



City of Okeechobee
TECHNICAL REVIEW COMMITTEE
55 SOUTHEAST THIRD AVENUE ♦ OKEECHOBEE, FL 34974
May 18, 2023
LIST OF EXHIBITS

Draft Minutes

February 16, 2023, Summary of Committee Action

Exhibit 1

Staff Report/Revised documents for Site Plan Review
Application No. 23-001-TRC (continued from the
February 16, 2023, Meeting)



CITY OF OKEECHOBEE, FLORIDA
TECHNICAL REVIEW COMMITTEE MEETING
FEBRUARY 16, 2023
DRAFT SUMMARY OF COMMITTEE ACTION

I. CALL TO ORDER

Chairperson Ritter called the regular meeting of the Technical Review Committee (TRC) for the City of Okeechobee to order on Thursday, February 16, 2023, at 10:00 A.M. in the City Council Chambers, located at 55 Southeast 3rd Avenue, Room 200, Okeechobee, Florida, followed by the Pledge of Allegiance.

II. ATTENDANCE

The following TRC Members were present: City Administrator Gary Ritter, Building Official Jeffery Newell, Okeechobee County Fire Rescue (OCFR) Bureau Chief Justin Hazellief, Police Chief Donald Hagan, and Public Works Director David Allen. City Planning Consultant Ben Smith, Okeechobee County Environmental Health (OCEH) Director Dianna May, Okeechobee Utility Authority (OUA) Executive Director John Hayford, Committee Secretary Patty Burnette and General Services Secretary Keli Trimnal were also present. City Attorney Gloria Velazquez, and the Okeechobee County School Board representative were absent.

III. AGENDA

- A. The City Administrator update under VI, will be given before New Business Item A.
- B. Motion by Police Chief Hagan, seconded by Building Official Newell, to approve the agenda as amended. **Motion Carried Unanimously.**
- C. There were no comment cards submitted for public participation.

IV. MINUTES

- A. Motion by Building Official Newell, seconded by Public Works Director Allen, to dispense with the reading and approve the October 20, 2022, Regular Meeting minutes. **Motion Carried Unanimously.**

VI. CITY ADMINISTRATOR UPDATE

- Mentioned staff would be brainstorming to come up with a better process for the review of site plans. The application specifically lists required documents needed at time of submittal. Many applications are submitted with documents omitted which in turn causes a list of contingencies that most of the Committee Members cannot review sufficiently before a scheduled meeting. Going forward, applications will not be scheduled for hearing dates until all required documents have been submitted for review.

V. NEW BUSINESS

- A. Site Plan Review Application No. 23-001-TRC, to construct 28 rental units in two phases (six duplexes, two single-family homes and associated parking on each block) on 4.24± acres, located between Northeast (NE) 3rd and 5th Streets and NE 2nd and 3rd Avenues, Lots 1 to 12 of Blocks 110 and 121, CITY OF OKEECHOBEE.
 - 1. City Planning Consultant Mr. Ben Smith of Morris-Depew Associates, Inc. briefly reviewed the Planning Staff Report recommending the following conditions are satisfied prior to the issuance of any building permit: site plan must provide lot dimensions for each structure, demonstrating compliance with City Land Development Regulations (LDR) Section 90-450; site plan must include all building features and impervious surfaces including balconies, over hangs, and covered porches; site plan must provide setback measurements, lot coverage calculations, and impervious surface calculations for all lots, demonstrating compliance with LDR Section 90-450; the Applicant agrees that if utilities are not provided separately to each structure and lot, parcels may not be subdivided unless a master homeowners association is created to manage shared utilities; plans shall be revised to remove Dahoon Holly from list of species to be planted under overhead power lines and engineering review comments shall be addressed as required by the City Administrator and Public Works Director, (a four page report has been incorporated into the official minute packet).
 - 2. Building Official Newell asked what the Applicant's intent was given the plans depict the units as having four bedrooms with a bathroom for each and the single-family homes as having six bedrooms with bathrooms for each. Is the intent to treat the units like a dormitory type of use.

V. NEW BUSINESS ITEM A

2. Continued: OCFR Bureau Chief Hazellief also inquired about the exact intended use and expressed concern about the use of the single-family homes having six bedrooms. Plans indicate a hydrant although another one may be needed. Police Chief Hagan, asked about the proposed lease cost for each unit and asked for clarification too on the intended use. Will they be duplexes or dormitories as the plans depict four bedrooms and four bathrooms for each unit. Public Works Director Allen expressed concern with stormwater detention; inquired about where the existing stop sign would be relocated to and where would it be placed should the property be divided in the future by the owner. Lastly, he expressed concern with residents backing out into the street as opposed to a turnaround which would be more sufficient and safer. OCEH Director May confirmed there would be no pool for the proposed project. OUA Director Hayford advised that the wastewater collection system and pump station was not the property of OUA, it is privately owned. No force main is shown on the plans; the Applicant should contact Public Works directly regarding a private collection system being located under the road right-of-way; and there would be future conversations regarding hydrants. Chairperson Ritter commented this application submittal was missing many required documents that are provided on a checklist that is part of the application itself.
3. Mr. Steven Dobbs, on behalf of the Applicant, Mr. Frank Michell Stephens, Registered Agent, Glenwood Park, LLC, was present. Mr. Dobbs did not know what the intended use was for the buildings. He discussed/reviewed with the Committee the six comments listed on page nine of the Planning Staff Report and added there will be no Homeowners Association.
4. No public comments were offered.
5. Chairperson Ritter disclosed he had spoken to both Mr. Dobbs and Mr. Stephens.
6. Motion by Police Chief Hagan, seconded by Public Works Director Allen, to deny Site Plan Review Application No. 23-001-TRC as presented and continue it to the May 18, 2023, Meeting, to allow the Applicant time to address comments contained within the Planning Staff Report and the Engineers' Report [as presented in Exhibit 1]. **Motion Carried Unanimously.**

B. Site Plan Review Application No. 23-002-TRC, requests to pave an existing outdoor storage lot to include, storm water management system, on 3.153± acres located at NE 9th Avenue.

1. City Planning Consultant Smith briefly reviewed the Planning Staff Report. Applicant is proposing improvements to an existing outdoor storage lot that involves a parcel owned and managed by Westlake Royal Roofing, LLC. The Applicant has indicated that the property will continue to operate as an outdoor storage yard and no new uses are proposed. Staff is recommending approval of the site plan with the following conditions: dumpster must be located on-site with location approved by Public Works or owner is responsible for all solid waste removal; a landscape plan must be submitted which complies with the City's LDR; and revise plans to demonstrate compliance with culvert requirements.
2. Building Official Newell noted the Covenants for the Commerce Center may require a fence. OCFR Bureau Chief Hazellief requested a knox box for gate access should a fence be built; mentioned for open storage one cannot fill in the entire space as fire lanes with proper width of a 20-foot minimum are needed for maneuvering of the fire trucks and a turnaround is required after 150-feet. Chairperson Ritter commented in lieu of a dumpster they would need to be responsible for waste removal.
3. Mr. Andy Medina, Project Manager, on behalf of Property Owner, Westlake Royal Roofing, LLC, was present. Mr. Medina is working on the South Florida Water Management District permit, landscaping plans with the Architect and replacing the culverts.
4. There were no questions from the public.
5. City Administrator Ritter disclosed he had spoken Mr. Medina.

V. NEW BUSINESS ITEM B

6. Motion by Building Official Newell, seconded by Public Works Director Allen to approve Site Plan Review Application No. 23-002-TRC, as presented in [Exhibit 2, which includes the Planning Consultant's analysis of findings and recommendation for approval] with the following conditions: fire lanes meet a minimum 20-foot width and after 150-feet a turnaround is required; if fencing is required by the Covenants, then requested access for the Fire Department must be provided; dumpster must be located on-site with location approved by Public Works or owner is responsible for all solid waste removal; a landscape plan must be submitted which complies with the City's LDR, and revise plans to demonstrate compliance with culvert requirements. **Motion Carried Unanimously.**

VII. Chairperson Ritter adjourned the meeting at 11:09 A.M.

Submitted by:

Patty M. Burnette, Secretary

Please take notice and be advised that when a person decides to appeal any decision made by the Technical Review Committee with respect to any matter considered at this proceeding, he/she may need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence upon which the appeal is to be based. General Services' media are for the sole purpose of backup for official records.

23-001-TRC

Site Plan Review Staff Report



Applicant | Glenwood Park, LLC
Site | 3-15-37-35-0010-01100-0010 (33778);
3-15-37-35-0010-01210-0010 (36847)



Prepared for The City of Okeechobee

General Information

Owner: Glenwood Park, LLC

Applicant: Glenwood Park, LLC

Primary Contact: Steven L. Dobbs (863)-634-0194

Site Address: 309 NE 4th Street, Okeechobee, FL 33972

Parcel Identification: 3-15-37-35-0010-01210-0010, 3-15-37-35-0010-01100-0010.

Note: For the legal description of the project or other information relating this application, please refer to the application submittal package which is available by request at City Hall and is posted on the City's website prior to the advertised public meeting at: <https://www.cityofokeechobee.com/agendas.html>

Future Land Use, Zoning, and Existing Use of Subject Property(s)

	Existing	Proposed
Future Land Use	Multiple Family Residential	Multiple Family Residential
Zoning	RMF	RMF
Use of Property	Vacant	Multifamily Residential
Acreage	4.24	4.24

Future Land Use, Zoning, and Existing Use of Surrounding Properties

	Future Land Use	Zoning	Existing Use
North	Multiple Family Residential	RMF	Single Family Residences
East	Single Family Residential, Commercial	RSF-1, CPO	Church
South	Commercial, Multi-Family Residential	RMF, CHV	Offices
West	Commercial	CHV	Funeral Home, Church, Office

General Description

The request for consideration by the City's Technical Review Committee (TRC) is an application for Site Plan Review of a residential development containing 12 duplexes and 4 single-family residences for a total of 28 dwelling units. The 4.24-acre project area is comprised of two city blocks, separated by NE 4th Street. This request was initially reviewed by the TRC at their February 16, 2023 meeting. Revised plans have been submitted and this report provides staff's analysis of those revised plans. Areas of deficiency or concern are highlighted in yellow.

Adequacy of Public Facilities

Potable Water and Sewer: Availability of potable water and sewer service for this site has been confirmed previously.

Traffic Generation: The applicant has provided a traffic analysis prepared by Mackenzie Engineering & Planning, Inc. which demonstrates available roadway capacity for 42 dwelling units. The traffic analysis was prepared for a greater density than the 28 dwelling units that the applicant is proposing.

Access and Internal Circulation: A separate driveway is proposed for each structure with direct access to local roadways.

Service Vehicle Access and Egress:

A. Fire Truck

Sufficiency of fire truck access and egress to be addressed by the Fire Department.

B. Loading Zone

No Loading zones are required, and none are proposed.

C. Dumpster Location and/or Trash Collection

No dumpster enclosure is depicted on the site plans. Each residence will maintain individual trash cans for waste disposal.

Consistency and Compatibility with Adjacent Uses

Consistency and Compatibility Analysis:

The proposed use is consistent with the comprehensive plan and the zoning code and is compatible with surrounding uses. Duplexes in this location provide a transition between commercial property to the west and south and the low density residential to the east and north; and will not be detrimental to the adjacent church properties. The development provides moderate density housing options in close proximity to the US441 corridor and downtown Okeechobee, which will provide support for the existing commercial in this area.

Compliance with Land Development Code

Regulation	Requirement	Compliance Notes
Permitted Uses §90-192	Single-family and two-family dwellings are permitted uses in the RMF zoning district.	In compliance
More than one principal building on a lot §90-450	More than one principal structure may be erected on a lot, provided that surveyed legal descriptions shall be used, and area, yard and all other zoning regulations shall be met for each structure as though they were on separate lots. Except for detached single-family housing, all other development is subject to site plan approval.	Though subdivision is not proposed at this time, plans must demonstrate that parcels could be subdivided with each structure and lot meeting the minimum zoning requirements. In compliance
Minimum Lot Area §90-196(1)	6,250 square feet for each dwelling unit <u>$90,169 \div 6,250 = 14.4$</u> <u>$94,502 \div 6,250 = 15.1$</u>	14 dwelling units on each parcel.
Minimum Lot Width §90-196(1)	50 feet for single family dwellings 100 ft for two family dwellings	In compliance
Allowable encroachment §90-448(2)	A required yard shall be open from ground to sky unobstructed, except for... Building overhang, eaves, cornice, gutter, sill, screen, chimney, fire escape, not exceeding two feet projecting into the required yard.	Cannot determine compliance. The revised site plan is not consistent with the previously submitted elevations and floor plans. Updated elevation and floor plans which are consistent with site plan must be submitted.
Min front yard setback §90-196(2)(a)	25 Feet	Duplex: Likely in compliance, although the updated elevation and floor plans should be submitted to confirm consistency. Single-family: 23' front yard setback.

