

Project:2400 E Atlantic

Flood Routing Description:Post-Development Calculations

Client :Portman Holdings

Design Engineer :Bryan Baldwin

Project Address / Location :2400 East Atlantic Blvd

Section/Township/Range:Section 05, Township 48S, Range 43E

Surfacewater License:

FEMA FIRM Information:12011X0376J

Project Description:A mixed-use building with ground floor commercial, approximately 350 units, and structured parking,

Date: 05/13/2025

Job Number: 14267.00

City: Pompano Beach

County: Broward

State: Florida

DRC

PZ25-12000001

08/06/2025

Total Drainage Basin: 0.238 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						
25 Year Return Period						
10 Year Return Period	9.5	0.10	0.002			
5 Year Return Period	7.8	5.81	0.115	10.6	8.51	0.169
3 Year Return Period						
5 Yr Return Period - 1 Hr	3.2	0.00	0.000			

Runoff estimation - USDA SCS formula

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

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								Zero Q (Water Budget)
25 Year Return Period								
10 Year Return Period		5.17	0.00					
5 Year Return Period		4.98	0.00	5.29	0.00	5.29	0.00	3.20
3 Year Return Period								

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	0.020
2.5" x WQPI x (Basin Area 1.82 Inches	0.036
Required Wet Detention (Total basin incl Offsite)	
0.5" Pretreatment-Com. Prjs,x(Basin Area - water area)	0.010
Credit for Inlets in Grass Areas, GAC=0.2" x (TDA	0.004
	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	0.039	0.079	3.96
Total WQ EQ WDV - Provided		0.079	3.96
Total WQ EQ WDV - Required		0.036	1.82

Exfil Vol. in Stage Storage =

(Ac-FT)	(Inches)
0.057	2.89

Project: 2400 E Atlantic
Flood Routing Description: Post-Development Calculations

Date: 05/13/2025

DRC

Client : Portman Holdings Job Number: 14267.00

PZ25-12000001
08/06/2025

Table 5. PRE - POST COMPARISON	PRE-DEVELOP. with Q - 3 Day Storm		POST-DEVELOP. with Q - 3 Day Storm		PRE-DEVELOP. *Zero Q - 1 Day Storm		POST-DEVELOP. *Zero Q - 1 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								
25 Year Return Period								
10 Year Return Period					5.19		5.17	
5 Year Return Period					5.05		4.98	
3 Year Return Period								

DRC

PZ25-12000001

08/06/2025

Routing Results from Analysis WITHOUT Offsite Discharge

Table 9. STAGE - DISCHARGE INFORMATION 5 - 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	1.50	0.00	0.00	0.00
4.00	0.02	0.19	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00
8.00	0.05	0.38	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00
12.00	0.07	0.57	0.01	0.00	0.00	0.00	0.00	0.00	1.51	0.00	0.00	0.00
16.00	0.10	0.75	0.05	0.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	0.00
20.00	0.12	0.95	0.12	0.01	0.00	0.00	0.00	0.00	1.59	0.00	0.00	0.00
24.00	0.15	1.14	0.20	0.01	0.00	0.00	0.00	0.00	1.65	0.00	0.00	0.00
28.00	0.18	1.42	0.34	0.01	0.01	0.01	0.00	0.01	1.76	0.00	0.00	0.00
32.00	0.22	1.69	0.51	0.01	0.01	0.01	0.00	0.01	1.90	0.00	0.00	0.00
36.00	0.25	1.96	0.69	0.01	0.01	0.01	0.00	0.01	2.06	0.00	0.00	0.00
40.00	0.29	2.24	0.89	0.01	0.01	0.02	0.00	0.02	2.22	0.00	0.00	0.00
44.00	0.32	2.52	1.10	0.02	0.01	0.02	0.00	0.02	2.40	0.00	0.00	0.00
48.00	0.36	2.79	1.31	0.01	0.01	0.02	0.00	0.02	2.58	0.00	0.00	0.00
52.00	0.40	3.14	1.59	0.02	0.02	0.03	0.00	0.03	2.80	0.00	0.00	0.00
56.00	0.50	3.86	2.20	0.05	0.04	0.04	0.00	0.04	3.24	0.00	0.00	0.00
58.00	0.57	4.45	2.72	0.07	0.06	0.05	0.00	0.05	3.62	0.00	0.00	0.00
59.00	0.63	4.89	3.11	0.11	0.08	0.05	0.00	0.05	3.88	0.00	0.00	0.00
59.50	0.68	5.27	3.46	0.17	0.11	0.06	0.00	0.06	4.05	0.00	0.00	0.00
59.75	0.85	6.59	4.68	1.18	0.24	0.06	0.00	0.06	4.22	0.00	0.00	0.00
60.00	1.02	7.90	5.92	1.19	0.45	0.07	0.00	0.07	4.51	0.00	0.00	0.00
60.50	1.09	8.46	6.47	0.26	0.45	0.09	0.00	0.09	4.74	0.00	0.00	0.00
61.00	1.13	8.76	6.75	0.14	0.34	0.11	0.00	0.11	4.92	0.00	0.00	0.00
62.00	1.18	9.16	7.14	0.08	0.18	0.13	0.00	0.13	5.07	0.00	0.00	0.00
64.00	1.24	9.64	7.60	0.05	0.07	0.15	0.00	0.15	5.17	0.00	0.00	0.00
68.00	1.31	10.20	8.15	0.03	0.03	0.16	0.00	0.16	5.25	0.00	0.00	0.00
72.00	1.36	10.57	8.51	0.02	0.02	0.17	0.00	0.17	5.29	0.00	0.00	0.00

