

*Tillman & Associates*  
ENGINEERING, LLC.

**CITY OF OCALA NORTH COMPLEX**

City of Ocala  
Engineering & Water  
Resources Department  
1805 NE 30<sup>th</sup> Ave, Bldg 600  
Ocala, Florida, 34470

11/27/2023

**MASTER  
STORMWATER  
REPORT**

**CITY OF OCALA NORTH COMPLEX**  
**STORMWATER MANAGEMENT REPORT**

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This item has been digitally signed and sealed by **Jeffrey M. McPherson** on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

# 1. Scope of Project and Basis of Analysis

## CITY OF OCALA NORTH COMPLEX STORMWATER MANAGEMENT REPORT

### Scope of Project:

The proposed "City of Ocala North Complex" project, hereafter referred to as "project," is located in Section 03, Township 15S, and Range 22E. More specifically, the project is located directly north of the City of Ocala Municipal Complex across NE 21<sup>st</sup> Street in Marion County, FL. The project will consist of the construction and installation of a truck shed, driveways, and stormwater infrastructure to support the proposed development. The stormwater for the project will be accommodated in one (1) dry retention area, DRA-1. This report contains the runoff calculations, stage-storage tables, soil boring summaries, and supporting stormwater routing analysis to demonstrate compliance with the City of Ocala and St. John's River Water Management District stormwater management criteria.

### Basis of Analysis:

#### **A. Regulatory Criteria**

The stormwater management system was designed to meet the City of Ocala and St. John's River Water Management District (SJRWMD) water quantity criteria for a closed basin by retaining the entire post development volume for the 10-year, 25-year, 100-year, 24-hour, and 25-year, 96-hour storm events without discharge. Additionally, the proposed stormwater management system was designed as an online retention facility to meet SJRWMD water quality requirements. Since no discharge occurs from the site, a pre-development analysis has not been prepared to establish allowable discharge rate and volume. Design calculations for storm sewers or other conveyance system shall be based on a 10-year, 24-hour design storm. The drainage retention/detention facility shall recover within 14 days of the start of the storm event. Should the soils conditions be such that the drainage retention/detention facility cannot recover in 14 days and there is no permitted city facility to "bleed down" to, the volume of the drainage retention/detention facility shall be sized to hold the additional post-minus pre-volume of a second 100-year, 24-hour storm plus the balance of the volume remaining at the end of the 14-day drawdown period.

#### **B. Hydrology Analysis Methodology and Land Use**

Manual Basins with Curve Number infiltration method was used to implement the traditional NRCS Unit Hydrograph Method with a distributed hydrologic approach to determine the rainfall excess. The Curve Number method considered the land use and hydrologic soil types for the post-developed conditions. The soil types for this project are composed of Arredondo sand (hydrologic group "A"), and Udorthents, excavated (hydrologic group "B"). Manual Basins input data will include the breakdown of area, land cover and soil combination. Impervious and Soils lookup table are also provided.

ICPR v4.07.08 was utilized to model the hydrology and hydraulics of the development for the required storm events. The percolation parameters for the estimated seasonal high-water table, aquifer base, and permeability rates were obtained from a site-specific geotechnical investigation in the area of the proposed DRA. Rainfall over time was applied using the Florida Type II (FLMOD) and SJRWMD-96 rainfall distribution. Time of concentration was set to 10 minutes for the drainage basin. A unit hydrograph with a peaking factor of 484 was used for the on-site basin in the analysis. The results of the analysis were evaluated for compliance with City of Ocala and SJRWMD quantity and quality criteria (See **Sections 4 and 5**).

#### **D. Pre-Development Hydrology**

In the pre-development condition, the east side of the project area is mostly open space and partly wooded, which drains from east to west to an existing low area onsite. From an existing building and parking lot to the west, the stormwater runoff is conveyed via sheet flow through an existing flume, culvert, and swale to an existing small retention area onsite. There is no impact to wetlands.

#### **C. Post-Development Hydrology**

In the post-developed condition, the project's stormwater management system will include a conveyance network designed to capture stormwater runoff from basin B-1. The runoff generated from this basin will be conveyed to a proposed dry retention pond with name (DRA-1). DRA-1 will retain the total basin runoff volume generated from the 10, 25, and 100-year, 24-hour storm events, and the 25-year, 96-hour storm event, with no offsite discharge.

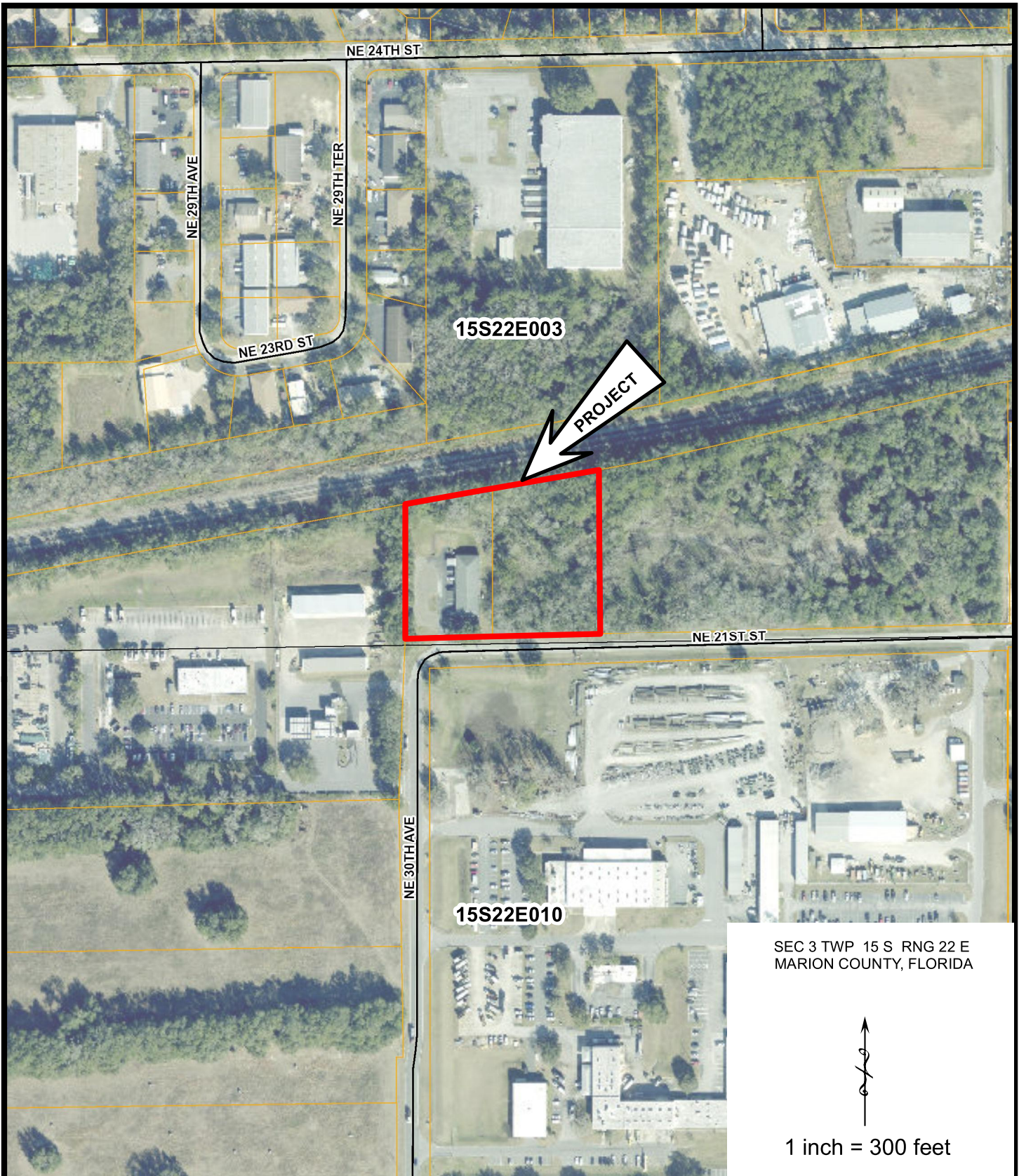
Results of computer modeling indicate DRA-1 does not recover the required volume within fourteen (14) days following the 10, 25, 100-year, 24-hour event, and the 25-year, 96-hour, storm. However, there is adequate capacity to retain a second storm event within the proposed DRA without discharge. Per City request, an emergency overflow structure (DS-1) will be installed in the proposed drainage retention area, with the control elevation set above the second 25-year, 96-hours storm maximum stage. In addition, more than six inches of freeboard is provided in the drainage retention area.

StormStudio computer software was used to analyze the secondary stormwater conveyance system. A tailwater elevation in the pond at the time of max inflow during the 10 year, 24-hour event plus six inches was used for this analysis. Please see section 6 of this report for the secondary stormwater calculations.

#### **E. Floodplain Compensation**

The City of Ocala Engineering Department requested a floodplain analysis based on the 63.5' Base Flood Elevation (BFE) per Marshall Swamp Flood Study from Marion County Water Management Plan. The floodplain volume comparison between the existing low area and the proposed project was calculated using 2022 AutoCAD Civil 3D (TIN surface comparison) and accounts for the volume above the seasonal high-water table (48.2') and below the floodplain elevation (63.5'). Since the net change to the floodplain is positive, there is an increase in storage volume within the flood comp area/pond and therefore no adverse flooding risk is posed. See **Section 7** for exhibits outlining limits of the pre- and post- development floodplain.

