

JONATHANS LANDING OLD TRAIL GOLF CLUB
GOLF COURSE MODIFICATIONS
WORK AREA SUMMARY

<u>Storm</u>	<u>Pre Stage</u>	<u>Revised Post Stage</u>
10yr-1day	16.23	16.18
100yr-3day	18.39	17.99

Minimum Road Crown Elevation per Permit = 16.8 NAVD
Minimum Finished Floor Elevation per Permit = 18.3 NAVD

Water Quality Required = 10.00 ac-ft
150% Water Quality Required = 15.00 ac-ft

Water Quality Provided = 15.68 ac-ft*

**Water quality provided is being increased in 16.30 ac lake area and 3.3 ac wetland area as part of this modification with new CS#1 with crest elevation 15.30 to meet the 150% requirement for impaired water body.*

New discharge structure CS#1 being added in new lake north of maintenance facility to increase water quality volume provided prior to discharge from this project area thru the existing 54" RCP drainage pipe.

Existing bleeders (4 x V-Notch 1.2' wide x 0.6' high w/ Invert Elevation 14.5) to remain
Existing discharge structure (3.5' wide morning glory weir w/ Crest Elevation 15.1) to remain

Existing outfall pipe (200 LF OF 24" BCCMP) to Unnamed Canal to remain

Note: Elevations shown are in NAVD 88



THIS ITEM HAS BEEN DIGITALLY SIGNED
AND SEALED BY DENNIS R. SHULTZ, P.E.
ON Dec 16, 2020

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JONATHANS LANDING OLD TRAIL GOLF CLUB

FES Project No. 18-1416.02

I. PROPOSED WORK AREA BREAKDOWN

A. TOTAL ACREAGE =	120.00 AC	
B. BUILDING COVERAGE =	0.00 AC	0%
C1. WATER MANAGMENT AREA =	16.30 AC	14%
C2. PRESERVE AREA =	4.00 AC	3%
D. ASPHALT PARKING / CONCRETE WALKS=	0.00 AC	0%
E. TOTAL IMPERVIOUS =	20.30 AC	17%
F. % WATER QUALITY IMPERVIOUS =		0%
G. TOTAL PERVIOUS AREA =	99.70 AC	83%
		100%

* reflects net increase of 1.44 acres of additional lake area

II. EXISTING WORK AREA BREAKDOWN

A. TOTAL ACREAGE =	120.00 AC	
B. BUILDING COVERAGE =	0.00 AC	0%
C1. WATER MANAGEMENT AREA =	14.80 AC	12%
C2. PRESERVE AREA =	4.00 AC	3%
D. ASPHALT PARKING / CONCRETE WALKS=	0.00 AC	0%
E. TOTAL IMPERVIOUS =	18.80 AC	16%
F. TOTAL PERVIOUS AREA =	101.20 AC	84%
		100%

III. WATER QUALITY CRITERIA

A. COMPUTE FIRST INCH OF RUNOFF FROM TOTAL SITE

1"/12 Total Acreage = 10.00 AC-FT= 120.00 AC-IN

B. COMPUTE 2.5 TIMES THE % OF "WATER QUALITY" IMPERVIOUS

2.5" x % Imperv. = 1.84 AC-FT= 0.00 AC-IN

IV. WATER QUALITY FOR IMPAIRED WATER BODY

A. COMPUTE 150% OF REQUIRED WATER QUALITY

WATER QUALITY X 1.5 = 15.00 AC-FT= 180.00 AC-IN

Flynn Engineering

Civil Engineering Services
Ft. Lauderdale, FL; (954) 522-1004

Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program
Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Client :
Job Number : 18-1416.02
Design Engineer :DRS

Project Location : MARTIN COUNTY, FL

Section / Township (S)/ Range (E): Plat Book / Page: City: County: Martin State: Florida

Project Description : GOLF COURSE MODIFICATION

PRE CALCULATIONS

*All elevations referenced are in NAVI

Total Project Acreage : 120.00 Acres
Total Drainage Basin(with offsite): 120.00 Acres

Federal Insurance Rate Map Information : Map No. Date: Zone Elev. NAVD

Hydrogeologic Information :

RAINFALL DATA from SFWMD Tech. Pub. 81-3 May, 1981	1 Day Storm Event			3 Day Storm Event			Less Trench Ac-Ft
	Rainfall Inches	Runoff Inches	Runoff Ac-Ft	Rainfall Inches	Runoff Inches	Runoff Ac-Ft	
100 Year Return Period	11.00	6.59	65.91	14.95	10.18	101.79	101.79
25 Year Return Period	8.80	4.69	46.87	11.96	7.45	74.46	74.46
10 Year Return Period	7.20	3.38	33.75	9.78	5.53	55.27	55.27
5 Year Return Period							
3 Year Return Period							

For Runoff estimation use USDA SCS formula
Runoff (in.) Q= $\frac{(P-0.2S)^2}{P+0.8S}$
Where: P = accumulated rainfall (in.)
S = Soil Storage Value

