	0.00	0.00	0.00	4.02	0.00	0.00	0.00
40.00	0.29	1.71	0.03	0.02	0.02	0.01	0.00	0.01	4.10	0.00	0.00	0.00
44.00	0.32	1.93	0.06	0.04	0.03	0.01	0.00	0.01	4.22	0.00	0.00	0.00
48.00	0.36	2.14	0.10	0.03	0.03	0.02	0.00	0.02	4.39	0.00	0.00	0.00
52.00	0.40	2.40	0.17	0.08	0.06	0.04	0.00	0.04	4.64	0.00	0.00	0.00
56.00	0.50	2.95	0.34	0.20	0.18	0.08	0.00	0.08	5.31	0.00	0.00	0.00
58.00	0.57	3.40	0.53	0.33	0.31	0.12	0.00	0.12	5.99	0.00	0.00	0.00
59.00	0.63	3.74	0.68	0.52	0.48	0.15	0.00	0.15	6.54	0.00	0.00	0.00
59.50	0.68	4.03	0.82	0.87	0.77	0.18	0.00	0.18	7.01	0.00	0.00	0.00
59.75	0.85	5.04	1.38	6.54	2.73	0.24	0.00	0.24	7.95	0.00	0.00	0.00
60.00	1.02	6.04	2.02	7.42	5.56	0.35	0.00	0.35	8.37	0.00	0.00	0.00
60.50	1.09	6.47	2.32	1.72	2.79	0.51	0.00	0.51	8.64	0.00	0.00	0.00
61.00	1.13	6.70	2.48	0.93	1.22	0.57	0.00	0.57	8.72	0.00	0.00	0.00
62.00	1.18	7.00	2.69	0.55	0.61	0.64	0.00	0.64	8.80	0.00	0.00	0.00
64.00	1.24	7.37	2.96	0.36	0.38	0.71	0.00	0.71	8.88	0.00	0.00	0.00
68.00	1.31	7.80	3.28	0.21	0.23	0.79	0.00	0.79	8.98	0.00	0.00	0.00
72.00	1.36	8.09	3.50	0.16	0.16	0.84	0.00	0.84	9.03	0.00	0.00	0.00
Peak stage						9.03	At hour	72.00				
Peak discharge						0.00	At hour	72.00				

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Flood Routing Description:

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Total Drainage Basin: 2.890 Acres
Water Table Elevation = 4.00 Feet
Time of Conc. (hr.) = 0.25
Calculated weighted soil (s) 6.43 Soil Storage Value (S) = Storage under pervious area / Total Area
Calculated CN value 60.9 Soil Storage under pavement and buildings is not considered in computations

N	Y/N -Do you want to limit the Exfiltration Trench Vol. to a maximum of 3.28" over the site?
N	Y/N -Deduct EXFIL Vol. from Rainfall amount rather than include Vol. in Stage Storage table
Y	Y/N -Use EXFIL Vol. in Stage Storage, up to Water Quality Vol., without safety Factor of 2.

Table 16. STAGE STORAGE TABLE

Stage Elevation (feet)	Storage (Ac-ft)	Storage (CF)	Depth to water table (Ft)	Compacted Ground storage table			
				1.00	2.00	3.00	4.00
			Ground storage(In)	0.45	1.88	4.95	8.18
4.00	0.000	0	Mean depth to ground water table (ft)=	5.15	(Pervious Area)		
4.50	0.030	1,310					
5.00	0.060	2,621					
5.50	0.090	3,931	Soil Storage Type	Ground Storage Values (In Inches)			
6.00	0.120	5,242	Depth to Ground Water (Ft)	1	2	3	4
6.50	0.150	6,552	* Depressional	0.45	1.58	3.3	5.1
7.00	0.181	7,863	Flatwoods	0.45	1.88	4.05	6.75
7.50	0.211	9,173	Coastal Type	0.45	1.88	4.95	8.18
8.00	0.241	10,483	* (Low Flatwoods & Costal Lowlands)				
8.50	0.394	17,168	Ground Storage Values reflect 25% reduction of Available Storage,				
9.00	0.800	34,862	to take into account compaction of native soils.				
9.50	1.436	62,574					
10.00	2.396	104,350					
10.50	3.661	159,468					
11.00	5.029	219,054					
11.50	6.447	280,811					
12.00	7.881	343,276					
12.50	9.315	405,741					
13.00	10.749	468,206					