## 2. Maps



SEC 3 TWP 15 S RNG 22 E  
MARION COUNTY, FLORIDA



1 inch = 300 feet

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**City of Ocala North Complex**  
Marion County  
**Aerial Location  
Map**

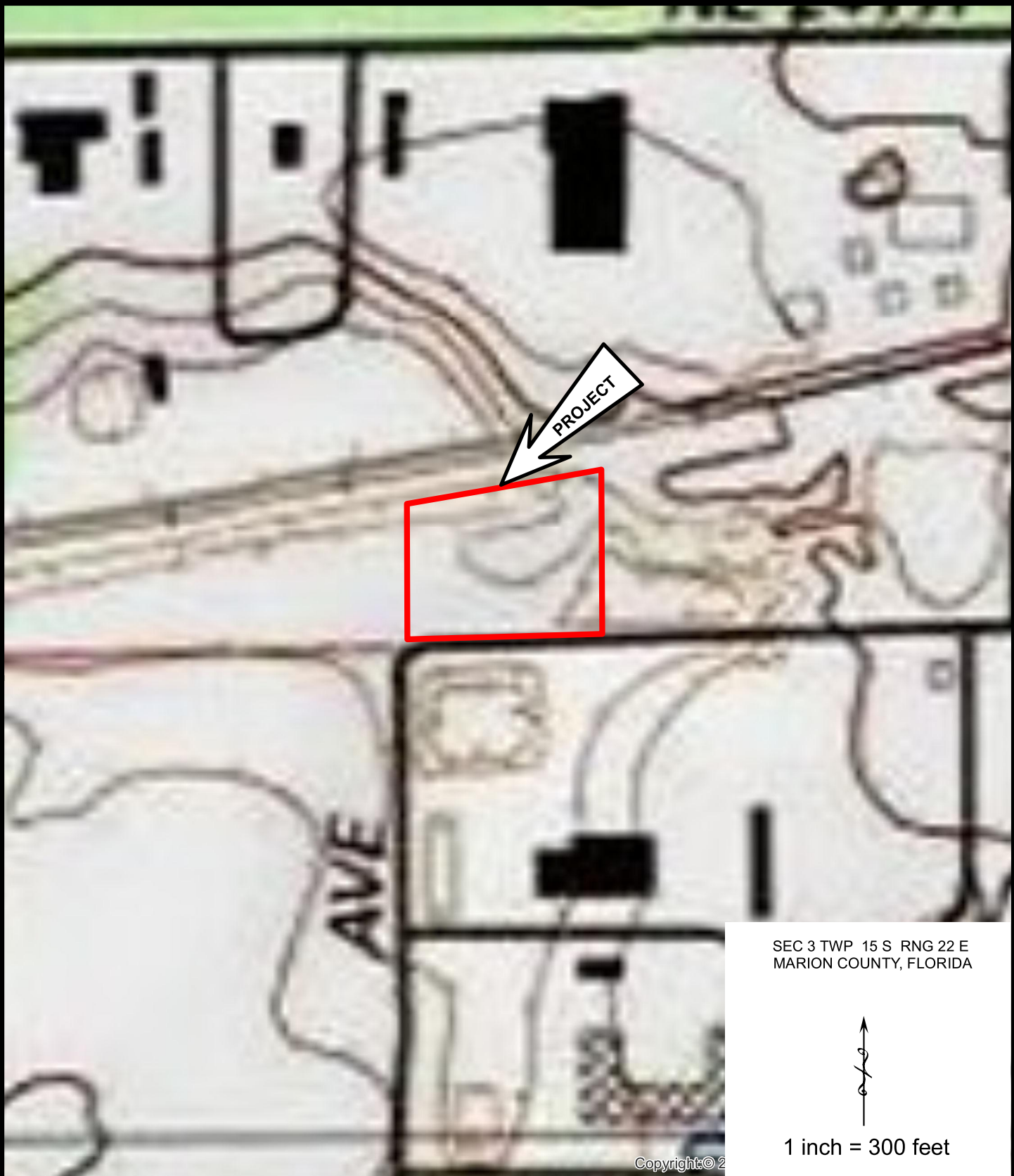
DATE 9/26/2023

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JOB NO. 23-8260

SHT. 1 OF 5



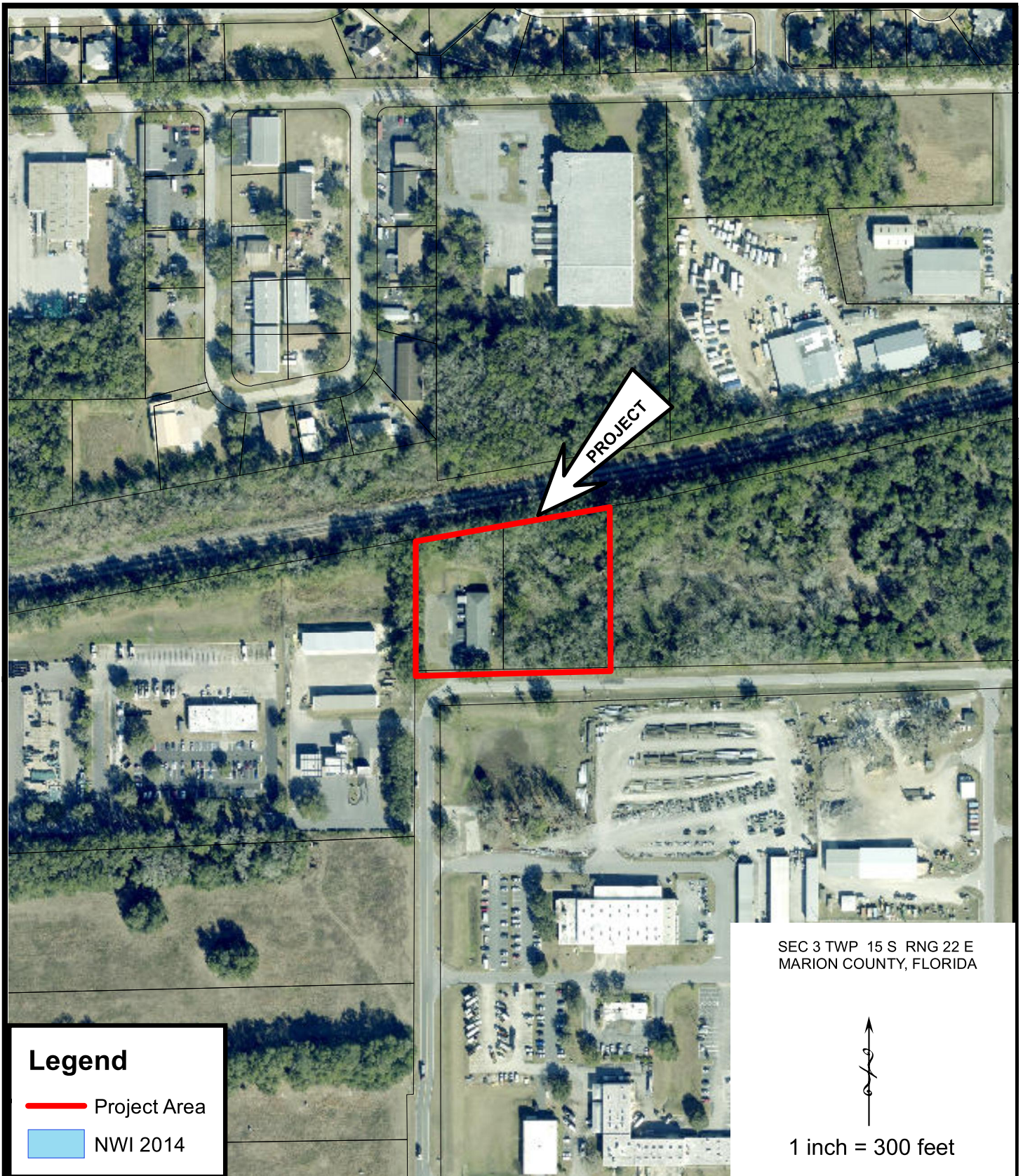
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City of Ocala North Complex  
Marion County

USGS QUAD MAP

DATE	9/26/2023
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SHT.	2 OF 5





**Legend**

- Project Area
- NWI 2014

SEC 3 TWP 15 S RNG 22 E  
MARION COUNTY, FLORIDA



1 inch = 300 feet

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**City of Ocala North Complex**  
Marion County  
**National Wetland  
Inventory Map**

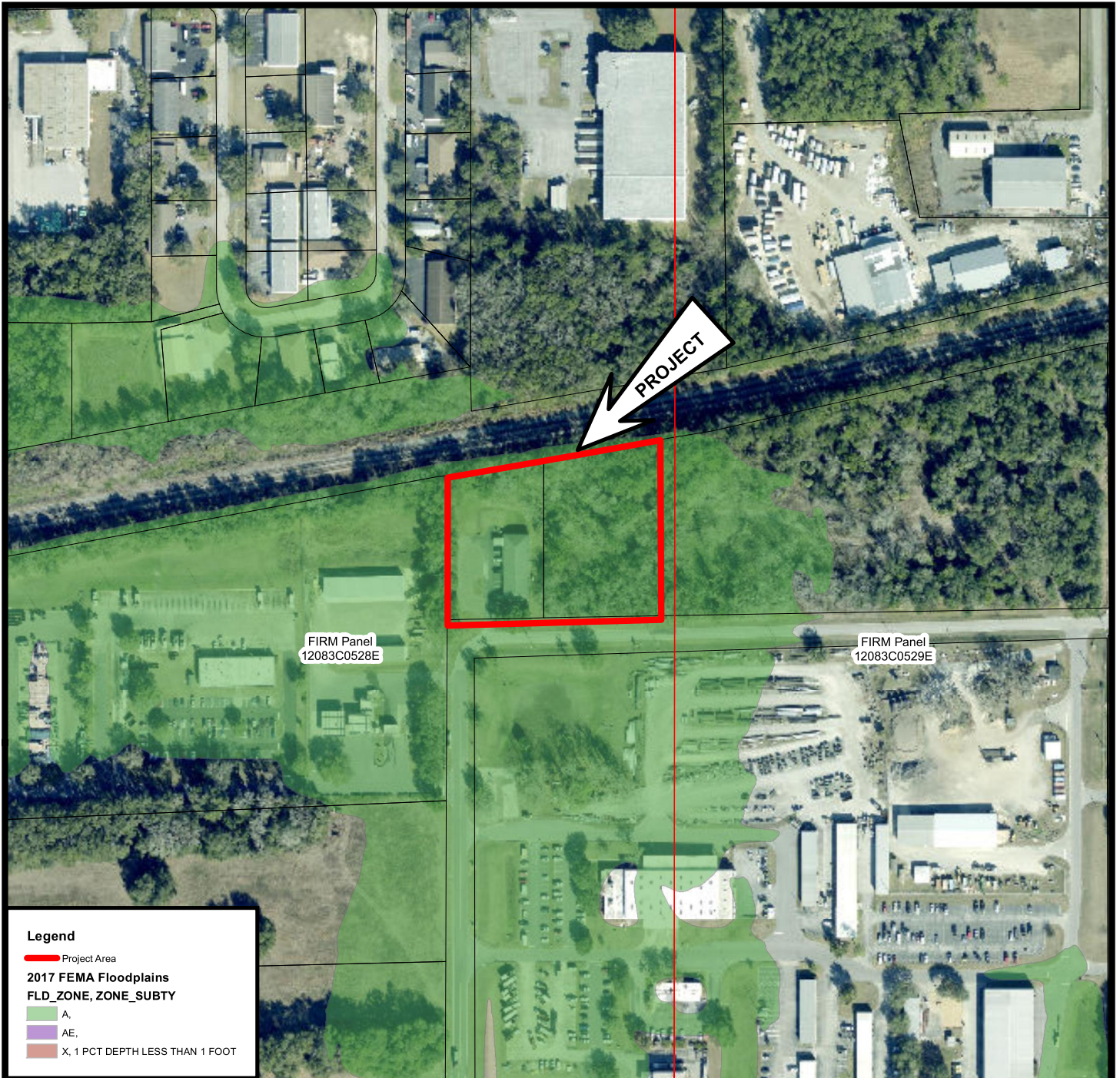
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SHT. 3 OF 5

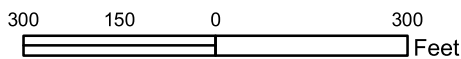


Panel Number: 12083C0528E

Effective Date: April 19, 2017

Note: FEMA Zone A floodplain within project boundary.