SUMMARY OF FLOOD ROUTING	MIN ELEV PER PERMIT	Calculated 1 Day Storm Event		Calculated 3 Day Storm Event	
		Peak Stage	Peak Discharge	Peak Stage	Peak Discharge
100 Year Return Period	18.30			18.39	0.00
25 Year Return Period				17.58	0.00
10 Year Return Period	16.80	16.23	0.00		
5 Year Return Period					
3 Year Return Period					

Water Table Elevation (ft)= 14.50
Compacted Ground storage table
Depth to water table (Ft) 1.00 2.00 3.00 4.00
Ground storage(In) 0.45 1.88 4.05 6.75
Mean depth to ground water table (ft)= 3.75 (Pervious Area)
Soil Storage (S) Value = 5.12
Soil Storage Value (S) = Storage under pervious area / Total Area
Soil Storage under pavement and bldgs. is not considered, per SFWMD.
Time of Conc. (hr.) = 0.50

Water Quality Storage Requirements :

Based on Total Drainage Basin Acreage(with offsite)	Ac-Ft
1" x Area	10.00
2.5" X % Imp. X Area (less bldg. & water,For water quality)	0.00
2.5" X % Imp. X Area (Total site less water areas)	0.00
.5" X Area (Pretreatment - Commercial projects Only)	5.00

Based on Project Drainage Acreage(NO offsite)	Ac-Ft
1" x Area	10.00
2.5" X % Imp. X Area (less bldg. & water,For water quality)	0.00
2.5" X % Imp. X Area (Total site less water areas)	0.00
.5" X Area (Pretreatment - Commercial projects Only)	5.00

STORAGE SOURCE	Basin Storage (Ac-Ft)	Equivalent Wet Detention (Ac-Ft)	Project Storage (Ac-Ft)	Equivalent Wet Detention (Ac-Ft)
Retention				
Dry Detention				
Wet Detention				
Total Less Trench	0.00	0.00	0.00	0.00
Exfiltration Trench	0	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00

Storage from ____ to ____

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Table 1 - Site Acreage Information

	Input Information							Imperv. Paved Acres	Perv. Acres	Bldgs. Acres	Non Bldgs. Acres	Water Lake Acres	Perv. Area Avg. El.
	LAND USES	Acres	High Elev.	Low Elev.	% Imperv. Paved	% Bldgs.	% Water						
1	LAKES AREA	14.80	14.50	14.50	0.00	0.00	100.00	0.00	0.00	0.00	14.80	14.80	0.00
2	PRESERVE AREA	3.30	14.50	14.50	0.00	0.00	100.00	0.00	0.00	0.00	3.30	3.30	0.00
3	PRESERVE AREAS 3&4	0.70	16.00	16.00	0.00	0.00	100.00	0.00	0.00	0.00	0.70	0.70	0.00
4	GOLF COURSE	101.20	20.00	16.50	0.00	0.00	0.00	0.00	101.20	0.00	101.20	0.00	18.25
5													
6													
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23													
24													
25													
26													
27													
28													
	PROJECT TOTALS / AVERAGE	120.00	20.00	14.50	0.00	0.00	15.67	0.00	101.20	0.00	120.00	18.80	0.00
	OFFSITE AREAS IN THIS BASIN												
29	NONE	0.000	18.50	14.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
40													
41													
	OFFSITE TOTALS / AVERAGE	0.00	18.50	14.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	EXFILTRATION TRENCH												
	BASIN TOTALS / AVERAGE	120.00	20.00	14.50	0.00	0.00	15.67	0.00	101.20	0.00	120.00	18.80	18.25

Basin % Imper. for Water Quality Purposes = 0.00

Drainage Basin % Impervious (incl. Bldg., No lakes)= 0.00

Project % Imper. for Water Quality Purposes = 0.00

Project % Impervious (incl. Bldg., No lakes)= 0.00

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Table 2 - Stage - Storage Information

LAND USES	Surface storage (Ac-Ft)											
	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.
	14.50	15.50	16.50	17.00	17.50	18.00	18.50	19.00	19.50	20.00	20.50	21.50
1 LAKES AREA	0.00	14.80	29.60	37.00	44.40	51.80	59.20	0.00	0.00	0.00	0.00	0.00
2 PRESERVE AREA	0.00	3.30	6.60	8.25	9.90	11.55	13.20	14.85	16.50	18.15	19.80	23.10
3 PRESERVE AREAS 3&4	0.00	0.00	0.35	0.70	1.05	1.40	1.75	2.10	2.45	2.80	3.15	3.85
4 GOLF COURSE	0.00	0.00	0.00	3.61	14.46	32.53	57.83	90.36	130.11	177.10	227.70	328.90
5												
6												
7												
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10												
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22												
23												
24												
25												
26												
27												
28												
PROJECT TOTALS / AVERAGE	0.00	18.10	36.55	49.56	69.81	97.28	131.98	107.31	149.06	198.05	250.65	355.85
OFFSITE AREAS IN THIS BASIN												
29 NONE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
OFFSITE TOTALS / AVERAGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 EXFILTRATION TRENCH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.00	18.10	36.55	49.56	69.81	97.28	131.98	107.31	149.06	198.05	250.65	355.85

Drainage Basin:
SFWMD allowable discharge: 42.43 CFS

Recieving Water Body:
Project Acreage : 120.00

Runoff Formula: $Q = \frac{72}{A}$
Q=Allowable runoff (CFS)
A=Drainage Area (Square Miles)