Project: Gary Matzner Park
POST-Development Calculations

Date: 01/13/2025

Flood Routing Description:

Client : Village of Pincecrest

Job Number: 13861.00

Table 17. SITE ACREAGE INFORMATION

Input Information								Imperv. Paved Acres	Perv. Acres	Bldgs. Acres	Non Bldgs. Acres	Water Lake Acres	Perv. Area Avg. El.	perv. acres * avg el
LAND USES	Acres	High Elev.	Low Elev.	% Imperv. Paved	% Bldgs.	% Water								
BASIN TOTALS / AVERAGE														
1	Prop. Concrete/Hardscape	0.019	11.40	9.00	100	0	0	0.02	0.00	0.00	0.02	0.00	0.00	0.
2	Proposed Sidewalk	0.430	11.40	9.20	100	0	0	0.43	0.00	0.00	0.43	0.00	0.00	0.
3	Proposed Asphalt	0.149	10.35	9.10	100	0	0	0.15	0.00	0.00	0.15	0.00	0.00	0.
4														
5														
6														
7	Proposed Building	0.022	11.40	11.40	0	100	0	0.00	0.00	0.02	0.00	0.00	0.00	0.
8														
9														
10	Landscape Area	2.270	10.30	8.00	0	0	0	0.00	2.27	0.00	2.27	0.00	9.15	21.
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39														
BASIN SUBTOTALS / AVG		2.890	11.40	8.00	20.69	0.76	0.00	0.60	2.27	0.02	2.87	0.00	9.15	21.

Table 18. UNDERGROUND STORAGE INFORMATION

Underground Storage		Area (SF)	Top Elev	Bottom Elev	% Voids									
1	Underground Storage 1													
2	Underground Storage 2													
3	Underground Storage 3													
4	Underground Storage 4													
5	Underground Storage 5													
BASIN TOTALS / AVERAGE		2.890	11.40	4.00	20.69	0.76	0.00	0.60	2.27	0.02	2.87	0.00	9.15	21.
Basin % Imper. for Water Quality Purposes =			20.85											
Basin % Impervious (incl. Bldg., No lakes)=			21.45											

Project: Gary Matzner Park
POST-Development Calculations

Date: 01/13/2025

Flood Routing Description:

Client : Village of Pincecrest

Job Number: 13861.00

Detail - Stage - Storage Information

Table 19. STAGE - STORAGE INFORMATION													
		Surface storage (Ac-Ft)											
LAND USES	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.
	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00
Total Surface Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.123	0.493	1.130	2.089
Underground Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Exfil Trench Storage	0.000	0.030	0.060	0.090	0.120	0.150	0.181	0.211	0.241	0.271	0.307	0.307	0.307
TOTAL Storage	0.000	0.030	0.060	0.090	0.120	0.150	0.181	0.211	0.241	0.394	0.800	1.436	2.396
1 Prop. Concrete/Hardscape	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.004
2 Proposed Sidewalk	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.063
3 Proposed Asphalt	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.048
4													
5													
6													
7 Proposed Building	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8													
9													
10 Landscape Area	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.123	0.493	1.110	1.974
11													
12													
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40													
Total Surface Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.49	1.13	2.09
Underground Storage													
	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00
1 Underground Storage 1													
2 Underground Storage 2													
3 Underground Storage 3													
4 Underground Storage 4													
5 Underground Storage 5													
Total Underground Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Exfil Trench Storage	0.000	0.030	0.060	0.090	0.120	0.150	0.181	0.211	0.241	0.271	0.307	0.307	0.307
TOTAL Storage	0.000	0.030	0.060	0.090	0.120	0.150	0.181	0.211	0.241	0.394	0.800	1.436	2.396
Stage Elevation	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00

Project: Gary Matzner Park
POST-Development Calculations
Flood Routing Description:
Client : Village of Pincecrest