Peak stage	5.29	At hour	72.00
Peak discharge	0.00	At hour	72.00

Project: 2400 E Atlantic
Post-Development Calculations
Flood Routing Description:
Client : Portman Holdings

Date: 05/13/2025

DRC

Job Number: 14267.00

PZ25-12000001

Total Drainage Basin: 0.238 Acres
Water Table Elevation = 1.50 Feet
Time of Conc. (hr.) = 1.00
Calculated weighted soil (s) 1.99 Soil Storage Value (S) = Storage under pervious area / Total Area
Calculated CN value 83.4 Soil Storage under pavement and buildings is not considered in computations

Y	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)
1.50	0.000	0
2.00	0.011	500
2.50	0.023	1,001
3.00	0.034	1,501
3.50	0.046	2,002
4.00	0.057	2,502
4.50	0.072	3,134
5.00	0.115	5,029
5.50	0.204	8,888
6.00	0.323	14,080
6.50	0.442	19,272
7.00	0.562	24,465
7.50	0.681	29,657
8.00	0.800	34,849
8.50	0.919	40,041
9.00	1.038	45,233
9.50	1.158	50,426
10.00	1.277	55,618
10.50	1.396	60,810

Compacted Ground storage table					
Depth to water table (Ft)	1.00	2.00	3.00	4.00	
	Ground storage(In)	0.45	1.88	4.95	8.18
Mean depth to ground water table (ft)=		3.75	(Pervious Area)		
Soil Storage Type		Ground Storage Values (In Inches)			
Depth to Ground Water (Ft)		1	2	3	4
* Depressional		0.45	1.58	3.3	5.1
Flatwoods		0.45	1.88	4.05	6.75
Coastal Type		0.45	1.88	4.95	8.18
* (Low Flatwoods & Costal Lowlands)					
Ground Storage Values reflect 25% reduction of Available Storage, to take into account compaction of native soils.					

Project: 2400 E Atlantic
Post-Development Calculations

Date: 05/13/2025

DRC

Flood Routing Description:

Client : Portman Holdings

Job Number: 14267.00

PZ25-12000001

Table 17. SITE ACREAGE INFORMATION

Input Information								08/06/2025					
LAND USES	Acres	High Elev.	Low Elev.	% Imperv. Paved	% Bldgs.	% Water	Imperv. Paved Acres	Perv. Acres	Bldgs. Acres	Non Bldgs. Acres	Water Lake Acres	Perv. Area Avg. El.	perv. acres * avg el
BASIN TOTALS / AVERAG	0.238	5.50	1.50	72.99	0.00	0.00	0.17	0.06	0.00	0.24	0.00	5.25	
1 Pervious	0.064	5.50	5.00	0	0	0	0.00	0.06	0.00	0.06	0.00	5.25	0.
2 Impervious	0.174	5.50	4.00	100	0	0	0.17	0.00	0.00	0.17	0.00	0.00	0.
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
BASIN SUBTOTALS / AVG	0.238	5.50	4.00	72.99	0.00	0.00	0.17	0.06	0.00	0.24	0.00	5.25	0.

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		0.238	5.50	1.50	72.99	0.00	0.00	0.17	0.06	0.00	0.24	0.00	5.25	0.
Basin % Imper. for Water Quality Purposes =			72.99											
Basin % Impervious (incl. Bldg., No lakes)=			72.99											

Project: 2400 E Atlantic
Post-Development Calculations

Date: 05/13/2025

DRC

Flood Routing Description:

Client : Portman Holdings

Job Number: 14267.00

PZ25-12000001

Detail - Stage - Storage Information

08/06/2025

Table 19. STAGE - STORAGE INFORMATION		Surface storage (Ac-Ft)											
LAND USES	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.
	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
Total Surface Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.058	0.147	0.266	0.385	0.504	0.623
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	0.011	0.023	0.034	0.046	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
TOTAL Storage	0.000	0.011	0.023	0.034	0.046	0.057	0.072	0.115	0.204	0.323	0.442	0.562	0.681
1 Pervious	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.048	0.080	0.113	0.145
2 Impervious	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.058	0.131	0.218	0.305	0.392	0.479
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
40													
Total Surface Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.15	0.27	0.38	0.50	0.62
Underground Storage													
	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
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	0.011	0.023	0.034	0.046	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
TOTAL Storage	0.000	0.011	0.023	0.034	0.046	0.057	0.072	0.115	0.204	0.323	0.442	0.562	0.681
Stage Elevation	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50

Table 20. SOIL - STORAGE INFORMATION
Detail - Soil Storage Information

08/06/2025

	LAND USES	Depth to Water Table	Ground Storage Under Pervious	
			Inches	Ac-Ft
	TOTAL/AVERAGE		7.37	0.04
1	Pervious	3.75	7.37	0.040
2	Impervious	0.00	0.00	0.000
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
	TOTAL/AVERAGE		7.37	0.040

Soil Storage Value (S) = Storage under pervious area / Total Area
Soil Storage under pavement and buildings is not considered in computations

S=	1.9914278
----	-----------

Project: 2400 E Atlantic
Post-Development Calculations

Date: 05/13/2025

DRC

Flood Routing Description:

Client : Portman Holdings

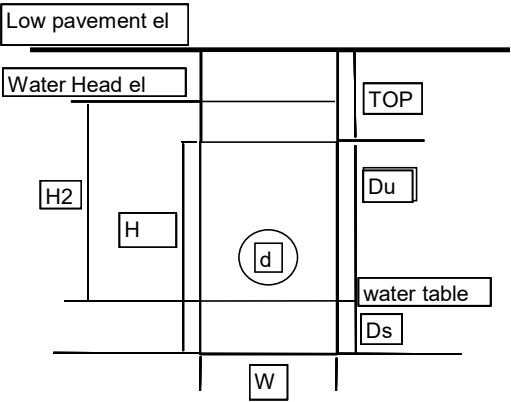
Job Number: 14267.00

PZ25-12000001

08/06/2025

Table 22-1 EXILTRATION TRENCH -1 INFORMATION

INPUT INFORMATION	
Trench Width (Ft) (W)	6.80
Trench Height (Ft) (H)	3.40
Diameter of Pipe (inches) (d)	18
Invert of Pipe (Ft) (IE)	1
Top of trench elevation	3.2
Low pavement elevation	5
Water Head elevation (Ft)	4.00
Avg. Hydraulic Conductivity (Cfs/Ft^2) (k)	1.00E-04



Length of Exfiltration trench Provided (Ft) (L)	200
Water table elevation (Ft)	1.50
Trench Data	
Depth To Top Of Trench (Ft) (TOP)	0.80
Bottom of trench elevation	-0.20
Saturated Trench Depth (Ds)	1.70
Non-Saturated Trench Depth (Du)	1.70
Depth To Water Table or Trench Bottom (Ft) (H2)	2.50
Trench Storage Begins at Higher of Water Table or Trench Bot. Elev.	1.50

= 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)	3,425
1 Hr. Vol by exfil SFWMD Eq.8 (Du < Ds or W > 2H) (CF)	0
This Trench Volume with Safety Factor of 2 (V(trnSF))	1,713
Max. Vol allowed in Exfil (3.28" = 0.273 Ac-Ft / Ac) (Val) (CF)	2,838
Total EXFIL Vol Provided ALL EXFIL Trenches (Vtot) (CF)	1,713
Equivalent Wet Detention Vol:50% credit ALL EXFIL (Vwteq) (CF)	3,425
Total System ALL EXFIL WQ Equivalent Wet Det. Vol Provided	3,425
Total System ALL EXFIL Volume Used in Stage-Storage	2,502

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

$V_{trn} = 3630 * L * [k * ((H2 * W) + (2 * H2 * Du) - Du^2 + (2 * H2 * Ds)) + ((1.39 * 10^{-4}) * (W * Du))]$	
$V_{trn} = 3630 * L * [k * ((2 * H2 * Du) - Du^2 + (2 * H2 * Ds)) + ((1.39 * 10^{-4}) * (W * Du))]$	
$V(TrnSF) = V_{trn} / (\text{Safety Factor of } 2)$	0.039 Ac-Ft
$V_{tot} = V_{design} + V_{sto}$	0.065 Ac-Ft
$V_{tot} = V_{design} + V_{sto}$	0.039 Ac-Ft
$V_{wteq} = V_{tot} * 2$	0.079 Ac-Ft

0.47	Ac-In
0.78	Ac-In
0.47	Ac-In
0.94	Ac-In

CF 0.079 Ac-Ft NOTE: This line is Sum of all Exfiltration Trenches
CF 0.057 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.