Table 3 - Stage / Discharge Data	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.
Stage (feet)	14.50	15.50	16.50	17.00	17.50	18.00	18.50	19.00	19.50	20.00	20.50	21.50
Discharge (Cfs)												

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Table 4 - Soil Storage Information

LAND USES	Depth to Water Table	Ground Storage Under Pervious	
		Inches	Ac-Ft
1 LAKES AREA	0.00	0.00	0.00
2 PRESERVE AREA	0.00	0.00	0.00
3 PRESERVE AREAS 3&4	0.00	0.00	0.00
4 GOLF COURSE	3.75	6.08	51.23
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
PROJECT TOTALS / AVERAGE		6.08	51.23
OFFSITE AREAS IN THIS BASIN			
29 NONE	0.00	0.00	0.00
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
OFFSITE TOTALS / AVERAGE		0.00	0.00
42			
TOTAL/AVERAGE		6.08	51.23

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

S= 5.12

Soil Storage under pavement and buildings is not considered in computations

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Exfiltration Trench Design Information :
Hydraulic Conductivity Determination :

FALLING HEAD OPEN HOLE	Test 1	Test 2	Test 3	Test 4
Diameter of test hole (Ft)				
Height of water @ T1 (Ft)				
Height of water @ T2 (Ft)				
Saturated hole depth (Ft)				
Time , T2 - T1 (Sec)				

Hydraulic conductivity (Cfs/Ft ^{1/2})				
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Avg.

USUAL OPEN HOLE	Test 1	Test 2	Test 3	Test 4
Diameter of test hole (Ft)				
Depth to water table (Ft)				
Saturated hole depth (Ft)				
Stabilized flow rate (Gpm)				

Hydraulic conductivity (Cfs/Ft ^{1/2})				
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Avg.

Exfiltration Trench Information :

INPUT INFORMATION		
Depth To Top Of Trench (Ft)		
Trench Width (Ft)		
Trench Height (Ft)		
Low Pavement Elevation		
Avg. Hydraulic Conductivity (Cfs/Ft ^{1/2})		

Saturated Trench Depth	
Non-Saturated Trench Depth	
Volume Required (Ac-Ft)	
Depth To Water Table or Trench Bottom (Ft)	

Length Required (Ft)	
Length Provided (Ft)	

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Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Table 5 - Stage - Discharge Information

100 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.54	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.80	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	1.07	0.00	0.08	0.04	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	1.34	0.02	1.17	0.79	0.15	0.00	0.15	14.51	0.00	0.00	0.00
24.00	0.15	1.61	0.06	2.03	1.45	0.53	0.00	0.53	14.53	0.00	0.00	0.00
28.00	0.18	2.00	0.16	4.65	3.39	1.41	0.00	1.41	14.58	0.00	0.00	0.00
32.00	0.22	2.39	0.29	3.98	4.30	2.69	0.00	2.69	14.65	0.00	0.00	0.00
36.00	0.25	2.77	0.44	4.71	4.80	4.25	0.00	4.25	14.73	0.00	0.00	0.00
40.00	0.29	3.17	0.63	5.34	5.84	6.09	0.00	6.09	14.84	0.00	0.00	0.00
44.00	0.32	3.56	0.84	8.80	6.61	8.12	0.00	8.12	14.95	0.00	0.00	0.00
48.00	0.36	3.95	1.06	6.32	6.95	10.35	0.00	10.35	15.07	0.00	0.00	0.00
52.00	0.40	4.44	1.37	13.60	10.73	13.21	0.00	13.21	15.23	0.00	0.00	0.00
56.00	0.50	5.46	2.06	30.23	26.29	19.42	0.00	19.42	15.57	0.00	0.00	0.00
58.00	0.57	6.29	2.67	44.16	40.65	24.98	0.00	24.98	15.87	0.00	0.00	0.00
59.00	0.63	6.91	3.14	66.43	56.51	29.01	0.00	29.01	16.09	0.00	0.00	0.00
59.50	0.68	7.46	3.58	106.30	83.16	32.14	0.00	32.14	16.17	0.00	0.00	0.00
59.75	0.85	9.32	5.13	747.43	220.64	36.69	0.00	36.69	16.51	0.00	0.00	0.00
60.00	1.02	11.17	6.74	779.78	437.83	45.74	0.00	45.74	16.85	0.00	0.00	0.00
60.50	1.09	11.97	7.45	171.68	341.65	62.17	0.00	62.17	17.31	0.00	0.00	0.00
61.00	1.13	12.39	7.83	91.26	190.97	71.44	0.00	71.44	17.53	0.00	0.00	0.00
62.00	1.18	12.95	8.34	53.24	78.63	80.40	0.00	80.40	17.69	0.00	0.00	0.00
64.00	1.24	13.63	8.96	34.14	37.53	88.10	0.00	88.10	17.83	0.00	0.00	0.00
68.00	1.31	14.42	9.69	19.66	22.11	96.01	0.00	96.01	17.98	0.00	0.00	0.00
72.00	1.36	14.95	10.18	14.81	14.81	101.17	0.00	101.17	18.39	0.00	0.00	0.00
Peak stage						18.39	At hour	72.00				
Peak discharge						0.00	At hour	0.00				