SEC 3 TWP 15 S RNG 22 E  
MARION COUNTY, FLORIDA



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City of Ocala North Complex  
Marion County  
**FEMA**  
**Map**

DATE 9/26/2023

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JOB NO. 23-8260

SHT. 4 OF 5

CANDLER  
Hydro Group A

KENDRICK  
Hydro Group B

PROJECT

UDORTHENTS  
Hydro Group B

ARREDONDO  
Hydro Group A

SEC 3 TWP 15 S RNG 22 E  
MARION COUNTY, FLORIDA



1 inch = 300 feet

*Tillman & Associates*  
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**City of Ocala North Complex**

Marion County

**Soils Map**

DATE 9/26/2023

DRAWN BY ATQ

CHKD. BY JMM

JOB NO. 23-8260

SHT. 5 OF 5

## 3. Summaries

Basin Post B-1  
Soil Boring Results Summary

			AVERAGE
Soil Boring ID	SB-1	SB-2	
Estimated Natural Ground Elev.	57.3	56.0	
Depth to SHGWT (ft)	10.5	6.5	
<b>Estimated SHGWT Elev.</b>	<b>46.8</b>	<b>49.5</b>	48.2
Depth to Confining Layer (ft)	11.5	7.5	
<b>Estimated Elev. Confining Layer</b>	<b>45.8</b>	<b>48.5</b>	47.2
Horizontal Permeability (ft/day)	1.8	28.6	
<b>FS 2.0 Applied (ft/day)</b>	<b>0.9</b>	<b>14.3</b>	7.6
Vertical Permeability (ft/day)	1.4	6.3	
<b>FS 2.0 Applied (ft/day)</b>	<b>0.7</b>	<b>3.2</b>	1.9
Depth to Limestone (ft)	20.0	20.0	
<b>Estimated Elev. Limestone</b>	<b>37.3</b>	<b>36.0</b>	

Notes:

1. All information provided by Geo-Tech Inc.geotechnical report, excluding estimated natural ground elevation.

**POST B-1  
 DRY RETENTION POND  
 AREA & STAGE-STORAGE VOLUME**

Stage-Storage Volume @ T.O.B. 61.00 = 5.42 ac-ft

Stage (ft)	Area (ac)	Area (sf)	Stor. Vol. (ac-ft)	
52.00	0.30	12,882	0.00	BTM
53.00	0.34	14,901	0.32	
54.00	0.39	17,021	0.69	
54.67	0.40	17,617	0.96	Water Quality
55.00	0.44	19,241	1.10	
56.00	0.49	21,562	1.57	
57.00	0.55	23,984	2.09	
58.00	0.70	30,499	2.72	
59.00	0.83	35,965	3.48	
60.00	0.98	42,540	4.38	
61.00	1.10	47,718	5.42	TOB

## 4. ICPR – Water Quality Analysis

**POST B-1  
SJRWMD WATER QUALITY VOLUME**

<b>TOTAL DRAINAGE AREA</b>	=	<b>11.55 ACRES</b>
<b>IMPERVIOUS AREA</b>	=	<b>1.29 ACRES</b>

**TOTAL DRAINAGE AREA OPTION**

TOTAL DRAINAGE AREA	=	11.55 ACRES
0.5" RUNOFF	=	0.5 INCHES
WATER QUALITY VOLUME	=	20,961 CU-FT

**IMPERVIOUS AREA OPTION**

TOTAL DRAINAGE AREA	=	11.55 ACRES
0.5" RUNOFF	=	20,961 CU-FT
IMPERVIOUS AREA	=	1.29 ACRES
1.25" OF RUNOFF	=	5,875 CU-FT

<b>USE MAXIMUM WATER QUALITY VOLUME</b>	=	<b>41,923 CU-FT</b>
<b>USE MAXIMUM WATER QUALITY VOLUME</b>	=	<b>0.96 AC-FT</b>

<b>WATER QUALITY STARTING ELEVATION</b>	=	<b>54.67 FT</b>
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Manual Basin: POST B-1

Scenario: WATER QUALITY  
 Node: DRA-1  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 10.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH484  
 Peaking Factor: 484.0  
 Area: 11.5494 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
0.1104	Paved	Hydro Group A	
0.4898	Paved	Hydro Group B	
0.4259	Open Space	Hydro Group A	
0.5083	Existing Impervious	Hydro Group A	
0.6470	Open Space	Hydro Group B	
6.4528	Woods	Hydro Group B	
0.2962	Retention Pond	Hydro Group B	
2.4327	Woods	Hydro Group A	
0.1286	Truck Shed	Hydro Group B	
0.0578	Existing Impervious	Hydro Group B	

Comment:

Node: DRA-1

Scenario: WATER QUALITY  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 54.67 ft  
 Warning Stage: 61.00 ft

Stage [ft]	Area [ac]	Area [ft2]
52.00	0.3000	13068
53.00	0.3400	14810
54.00	0.3900	16988
55.00	0.4400	19166
56.00	0.4900	21344
57.00	0.5500	23958
58.00	0.7000	30492
59.00	0.8300	36155
60.00	0.9800	42689
61.00	1.1000	47916

Comment:

**Node: GW**

Scenario: WATER QUALITY  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 0.00 ft  
 Warning Stage: 0.00 ft  
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	0.00
0	0	0	999.0000	0.00

Comment:

**Percolation Link: L-PERC-A**

Scenario:	WATER QUALITY	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	DRA-1	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	GW	Perimeter 1:	128.00 ft
Link Count:	1	Perimeter 2:	169.00 ft
Flow Direction:	Both	Perimeter 3:	209.00 ft
Aquifer Base Elevation:	47.20 ft	Distance P1 to P2:	25.00 ft
Water Table Elevation:	48.20 ft	Distance P2 to P3:	25.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	5
Horizontal Conductivity:	7.600 fpd	# of Cells P2 to P3:	3
Vertical Conductivity:	1.900 fpd		
Fillable Porosity:	0.250		
Layer Thickness:	3.80 ft		

Comment:

**Percolation Link: L-PERC-B**

Scenario:	WATER QUALITY	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	DRA-1	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	GW	Perimeter 1:	578.00 ft
Link Count:	1	Perimeter 2:	803.00 ft
Flow Direction:	Both	Perimeter 3:	1253.00 ft
Aquifer Base Elevation:	47.20 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	48.20 ft	Distance P2 to P3:	100.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	7.600 fpd	# of Cells P2 to P3:	10
Vertical Conductivity:	1.900 fpd		
Fillable Porosity:	0.250		
Layer Thickness:	3.80 ft		

Comment:

Simulation: Treatment Volume

Scenario: WATER QUALITY  
 Run Date/Time: 11/27/2023 10:17:02 AM  
 Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: CN

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: Impervious

Tolerances & Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight: 0.5 dec  
 Fact:  
 dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr

Smp/Man Basin Rain: No Rainfall

Opt:

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area 100 ft2

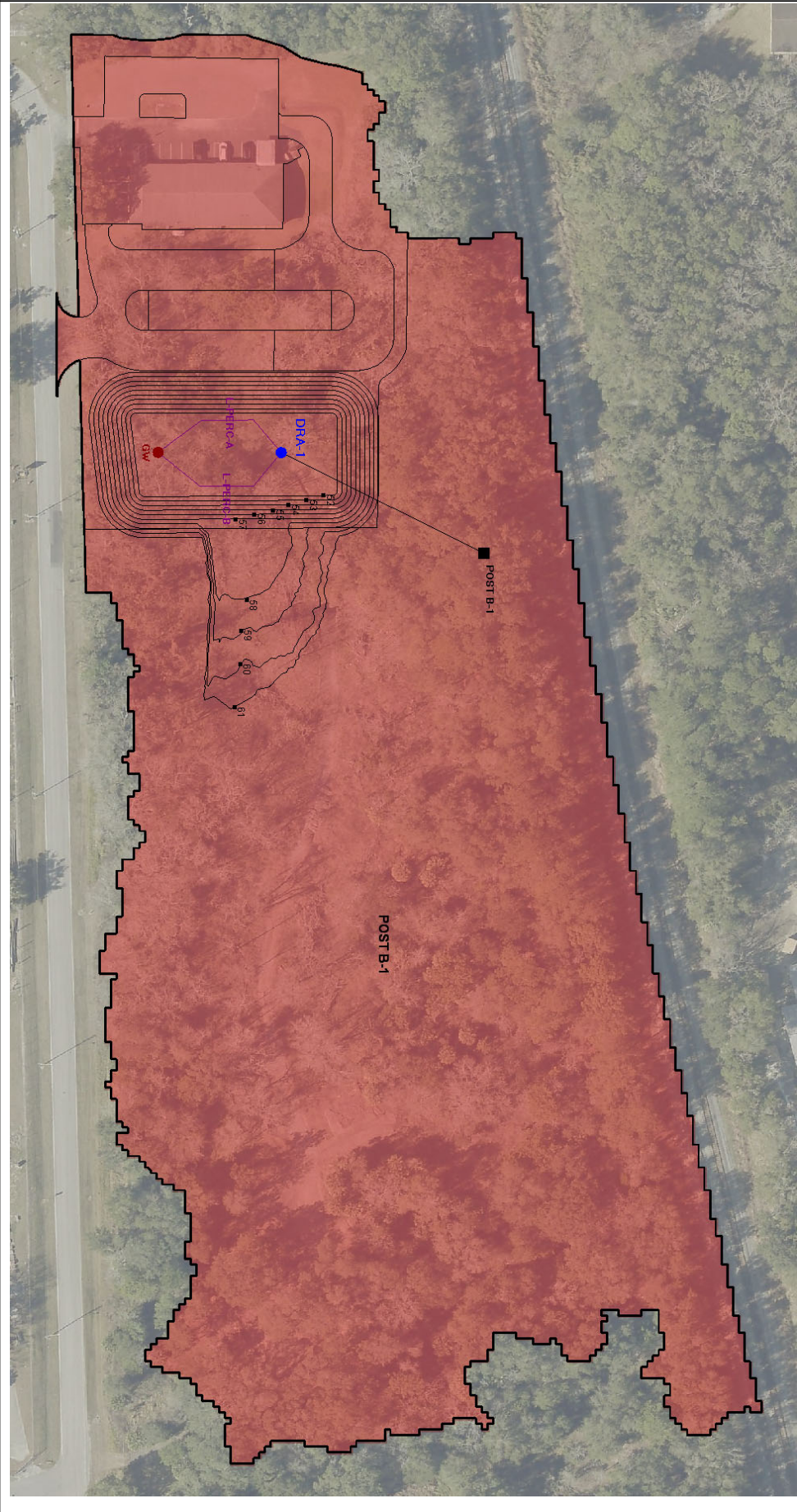
(1D):