Minimum secondary front yard setback §90-447 §90-449	Any yard adjoining a street shall be considered a front yard. That yard upon which the property is addressed is required to comply with the minimum depth requirements of the regulations of this article. All other front yards shall be not less than 75 percent of the required minimum depth. <u>25 x 0.75 = 18.75 feet</u>	In compliance
Minimum Required Side Setbacks §90-196(2)(a)	10 ft	In compliance
Minimum Required Rear Yard §90-196(2)(a)	10 ft	In compliance
Max lot coverage §90-196(3)(a)	40%	Likely in compliance though it is not clear that lot coverage calculations include all covered porches and overhangs. Also, lot coverage must be calculated for each potential lot per 90-450.
Max impervious surface §90-196(3)(a)	60%	Likely in compliance though it is not clear that impervious surface calculations include all covered porches and overhangs. Also, impervious surface must be calculated for each potential lot per 90-450.
Single Family Unit Min Area §90-196(5)	800 sf	In compliance
Max height §90-196(4)	45 feet	Likely in compliance, though updated elevation plans should be submitted to confirm.
Parking spaces location §90-511(a)	Required off-street parking and loading spaces shall be located on the same parcel as the primary use, unless approved by TRC upon submittal of written agreement to ensure continued availability	In compliance

Min parking space dimensions §90-511(b)	9' by 20'	9' by 20' parking space dimensions indicated on site plans. In compliance.
SFR min driveway width §90-511(d)(1)	8 ft	In compliance
Duplex min driveway width §90-511(d)(2)(a)	24' for 90° parking spaces	In compliance
Paving §90-511(e)(1)	Each parking and loading space shall be paved	In compliance
Parking and loading space layout §90-511(e)(2)	Each parking space shall be designed to permit access without moving another vehicle.	In compliance
Parking Requirements Sec. 90-512(1)	2 spaces per dwelling unit;	In compliance
Landscape buffer areas §90-534(1)	Minimum width of buffer along street frontage shall be ten feet	In compliance

<p>Landscape buffer areas §90-534(2)</p>	<p>At least one tree and three shrubs for each 300 square feet of required landscaped buffer.</p> <p><u>North Parcel</u> 270 linear ft of non-driveway frontage on NE 5th St requires 2,700 sf of landscaped area with 9 trees and 27 shrubs</p> <p>240 linear ft of non-driveway frontage on NE 3rd Ave requires 2,400 sf of landscaped area with 8 trees and 24 shrubs</p> <p>270 linear ft of non-driveway frontage on NE 4th St requires 2,700 sf of landscaped area with 9 trees and 27 shrubs</p> <p>240 linear ft of non-driveway frontage on NE 2nd Ave requires 2,400 sf of landscaped area with 8 trees and 24 shrubs</p> <p><u>South Parcel</u> 270 linear ft of non-driveway frontage on NE 4th St requires 2,700 sf of landscaped area with 9 trees and 27 shrubs</p> <p>255 linear ft of non-driveway frontage on NE 3rd Ave requires 2,550 sf of landscaped area with 9 trees and 26 shrubs</p> <p>270 linear ft of non-driveway frontage on NE 3rd St requires 2,700 sf of landscaped area with 9 trees and 27 shrubs</p> <p>255 linear ft of non-driveway frontage on NE 2nd Ave requires 2,550 sf of landscaped area with 9 trees and 26 shrubs</p>	<p>In Compliance</p> <p>Only 6 trees and 13 shrubs</p> <p>Only 7 trees and 20 shrubs</p> <p>Only 4 trees and 11 shrubs</p> <p>Only 6 trees and 18 shrubs</p> <p>Only 6 trees and 13 shrubs</p> <p>Only 8 trees</p> <p>Only 6 trees and 7 shrubs</p>
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Landscape buffer areas §90-534(3)	Trees may be planted in clusters, but shall not exceed 50 feet on centers abutting the street.	In compliance
Landscape buffer areas §90-534(4)	The remainder of a landscape buffer shall be landscaped with grass, ground cover, or other landscape material.	Plans indicate the use of mulch around trees and shrubs.
Landscape design and plan §90-538(a)	Proposed development, vehicular and pedestrian circulation systems, and site drainage shall be integrated into the landscaping plan.	Drainage specifics are not included in the landscape plan, although it is included in the plan set.
Landscape design and plan §90-538(b)	Existing native vegetation shall be preserved where feasible, and may be used in calculations to meet these landscaping requirements.	In compliance
Species diversification §90-538(c)	When more than ten trees are required to be planted, two or more species shall be used.	In compliance
Tree spacing from utility structures §90-538(d)	Trees and shrubs shall not be planted in a location where at their maturity they would interfere with utility services.	In compliance, the site plan includes a note that consideration will be made to protect overhead utility lines at the time of installation, will meet the requirements.

Utility Corridor Requirements §90-543(b)	No tree shall be planted where it could, at mature height, conflict with overhead utility lines. Larger trees (trees with a mature height of 30 feet or more) shall be planted no closer than a horizontal distance of 30 feet from the nearest overhead utility line. Medium trees (trees with a height of 20 to 30 feet) shall be offset at least 20 feet horizontally from the nearest overhead utility line. Small trees (trees with a mature height of less than 20 feet) shall not be required to meet a minimum offset, except that no tree, regardless of size shall be planted within five feet of any existing or proposed utility implement.	In compliance, Silver Buttonwood and Crape Myrtle are proposed under utility lines.
Shade §90-538(e)	Trees should maximize the shading of pedestrian walks and parking spaces.	Live Oak, Black Olive, and Green Buttonwood are proposed near parking areas.
Drought tolerance §90-540(b)	At least 75 percent of the total number of plants required shall be state native very drought tolerant species as listed in the South Florida Water Management District Xeriscape Plant Guide. However, when a landscape irrigation system is installed, at least 75 percent or the total number of plants required shall be state native moderate or very drought tolerant species.	In compliance
Min tree size §90-540(c)	Trees shall be at least ten feet high and two inches in diameter measured four feet above ground level at the time of planting.	In compliance

Sidewalks § 78-36	Sidewalks shall be provided along each right-of-way. Pedestrian access shall be provided from the development to the ROW facilities.	The plans depict sidewalk dimensions, striping details, and detectable warning strips. In compliance.
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Recommendation

Based on the foregoing analysis, we recommend that the following conditions are satisfied prior to issuance of any building permit:

1. No revised elevations or floor plans have been submitted. Previously submitted elevations and floor plans are not consistent with latest site plan. Please provide updated elevations and floor plans which are consistent with site plan.
2. Primary front setbacks shall be at least 25 feet for all structures.
3. Site plan must provide lot coverage calculations and impervious surface calculations for each lot, demonstrating compliance with Section 90-450.
4. Applicant agrees that if utilities are not provided separately to each structure and lot, parcels may not be subdivided unless a master homeowners association is created to manage shared utilities.
5. Landscape plans shall demonstrate compliance with landscape buffer standards per §90-534(2) or TRC may approve alternate landscape plan per §90-539 upon finding that applicant has demonstrated that the landscape and buffer requirements can be more effectively met by an alternative landscape plan.
6. Engineering review comments shall be addressed as required by the City Administrator and Public Works Director.

Submitted by:



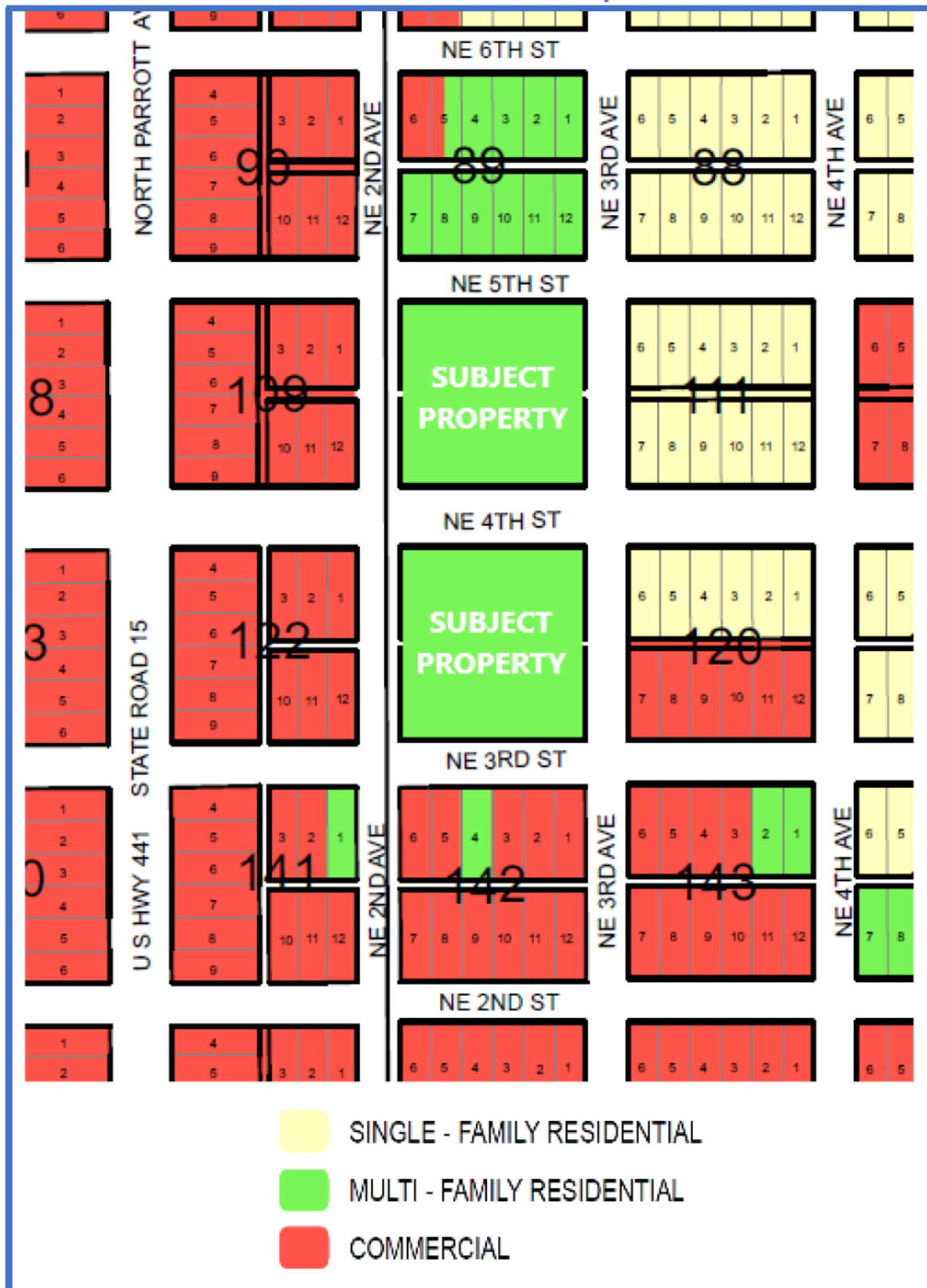
Ben Smith, AICP

Director of Planning

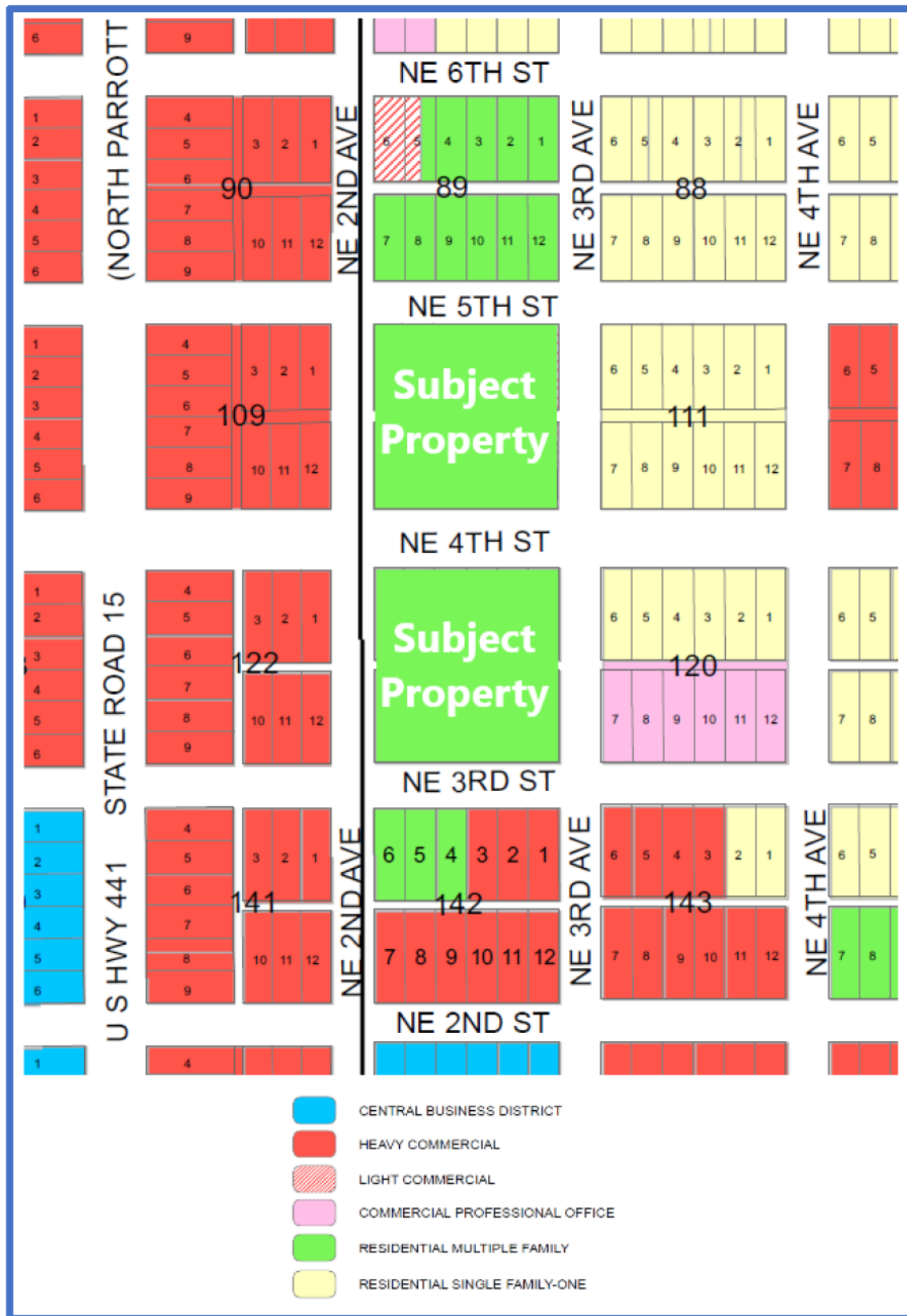
April 19, 2023

Okeechobee Technical Review Committee Hearing: May 18, 2023

Future Land Use Map



Zoning Map



Aerial Identifying Existing Land Use



23-001-TRC

Engineering Review Comments

DATE: April 19, 2023
TO: City of Okeechobee
FROM: Morris-Depew Associates Inc., Engineering Dept.

The following comments are provided based on a review of the proposed plans for 23-001-TRC for compliance with all potentially applicable regulations. It is understood that it may be appropriate to grant relief from some standards (based on existing site and infrastructure conditions unknown to the reviewers and based on typical development practices in the city) as determined by the City Administrator and City Public Works Director.

Sec 86-182 - (e)

Areas to be used for water retention purposes shall be designated as "general purpose areas" on the plat and shall not be shown on the plat in any other way. Such areas shall in no circumstances be given a lot designation in the subdivision. Such areas shall be held in common ownership and maintained by the property owners' association. Such property owners' association shall be provided for in the protective covenants specified in section 86-72, with provisions that provide for maintenance of retention areas and assessment of property owners by the city if the property owners' association fails to adequately maintain such water retention areas. If the city council agrees to accept the dedication of the water retention areas, they shall be deeded as general purpose areas in a given block, as the case may be.