Table 6 - Stage - Discharge Information

25 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.21	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.43	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.64	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	0.85	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	1.07	0.00	0.13	0.05	0.00	0.00	0.00	14.50	0.00	0.00	0.00
24.00	0.15	1.28	0.01	0.78	0.53	0.10	0.00	0.10	14.51	0.00	0.00	0.00
28.00	0.18	1.60	0.06	2.41	1.72	0.51	0.00	0.51	14.53	0.00	0.00	0.00
32.00	0.22	1.91	0.13	2.31	2.46	1.20	0.00	1.20	14.57	0.00	0.00	0.00
36.00	0.25	2.22	0.23	2.90	2.94	2.13	0.00	2.13	14.62	0.00	0.00	0.00
40.00	0.29	2.53	0.34	3.42	3.73	3.29	0.00	3.29	14.68	0.00	0.00	0.00
44.00	0.32	2.85	0.48	5.81	4.35	4.61	0.00	4.61	14.75	0.00	0.00	0.00
48.00	0.36	3.16	0.63	4.26	4.68	6.09	0.00	6.09	14.84	0.00	0.00	0.00
52.00	0.40	3.56	0.84	9.37	7.38	8.04	0.00	8.04	14.94	0.00	0.00	0.00
56.00	0.50	4.36	1.32	21.48	18.61	12.38	0.00	12.38	15.18	0.00	0.00	0.00
58.00	0.57	5.03	1.76	31.95	29.29	16.36	0.00	16.36	15.40	0.00	0.00	0.00
59.00	0.63	5.53	2.11	48.55	41.12	19.28	0.00	19.28	15.56	0.00	0.00	0.00
59.50	0.68	5.97	2.43	78.27	60.92	21.57	0.00	21.57	15.69	0.00	0.00	0.00
59.75	0.85	7.45	3.58	557.31	163.67	24.95	0.00	24.95	15.87	0.00	0.00	0.00
60.00	1.02	8.93	4.80	590.78	327.82	31.72	0.00	31.72	16.15	0.00	0.00	0.00
60.50	1.09	9.57	5.35	131.29	257.99	44.11	0.00	44.11	16.79	0.00	0.00	0.00
61.00	1.13	9.91	5.63	69.97	144.93	51.13	0.00	51.13	17.04	0.00	0.00	0.00
62.00	1.18	10.36	6.03	40.93	60.16	57.96	0.00	57.96	17.21	0.00	0.00	0.00
64.00	1.24	10.90	6.50	26.32	28.91	63.88	0.00	63.88	17.35	0.00	0.00	0.00
68.00	1.31	11.54	7.07	15.20	17.09	69.99	0.00	69.99	17.50	0.00	0.00	0.00
72.00	1.36	11.96	7.45	11.47	11.47	73.98	0.00	73.98	17.58	0.00	0.00	0.00
Peak stage						17.58	At hour	72.00				
Peak discharge						0.00	At hour	0.00				

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Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program

Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Table 7 - Stage - Discharge Information

10 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.17	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.35	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.53	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	0.70	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	0.88	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
24.00	0.15	1.05	0.00	0.05	0.01	0.00	0.00	0.00	14.50	0.00	0.00	0.00
28.00	0.18	1.31	0.02	1.04	0.70	0.12	0.00	0.12	14.51	0.00	0.00	0.00
32.00	0.22	1.56	0.05	1.25	1.31	0.46	0.00	0.46	14.53	0.00	0.00	0.00
36.00	0.25	1.81	0.11	1.72	1.73	0.98	0.00	0.98	14.55	0.00	0.00	0.00
40.00	0.29	2.07	0.18	2.16	2.33	1.69	0.00	1.69	14.59	0.00	0.00	0.00
44.00	0.32	2.33	0.27	3.80	2.83	2.53	0.00	2.53	14.64	0.00	0.00	0.00
48.00	0.36	2.58	0.36	2.87	3.13	3.52	0.00	3.52	14.69	0.00	0.00	0.00
52.00	0.40	2.91	0.51	6.46	5.07	4.84	0.00	4.84	14.77	0.00	0.00	0.00
56.00	0.50	3.57	0.85	15.35	13.24	7.89	0.00	7.89	14.94	0.00	0.00	0.00
58.00	0.57	4.12	1.16	23.29	21.25	10.75	0.00	10.75	15.09	0.00	0.00	0.00
59.00	0.63	4.52	1.42	35.79	30.17	12.88	0.00	12.88	15.21	0.00	0.00	0.00
59.50	0.68	4.88	1.66	58.18	45.02	14.57	0.00	14.57	15.30	0.00	0.00	0.00
59.75	0.85	6.10	2.52	420.12	122.68	17.10	0.00	17.10	15.44	0.00	0.00	0.00
60.00	1.02	7.31	3.46	453.33	248.30	22.23	0.00	22.23	15.72	0.00	0.00	0.00
60.50	1.09	7.83	3.89	101.81	197.27	31.69	0.00	31.69	16.15	0.00	0.00	0.00
61.00	1.13	8.11	4.11	54.41	111.44	37.08	0.00	37.08	16.52	0.00	0.00	0.00
62.00	1.18	8.47	4.41	31.93	46.69	42.36	0.00	42.36	16.72	0.00	0.00	0.00
64.00	1.24	8.92	4.79	20.60	22.60	46.97	0.00	46.97	16.90	0.00	0.00	0.00
68.00	1.31	9.44	5.23	11.94	13.41	51.76	0.00	51.76	17.05	0.00	0.00	0.00
72.00	1.36	9.78	5.53	9.03	9.02	54.90	0.00	54.90	17.13	0.00	0.00	0.00
Peak stage						17.13	At hour	72.00				
Peak discharge						0.00	At hour	0.00				