Date: 01/13/2025

Job Number: 13861.00

Table 20. SOIL - STORAGE INFORMATION

Detail - Soil Storage Information

	LAND USES	Depth to Water Table	Ground Storage Under Pervious	
			Inches	Ac-Ft
	TOTAL/AVERAGE		8.18	1.55
1	Prop. Concrete/Hardscape	0.00	0.00	0.000
2	Proposed Sidewalk	0.00	0.00	0.000
3	Proposed Asphalt	0.00	0.00	0.000
4				
5				
6				
7	Proposed Building	0.00	0.00	0.000
8				
9				
10	Landscape Area	5.15	8.18	1.547
11				
12				
13				
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39				
40				
	TOTAL/AVERAGE		8.18	1.547

Soil Storage Value (S) = Storage under pervious area / Total Area

Soil Storage under pavement and buildings is not considered in computations

S= 6.42512111

Project: Gary Matzner Park
POST-Development Calculations

Date: 01/13/2025

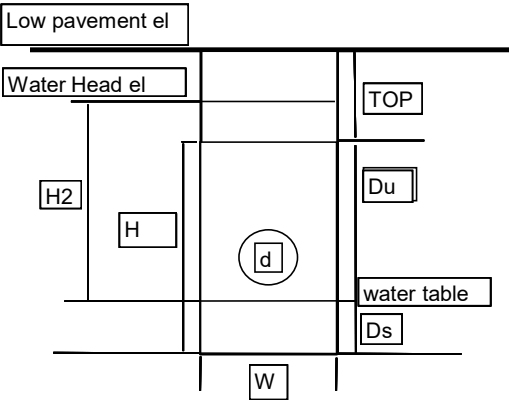
Flood Routing Description:

Client : Village of Pincecrest

Job Number: 13861.00

Table 22-1 EXILTRATION TRENCH -1 INFORMATION

INPUT INFORMATION	
Trench Width (Ft) (W)	5.00
Trench Height (Ft) (H)	15.00
Diameter of Pipe (inches) (d)	18
Invert of Pipe (Ft) (IE)	4.6
Top of trench elevation	7.3
Low pavement elevation	9.1
Water Head elevation (Ft)	9.10
Avg. Hydraulic Conductivity (Cfs/Ft^2) (k)	7.71E-04



Length of Exfiltration trench Provided (Ft) (L)	40
Water table elevation (Ft)	4.00
Trench Data	
Depth To Top Of Trench (Ft) (TOP)	1.80
Bottom of trench elevation	-7.70
Saturated Trench Depth (Ds)	11.70
Non-Saturated Trench Depth (Du)	3.30
Depth To Water Table or Trench Bottom (Ft) (H2)	5.10
Trench Storage Begins at Higher of Water Table or Trench Bot. Elev.	4.00

= Water head El - Top of Trench El.
= Top of Trench El. - Trench Height (H)
= Trench Height below water Table
= Trench depth above water Table
= Water head El to the water table or bottom of trench

Trench Volumes Stored & Exfiltrated in 1 hour (CF)

1 Hr. Vol by exfil SFWMD Eq.7 (Du > Ds and W < 2H) (CF)	0
1 Hr. Vol by exfil SFWMD Eq.8 (Du < Ds or W > 2H) (CF)	16,242
This Trench Volume with Safety Factor of 2 (V(trnSF))	8,121
Max. Vol allowed in Exfil (3.28" = 0.273 Ac-Ft / Ac) (Val) (CF)	0
Total EXFIL Vol Provided ALL EXFIL Trenches (Vtot) (CF)	0
Equivalent Wet Detention Vol:50% credit ALL EXFIL (Vwteq) (CF)	0
Total System ALL EXFIL WQ Equivalent Wet Det. Vol Provided	16,242
Total System ALL EXFIL Volume Used in Stage-Storage	13,366

Note: 3630 in Eqn. is conversion factor from (Ac-In) to (CF)-> (43560 SF/Ac)(1FT/12In)