1. The response for this is acknowledged, however common detention areas for subdivision should be depicted as "general purpose areas" within tracts to be held in common ownership and maintained by the property owners association. Currently, the common detention areas are located within future platted lots are not labeled "general purpose areas" and therefore not able to be held in common ownership by the future property owner's association.

The Sheets C201 - C202 now depict roadside swales as "general purpose areas" in the public right of way. The public right of way is not subject of the future platted lots therefore these areas are not required to be labeled "general purpose areas".

Sec. 86-185. - Wastewater and water.

Standards for installation of water, wastewater and storm wastewater are as follows:

Installation of any water and wastewater system shall comply with appropriate state regulations and standard specifications provided in the Public Utilities Manual and the Manual of Standards and Design Construction and Maintenance for Water and Wastewater Systems, and shall be installed under the direction and supervision of, and subject to the inspection and approval of, the city. If any defects shall occur in the water or sanitary wastewater facilities within one year from the date of acceptance by the city, such defects shall be remedied and corrected at the developer's expense. The specifications and location of fire hydrants shall be approved by the city.

2. Item 20 on FDEP Form 62-604.300_3a_10_04_2021.pdf "Notification/Application For Constructing A Domestic Wastewater Collection/Transmission System", manholes should be provided for the gravity sewer system.

Initials (or "NA" or "NC")	Item Number	Requirement
	20	The project is designed with manholes at the end of each line; at all changes in grade, size, or alignment; at all intersections; and at distances not greater than 400 feet for sewers 15 inches or less and 500 feet for sewers 18 inches to 30 inches, except in the case where adequate modern cleaning equipment is available at distances not greater than 600 feet. [RSWF 34.1]

Please address this requirement from Florida Department of Environmental Protection.

3. On Sheet 501, a new water main is now depicted to cross NE 3rd Avenue. Please provide details for water main crossing (Direction bore, jack and bore, casing, open cut with pavement restoration, horizontal separation from existing storm, etc. subject to approval of Public Works Director.
4. Several Water Meters are depicted within driveway areas. On Sheet C601, Note 2 of the Typical Service Connection (Underground) detail, indicates that meter box shall not be placed in sidewalk or driveways area. Please address these locations.
5. Prior to construction commencement, provide a sewage collection/transmission system construction permit from Florida Department of Environmental Protection and approval from local sewer authority.
6. Prior to construction commencement, provide a water main extension construction permit from Florida Department of Environmental Protection and approval from local water authority.

Sec. 86-184. - Bridges and culverts.

(a) All bridges and culverts shall meet the standards specified by the state department of transportation as contained in Standard Specifications for Road and Bridge Construction.

(b) Locations of bridges and culverts, with construction data and full specifications, shall be shown in an exhibit, and approval or acceptance of the final plat shall not be accomplished unless such exhibit is transmitted.

7. Sheet 501 and 502 no longer depicts the driveway culverts. The reviewer is not able to determine if conflict between driveway culverts and 16" water main is resolved. It is recommended that separation between proposed culverts and existing water main with Rule 62-62-555.314, F.A.C. be demonstrated.
8. Several roadside swales have been proposed to be modified with higher elevations. Please submit ditch and culvert capacity design calculation to Public Works Director for review of proposed design conditions.

Sec. 34-2. - Fire hydrants.

Fire hydrants shall be provided in all water mains, transmission and distribution systems. Fire hydrants shall be spaced such that the maximum distance for protection will not be more than 500 feet as the fire hose lays. The appropriate fire marshal has final jurisdiction on all hydrant and fire sprinkler line locations during plan review. A fire marshal-approved plan is required with all preliminary plan submissions. Each hydrant shall be capable of delivering a flow of at least 500 gallons per minute with a residual design pressure of not less than 20 psi. Fire hydrants shall be of the dry barrel breakaway type conforming to AWWA C502, with two 2½-inch threaded hose nozzles and one 4½-inch threaded pumper nozzle. Hydrants shall have a 5¼-inch interior valve opening and be restrained from the hydrant to the tee at the main. Restraint by use of "all-thread" rods shall not be allowed. At the discretion of the city administrator, additional protection for fire hydrants shall be provided including, but not limited to, concrete filled ductile iron traffic posts. Fire hydrant branches (from main to hydrant) shall be a minimum of six inches inside diameter. Each branch shall be provided with a resilient seat gate valve located as close as possible to the main. Hydrants shall be located near road lines with the pumper discharge nozzle facing as directed by the fire marshal. Hydrants shall be laid to minimize their vulnerability to traffic.

9. Fire Chief to confirm whether the proposed hydrants locations are consistent with those agreed to in pre application meeting.

Sec. 78-101. - Requirements.

(a) Required stormwater management systems shall comply with state approved standards adopted by the South Florida Water Management District.

(b) Minimum stormwater management requirements are as follows:

- (1) Stormwater treatment and disposal facilities shall be designed for a 25-year storm event of 24-hour duration.
- (2) The first inch of stormwater runoff shall be treated on site.
- (3) Post development runoff rates, volumes and pollutant loads shall not exceed predevelopment conditions.
- (4) Erosion and sediment controls shall be used during construction.
- (5) Minimum road elevation is the crown of the road or 100-year, three-day event, whichever is highest.

10. Please note that placement of erosion control devices is performance based. The locations for silt fence as depicted on the plan set represents the base line condition for preventing sedimentation and should be modified by the contractor to prevent offsite transport of sediment as warranted by field conditions.

11. Nutrient loading calculations have been provided. These indicate that in order to provide the required nutrient load reduction, a retention volume in excess of 1" over the site is required. It appears that the volume contained in the ponds, which is based on traditional SFWMD water quality requirements is slightly in excess of this volume. However, the control structure modifications provided in this plan revision does not reflect the requirements for a retention type control structure. Instead, the design reflects detention with filtration, except without a properly sized sand filter. That effectively qualifies the pond as detention and not retention. SFWMD defines retention as follows:

"Retention" means a system designed to prevent the discharge of a given volume of stormwater runoff into surface waters in the state by complete on-site storage.

Examples are systems such as excavated or natural depression storage areas, pervious pavement with subgrade, or above ground storage areas."

This definition prevents the inclusion of any type of orifice on the control structure below the required water quality stage. In addition, please demonstrate that the retention area has the ability to recover its water quality volume in 72 hours or less.



March 31, 2023

City of Okeechobee

Job No.: FL22024 - Glenwood
Subject: 23-001-TRC RAI Engineering Review

Dear Reviewer:

Below are responses to the Request for Additional Information based on the Engineering Review Comments from January 19, 2023, for the above referenced permit application. The following conditions are in regular type and responses are in *italics*.

Sec 78-36 – Sidewalks, driveways, and pedestrian access.

1. Provide typical design width on plans for sidewalks. Provide cross walk striping details and detectable warning strips for proposed sidewalks.

Plans have been updated to include dimensions, striping details and detectable warning strips for proposed sidewalks.

2. Address potential drop from sidewalk crossing to existing inlet at corner of NE 3rd AVE and NE 4th ST.

According to the 2018 FDOT Greenbook, we are neither 10" lower within 2' at 3:1 slope (8") or 60" with a slope greater than 2:1, so we should meet this criteria.

3. Provide for Sidewalk location in Typical Section B-B. Include provision for minimum clear graded area to avoid edge drop off to proposed swale.

Typical Section B-B has been updated to clarify the clear graded area so that there will be no edge drop off into the proposed swale.

Sec. 86-182 – (e)

4. Common detention areas for subdivision should be depicted as "general purpose areas" outside of the proposed lots.

The detention areas are covered by a drainage easement within the proposed subdivision and would be a part of the HOA duties, if ever subdivided.

5. Provide locations on plan view of sheets 301-C302 for typical cross section A-A

Section A-A has been depicted on the plan sheets.

Sec. 8c-185 – Wastewater and water

6. Provide horizontal dimensions between proposed water and sewer mains.

Plans have been updated to show dimensions between proposed water and sewer mains.

7. Provide additional details and criteria for proposed sewer design including lift station details.

Additional details have been added for the proposed sewer design including the lift station details.

8. Manhole details are provided in details; however, manholes are not provided in the design. Please address.

The manhole detail has been removed from the plan set.

9. Provide proposed sanitary sewer easement for maintenance of system on future lots.

The easement has been added to the plan.

10. Provide force main design from lift station to point of connection to existing system.

The design has been added to the plans.

11. Proposed sewer mains appear to be in conflict with proposed landscape buffers.

The sewer line will be below the landscape buffers with cleanouts every 75', this should not be in conflict with the landscape buffer.

12. Does proposed 8" water main connect to existing 6" water main on NE 4th Street?

Plans have been updated to show the detail of the proposed connection of the water main on NE 4th Street.

13. Fire Hydrant at NE 3rd AVE and NE 5th Street appears to be located within proposed sidewalk. Please address.

Fire Hydrant location has been adjusted on the update plans.

14. Will duplex/2 family buildings need separate water meters?

Each duplex will have 2 water meters, one for each side of the building. This will provide for best service to each unit.

15. Provide details for proposed water service connections to 16" water main on NE 2nd Ave

The details have been added.

16. Provide details for water main crossing of NE 4th ST. (Direction bore, jack and bore, casing, open cut with pavement restoration, horizontal separation from existing storm, etc.)

These details have been added.

17. Prior to construction commencement, provide a sewage collection/transmission system construction permit from Florida Department of Environmental Protection and approval from local sewer authority.

Prior to construction we will provide the copy of the approved construction permit from the Florida Department of Environmental Protection and approval from Okeechobee Utility Authority.

18. Prior to construction commencement, provide a water main extension construction permit from Florida Department of Environmental Protection and approval from local water authority.

Prior to construction we will provide the copy of the approved construction permit from the Florida Department of Environmental Protection and approval from Okeechobee Utility Authority.

Sec. 86-184 – Bridges and culverts.

19. Proposed Driveway culverts on NE 2nd Ave appear to conflict with existing 16" water main.

The culverts have been relocated.

20. Proposed culverts on south side of NE 4th street appear to conflict with existing 5' storm drain. Please address. Have alternate designs to connect to 5' storm drain been considered? Provide invert and end treatment details for control structure connections to proposed roadside swales on NE 4th Street.

The culverts

21. Provide minimum pipe coverage details per FDOT Standards for proposed CMP culverts under proposed asphalt within public right-of-way.

The FDOT minimum clearance has been added to the plans.

22. Please provide details for culvert end treatments for culverts under proposed sidewalks.

Each should receive a MES that is in the details.

23. Provide additional details for proposed culverts and existing culverts at the corner of NE 5th ST and NE 3rd AVE

The details have been added to the plans.

24. Invert of proposed sidewalk culvert at NE 4th ST and NE 3rd AVE appears lower than RIM elevation of existing storm drain of 18" RCP to south.

The inverts have been adjusted.

25. Proposed Driveway culvert on NE 4th street appears to conflict with existing storm drain. Please address

The culvert has been adjusted.

26. Provide minimum pipe coverage details for proposed CMP culverts under proposed asphalt within public right-of-way

Not sure if this is a duplicate comment, but please see item 21.

Sec. 34-2 – Fire hydrants.

27. Provide correspondence from Fire Marshall that the location and number of fire hydrants as proposed are sufficient for the development.

The Fire Reviewer was at TRC and said the placement of the fire hydrants was sufficient for the project.

Sec. 78-101 – Requirements.

28. Please ensure that the placement of the silt fence follows the requirements of the "Florida Stormwater, Erosion and Sediment Control Inspector's Manuals".

The silt fence has been relocated.

29. The written report states that pavement areas will pass through the dry detention areas. Please confirm that unpaved areas will pass through the dry detention areas as well. (The Storm CAD model appears to indicate that all water from each of the developed blocks will be routed through the stormwater pond.)

Each block will be surrounded by a perimeter berm that will ensure all water from impervious and pervious areas will pass through the dry detention area.

30. Please indicate how site grading and or drainage infrastructure will route water to the ponds.

Each parking area is graded to shed water away from the driveway so the water will

be captured inside the perimeter berm of each block and swales on each property line will ensure the water will be directed to the dry detention area.

31. The control elevation for BLOCK 110 is listed as 23.0 and the proposed pond bottom elevation is listed as 23.33, SFWMD requires a dry pond bottom to be 1' higher than the control elevation for the site. Please address.

The SFMWD required the bottom of the pond to be 1' above the wet season water table which it is the remainder of the volume would be considered retention, but with such a small distance the system will recover to wet season water table within the 12 day recovery period.

32. The control elevation for BLOCK 121 is listed as 24.0 and the proposed pond bottom elevation is listed as 24.33, SFWMD requires a dry pond bottom to be 1' higher than the control elevation for the site. Please address.

The SFMWD required the bottom of the pond to be 1' above the wet season water table which it is the remainder of the volume would be considered retention, but with such a small distance the system will recover to wet season water table within the 12 day recovery period.

33. Under the allowable discharge calculation on the second page of the report pdf, the Block 121 project acreage is listed as 2.20 acres. Total Basin Acreage on sheet 6 of your drainage report lists the total Basin Acreage as 2.17 acres. Please clarify.

These area now match in each area of the report.

34. At the bottom of the second page in the drainage report is a statement that says "Since the proposed water quality system is dry detention, the volume required is 100% of the calculated volume." Please be advised that the dry pond water quality volume requirement is 75% of the requirement for water quality being provided by a wet pond.

This has been corrected.

35. Section B Water Quantity on page 3 of the drainage report states "The actual maximum discharge rate for the 10-year, 72-hour storm event was calculated and shown below, which is within tolerance of the maximum allowable peak rate. To demonstrate conformance to this criterion, the proposed project was flood-routed using WaterCAD." Was this referring to the 25-year event instead?

This has been corrected.

36. Nutrient Loading: Please provide a site-specific pollutant loading analysis. If retention is required to meet pollutant loading goals, please ensure retention areas are compliant with a 72 hour drawdown requirement.

Nutrient loading analysis from the BMPTrains model has been added to the drainage calculations.