Table 8 - Stage - Discharge Information

5 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
24.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
28.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
32.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
36.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
40.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
44.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
48.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
52.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
56.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
58.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.50	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.75	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
60.00	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
60.50	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
61.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
62.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
64.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
68.00	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
72.00	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
Peak stage						14.50	At hour	0.00				
Peak discharge						0.00	At hour	0.00				

Flynn Engineering

Civil Engineering Services
Ft. Lauderdale, FL; (954) 522-1004

Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program
Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Table 9 - Stage - Discharge Information 3 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
24.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
28.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
32.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
36.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
40.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
44.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
48.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
52.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
56.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
58.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.50	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.75	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
60.00	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
60.50	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
61.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
62.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
64.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
68.00	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
72.00	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
Peak stage						14.50	At hour	0.00				
Peak discharge						0.00	At hour	0.00				

Flynn Engineering

Civil Engineering Services
Ft. Lauderdale, FL; (954) 522-1004

Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program
Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Client :
Job Number : 18-1416.02
Design Engineer :DRS

Project Location : MARTIN COUNTY, FL

Section / Township (S)/ Range (E): Plat Book / Page: City: County: Martin State: Florida

Project Description : GOLF COURSE MODIFICATION

POST CALCULATIONS

*All elevations referenced are in NAVI

Total Project Acreage : 120.00 Acres
Total Drainage Basin(with offsite): 120.00 Acres

Federal Insurance Rate Map Information : Map No. Date: Zone Elev. NAVD

Hydrogeologic Information :

RAINFALL DATA from SFWMD Tech. Pub. 81-3 May, 1981	1 Day Storm Event			3 Day Storm Event			Less Trench Ac-Ft
	Rainfall Inches	Runoff Inches	Runoff Ac-Ft	Rainfall Inches	Runoff Inches	Runoff Ac-Ft	
100 Year Return Period	11.00	6.64	66.37	14.95	10.23	102.34	102.34
25 Year Return Period	8.80	4.73	47.28	11.96	7.49	74.95	74.95
10 Year Return Period	7.20	3.41	34.10	9.78	5.57	55.71	55.71
5 Year Return Period							
3 Year Return Period							

For Runoff estimation use USDA SCS formula
$$\text{Runoff (in.) } Q = \frac{(P-0.2S)^2}{P+0.8S}$$

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

SUMMARY OF FLOOD ROUTING	MIN ELEV PER PERMIT	Calculated 1 Day Storm Event		Calculated 3 Day Storm Event	
		Peak Stage	Peak Discharge	Peak Stage	Peak Discharge
100 Year Return Period	18.30			17.99	0.00
25 Year Return Period				17.51	0.00
10 Year Return Period	16.80	16.18	0.00		
5 Year Return Period					
3 Year Return Period					

Water Table Elevation (ft)= 14.50
Compacted Ground storage table

Depth to water table (Ft)	1.00	2.00	3.00	4.00
Ground storage(In)	0.45	1.88	4.05	6.75

Mean depth to ground water table (ft)= 3.75 (Pervious Area)
Soil Storage (S) Value = 5.05
Soil Storage Value (S) = Storage under pervious area / Total Area
Soil Storage under pavement and bldgs. is not considered, per SFWMD.
Time of Conc. (hr.) = 0.50

Water Quality Storage Requirements :

Based on Total Drainage Basin Acreage(with offsite)	Ac-Ft
1" x Area	10.00
2.5" X % Imp. X Area (less bldg. & water,For water quality)	0.00
2.5" X % Imp. X Area (Total site less water areas)	0.00
.5" X Area (Pretreatment - Commercial projects Only)	5.00

Based on Project Drainage Acreage(NO offsite)	Ac-Ft
1" x Area	10.00
2.5" X % Imp. X Area (less bldg. & water,For water quality)	0.00
2.5" X % Imp. X Area (Total site less water areas)	0.00
.5" X Area (Pretreatment - Commercial projects Only)	5.00

STORAGE SOURCE	Basin Storage (Ac-Ft)	Equivalent Wet Detention (Ac-Ft)	Project Storage (Ac-Ft)	Equivalent Wet Detention (Ac-Ft)
Retention				
Dry Detention				
Wet Detention				
Total Less Trench	0.00	0.00	0.00	0.00
Exfiltration Trench	0	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00

Storage from ____ to ____

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Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program
Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Table 1 - Site Acreage Information