$V_{trn} = 3630 * L * [k * ((H2 * W) + (2 * H2 * Du) - Du^2 + (2 * H2 * Ds)) + ((1.39 * 10^{-4}) * (W * Du))]$	
$V_{trn} = 3630 * L * [k * ((2 * H2 * Du) - Du^2 + (2 * H2 * Ds)) + ((1.39 * 10^{-4}) * (W * Du))]$	
$V(TrnSF) = V_{trn} / (\text{Safety Factor of } 2)$	
$V_{tot} = V_{design} + V_{sto}$	
$V_{wteq} = V_{tot} * 2$	

0.186	Ac-Ft	2.24	Ac-In
0.000	Ac-Ft	0.00	Ac-In
0.000	Ac-Ft	0.00	Ac-In
0.000	Ac-Ft	0.00	Ac-In

CF 0.373 Ac-Ft NOTE: This line is Sum of all Exfiltration Trenches
CF 0.307 Ac-Ft NOTE: This line is Sum of all Exfiltration Trenches

NOTE: For Exfiltration Trench design, a factor of safety of 2 is used for WQ in all conditions (WQ vol & above WQ vol), per the "New" SFWMD formula.
Select on the Stage-Storage tab, whether to use the safety factor for the Exfil trench, up to the required WQ amount, in the flood routing Stage-Storage volumes.
Because of the built in safety factor of only using the trench discharge for one hour during the 72 hour storm event, some Agencies allow the use of the Exfiltration trench volume, up to the required Water Quality Volume, without a safety factor of 2, for use in storm routing calculations.

Table 23. WATER QUALITY CALCULATIONS TABLE
Proposed Project

Project Land Use	Total Basin	Unit
1. Water Area (WA)	0.00	Acres
2. Roof Area (RA)	0.02	Acres
3. Other Impervious Areas, paving, sidewalks, roads, etc. (IA)	0.60	Acres
4. Landscape and Pervious areas (LPA)	2.27	Acres
5. Total Drainage Area (TDA)	2.89	Acres
6. Total % Impervious ($TPI = (WA + RA + IA) / TDA$)	21.5%	
7. Area for Water Quality % Impervious Calculations ($WQA = TDA - WA - RA$)	2.87	Acres
8. Impervious Area for Water Quality % Impervious Calculations ($WQIA = WQA - LPA$)	0.60	Acres
9. Water Quality % Impervious ($WQPI = WQIA / WQA$)	20.9%	
Required Water Quality Volumes per Florida SWERP		
Wet Detention Volume, the greater of the following:	Storage Volume	Unit
10. First inch of runoff from the entire site ($1" \times TDA$)	0.24	Ac-Ft
11. 2.5 in. times the percentage of impervious ($2.5" \times WQPI \times (TDA - WA)$)	0.13	Ac-Ft
12. Required Wet Water Quality Amount (greater of the 1" or 2.5" x % impervious)	0.24	Ac-Ft

The SWERP provides for credits to the Water Quality Volume for Dry Detention and Retention

13. Dry Detention Volume (DDV) (75% of WDV)	0.18	Ac-Ft
14. Retention Volume (RV) (50% of WDV)	0.12	Ac-Ft
15. Required Dry Detention or Retention Volume for Commercial and Industrial Zoned land and Projects greater than 40% Imp., Discharging to certain water bodies ($0.5" \times TDA - WA$)	0.12	Ac-Ft

The SWERP provides for credits to the Water Quality Volume for Inlets in Grass Areas

16. Ratio Impervious Area to Pervious Area, for inlets in Grass Area credit. (Full credit (0.2" wet detention) for Ratios 10:1 or less, proportionately less credit for greater ratios.) ($IAPA = (RA + IA) / LPA$)	0.27	
17. Credit for Inlets in Grass Area ($GAC = 0.2" \times (TDA - WA)$) (reduce for $IAPA > 10$)	0.05	Ac-Ft
18. Required Wet Detention Volume Water Quality with Inlet in Grass area credit	0.19	Ac-Ft
19. Required Dry Detention Volume Water Quality with Inlet in Grass area credit	0.14	Ac-Ft
20. Required Retention Volume Water Quality with Inlet in Grass area credit	0.10	Ac-Ft