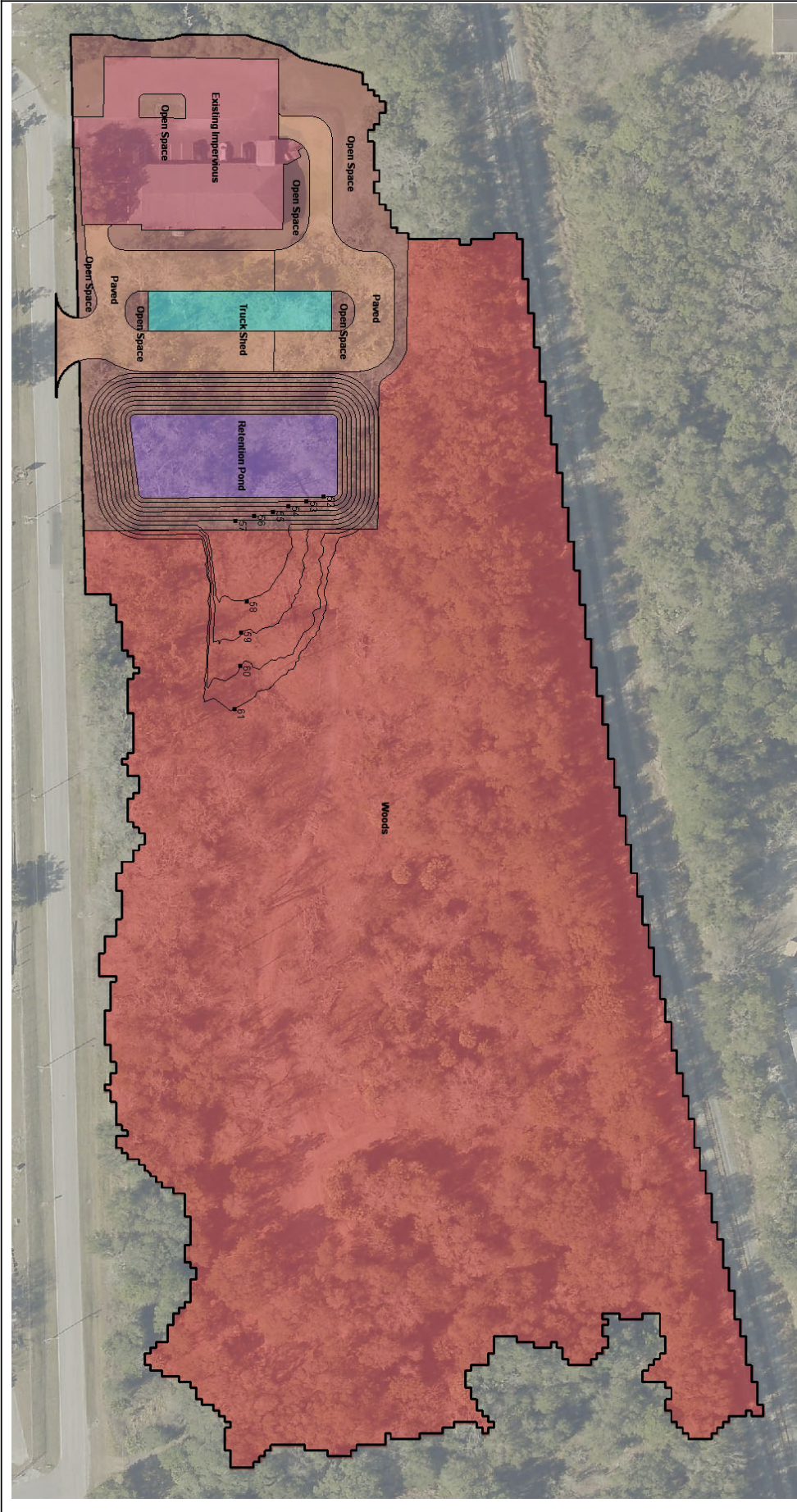
Energy Switch (1D): Energy

Comment:
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Scenario	Sim	Node Name	Relative Time [hrs]	Stage [ft]
WATER QUALITY	Treatment Volume	DRA-1	54.7504	52.06
WATER QUALITY	Treatment Volume	DRA-1	55.0004	52.05
WATER QUALITY	Treatment Volume	DRA-1	55.2504	52.05
WATER QUALITY	Treatment Volume	DRA-1	55.5004	52.05
WATER QUALITY	Treatment Volume	DRA-1	55.7504	52.05
WATER QUALITY	Treatment Volume	DRA-1	56.0004	52.05
WATER QUALITY	Treatment Volume	DRA-1	56.2504	52.04
WATER QUALITY	Treatment Volume	DRA-1	56.5004	52.04
WATER QUALITY	Treatment Volume	DRA-1	56.7504	52.04
WATER QUALITY	Treatment Volume	DRA-1	57.0004	52.04
WATER QUALITY	Treatment Volume	DRA-1	57.2504	52.03
WATER QUALITY	Treatment Volume	DRA-1	57.5004	52.03
WATER QUALITY	Treatment Volume	DRA-1	57.7504	52.03
WATER QUALITY	Treatment Volume	DRA-1	58.0004	52.03
WATER QUALITY	Treatment Volume	DRA-1	58.2504	52.03
WATER QUALITY	Treatment Volume	DRA-1	58.5004	52.02
WATER QUALITY	Treatment Volume	DRA-1	58.7504	52.02
WATER QUALITY	Treatment Volume	DRA-1	59.0004	52.02
WATER QUALITY	Treatment Volume	DRA-1	59.2504	52.02
WATER QUALITY	Treatment Volume	DRA-1	59.5004	52.02
WATER QUALITY	Treatment Volume	DRA-1	59.7504	52.01
WATER QUALITY	Treatment Volume	DRA-1	60.0004	52.01
WATER QUALITY	Treatment Volume	DRA-1	60.2504	52.01
WATER QUALITY	Treatment Volume	DRA-1	60.5004	52.01
WATER QUALITY	Treatment Volume	DRA-1	60.7504	52.01
WATER QUALITY	Treatment Volume	DRA-1	61.0004	52.00
WATER QUALITY	Treatment Volume	DRA-1	61.2504	52.00
WATER QUALITY	Treatment Volume	DRA-1	61.5004	52.00
WATER QUALITY	Treatment Volume	DRA-1	61.7504	52.00
WATER QUALITY	Treatment Volume	DRA-1	62.0004	52.00
WATER QUALITY	Treatment Volume	DRA-1	62.2504	52.00
WATER QUALITY	Treatment Volume	DRA-1	62.5004	52.00
WATER QUALITY	Treatment Volume	DRA-1	62.7504	52.00
WATER QUALITY	Treatment Volume	DRA-1	63.0004	52.00
WATER QUALITY	Treatment Volume	DRA-1	63.2504	52.00
WATER QUALITY	Treatment Volume	DRA-1	63.5004	52.00
WATER QUALITY	Treatment Volume	DRA-1	63.7504	52.00
WATER QUALITY	Treatment Volume	DRA-1	64.0004	52.00
WATER QUALITY	Treatment Volume	DRA-1	64.2504	52.00
WATER QUALITY	Treatment Volume	DRA-1	64.5004	52.00
WATER QUALITY	Treatment Volume	DRA-1	64.7504	52.00

## 5. ICPR – Post Basin Analysis









Manual Basin: POST B-1

Scenario: POST  
 Node: DRA-1  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 10.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH484  
 Peaking Factor: 484.0  
 Area: 11.5494 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
0.1104	Paved	Hydro Group A	
0.4898	Paved	Hydro Group B	
0.4259	Open Space	Hydro Group A	
0.5083	Existing Impervious	Hydro Group A	
0.6470	Open Space	Hydro Group B	
6.4528	Woods	Hydro Group B	
0.2962	Retention Pond	Hydro Group B	
2.4327	Woods	Hydro Group A	
0.1286	Truck Shed	Hydro Group B	
0.0578	Existing Impervious	Hydro Group B	

Comment:

Manual Basin Runoff Summary [POST]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
POST B-1	100Y-24H	51.81	12.0333	11.50	5.40	11.5494	54.9	13.78	13.78
POST B-1	10Y-24H	19.08	12.0333	6.50	2.10	11.5494	58.2	13.78	13.78
POST B-1	25Y-24H	29.46	12.0333	8.30	3.18	11.5494	56.6	13.78	13.78
POST B-1	25Y-96H	40.74	60.0167	11.50	5.40	11.5494	54.9	13.78	13.78

Curve Number: CN [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Existing Impervious	Hydro Group A	98.0
Existing Impervious	Hydro Group B	98.0
Open Space	Hydro Group A	39.0
Open Space	Hydro Group B	61.0
Paved	Hydro Group A	98.0
Paved	Hydro Group B	98.0
Retention Pond	Hydro Group B	98.0
Truck Shed	Hydro Group B	98.0

Land Cover Zone	Soil Zone	Curve Number [dec]
Woods	Hydro Group A	30.0
Woods	Hydro Group B	55.0

Impervious: Impervious [Set]

Land Cover Zone	% Impervious	% DCIA	% Direct	Ia Impervious [in]	Ia Pervious [in]
Existing Impervious	100.00	100.00	0.00	0.000	0.000
Open Space	0.00	0.00	0.00	0.000	0.000
Paved	100.00	100.00	0.00	0.000	0.000
Retention Pond	100.00	100.00	0.00	0.000	0.000
Truck Shed	100.00	100.00	0.00	0.000	0.000
Woods	0.00	0.00	0.00	0.000	0.000

Node: DRA-1

Scenario: POST  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 52.00 ft  
 Warning Stage: 61.00 ft

Stage [ft]	Area [ac]	Area [ft2]
52.00	0.3000	13068
53.00	0.3400	14810
54.00	0.3900	16988
55.00	0.4400	19166
56.00	0.4900	21344
57.00	0.5500	23958
58.00	0.7000	30492
59.00	0.8300	36155
60.00	0.9800	42689
61.00	1.1000	47916

Comment:

Node: GW

Scenario: POST  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 0.00 ft  
 Warning Stage: 0.00 ft  
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	0.00
0	0	0	999.0000	0.00

Comment:

**Percolation Link: L-PERC-A**

Scenario:	POST	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	DRA-1	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	GW	Perimeter 1:	128.00 ft
Link Count:	1	Perimeter 2:	169.00 ft
Flow Direction:	Both	Perimeter 3:	209.00 ft
Aquifer Base Elevation:	47.20 ft	Distance P1 to P2:	25.00 ft
Water Table Elevation:	48.20 ft	Distance P2 to P3:	25.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	5
Horizontal Conductivity:	7.600 fpd	# of Cells P2 to P3:	3
Vertical Conductivity:	1.900 fpd		
Fillable Porosity:	0.250		
Layer Thickness:	3.80 ft		

Comment:

**Percolation Link: L-PERC-B**

Scenario:	POST	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	DRA-1	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	GW	Perimeter 1:	578.00 ft
Link Count:	1	Perimeter 2:	803.00 ft
Flow Direction:	Both	Perimeter 3:	1253.00 ft
Aquifer Base Elevation:	47.20 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	48.20 ft	Distance P2 to P3:	100.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	7.600 fpd	# of Cells P2 to P3:	10
Vertical Conductivity:	1.900 fpd		
Fillable Porosity:	0.250		
Layer Thickness:	3.80 ft		

Comment:

**Simulation: 100Y-24H**

Scenario: POST  
 Run Date/Time: 11/27/2023 10:07:26 AM  
 Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	360.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: CN

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: Impervious

Tolerances & Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight: 0.5 dec  
 Fact:  
 dZ Tolerance: 0.0010 ft  
 Max dZ: 1.0000 ft  
 Link Optimizer Tol: 0.0001 ft  
 Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr  
 Smp/Man Basin Rain Global  
 Opt:  
 Rainfall Name: ~FLMOD  
 Rainfall Amount: 11.50 in  
 Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area 100 ft2  
 (1D):  
 Energy Switch (1D): Energy

Comment:

Simulation: 100Y-24H\_2nd

Scenario: POST  
 Run Date/Time: 11/27/2023 10:09:28 AM  
 Program Version: ICPR4 4.07.08

General

Run Mode: Hot Start Hot Start Simulation: 100Y-24H

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000
Hot Start Time:	0	0	0	359.9000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
  
 Unit Hydrograph

Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: CN

Folder:

Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Impervious

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Global
	Opt:
Max dZ: 1.0000 ft	Rainfall Name: ~FLMOD
Link Optimizer Tol: 0.0001 ft	Rainfall Amount: 11.50 in
	Storm Duration: 24.0000 hr
Edge Length Option: Automatic	
	Dflt Damping (1D): 0.0050 ft
	Min Node Srf Area 100 ft2
	(1D):
	Energy Switch (1D): Energy

Comment:

Simulation: 10Y-24H

Scenario: POST  
Run Date/Time: 11/27/2023 10:09:34 AM  
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	360.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
------	-------	-----	-----------	----------------------

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: CN

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: Impervious

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight: 0.5 dec

Fact:

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Smp/Man Basin Rain Opt: Global

Rainfall Name: ~FLMOD

Rainfall Amount: 6.50 in

Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area 100 ft2

(1D):

Energy Switch (1D): Energy

Comment:

Simulation: 10Y-24H\_2nd

Scenario: POST

Run Date/Time: 11/27/2023 10:11:29 AM

Program Version: ICPR4 4.07.08



**General**

Run Mode: Hot Start Hot Start Simulation: 10Y-24H

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000
Hot Start Time:	0	0	0	359.9000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

**Output Time Increments**

**Hydrology**

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

**Surface Hydraulics**

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

**Restart File**

Save Restart: False

**Resources & Lookup Tables**

**Resources**

Rainfall Folder:  
  
Unit Hydrograph Folder:

**Lookup Tables**

Boundary Stage Set:  
Extern Hydrograph Set:  
Curve Number Set: CN  
  
Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Impervious

**Tolerances & Options**

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight: 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain: Global
	Opt:
Max dZ: 1.0000 ft	Rainfall Name: ~FLMOD
Link Optimizer Tol: 0.0001 ft	Rainfall Amount: 6.50 in

Edge Length Option: Automatic

Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area 100 ft2

(1D):

Energy Switch (1D): Energy

Comment:

Simulation: 25Y-24H

Scenario: POST

Run Date/Time: 11/27/2023 10:11:36 AM

Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	360.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: CN

Folder:

Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Impervious

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Global
	Opt:
Max dZ: 1.0000 ft	Rainfall Name: ~FLMOD
Link Optimizer Tol: 0.0001 ft	Rainfall Amount: 8.30 in
	Storm Duration: 24.0000 hr
Edge Length Option: Automatic	
	Dflt Damping (1D): 0.0050 ft
	Min Node Srf Area 100 ft2
	(1D):
	Energy Switch (1D): Energy

Comment:

Simulation: 25Y-24H\_2nd

Scenario: POST  
Run Date/Time: 11/27/2023 10:13:38 AM  
Program Version: ICPR4 4.07.08

General

Run Mode: Hot Start Hot Start Simulation: 25Y-24H

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000
Hot Start Time:	0	0	0	359.9000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph  
Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: CN

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: Impervious

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight: 0.5 dec

Fact:

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Smp/Man Basin Rain Global  
Opt:

Rainfall Name: ~FLMOD

Rainfall Amount: 8.30 in

Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area 100 ft2

(1D):

Energy Switch (1D): Energy

Comment:

Simulation: 25Y-96H

Scenario: POST

Run Date/Time: 11/27/2023 10:13:51 AM

Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	432.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
  
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:  
Extern Hydrograph Set:  
Curve Number Set: CN  
  
Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Impervious

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight: 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain: Global
	Opt:
Max dZ: 1.0000 ft	Rainfall Name: ~SJRWMD-96
Link Optimizer Tol: 0.0001 ft	Rainfall Amount: 11.50 in
Edge Length Option: Automatic	Storm Duration: 96.0000 hr

Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area 100 ft2  
 (1D):  
 Energy Switch (1D): Energy

Comment:

Simulation: 25Y-96H\_2nd

Scenario: POST  
 Run Date/Time: 11/27/2023 10:16:31 AM  
 Program Version: ICPR4 4.07.08

General

Run Mode: Hot Start Hot Start Simulation: 25Y-96H

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000
Hot Start Time:	0	0	0	431.9000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
  
 Unit Hydrograph

Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: CN

Folder:

Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Impervious

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Global
	Opt:
Max dZ: 1.0000 ft	Rainfall Name: ~SJRWMD-96
Link Optimizer Tol: 0.0001 ft	Rainfall Amount: 11.50 in
	Storm Duration: 96.0000 hr
Edge Length Option: Automatic	
	Dflt Damping (1D): 0.0050 ft
	Min Node Srf Area 100 ft2
	(1D):
	Energy Switch (1D): Energy

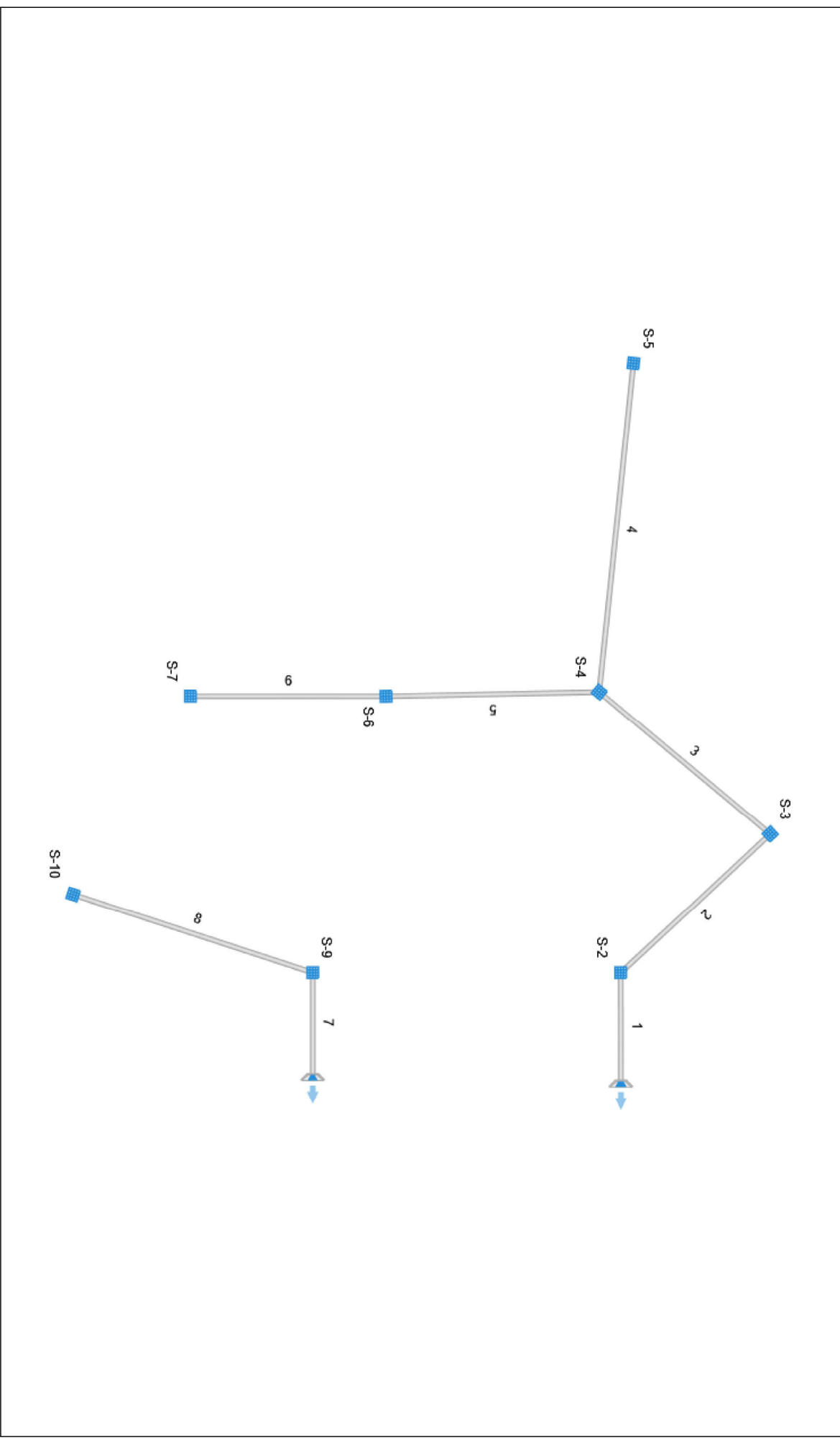
Comment:

Scenario	Sim	Node Name	Relative Time [hrs]	Warning Stage [ft]	Maximum Stage [ft]
POST	100Y-24H	DRA-1	360.0064	61.00	58.89
POST	100Y-24H_2nd	DRA-1	24.0048	61.00	59.53
POST	10Y-24H	DRA-1	360.0064	61.00	54.89
POST	10Y-24H_2nd	DRA-1	24.0064	61.00	54.89
POST	25Y-24H	DRA-1	360.0068	61.00	56.53
POST	25Y-24H_2nd	DRA-1	24.0042	61.00	56.85
POST	25Y-96H	DRA-1	432.0072	61.00	59.15
POST	25Y-96H_2nd	DRA-1	96.0043	61.00	60.40



Scenario	Sim	Node Name	Relative Time [hrs]	Stage [ft]
POST	100Y-24H	DRA-1	360.0064	54.90
POST	10Y-24H	DRA-1	360.0064	52.35
POST	25Y-24H	DRA-1	360.0068	53.43
POST	25Y-96H	DRA-1	432.0072	56.73

## 6. Secondary Stormwater Calculations



# T&A Custom Report

Stormwater Studio 2023 V.3.0.0.32

Project Name: Template

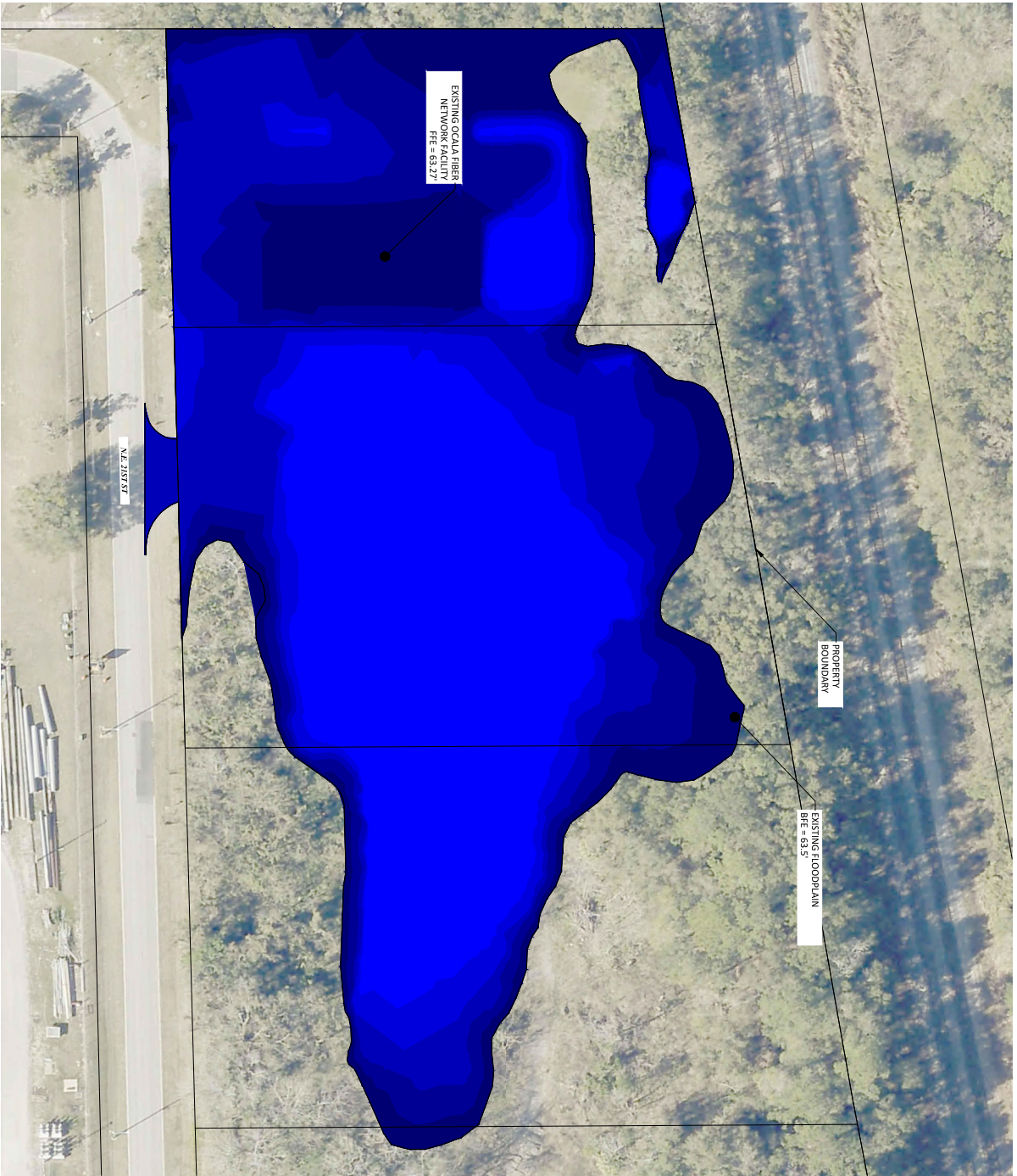
11-10-2023

Line No.	Inlet ID	Drain Area (ac)	Runoff Coeff (C)	Incr CxA	Inlet Time (min)	i Inlet (in/hr)	Incr Q (cfs)	Total C x A	Tc System (min)	i Syst (in/hr)	Flow Rate (cfs)	Line No.	Line Size (in)	Invert Up (ft)	Invert Dn (ft)	Line Length (ft)	Line Slope (%)	n-value Pipe	Capac. Full (cfs)	Cover Up (ft)	HGL Up (ft)	Cover Dn (ft)	HGL Dn (ft)	Vel Ave (ft/s)
1	S-2	0.100	0.95	0.10	10.0	8.26	0.78	0.93	11.6	7.89	7.31	1	24	52.20	52.00	39.48	0.51	0.013	16.10	6.60	54.41	6.50	54.37	2.33
2	S-3	0.220	0.80	0.18	10.0	8.26	1.45	0.83	11.3	7.94	6.61	2	18	56.90	56.50	75.05	0.53	0.013	7.67	2.40	57.97	2.80	57.57	4.88
3	S-4	0.360	0.80	0.29	10.0	8.26	2.38	0.86	11.0	8.01	5.25	3	18	57.30	56.90	81.99	0.49	0.013	7.33	2.00	58.62	2.40	58.45	3.08
4	S-5	0.290	0.35	0.10	10.0	8.26	0.84	0.10	10.0	8.26	0.84	4	18	57.55	57.30	121.74	0.21	0.013	4.76	1.50	58.84	2.00	58.83	0.50
5	S-6	0.160	0.70	0.11	10.0	8.26	0.93	0.27	10.4	8.15	2.17	5	18	57.55	57.30	78.52	0.32	0.013	5.93	1.75	58.85	2.00	58.82	1.28
6	S-7	0.220	0.70	0.15	10.0	8.26	1.27	0.15	10.0	8.26	1.27	6	18	57.80	57.55	72.05	0.35	0.013	6.19	1.50	58.89	1.75	58.88	0.95
7	S-9	0.120	0.95	0.11	10.0	8.26	0.94	0.16	10.8	8.07	1.30	7	18	52.20	52.00	37.10	0.54	0.013	7.71	7.10	54.38	7.00	54.37	0.74
8	S-10	0.050	0.95	0.05	10.0	8.26	0.39	0.05	10.0	8.26	0.39	8	18	57.30	56.95	92.86	0.38	0.013	6.45	2.00	57.55	2.35	57.20	2.02

Notes: IDE File = Zone 7\_idf, Return Period = 25-yrs

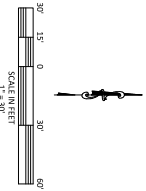
Project File: City of Ocala North Complex Stormwater.sws

## 7. Exhibits



**LEGEND**

EXISTING FLOODPLAIN BASED ON THE 63.5' BFE PER MARSHALL SWANUP FLOOD STUDY FROM MARION COUNTY WATER MANAGEMENT PLAN, AND BOUNDARY & TOPOGRAPHIC SURVEY FOR OCALA FIBER NETWORK FACILITY, AND DRONE SURVEY OF THE PROPERTY PROVIDED BY THE CITY OF OCALA.



NOT VALID UNLESS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER

SHEET 1

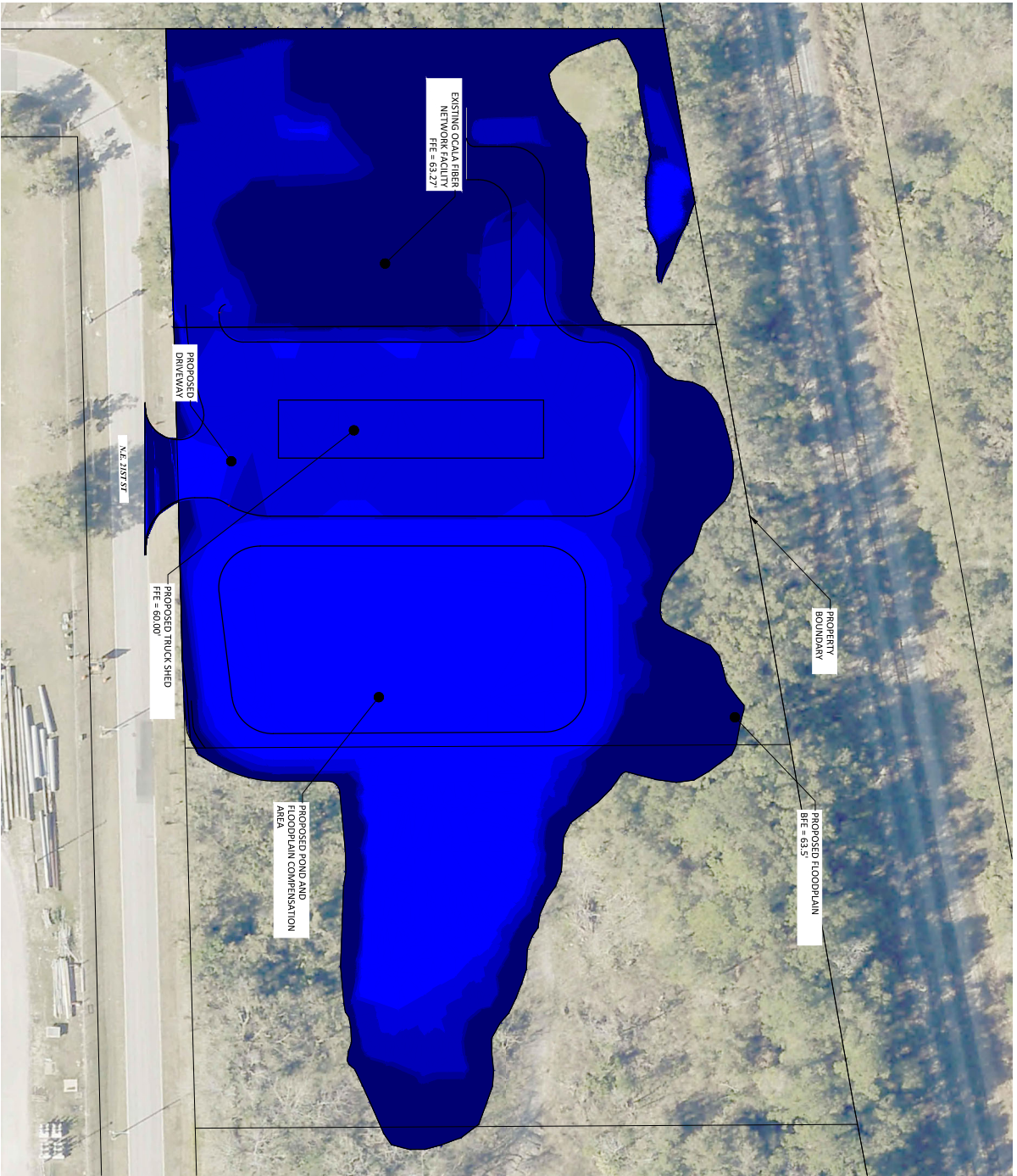
DATE: 11/23  
 DRAWN BY: JA  
 JOB NO.: 23-5260