	LAND USES	Input Information						Imperv. Paved Acres	Perv. Acres	Bldgs. Acres	Non Bldgs. Acres	Water Lake Acres	Perv. Area Avg. El.
		Acres	High Elev.	Low Elev.	% Imperv. Paved	% Bldgs.	% Water						
1	LAKES AREA	16.30	14.50	14.50	0.00	0.00	100.00	0.00	0.00	0.00	16.30	16.30	0.00
2	PRESERVE AREA	3.30	14.50	14.50	0.00	0.00	100.00	0.00	0.00	0.00	3.30	3.30	0.00
3	PRESERVE AREAS 3&4	0.70	16.00	16.00	0.00	0.00	100.00	0.00	0.00	0.00	0.70	0.70	0.00
4	GOLF COURSE	99.70	20.00	16.50	0.00	0.00	0.00	0.00	99.70	0.00	99.70	0.00	18.25
5													
6													
7													
8													
9													
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24													
25													
26													
27													
28													
	PROJECT TOTALS / AVERAGE	120.00	20.00	14.50	0.00	0.00	16.92	0.00	99.70	0.00	120.00	20.30	0.00
	OFFSITE AREAS IN THIS BASIN												
29	NONE	0.000	18.50	14.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
40													
41													
	OFFSITE TOTALS / AVERAGE	0.00	18.50	14.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	EXFILTRATION TRENCH												
	BASIN TOTALS / AVERAGE	120.00	20.00	14.50	0.00	0.00	16.92	0.00	99.70	0.00	120.00	20.30	18.25

Basin % Imper. for Water Quality Purposes = 0.00

Drainage Basin % Impervious (incl. Bldg., No lakes)= 0.00

Project % Imper. for Water Quality Purposes = 0.00

Project % Impervious (incl. Bldg., No lakes)= 0.00

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Table 2 - Stage - Storage Information

Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program
Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

LAND USES	Surface storage (Ac-Ft)											
	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.
	14.50	15.50	16.50	17.00	17.50	18.00	18.50	19.00	19.50	20.00	20.50	21.50
1 LAKES AREA	0.00	16.30	32.60	40.75	48.90	57.05	65.20	0.00	0.00	0.00	0.00	0.00
2 PRESERVE AREA	0.00	3.30	6.60	8.25	9.90	11.55	13.20	14.85	16.50	18.15	19.80	23.10
3 PRESERVE AREAS 3&4	0.00	0.00	0.35	0.70	1.05	1.40	1.75	2.10	2.45	2.80	3.15	3.85
4 GOLF COURSE	0.00	0.00	0.00	3.56	14.24	32.05	56.97	89.02	128.19	174.48	224.33	324.03
5												
6												
7												
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10												
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26												
27												
28												
PROJECT TOTALS / AVERAGE	0.00	19.60	39.55	53.26	74.09	102.05	137.12	105.97	147.14	195.43	247.28	350.98
OFFSITE AREAS IN THIS BASIN												
29 NONE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
OFFSITE TOTALS / AVERAGE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 EXFILTRATION TRENCH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.00	19.60	39.55	53.26	74.09	102.05	137.12	105.97	147.14	195.43	247.28	350.98

Drainage Basin:
SFWMD allowable discharge: 42.43 CFS

Recieving Water Body:
Project Acreage : 120.00

Runoff Formula: $Q = \frac{72}{A}$
Q=Allowable runoff (CFS)
A=Drainage Area (Square Miles)

Table 3 - Stage / Discharge Data	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.
Stage (feet)	14.50	15.50	16.50	17.00	17.50	18.00	18.50	19.00	19.50	20.00	20.50	21.50
Discharge (Cfs)												

Flynn Engineering

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Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program
Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Table 4 - Soil Storage Information

LAND USES	Depth to Water Table	Ground Storage Under Pervious	
		Inches	Ac-Ft
1 LAKES AREA	0.00	0.00	0.00
2 PRESERVE AREA	0.00	0.00	0.00
3 PRESERVE AREAS 3&4	0.00	0.00	0.00
4 GOLF COURSE	3.75	6.08	50.47
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
PROJECT TOTALS / AVERAGE		6.08	50.47
OFFSITE AREAS IN THIS BASIN			
29 NONE	0.00	0.00	0.00
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
OFFSITE TOTALS / AVERAGE		0.00	0.00
42			
TOTAL/AVERAGE		6.08	50.47

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

S= 5.05

Soil Storage under pavement and buildings is not considered in computations

Flynn Engineering

Civil Engineering Services
Ft. Lauderdale, FL; (954) 522-1004

Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program
Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Exfiltration Trench Design Information :
Hydraulic Conductivity Determination :

FALLING HEAD OPEN HOLE	Test 1	Test 2	Test 3	Test 4
Diameter of test hole (Ft)				
Height of water @ T1 (Ft)				
Height of water @ T2 (Ft)				
Saturated hole depth (Ft)				
Time , T2 - T1 (Sec)				

Hydraulic conductivity (Cfs/Ft ^{1/2})				
---	--	--	--	--

Avg.

USUAL OPEN HOLE	Test 1	Test 2	Test 3	Test 4
Diameter of test hole (Ft)				
Depth to water table (Ft)				
Saturated hole depth (Ft)				
Stabilized flow rate (Gpm)				

Hydraulic conductivity (Cfs/Ft ^{1/2})				
---	--	--	--	--

Avg.