37. Please demonstrate the tailwater assumptions used in the WaterCAD model. Consider that Block 110 swale as an invert elevation of 23.3 and an eop elevation of 25.7 within the vicinity of CS-1.

I understand the concern, but even if the dry detention area does not start to drain until hour 72, which would most likely be the peak tailwater elevation and would recover quickly with full culvert discharge and no indication of perched water tables in the vicinity, the dry detention area would start to discharge at hour 72 and if you add the discharge from the beginning of the discharge at hour 45 and add it onto the end of the recovery at hour 90, the dry detention area would still recover by hour 117, which is still well within the SFWMD 288 hour recovery time.

38. Please demonstrate the tailwater assumptions used in the WaterCAD model. Consider that Block 121 swale as an invert elevation of 24.3 and an eop elevation of 25.8 within the vicinity of CS-2.

I understand the concern, but even if the dry detention area does not start to drain until hour 72, which would most likely be the peak tailwater elevation and would recover quickly with full culvert discharge and no indication of perched water tables in the vicinity, the dry detention area would start to discharge at hour 72 and if you add the discharge from the beginning of the discharge at hour 45 and add it onto the end of the recovery at hour 90, the dry detention area would still recover by hour 117, which is still well within the SFWMD 288 hour recovery time.

If you should have additional question or require more information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read "Steven L. Dobbs".

Steven L. Dobbs, P. E.
President

Complete Report (not including cost) Ver 4.3.5

Project: FL22024

Date: 31/03/2023 08:10:11 a. m.

Site and Catchment Information

Analysis: BMP Analysis

Catchment Name	BLOCK 110	BLOCK 121
Rainfall Zone	Florida Zone 2	Florida Zone 2
Annual Mean Rainfall	50.00	50.00

Pre-Condition Landuse Information

Landuse	Undeveloped - Upland Hardwood: TN=1.042 TP=0.346	Undeveloped - Upland Hardwood: TN=1.042 TP=0.346
Area (acres)	2.26	2.35
Rational Coefficient (0-1)	0.00	0.00
Non DCIA Curve Number	29.90	29.90
DCIA Percent (0-100)	0.00	0.00
Nitrogen EMC (mg/l)	1.042	1.042
Phosphorus EMC (mg/l)	0.346	0.346
Runoff Volume (ac- ft/yr)	0.018	0.019
Groundwater N (kg/yr)	0.000	0.000
Groundwater P (kg/yr)	0.000	0.000
Nitrogen Loading (kg/yr)	0.024	0.025
Phosphorus Loading (kg/yr)	0.008	0.008

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327	Single-Family: TN=2.070 TP=0.327
Area (acres)	2.26	2.35
Rational Coefficient (0-1)	0.16	0.15
Non DCIA Curve Number	84.73	84.24
DCIA Percent (0-100)	0.00	0.00

Wet Pond Area (ac)	0.00	0.00
Nitrogen EMC (mg/l)	2.070	2.070
Phosphorus EMC (mg/l)	0.327	0.327
Runoff Volume (ac-ft/yr)	1.482	1.494
Groundwater N (kg/yr)	0.000	0.000
Groundwater P (kg/yr)	0.000	0.000
Nitrogen Loading (kg/yr)	3.782	3.812
Phosphorus Loading (kg/yr)	0.597	0.602

Catchment Number: 1 Name: BLOCK 110

Project: FL22024

Date: 31/03/2023

Retention Design

Retention Depth (in)	1.100
Retention Volume (ac-ft)	0.207

Watershed Characteristics

Catchment Area (acres)	2.26
Contributing Area (acres)	2.260
Non-DCIA Curve Number	84.73
DCIA Percent	0.00
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

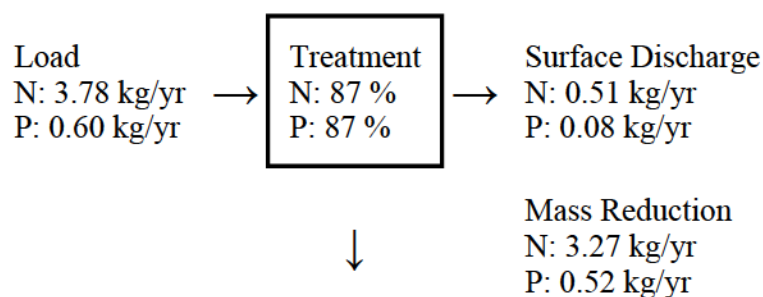
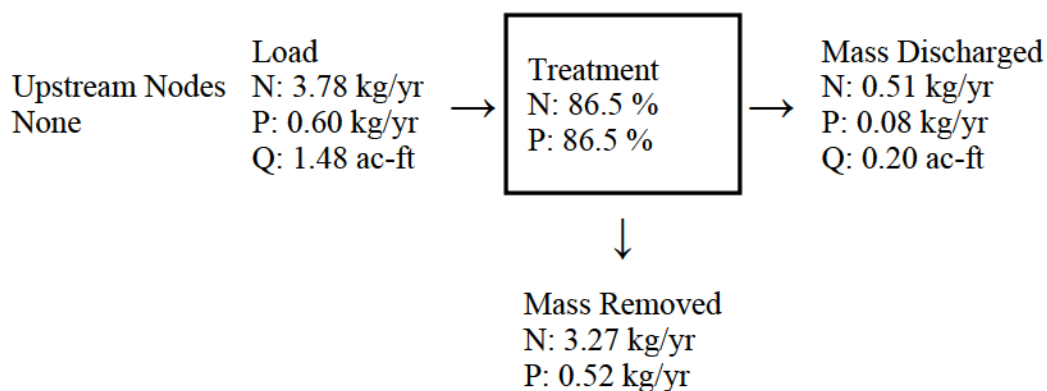
Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	87
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	87

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr) 0.471
 TN Mass Load (kg/yr) 3.272
 TN Concentration (mg/L) 2.070
 TP Mass Load (kg/yr) 0.517
 TP Concentration (mg/L) 0.327

Load Diagram for Retention (stand-alone)**Load Diagram for Retention (As Used In Routing)****Catchment Number: 2 Name: BLOCK 121**

Project: FL22024

Date: 31/03/2023

Retention Design

Retention Depth (in) 1.060
 Retention Volume (ac-ft) 0.208

Watershed Characteristics

Catchment Area (acres) 2.35
 Contributing Area (acres) 2.350
 Non-DCIA Curve Number 84.24
 DCIA Percent 0.00
 Rainfall Zone Florida Zone 2
 Rainfall (in) 50.00

Surface Water Discharge

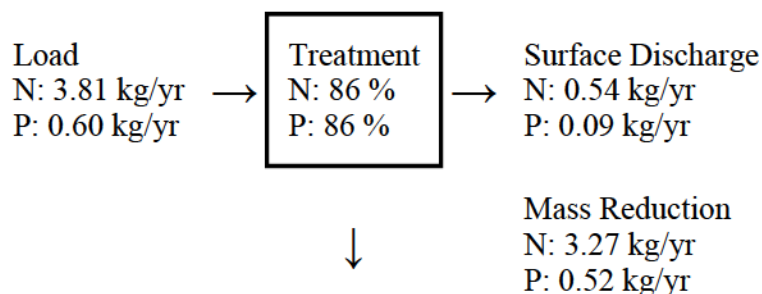
Required TN Treatment Efficiency (%)
 Provided TN Treatment Efficiency (%) 86
 Required TP Treatment Efficiency (%)
 Provided TP Treatment Efficiency (%) 86

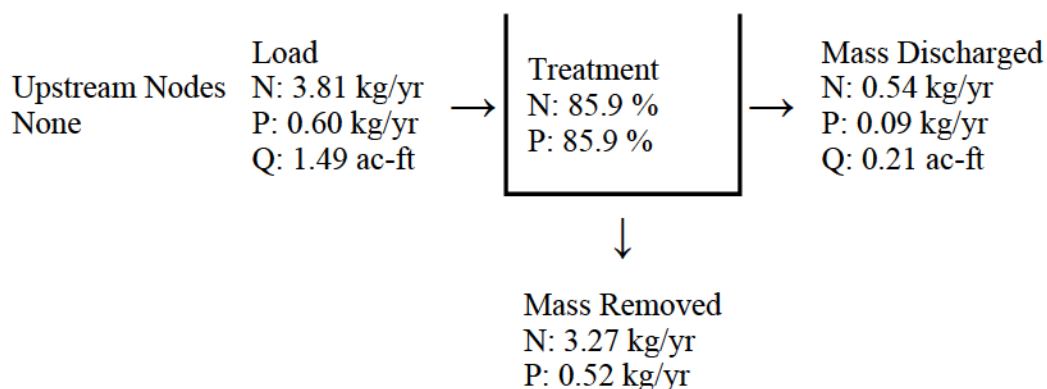
Media Mix Information

Type of Media Mix Not Specified
 Media N Reduction (%)
 Media P Reduction (%)

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr) 0.000
 TN Mass Load (kg/yr) 3.273
 TN Concentration (mg/L) 0.000
 TP Mass Load (kg/yr) 0.517
 TP Concentration (mg/L) 0.000

Load Diagram for Retention (stand-alone)**Load Diagram for Retention (As Used In Routing)**



Summary Treatment Report Version: 4.3.5

Project: FL22024

Analysis Type: BMP Analysis

Date: 31/03/2023

BMP Types:

Catchment 1 - (BLOCK 110)

Retention

Catchment 2 - (BLOCK 121)

Retention

Based on % removal values to the nearest percent

Routing Summary

Catchment 1 Routed to Outlet

Catchment 2 Routed to Outlet

Summary Report

Nitrogen

Surface Water Discharge

Total N post load	7.59 kg/yr	
Percent N load reduction	86 %	
Provided N discharge load	1.05 kg/yr	2.31 lb/yr
Provided N load removed	6.55 kg/yr	14.43 lb/yr

Phosphorus

Surface Water Discharge

Total P post load	1.2 kg/yr	
Percent P load reduction	86 %	
Provided P discharge load	.166 kg/yr	.37 lb/yr
Provided P load removed	1.034 kg/yr	2.28 lb/yr

Okeechobee County Water Management Report

Proposed Site Improvements

for

Glenwood Park, LLC

City of Okeechobee, FL

Revised August 2022
Revised January 2023
Revised March 2023



ENGINEERING

By: Steven L. Dobbs, P.E. # 48134
Steven L. Dobbs Engineering
1062 Jakes Way
Okeechobee, FL 34974

Purpose: The purpose of this report is to provide South Florida Water Management District (SFWMD) and City of Okeechobee County with the calculations and documentation necessary to demonstrate the proposed surface water management system complies with state and local criteria.

Existing Condition Description: The site is an open space lawn with trees and there were no previous improvements on site. There are two portions of the existing site: Block 110 which is the north portion that is enclosed between NE 5th Street, NE 3rd Ave., 4th Street, and NE 2nd Ave. with PARCEL ID: (3-15-37-35-0010-01100-0010). And Block 121 which the south portion enclosed between NE 4th Street, NE 3rd Ave., NE 3rd Street, and NE 2nd Ave. with PARCEL IDs: (3-15-37-35-0010-01210-0060; 3-15-37-35-0010-01210-0040; 3-15-37-35-0010-01210-0030; 3-15-37-35-0010-01210-0010; 3-15-37-35-0010-01210-0070; 3-15-37-35-0010-01210-0090; 3-15-37-35-0010-01210-0100; and 3-15-37-35-0010-01210-0120). Both are in portion of Section 15, Township 37 South, Range 35 East, City of Okeechobee.

The historic discharge for site block 110 is through a sheet flow going to the north and south swale of the and then discharging to an existing drainage structure on the northeast and southeast of the site while some flows are also contained in the site. The historic discharge for site block 121 is through a sheet flow going to the north and east swale of the and then discharging to an existing drainage structure on the northeast of the site while some flows are also contained in the site.

The Soils Report for Okeechobee County identifies the site soil as Immokalee fine sand with 0 to 2% slopes. This soil has a Hydrologic Soil Group rating of B/D which is poorly drained in the natural state and moderately drained in developed. The soils report also indicates the wet season water table is approximately 1' below natural ground. The average elevation where the north pond is located is 24 which sets the wet season water table elevation to elevation 23, around the south pond the average elevation is 25 which sets the wet season water table elevation to elevation 24.

Proposed Use: The owner proposes construction of 12 duplexes and 4 single family homes for a total of 28 dwelling units with associated parking and covered patio. The project will be served by a dry detention stormwater collection system. The water and sewer will be served by the Okeechobee utility Authority.

Drainage Considerations: To attenuate the increased run-off generated by the proposed improvements and to ensure that water quality standards are met, we propose to pass all drainage areas through a dry detention system which will discharge to the west through north of Fire Station department by drainage pipe to swale. The dry detention basin is a S-133 basin which is controlled at 13.5 NGVD '29. The control elevation for the BLOCK 110 will be the wet season water table at elevation 23. This will put the bottom of the pond at elevation 24.00. The control elevation for the BLOCK 121 will be the wet season water table at elevation 24. This will put the bottom of the pond at elevation 25.00.

Allowable discharge for the S-133 basin is 15.6 CSM for the 25 year – 3 day event:

$$Q = 15.6 \text{ cfs per square mile} * A / 640$$

$$Q1 = 15.6 \text{ cfs per square mile} * 2.26 / 640 = 0.06 \text{ cfs}$$

$$Q2 = 15.6 \text{ cfs per square mile} * 2.35 / 640 = 0.06 \text{ cfs}$$

A. Water Quality

Water quality treatment is provided in the form of dry detention.

Since the proposed water quality system is dry detention, the volume required is 75% of the calculated volume. However, since this project discharge into an impaired water basin and with a presumption of compliance with nutrient control by adding an additional 50% to the water quality volume the total water quality volume is see

table below.

Based on the attached stage storage spreadsheet, the water quality volume see table below is met at elevation see table below. Total water quality required for 150% of the water quality volume and elevation for the two sites is see table below.

Water Quality Table

Basin	WQ Volume Required Ac-Ft	Elevation WQ Volume Met	WQ Volume Provided Ac-Ft
Onsite Blk 110	0.19	25.15	0.38
Onsite Blk 121	0.20	26.09	0.31

B. Water Quantity

This project is located in the S-133 which discharges ultimately into Lake Okeechobee through S-133 out of the rim canal. The allowable peak discharge rate in this basin is 15.6 CSM. The allowable peak discharge rate for this project, based on the 25-year, 72-hour storm event was calculated and shown below. The actual maximum discharge rate for the 25-year, 72-hour storm event was calculated and shown below, which is within tolerance of the maximum allowable peak rate. To demonstrate conformance to this criterion, the proposed project was flood-routed using WaterCAD.