FLOODPLAIN EXHIBIT  
 PRE-DEVELOPMENT  
 MARION COUNTY, FL  
**CITY OF OCALA  
 NORTH COMPLEX**

DATE	REVISIONS

**Tillman & Associates**  
 ENGINEERING, LLC  
 CIVIL ENGINEERING - PLANNING - LANDSCAPE ARCHITECTURE - ENVIRONMENTAL  
 1720 SE 16th Ave. Bldg 100, Ocala, FL 34471  
 Office: (352) 387-4540 Fax: (352) 387-4545

14. I have prepared this plan in accordance with the Florida Board of Professional Engineers, Chapter 461, Part 1, F.S. and the Florida Board of Professional Engineers, Chapter 461, Part 1, F.S. I am not responsible for any errors or omissions in this plan.



**LEGEND**

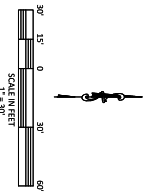
PROPOSED FLOODPLAIN  
BFE = 63.5

FLOODPLAIN COMPENSATION			
SURFACE	(C) <sup>1</sup>	(A-C) <sup>2</sup>	
EXISTING FLOODPLAIN VOLUME <sup>1</sup>	14,324	8,90	
PROPOSED FLOODPLAIN VOLUME <sup>1</sup>	18,976	11,60	
NET CHANGE IN FLOODPLAIN VOLUME <sup>2</sup> (PROPOSED GAINING)	4,352	2,7	

- 1- FLOODPLAIN VOLUME WITHIN PROJECT AREA
- 2- NET CHANGE IS POSITIVE TO CONFIRM INCREASE IN FLOODPLAIN STORAGE VOLUME

**NOTES**

- FLOODPLAIN COMPARISON WAS CALCULATED USING 2022 AUTOCAD CIVIL 3D TIN SURFACE COMPARISON.
- FLOODPLAIN VOLUMES CALCULATED FROM THE SEASONAL HIGH WATER TABLE ELEVATION OF 48.2' UP TO THE BFE OF 63.5'.
- SINCE THE NET CHANGE TO THE FLOODPLAIN IS POSITIVE, THERE IS NO NET CHANGE IN STORAGE VOLUME AND THEREFORE NO ADVERSE FLOODING RISK POSED.

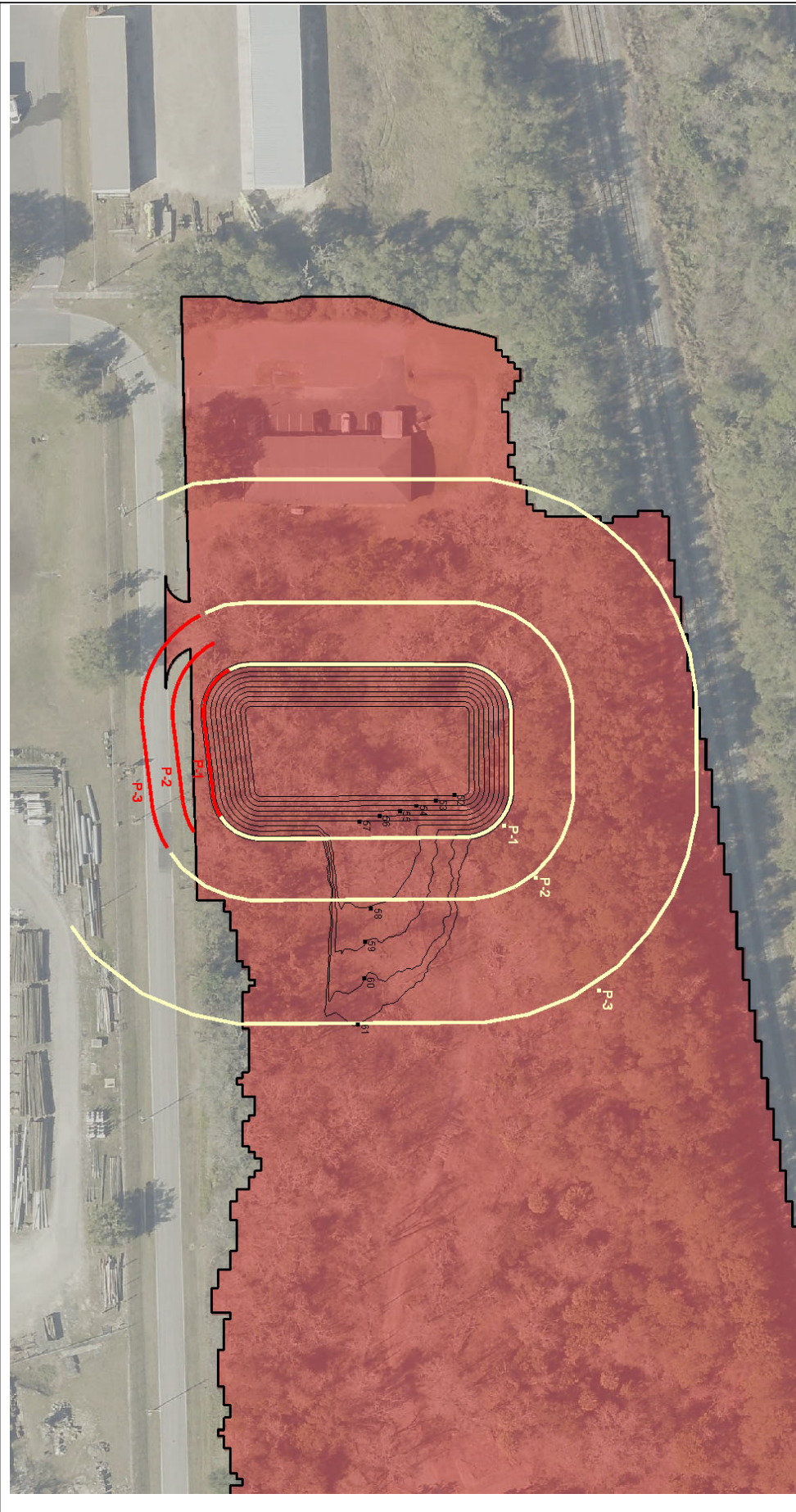


NOT VALID UNLESS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER

SHEET: <b>2</b>	<b>FLOODPLAIN EXHIBIT</b> POST-DEVELOPMENT MARION COUNTY, FL  <b>CITY OF OCALA</b> <b>NORTH COMPLEX</b>	DATE: _____ REVISIONS: _____ _____ _____ _____	<b>ENGINEERING, LLC.</b> CIVIL ENGINEERING - PLANNING - LANDSCAPE ARCHITECTURE - ENVIRONMENTAL 1720 SE 16th Ave. Bldg 100, Ocala, FL 34471 Office: (352) 387-4540 Fax: (352) 387-4545
DATE: 11/27/23 DRAWN BY: JLA PROJ. NO.: 23-5260			

PERCOLATION PERIMETERS

Background Image: PERCOLATION PERIMETERS







**Floodplain Analysis Report, Lake Panasoffkee and Marshall  
Swamp Watershed Management Plan**

Marion County Board Of County Commissioners | July 2012

**FLOODPLAIN ANALYSIS REPORT, LAKE PANASOFFKEE AND MARSHALL  
SWAMP WATERSHED MANAGEMENT PLAN**

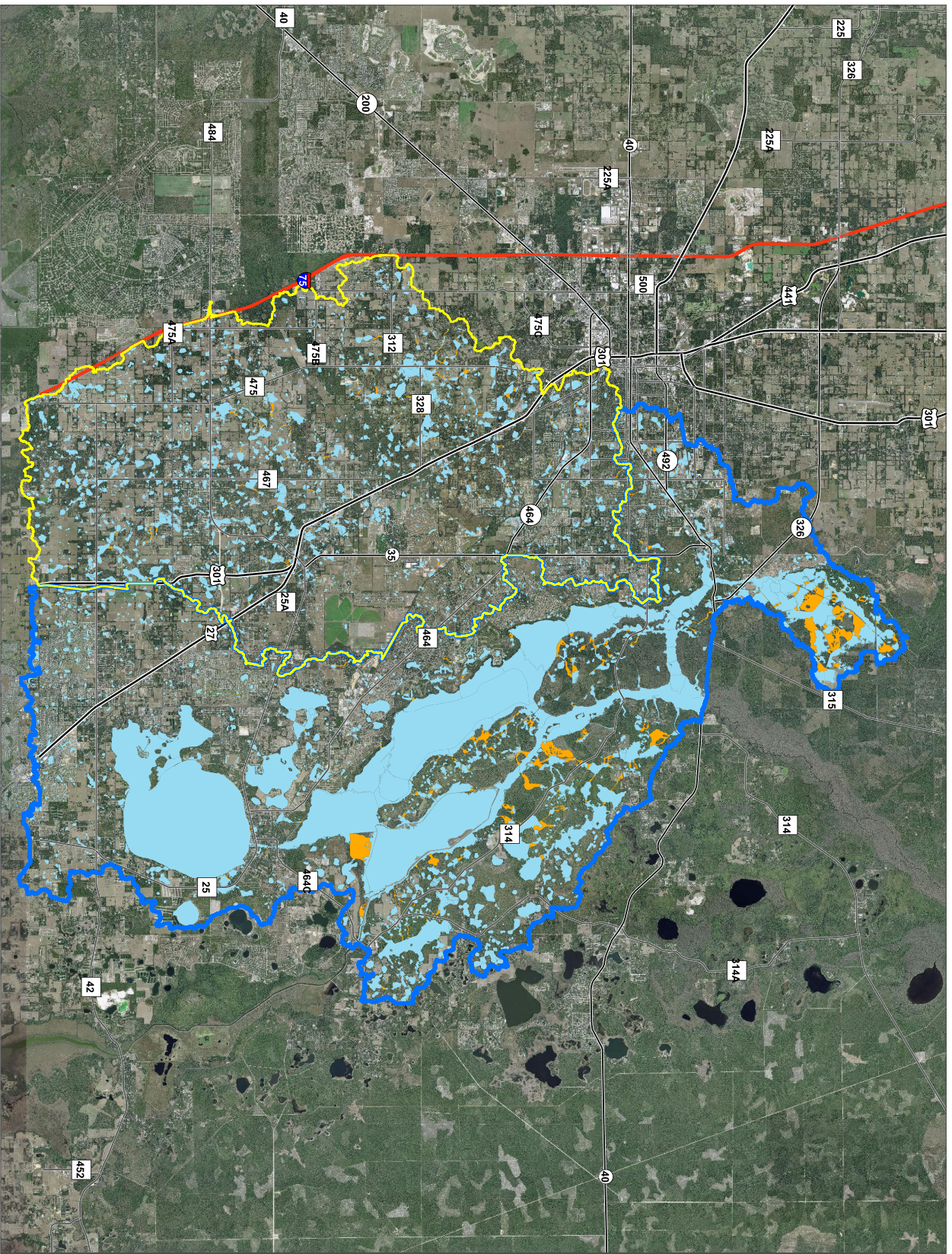
**Prepared for**  
Marion County Board Of County Commissioners