Exfiltration Trench Information :

INPUT INFORMATION		
Depth To Top Of Trench (Ft)		
Trench Width (Ft)		
Trench Height (Ft)		
Low Pavement Elevation		
Avg. Hydraulic Conductivity (Cfs/Ft ^{1/2})		

Saturated Trench Depth	
Non-Saturated Trench Depth	
Volume Required (Ac-Ft)	
Depth To Water Table or Trench Bottom (Ft)	

Length Required (Ft)	
Length Provided (Ft)	

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Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program

Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Table 5 - Stage - Discharge Information

100 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.54	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.80	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	1.07	0.00	0.11	0.08	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	1.34	0.02	1.24	0.84	0.17	0.00	0.17	14.51	0.00	0.00	0.00
24.00	0.15	1.61	0.06	2.10	1.50	0.56	0.00	0.56	14.53	0.00	0.00	0.00
28.00	0.18	2.00	0.16	4.76	3.47	1.47	0.00	1.47	14.58	0.00	0.00	0.00
32.00	0.22	2.39	0.30	4.05	4.38	2.78	0.00	2.78	14.64	0.00	0.00	0.00
36.00	0.25	2.77	0.46	4.78	4.87	4.36	0.00	4.36	14.72	0.00	0.00	0.00
40.00	0.29	3.17	0.65	5.41	5.92	6.23	0.00	6.23	14.82	0.00	0.00	0.00
44.00	0.32	3.56	0.86	8.90	6.68	8.28	0.00	8.28	14.92	0.00	0.00	0.00
48.00	0.36	3.95	1.08	6.38	7.02	10.53	0.00	10.53	15.04	0.00	0.00	0.00
52.00	0.40	4.44	1.39	13.72	10.83	13.43	0.00	13.43	15.19	0.00	0.00	0.00
56.00	0.50	5.46	2.08	30.44	26.48	19.69	0.00	19.69	15.50	0.00	0.00	0.00
58.00	0.57	6.29	2.70	44.42	40.90	25.29	0.00	25.29	15.79	0.00	0.00	0.00
59.00	0.63	6.91	3.18	66.78	56.82	29.33	0.00	29.33	15.99	0.00	0.00	0.00
59.50	0.68	7.46	3.62	106.81	83.59	32.48	0.00	32.48	16.15	0.00	0.00	0.00
59.75	0.85	9.32	5.17	750.45	221.61	37.06	0.00	37.06	16.28	0.00	0.00	0.00
60.00	1.02	11.17	6.78	782.20	439.49	46.14	0.00	46.14	16.74	0.00	0.00	0.00
60.50	1.09	11.97	7.50	172.12	342.78	62.62	0.00	62.62	17.22	0.00	0.00	0.00
61.00	1.13	12.39	7.88	91.48	191.54	71.92	0.00	71.92	17.45	0.00	0.00	0.00
62.00	1.18	12.95	8.39	53.36	78.82	80.90	0.00	80.90	17.62	0.00	0.00	0.00
64.00	1.24	13.63	9.01	34.21	37.61	88.62	0.00	88.62	17.76	0.00	0.00	0.00
68.00	1.31	14.42	9.74	19.70	22.15	96.55	0.00	96.55	17.90	0.00	0.00	0.00
72.00	1.36	14.95	10.23	14.84	14.84	101.72	0.00	101.72	17.99	0.00	0.00	0.00
Peak stage						17.99	At hour	72.00				
Peak discharge						0.00	At hour	0.00				

Table 6 - Stage - Discharge Information

25 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.21	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.43	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.64	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	0.85	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	1.07	0.00	0.18	0.08	0.00	0.00	0.00	14.50	0.00	0.00	0.00
24.00	0.15	1.28	0.01	0.83	0.57	0.12	0.00	0.12	14.51	0.00	0.00	0.00
28.00	0.18	1.60	0.06	2.49	1.78	0.54	0.00	0.54	14.53	0.00	0.00	0.00
32.00	0.22	1.91	0.14	2.37	2.53	1.26	0.00	1.26	14.56	0.00	0.00	0.00
36.00	0.25	2.22	0.23	2.96	3.00	2.21	0.00	2.21	14.61	0.00	0.00	0.00
40.00	0.29	2.53	0.35	3.48	3.79	3.38	0.00	3.38	14.67	0.00	0.00	0.00
44.00	0.32	2.85	0.49	5.89	4.41	4.73	0.00	4.73	14.74	0.00	0.00	0.00
48.00	0.36	3.16	0.64	4.32	4.74	6.23	0.00	6.23	14.82	0.00	0.00	0.00
52.00	0.40	3.56	0.85	9.47	7.46	8.21	0.00	8.21	14.92	0.00	0.00	0.00
56.00	0.50	4.36	1.34	21.68	18.79	12.59	0.00	12.59	15.14	0.00	0.00	0.00
58.00	0.57	5.03	1.79	32.19	29.52	16.60	0.00	16.60	15.35	0.00	0.00	0.00
59.00	0.63	5.53	2.13	48.88	41.41	19.54	0.00	19.54	15.50	0.00	0.00	0.00
59.50	0.68	5.97	2.46	78.77	61.33	21.85	0.00	21.85	15.61	0.00	0.00	0.00
59.75	0.85	7.45	3.61	560.30	164.61	25.25	0.00	25.25	15.78	0.00	0.00	0.00
60.00	1.02	8.93	4.84	593.24	329.47	32.05	0.00	32.05	16.12	0.00	0.00	0.00
60.50	1.09	9.57	5.39	131.75	259.13	44.50	0.00	44.50	16.68	0.00	0.00	0.00
61.00	1.13	9.91	5.68	70.20	145.51	51.55	0.00	51.55	16.94	0.00	0.00	0.00
62.00	1.18	10.36	6.07	41.05	60.37	58.41	0.00	58.41	17.12	0.00	0.00	0.00
64.00	1.24	10.90	6.55	26.40	28.99	64.34	0.00	64.34	17.27	0.00	0.00	0.00
68.00	1.31	11.54	7.12	15.24	17.13	70.46	0.00	70.46	17.41	0.00	0.00	0.00
72.00	1.36	11.96	7.49	11.50	11.50	74.47	0.00	74.47	17.51	0.00	0.00	0.00
Peak stage						17.51	At hour	72.00				
Peak discharge						0.00	At hour	0.00				