	Allowable Discharge	Modeled Discharge	Meets Criteria
Onsite Blk 110	0.06 CFS	0.38	No, but minimum bleeder
Onsite Blk 121	0.06 CFS	0.36	No, but minimum bleeder

The 10-year, 24-hour storm (5.0") w/ discharge, the 25 year, 72 hour storm (9") w/ discharge, and the 100 year, 72 hour storm (10") w/o discharge, were evaluated based on the proposed plan. Please refer to the attached WaterCAD flood routing input/output parameters.

A summary of the flood routings for the Lake Node in each Phase is provided as follows:

	<u>10 Year, 24 Hr. Storm</u> <u>(5.0")</u>		<u>25 Year, 72 hr. Storm</u> <u>(9.0")</u>		<u>100 Year, 72 Hr. Storm</u> <u>(10.0")</u>
	Peak Stage (ft-NGVD'29)	Peak Rate (cfs)	Peak Stage (ft-NGVD'29)	Peak Rate (cfs)	Peak Stage (ft- NGVD'29)
Onsite Blk 110	25.31	0.33	25.90	0.38	26.55
Onsite Blk 121	26.21	0.32	26.66	0.36	27.13

Water Use: The proposed potable water and wastewater for the project will be provided by Okeechobee Utility Authority. The wastewater will be by septic tank.

There has been no Consumptive Water Use permit issued nor applied for this project. There are no existing wells onsite.

Off-Site Drainage: There is no offsite flow onto this property.

Flood Plain Analysis: As shown on the attached FEMA Panel 12093C0480C, property are in Zone X (Area of Minimal Flood Hazard) which is at area of minimal flood hazard.

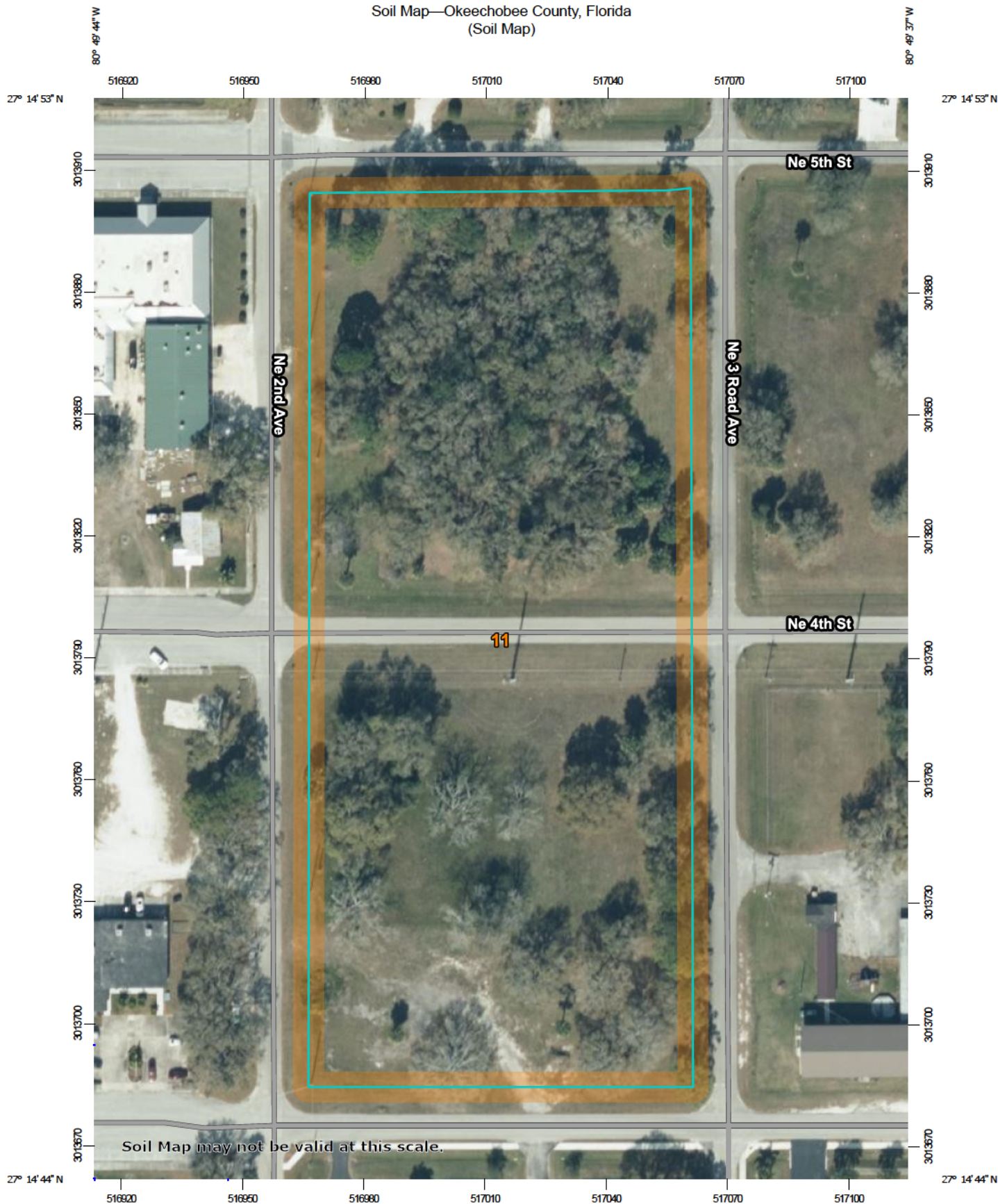
Nutrient Analysis: As previously stated, the project proposes to provide 150% of the required water quality

treatment volume in the dry detention system in order to meet the nutrient removal requirements.

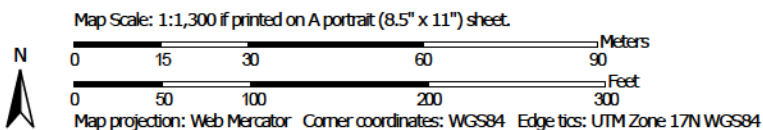
Construction Recommendations: Runoff and/or any water generated by short-term dewatering during construction will be contained on-site. However, there is some potential for transport of sediment to off-site areas should heavy rainfall occur. In order to reduce the potential of any off-site transport of sediment or turbidity we recommend installation and maintenance of temporary silt fence around the perimeter of the proposed project until site work has been completed and the site has been stabilized.

Conclusions: In my professional opinion, the proposed construction should have no impact to existing drainage patterns off-site and should have no impact on off-site areas. The recommendations above should be followed during and after the site work until such time as the ground surface has been adequately stabilized to prevent the off-site transport of any soil or suspended solids. The proposed design and construction will comply with applicable state and local requirements.

Soil Map—Okeechobee County, Florida (Soil Map)




Soil Map may not be valid at this scale.




Soil Map—Okeechobee County, Florida
(Soil Map)


MAP LEGEND


Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Okeechobee County, Florida

Survey Area Data: Version 19, Aug 26, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

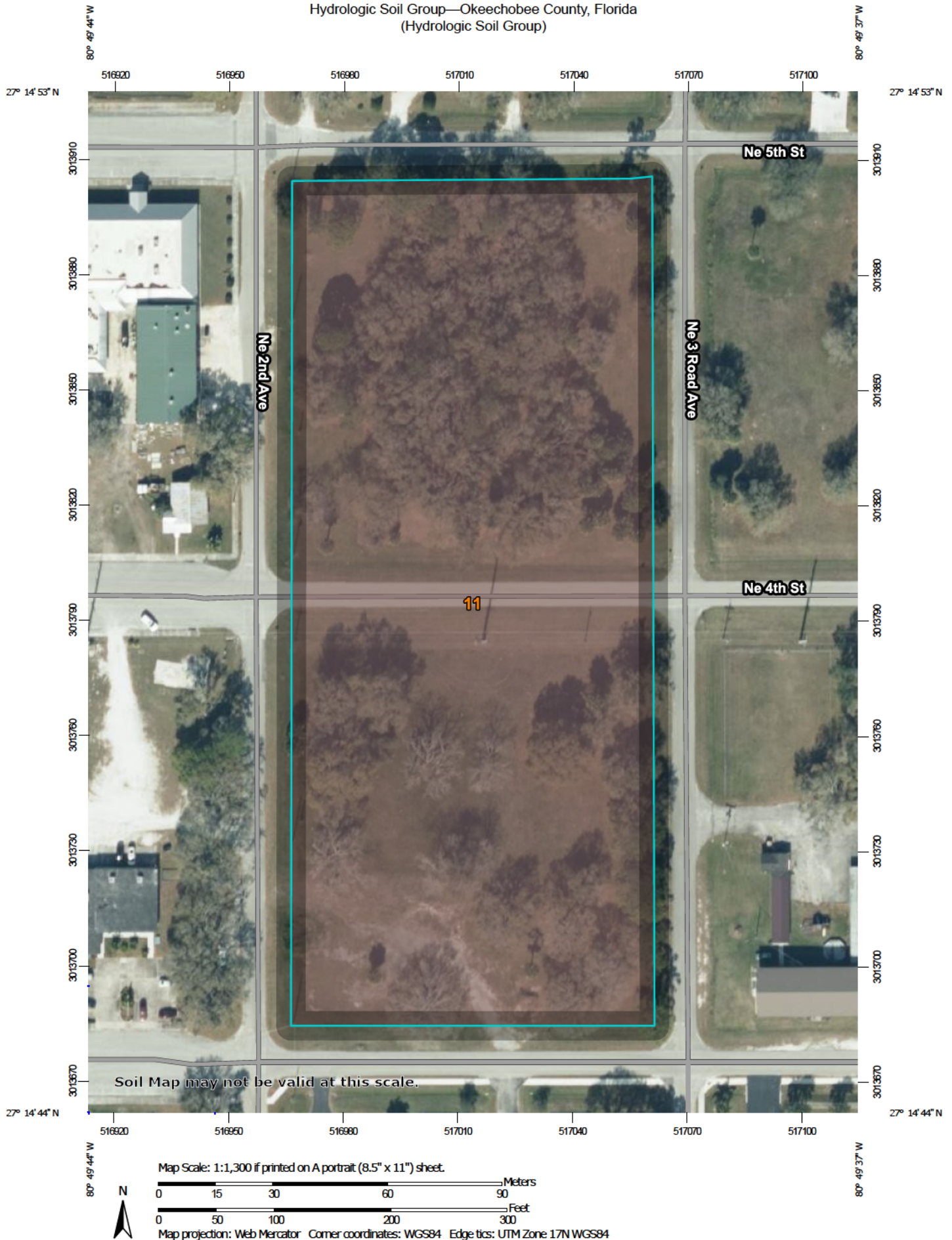
Date(s) aerial images were photographed: Jan 25, 2019—Jan 29, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend


Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11	Immokalee fine sand, 0 to 2 percent slopes	5.2	100.0%
Totals for Area of Interest		5.2	100.0%

Hydrologic Soil Group—Okeechobee County, Florida
(Hydrologic Soil Group)



MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines


 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Okeechobee County, Florida
 Survey Area Data: Version 19, Aug 26, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 25, 2019—Jan 29, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
11	Immokalee fine sand, 0 to 2 percent slopes	B/D	5.2	100.0%
Totals for Area of Interest			5.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

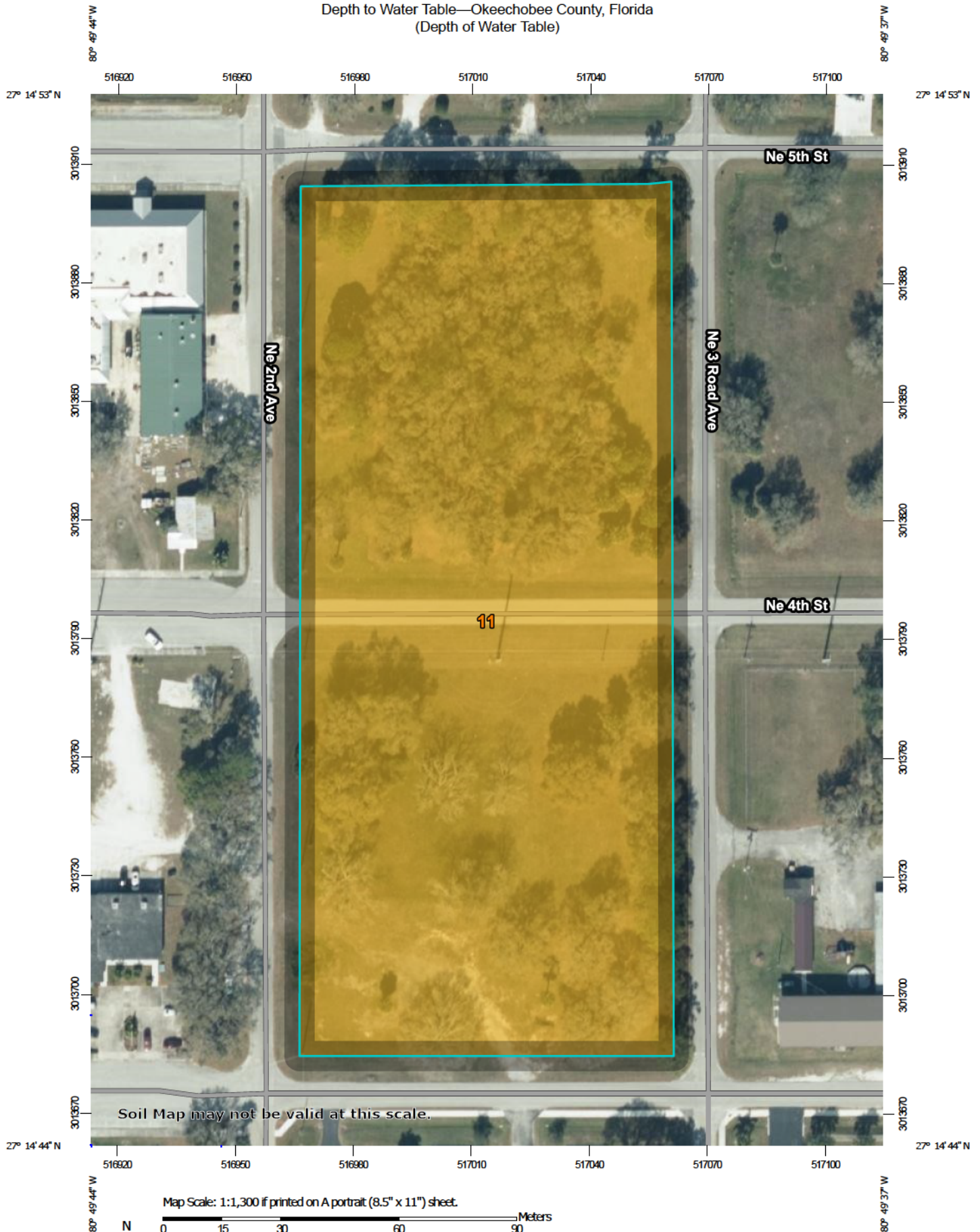
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher


Depth to Water Table—Okeechobee County, Florida (Depth of Water Table)



Depth to Water Table—Okeechobee County, Florida
(Depth of Water Table)








MAP LEGEND

Area of Interest (AOI)


 Area of Interest (AOI)

Soils


Soil Rating Polygons

-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200
-  Not rated or not available

Soil Rating Lines


-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200
-  Not rated or not available

Soil Rating Points






-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200

 Not rated or not available


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Okeechobee County, Florida
Survey Area Data: Version 19, Aug 26, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 25, 2019—Jan 29, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
11	Immokalee fine sand, 0 to 2 percent slopes	31	5.2	100.0%
Totals for Area of Interest			5.2	100.0%

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

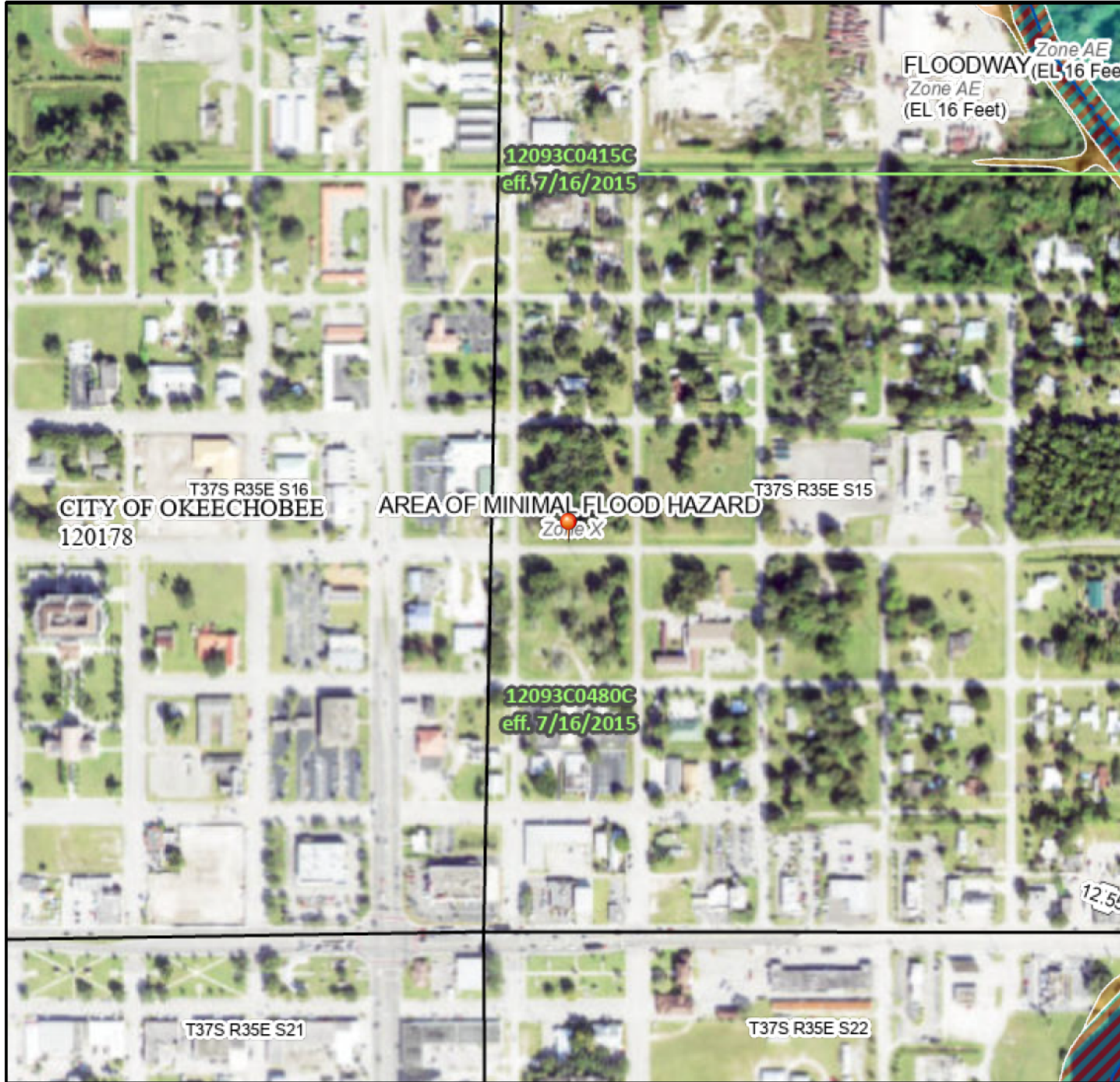
Beginning Month: January

Ending Month: December

National Flood Hazard Layer FIRMette



80°50'W 27°15'N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		29.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **5/4/2022 at 10:28 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

80°49'23"W 27°14'33"N

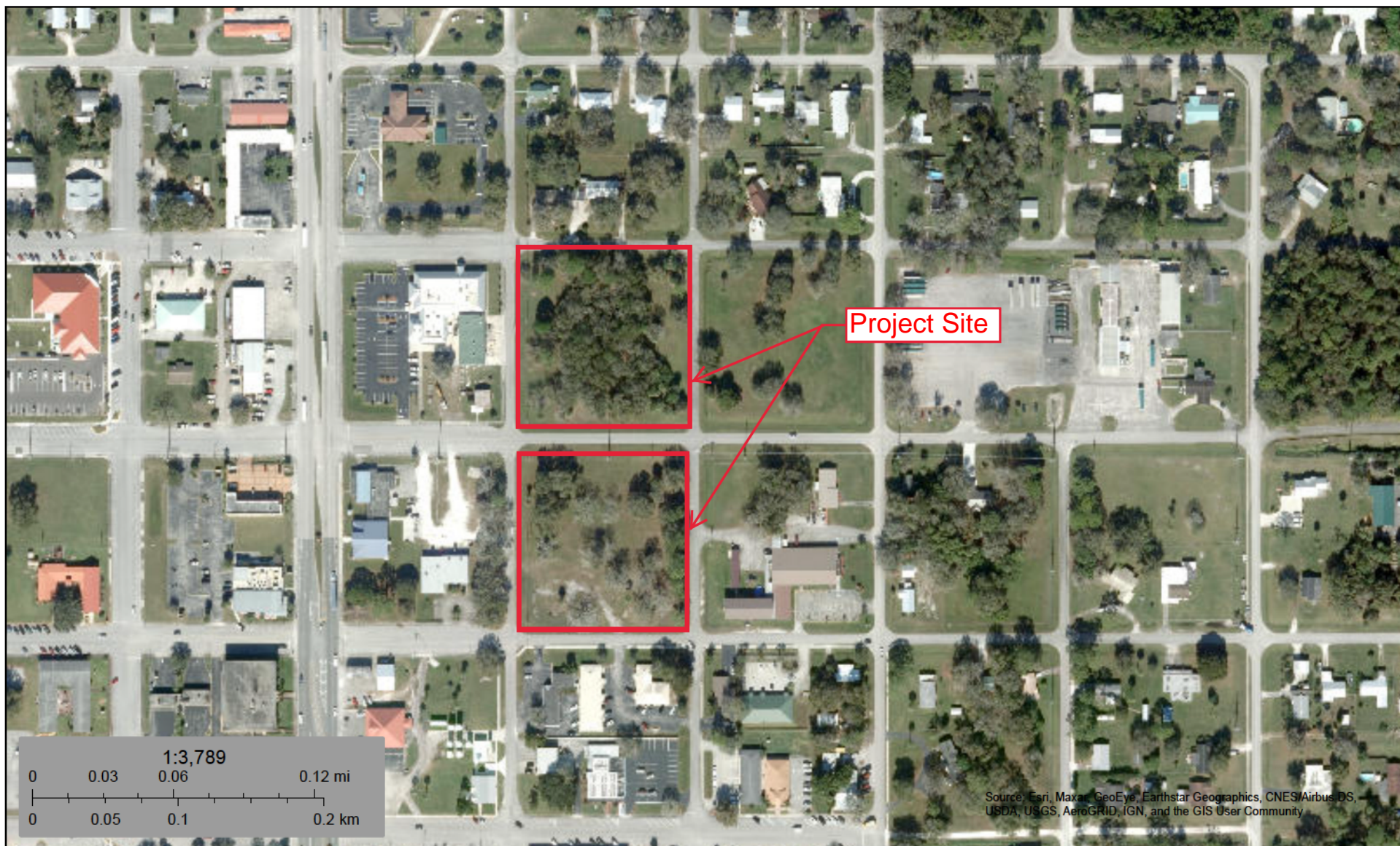
Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020



U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetland Mapper



May 4, 2022

Wetlands

	Estuarine and Marine Deepwater		Freshwater Emergent Wetland		Lake
	Estuarine and Marine Wetland		Freshwater Forested/Shrub Wetland		Other
			Freshwater Pond		Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Basin Information For:**FL22024-BLOCK 110**

Total Basin Area	=	2.26 ac	10-year, 1-day	P ₁₀ =	5.00 in	Stage	
			V = (((5.00-0.2(1.80))^2)/(5.00-0.8(1.80)))	*2.26/12 =	0.63 ac-ft	26.02	ft-NGVD
			10-year, 3-day	P ₂₅ =	9.00 in		
			V = (((9.00-0.2(1.80))^2)/(9.00-0.8(1.80)))	*2.26/12 =	1.35 ac-ft	26.67	ft-NGVD
			100-year, 3-day	P ₁₀₀ =	10.00 in		
			V = (((10.00-0.2(1.80))^2)/(10.00-0.8(1.80)))	*2.26/12 =	1.53 ac-ft	26.81	ft-NGVD
Total Basin Area (water quality)	=	2.26 ac					
Impervious Area							
Roofline/Bldg.	=	0.34 ac					
Wetland	=	ac					
Lakes	=	ac					
Pavement/Sidewalk	=	0.42 ac					
Total Impervious Area	=	0.76 ac					
Pervious Area							
Dry Detention	=	0.19 ac					
Green	=	1.31 ac					
Total Pervious Area	=	1.50 ac					
Percent Impervious	=	33.6%					
Adjusted Soil Storage	=	1.80 in					
Calculated SCS Curve Number	=	73					
Time of Concentration	=	10.00 min					

Control Structure Design

Max. Allowable Discharge	=	0.06 cfs		
Control Elevation	=	23.00 ft-NGVD		
Req. Weir Crest Elevation	=	26.67 ft-NGVD		
Pro. Weir Crest Elevation	=	26.50 ft-NGVD		
Provided Water Quality	=	0.38 ac-ft		
Bleed Down Volume	=	0.19 ac-ft	1/2 detention volume	
Allowable Bleeder Discharge	=	0.10 cfs		
	=	0.23 degrees		

Circular Orifice Design:

$$Q = 0.6 * A * (2 * g * H)^{0.5}$$

Solving the above equation for Diameter yields

$$D = 2 * (Q / (0.6 * \pi * (2 * g * H)^{0.5}))^{0.5} * 12 \text{ in/Ft}$$

Assuming 3-inch bleeder initially

$$D = 2 * [0.10 / (0.6 * 3.141 * (2 * 32.2 * (26.50 - (23.00 + 0.125)))^{0.5})]^{0.5} * 12 \text{ in/Ft}$$

$$D = 1.42 \text{ in for one bleeder}$$

Water Quality Calculation

1/2" Pretreatment x Total Area	=	0.09 ac-ft
1" x Total Area	=	0.19 ac-ft
Runoff from 2.5"x % net Impervious - SFWMD criteria	=	0.10 ac-ft
Required Water Quality Volume	=	0.19 ac-ft
Dry Detention Multiplier	=	1.13 1.5*0.75
Adjusted Required Water Quality Volume	=	0.21 ac-ft
0.5 Water quality stage (0.106116083742252 ac-ft)	=	25.08 ft-NAVD
Water Quality Stage	=	25.33 ft-NAVD
Min. Req Road Crown Elev. (10 yr-24 hr storm)	=	26.02 ft-NGVD
Min. Req Perimeter Berm Elev. (25 yr-72 hr storm)	=	26.67 ft-NGVD
Min. Req F.F.E. (100 yr-72 hr zero discharge)	=	26.81 ft-NGVD

Stage Storage Calculations for Basin FL22024-BLOCK 110

Land use Category	Storage Type	Area (ac.)	From Elev.	To Elev.	Cumulative Stage-Storage (ac-ft)										
					24.00	24.50	25.00	25.50	26.00	26.50	27.00	27.50	28.00	28.50	29.00
Dry retention	Vertical	0.00	24.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dry retention bank	Linear	0.19	24.00	25.00	0.00	0.02	0.10	0.19	0.29	0.38	0.48	0.57	0.67	0.76	0.86
Building	Vertical	0.34	28.40		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.20
Pavement	Linear	0.42	27.00	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21	0.42	0.63
Green	Linear	1.31	25.00	27.00	0.00	0.00	0.00	0.08	0.33	0.74	1.31	1.97	2.63	3.28	3.94
	Total:	2.26		Totals:	0.00	0.024	0.10	0.27	0.61	1.12	1.79	2.59	3.50	4.50	5.63