**Prepared by**  
Jones Edmunds & Associates, Inc.  
730 NE Waldo Road  
Gainesville, FL 32641

PE Certificate of Authorization #1841  
PG Certificate of Authorization #133

July 2012

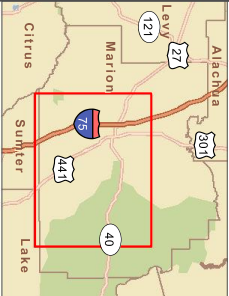




For Informational Purposes Only: Q:\13150\_Marion\17-04-LakePanasoffkeeMarshallSwampPhase2\FloodAnalysis\_Figures\Map6\_100YFloodplan\_11x17\_20110414.mxd Date: 4/14/2012

**Figure 6**  
100-Year Floodplain Map

Lake Panasoffkee and  
Marshall Swamp  
Watershed Management Plan



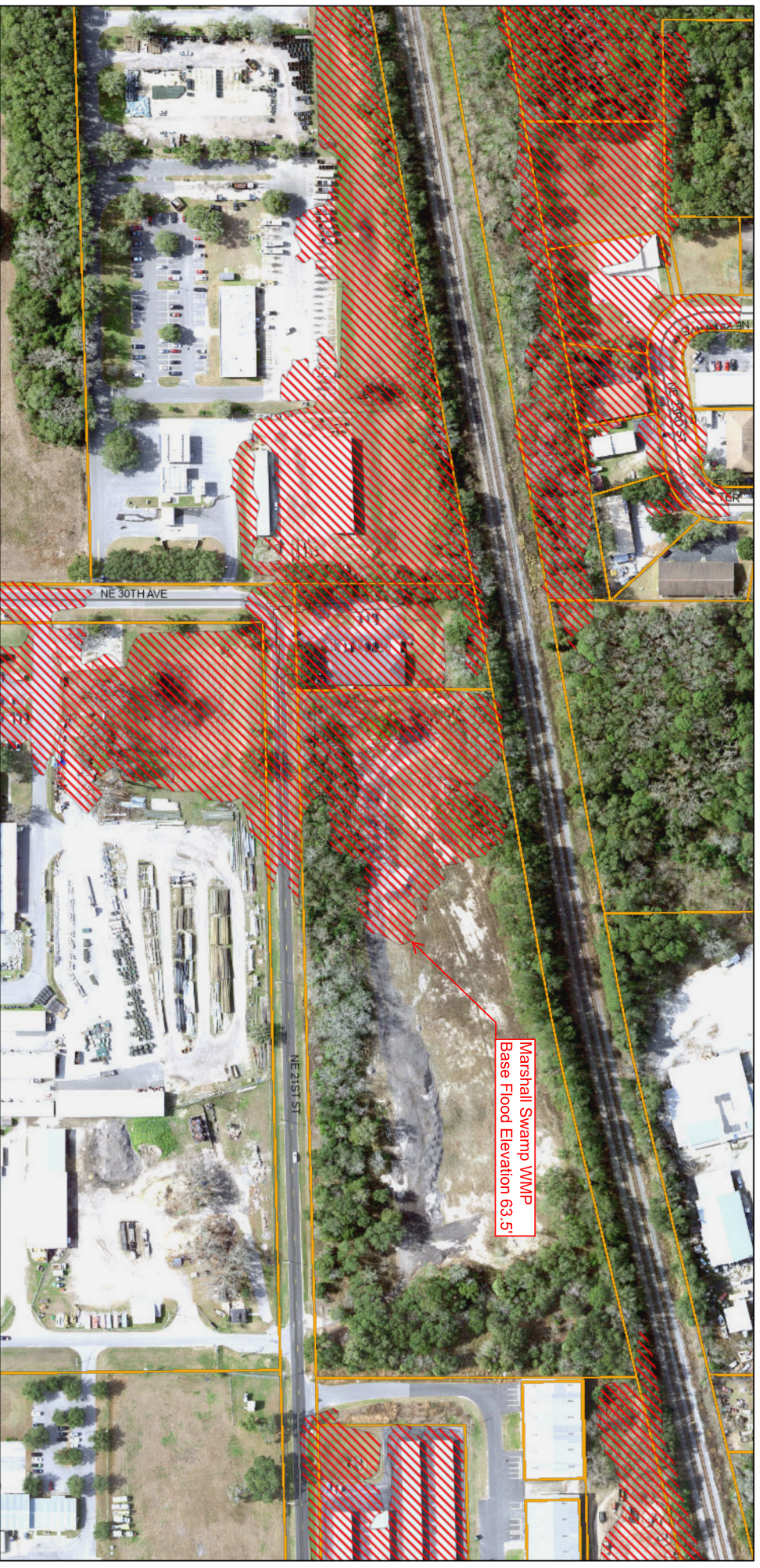
- Legend**
- Lake Panasoffkee Watershed
  - Marshall Swamp Watershed
  - Flood Zone
  - Interstate
  - US Road
  - State Road
  - County Road
  - Local Road
  - Roadway Feature
- Aerial Photography:  
SWFWMD (2008)



Marion County Board of County Commissioners  
JONES EDMUNDS

<b>Node</b>	Minimum Node Elevation*	<b>100Y1D</b>	100Y4D	Verification	<b>Watershed</b>
NC1940	70.3	73.0	73.2	72.4	Marshall Swamp
NC1941	61.5	69.3	69.6	68.8	Marshall Swamp
NC1942	61.5	72.1	73.3	71.3	Marshall Swamp
NC1943	64.4	67.5	67.5	65.7	Marshall Swamp
NC1944	71.1	78.3	78.4	77.9	Marshall Swamp
NC1945	75.5	92.2	92.3	90.8	Marshall Swamp
NC1946	61.6	74.9	75.1	74.5	Marshall Swamp
NC1947	54.2	67.6	67.8	67.3	Marshall Swamp
NC1948	71.9	81.1	82.6	79.0	Marshall Swamp
NC1949	76.3	84.2	84.5	80.6	Marshall Swamp
NC1950	74.5	81.7	82.2	80.6	Marshall Swamp
NC1951	68.3	75.0	75.5	72.9	Marshall Swamp
NC1952	77.8	87.8	88.1	87.6	Marshall Swamp
NC1953	79.1	88.4	89.7	86.4	Marshall Swamp
NC1954	85.2	95.8	95.9	94.7	Marshall Swamp
NC1955	101.4	112.9	113.2	106.5	Marshall Swamp
NC1956	110.3	117.4	117.4	117.1	Marshall Swamp
NC1957	82.2	92.8	92.9	92.3	Marshall Swamp
NC1958	113.9	122.0	122.1	121.5	Marshall Swamp
NC1959	81.2	84.2	84.5	83.5	Marshall Swamp
NC1960	86.5	97.6	97.6	97.3	Marshall Swamp
NC1961	52.9	59.2	59.8	58.7	Marshall Swamp
NC1962	47.0	52.5	52.5	52.2	Marshall Swamp
NC1963	56.1	59.1	59.1	58.1	Marshall Swamp
NC1964	58.7	59.2	59.2	59.1	Marshall Swamp
NC1965	63.1	68.1	69.3	67.4	Marshall Swamp
NC1966	68.1	71.1	71.5	70.4	Marshall Swamp
NC1967	60.0	61.3	61.4	61.2	Marshall Swamp
NC1968	42.8	44.8	45.3	44.0	Marshall Swamp
NC1969	44.1	44.8	44.9	44.4	Marshall Swamp
NC1970	62.0	67.9	68.6	67.4	Marshall Swamp
NC1971	65.5	70.9	71.7	70.3	Marshall Swamp
NC1972	63.0	67.9	68.1	67.7	Marshall Swamp
NC1973	66.0	67.7	68.0	66.9	Marshall Swamp
NC1974	60.4	61.9	62.0	61.4	Marshall Swamp
NC1975	59.1	64.8	66.8	61.4	Marshall Swamp
NC1976	58.0	68.3	68.6	67.9	Marshall Swamp
NC1977	59.3	62.6	62.9	60.9	Marshall Swamp
<b>NC1978</b>	53.0	<b>63.5</b>	67.3	60.6	<b>Marshall Swamp</b>
NC1979	57.0	63.9	64.8	63.1	Marshall Swamp
NC1980	62.1	67.7	68.8	66.4	Marshall Swamp
NC1981	57.0	64.1	67.3	63.8	Marshall Swamp
NC1982	56.6	63.5	67.3	61.8	Marshall Swamp
NC1983	66.2	71.6	71.5	69.1	Marshall Swamp

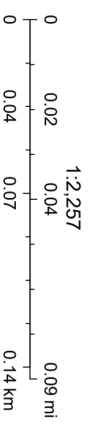
# Marion County Florida - Interactive Map



11/22/2023, 10:06:39 AM

- Marion County
- Municipalities
- Streets
- Flood Prone Areas

- Parcels
- Aerial 2023
- Green: Band\_2
- Blue: Band\_3
- Red: Band\_1



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Marion County Board of County Commissioners  
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