Flynn Engineering

Civil Engineering Services

Ft. Lauderdale, FL; (954) 522-1004

Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program

Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Table 7 - Stage - Discharge Information

10 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.17	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.35	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.53	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	0.70	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	0.88	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
24.00	0.15	1.05	0.00	0.09	0.04	0.00	0.00	0.00	14.50	0.00	0.00	0.00
28.00	0.18	1.31	0.02	1.11	0.75	0.13	0.00	0.13	14.51	0.00	0.00	0.00
32.00	0.22	1.56	0.05	1.29	1.36	0.49	0.00	0.49	14.53	0.00	0.00	0.00
36.00	0.25	1.81	0.11	1.77	1.78	1.03	0.00	1.03	14.55	0.00	0.00	0.00
40.00	0.29	2.07	0.19	2.20	2.39	1.76	0.00	1.76	14.59	0.00	0.00	0.00
44.00	0.32	2.33	0.27	3.87	2.89	2.62	0.00	2.62	14.63	0.00	0.00	0.00
48.00	0.36	2.58	0.37	2.91	3.19	3.62	0.00	3.62	14.68	0.00	0.00	0.00
52.00	0.40	2.91	0.52	6.55	5.14	4.97	0.00	4.97	14.75	0.00	0.00	0.00
56.00	0.50	3.57	0.86	15.52	13.39	8.05	0.00	8.05	14.91	0.00	0.00	0.00
58.00	0.57	4.12	1.19	23.51	21.46	10.94	0.00	10.94	15.06	0.00	0.00	0.00
59.00	0.63	4.52	1.44	36.10	30.44	13.09	0.00	13.09	15.17	0.00	0.00	0.00
59.50	0.68	4.88	1.68	58.65	45.40	14.80	0.00	14.80	15.25	0.00	0.00	0.00
59.75	0.85	6.10	2.55	422.98	123.57	17.35	0.00	17.35	15.39	0.00	0.00	0.00
60.00	1.02	7.31	3.50	455.76	249.89	22.51	0.00	22.51	15.65	0.00	0.00	0.00
60.50	1.09	7.83	3.92	102.27	198.39	32.02	0.00	32.02	16.12	0.00	0.00	0.00
61.00	1.13	8.11	4.15	54.65	112.02	37.44	0.00	37.44	16.30	0.00	0.00	0.00
62.00	1.18	8.47	4.45	32.06	46.90	42.75	0.00	42.75	16.62	0.00	0.00	0.00
64.00	1.24	8.92	4.83	20.68	22.69	47.38	0.00	47.38	16.79	0.00	0.00	0.00
68.00	1.31	9.44	5.27	11.98	13.46	52.18	0.00	52.18	16.96	0.00	0.00	0.00
72.00	1.36	9.78	5.57	9.06	9.05	55.33	0.00	55.33	17.05	0.00	0.00	0.00
Peak stage						17.05	At hour	72.00				
Peak discharge						0.00	At hour	0.00				

Table 8 - Stage - Discharge Information

5 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
24.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
28.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
32.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
36.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
40.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
44.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
48.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
52.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
56.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
58.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.50	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.75	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
60.00	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
60.50	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
61.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
62.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
64.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
68.00	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
72.00	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
Peak stage						14.50	At hour	0.00				
Peak discharge						0.00	At hour	0.00				

Flynn Engineering

Civil Engineering Services
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Santa Barbara Urban Hydrograph Flood Routing, based on South Florida Water Management District Program
Project: JONATHANS LANDING OLD TRAIL GOLF CLUB

Date : 11/18/20

Table 9 - Stage - Discharge Information 3 - YEAR STORM EVENT

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	14.50	0.00	0.00	0.00
4.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
8.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
12.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
16.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
20.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
24.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
28.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
32.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
36.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
40.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
44.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
48.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
52.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
56.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
58.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.50	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
59.75	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
60.00	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
60.50	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
61.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
62.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
64.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
68.00	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
72.00	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.50	0.00	0.00	0.00
Peak stage						14.50	At hour	0.00				
Peak discharge						0.00	At hour	0.00				