Basin Information For:**FL22024-BLOCK 121**

Total Basin Area	=	2.35 ac	10-year, 1-day	$P_{10} = 5.00$ in	Stage
			$V = (((5.00-0.2(1.88))^2)/(5.00-0.8(1.88))) * 2.35/12 = 0.64$ ac-ft	26.71	ft-NGVD
			10-year, 3-day	$P_{25} = 9.00$ in	
			$V = (((9.00-0.2(1.88))^2)/(9.00-0.8(1.88))) * 2.35/12 = 1.39$ ac-ft	27.23	ft-NGVD
			100-year, 3-day	$P_{100} = 10.00$ in	
			$V = (((10.00-0.2(1.88))^2)/(10.00-0.8(1.88))) * 2.35/12 = 1.58$ ac-ft	27.34	ft-NGVD
Total Basin Area (water quality)	=	2.35 ac			
Impervious Area					
Roofline/Bldg.	=	0.34 ac			
Wetland	=	ac			
Lakes	=	ac			
Pavement/Sidewalk	=	0.42 ac			
Total Impervious Area	=	0.76 ac			
Pervious Area					
Dry Detention	=	0.21 ac			
Green	=	1.39 ac			
Total Pervious Area	=	1.59 ac			
Percent Impervious	=	32.3%			
Adjusted Soil Storage	=	1.88 in			
Calculated SCS Curve Number	=	73			
Time of Concentration	=	10.00 min			

<u>Control Structure Design</u>			
Max. Allowable Discharge	=	0.06	cfs
Control Elevation	=	24.00	ft-NGVD
Req. Weir Crest Elevation	=	27.23	ft-NGVD
Pro. Weir Crest Elevation	=	27.00	ft-NGVD
Provided Water Quality	=	0.31	ac-ft
Bleed Down Volume	=	0.16	ac.ft
Allowable Bleeder Discharge	=	0.08	cfs
	=	0.33	degrees

1/2 detention volume

Control Structure Design

Max. Allowable Discharge	=	0.06 cfs
Control Elevation	=	24.00 ft-NGVD
Req. Weir Crest Elevation	=	27.23 ft-NGVD

Pro. Weir Crest Elevation	=	27.00 ft-NGVD
Provided Water Quality	=	0.31 ac-ft
Bleed Down Volume	=	0.16 ac-ft
Allowable Bleeder Discharge	=	0.08 cfs
	=	0.33 degrees

Circular Orifice Design:

$$Q = 0.6 * A * (2 * g * H)^{0.5}$$

Solving the above equation for Diameter yields

$$D = 2 * (Q / (0.6 * \pi * (2 * g * H)^{0.5}))^{0.5} * 12 \text{ in/Ft}$$

Assuming 3-inch bleeder initially

$$D = 2 * [0.08 / (0.6 * 3.1414 * (2 * 32.2 * (27.00 - (24.00 + 0.125)))^{0.5})]^{0.5} * 12 \text{ in/Ft}$$

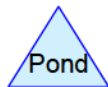
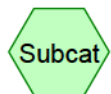
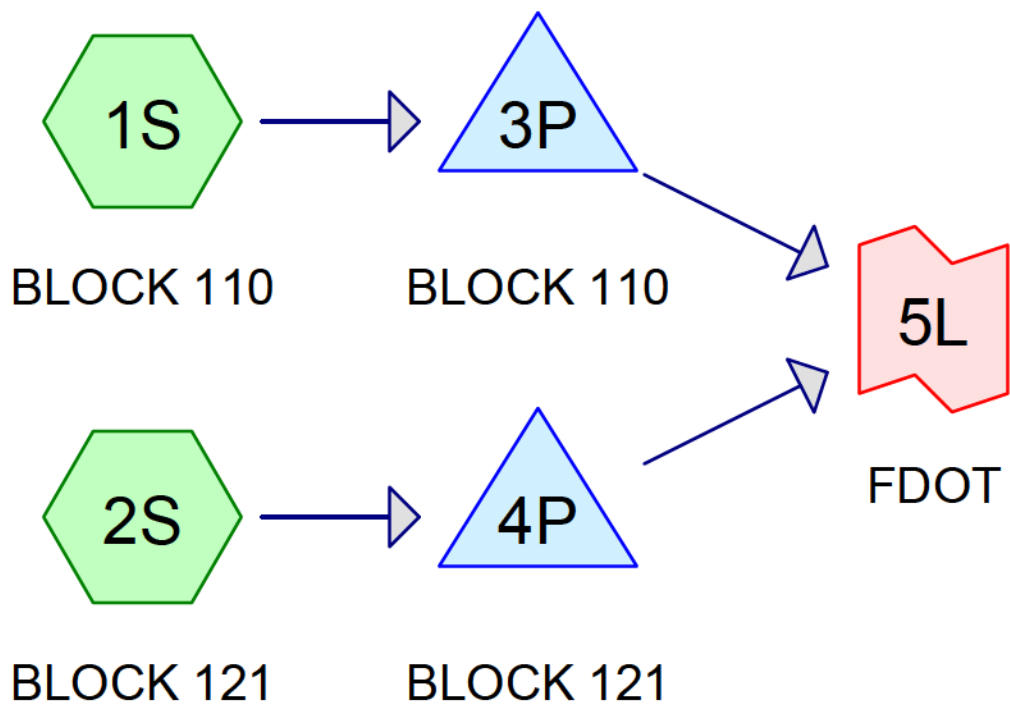
$$D = 1.34 \text{ in for one bleeder}$$

Water Quality Calculation

1/2" Pretreatment x Total Area	=	0.10 ac-ft
1" x Total Area	=	0.20 ac-ft
Runoff from 2.5"x % net Impervious - SFWMD criteria	=	0.10 ac-ft
Required Water Quality Volume	=	0.20 ac-ft
Dry Detention Multiplier	=	1.13
Adjusted Required Water Quality Volume	=	0.22 ac-ft
0.5 Water quality stage (0.110325401063189 ac-ft)	=	26.04 ft-NAVD
Water Quality Stage	=	26.21 ft-NAVD
Min. Req Road Crown Elev. (10 yr-24 hr storm)	=	26.71 ft-NGVD
Min. Req Perimeter Berm Elev. (25 yr-72 hr storm)	=	27.23 ft-NGVD
Min. Req F.F.E. (100 yr-72 hr zero discharge)	=	27.34 ft-NGVD

Stage Storage Calculations for Basin FL22024-BLOCK 121

Land use Category	Storage Type	Area (ac.)	From Elev.	To Elev.	Cumulative Stage-Storage (ac-ft)										
					25.00	25.50	26.00	26.50	27.00	27.50	28.00	28.50	29.00	29.50	30.00
Dry retention	Vertical	0.00	25.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dry retention bank	Linear	0.21	25.00	26.00	0.00	0.03	0.10	0.21	0.31	0.41	0.52	0.62	0.73	0.83	0.93
Building	Vertical	0.34	28.40		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.20	0.37	0.54
Pavement	Linear	0.42	27.00	28.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21	0.42	0.63	0.84	1.05
Green	Linear	1.39	26.00	27.00	0.00	0.00	0.00	0.17	0.69	1.39	2.08	2.77	3.47	4.16	4.85
	Total:	2.35		Totals:	0.00	0.026	0.10	0.38	1.00	1.85	2.81	3.85	5.03	6.20	7.38



FL22024 POST

Type II FL 24-hr 10y-24h Rainfall=5.00"

Prepared by HP

Printed 29/03/2023

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Page 2

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points

Runoff by SCS TR-20 method, UH=SWFWMD-256, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BLOCK 110Runoff Area=2.260 ac 33.63% Impervious Runoff Depth=2.28"
Tc=10.0 min CN=73 Runoff=2.77 cfs 0.429 af**Subcatchment 2S: BLOCK 121**Runoff Area=2.350 ac 32.34% Impervious Runoff Depth=2.28"
Tc=10.0 min CN=73 Runoff=2.88 cfs 0.447 af**Pond 3P: BLOCK 110**Peak Elev=25.31' Storage=0.206 af Inflow=2.77 cfs 0.429 af
Outflow=0.33 cfs 0.429 af**Pond 4P: BLOCK 121**Peak Elev=26.21' Storage=0.219 af Inflow=2.88 cfs 0.447 af
Outflow=0.32 cfs 0.447 af**Link 5L: FDOT**Inflow=0.66 cfs 0.876 af
Primary=0.66 cfs 0.876 af**Total Runoff Area = 4.610 ac Runoff Volume = 0.876 af Average Runoff Depth = 2.28"**
67.03% Pervious = 3.090 ac 32.97% Impervious = 1.520 ac

Summary for Subcatchment 1S: BLOCK 110

Runoff = 2.77 cfs @ 12.34 hrs, Volume= 0.429 af, Depth= 2.28"

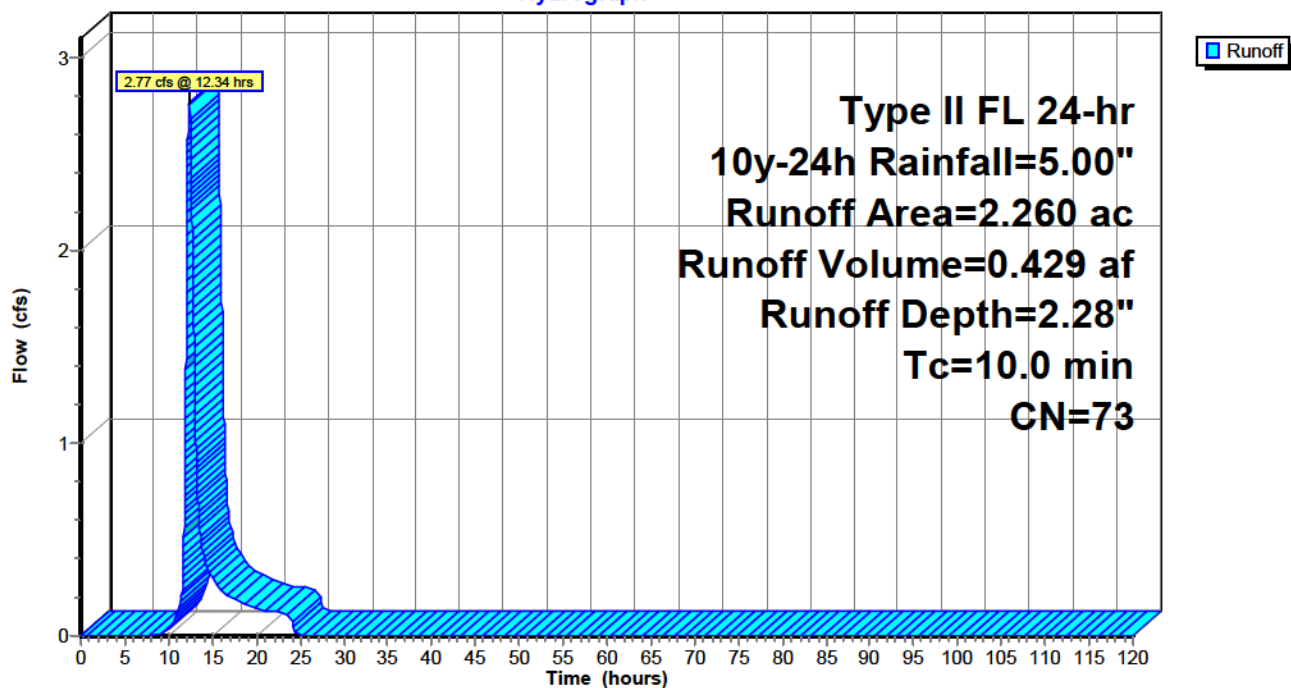
Runoff by SCS TR-20 method, UH=SWFWMD-256, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II FL 24-hr 10y-24h Rainfall=5.00"

Area (ac)	CN	Description
0.760	98	Paved parking, HSG A
1.500	61	>75% Grass cover, Good, HSG B
2.260	73	Weighted Average
1.500	61	66.37% Pervious Area
0.760	98	33.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 1S: BLOCK 110

Hydrograph



Summary for Subcatchment 2S: BLOCK 121

Runoff = 2.88 cfs @ 12.34 hrs, Volume= 0.447 af, Depth= 2.28"

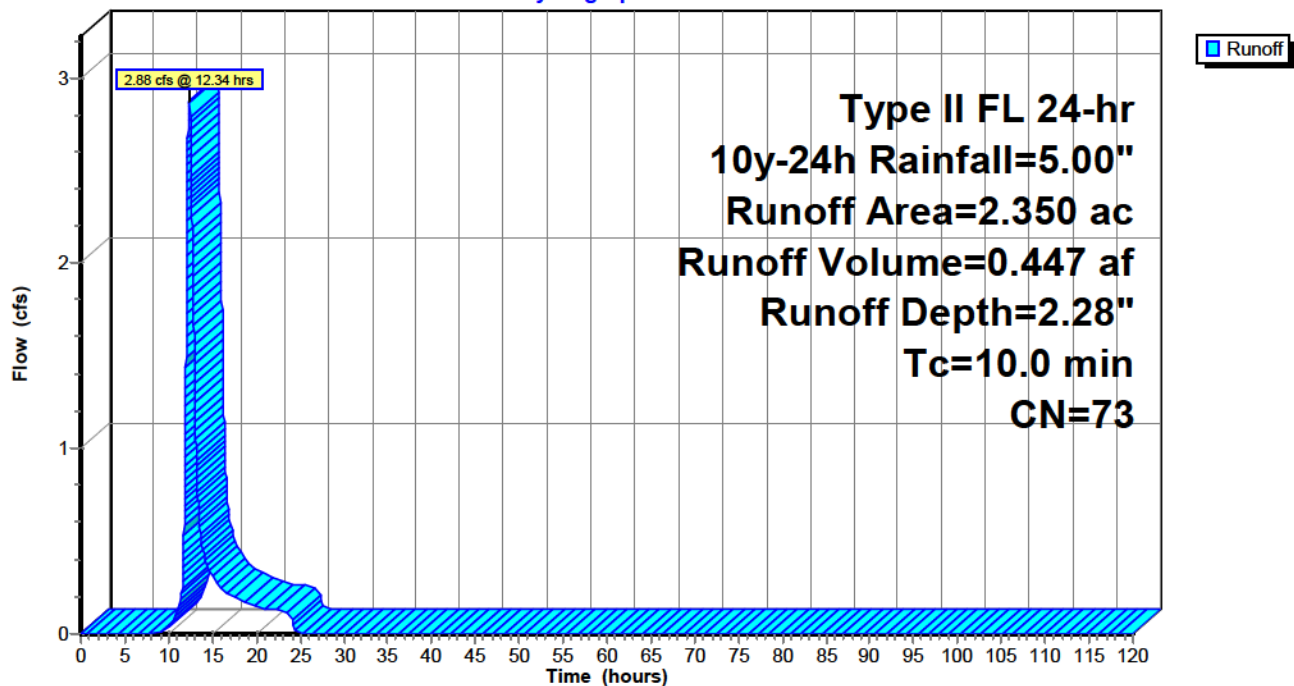
Runoff by SCS TR-20 method, UH=SWFWMD-256, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II FL 24-hr 10y-24h Rainfall=5.00"

Area (ac)	CN	Description
0.760	98	Paved parking, HSG A
1.590	61	>75% Grass cover, Good, HSG B
2.350	73	Weighted Average
1.590	61	67.66% Pervious Area
0.760	98	32.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 2S: BLOCK 121

Hydrograph



Summary for Pond 3P: BLOCK 110

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2.260 ac, 33.63% Impervious, Inflow Depth = 2.28" for 10y-24h event
 Inflow = 2.77 cfs @ 12.34 hrs, Volume= 0.429 af
 Outflow = 0.33 cfs @ 14.60 hrs, Volume= 0.429 af, Atten= 88%, Lag= 135.5 min
 Primary = 0.33 cfs @ 14.60 hrs, Volume= 0.429 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 Peak Elev= 25.31' @ 14.60 hrs Surf.Area= 0.000 ac Storage= 0.206 af

Plug-Flow detention time= 291.7 min calculated for 0.429 af (100% of inflow)
 Center-of-Mass det. time= 291.7 min (1,160.2 - 868.6)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	3.500 af	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (acre-feet)
24.00	0.000
24.50	0.024
25.00	0.100
25.50	0.270
26.00	0.610
26.50	1.120
27.00	1.790
27.50	2.590
28.00	3.500

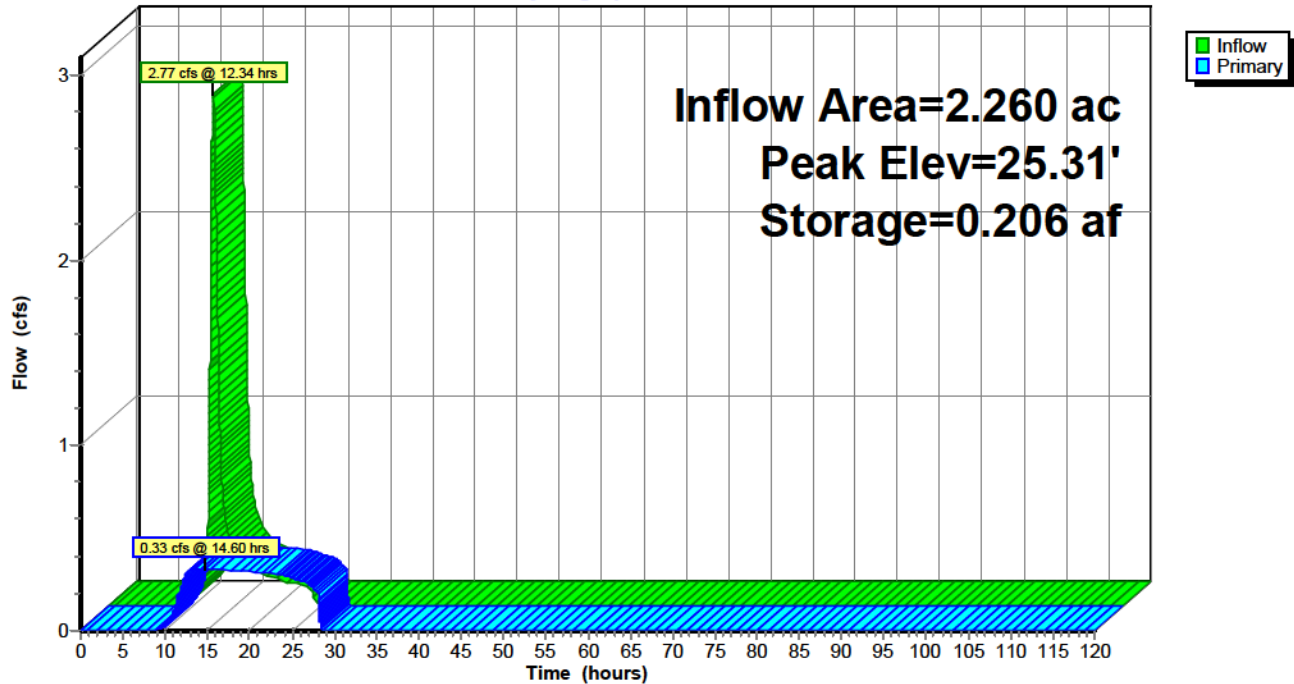
Device	Routing	Invert	Outlet Devices
#1	Primary	23.33'	18.0" Round Culvert L= 32.0' Ke= 0.500 Inlet / Outlet Invert= 23.33' / 23.30' S= 0.0009 ' S= 0.0009 ' Cc= 0.900 n= 0.025, Flow Area= 1.77 sf
#2	Device 1	23.00'	3.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	26.50'	24.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.33 cfs @ 14.60 hrs HW=25.31' (Free Discharge)

1=Culvert (Passes 0.33 cfs of 5.49 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.33 cfs @ 6.78 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

Pond 3P: BLOCK 110

Hydrograph



Summary for Pond 4P: BLOCK 121

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2.350 ac, 32.34% Impervious, Inflow Depth = 2.28" for 10y-24h event
 Inflow = 2.88 cfs @ 12.34 hrs, Volume= 0.447 af
 Outflow = 0.32 cfs @ 14.81 hrs, Volume= 0.447 af, Atten= 89%, Lag= 148.4 min
 Primary = 0.32 cfs @ 14.81 hrs, Volume= 0.447 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 Peak Elev= 26.21' @ 14.81 hrs Surf.Area= 0.000 ac Storage= 0.219 af

Plug-Flow detention time= 316.9 min calculated for 0.447 af (100% of inflow)
 Center-of-Mass det. time= 316.9 min (1,185.5 - 868.6)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	5.030 af	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (acre-feet)
25.00	0.000
25.50	0.026
26.00	0.100
26.50	0.380
27.00	1.000
27.50	1.850
28.00	2.810
28.50	3.850
29.00	5.030

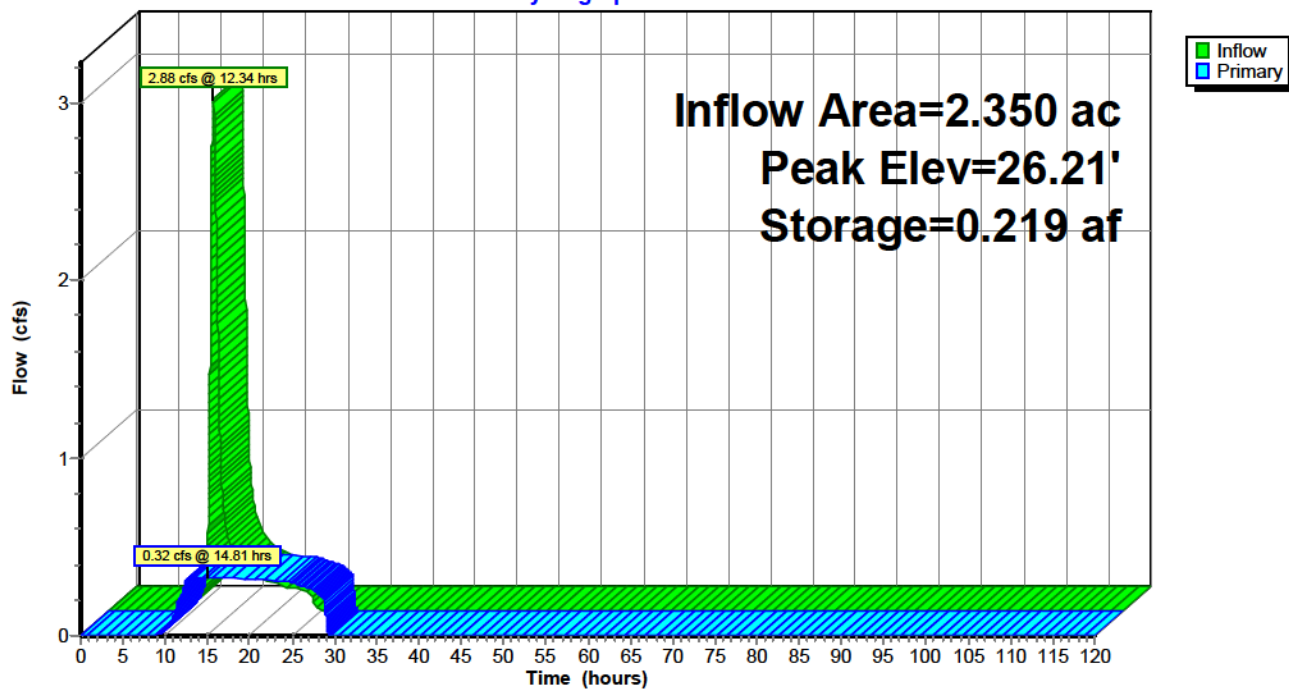
Device	Routing	Invert	Outlet Devices
#1	Primary	24.33'	18.0" Round Culvert L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 24.33' / 24.30' S= 0.0010 ' S= 0.0010 ' Cc= 0.900 n= 0.025, Flow Area= 1.77 sf
#2	Device 1	24.00'	3.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	27.00'	24.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 14.81 hrs HW=26.21' (Free Discharge)

1=Culvert (Passes 0.32 cfs of 5.55 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.32 cfs @ 6.61 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

Pond 4P: BLOCK 121

Hydrograph



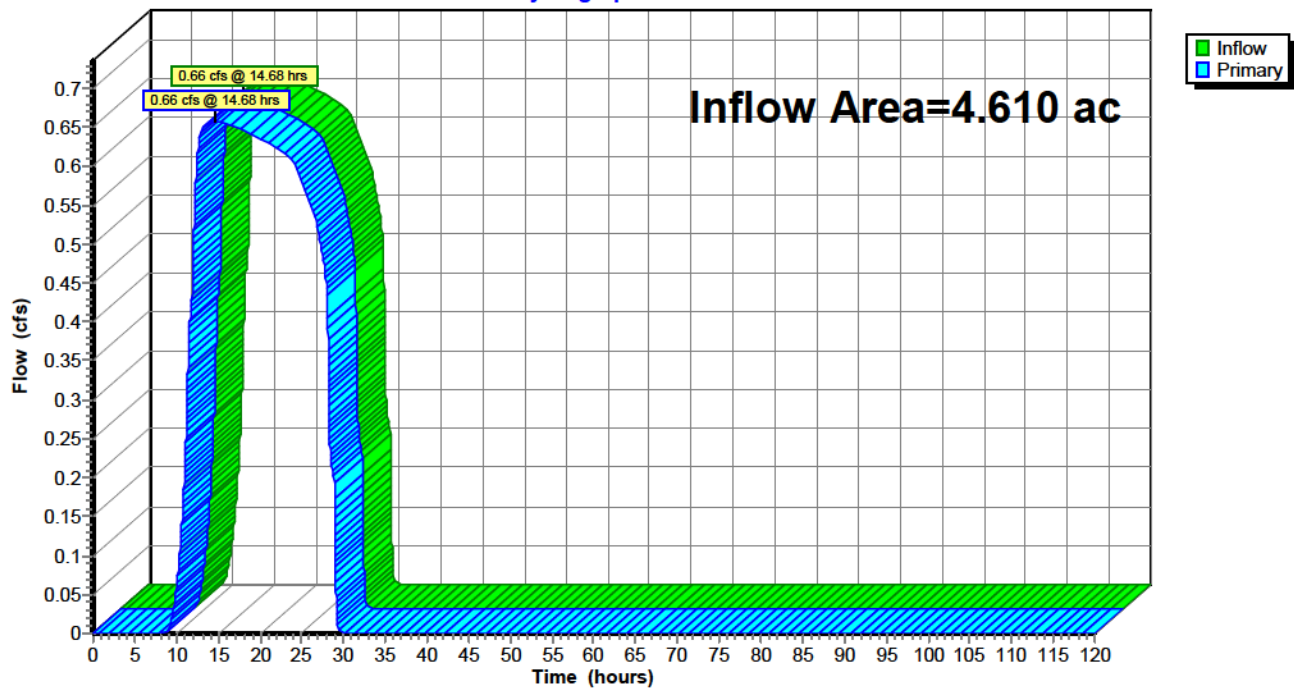
Summary for Link 5L: FDOT

Inflow Area = 4.610 ac, 32.97% Impervious, Inflow Depth = 2.28" for 10y-24h event
Inflow = 0.66 cfs @ 14.68 hrs, Volume= 0.876 af
Primary = 0.66 cfs @ 14.68 hrs, Volume= 0.876 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Link 5L: FDOT

Hydrograph



FL22024 POST

SFWMD 72-hr 25y-72h Rainfall=9.00"

Prepared by HP

Printed 29/03/2023

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Page 10

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points

Runoff by SCS TR-20 method, UH=SFWMD-256, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BLOCK 110Runoff Area=2.260 ac 33.63% Impervious Runoff Depth=5.71"
Tc=10.0 min CN=73 Runoff=7.78 cfs 1.075 af**Subcatchment 2S: BLOCK 121**Runoff Area=2.350 ac 32.34% Impervious Runoff Depth=5.71"
Tc=10.0 min CN=73 Runoff=8.09 cfs 1.117 af**Pond 3P: BLOCK 110**Peak Elev=25.90' Storage=0.542 af Inflow=7.78 cfs 1.075 af
Outflow=0.38 cfs 1.075 af**Pond 4P: BLOCK 121**Peak Elev=26.66' Storage=0.578 af Inflow=8.09 cfs 1.117 af
Outflow=0.36 cfs 1.117 af**Link 5L: FDOT**Inflow=0.74 cfs 2.192 af
Primary=0.74 cfs 2.192 af**Total Runoff Area = 4.610 ac Runoff Volume = 2.192 af Average Runoff Depth = 5.71"**
67.03% Pervious = 3.090 ac 32.97% Impervious = 1.520 ac

Summary for Subcatchment 1S: BLOCK 110

Runoff = 7.78 cfs @ 59.97 hrs, Volume= 1.075 af, Depth= 5.71"

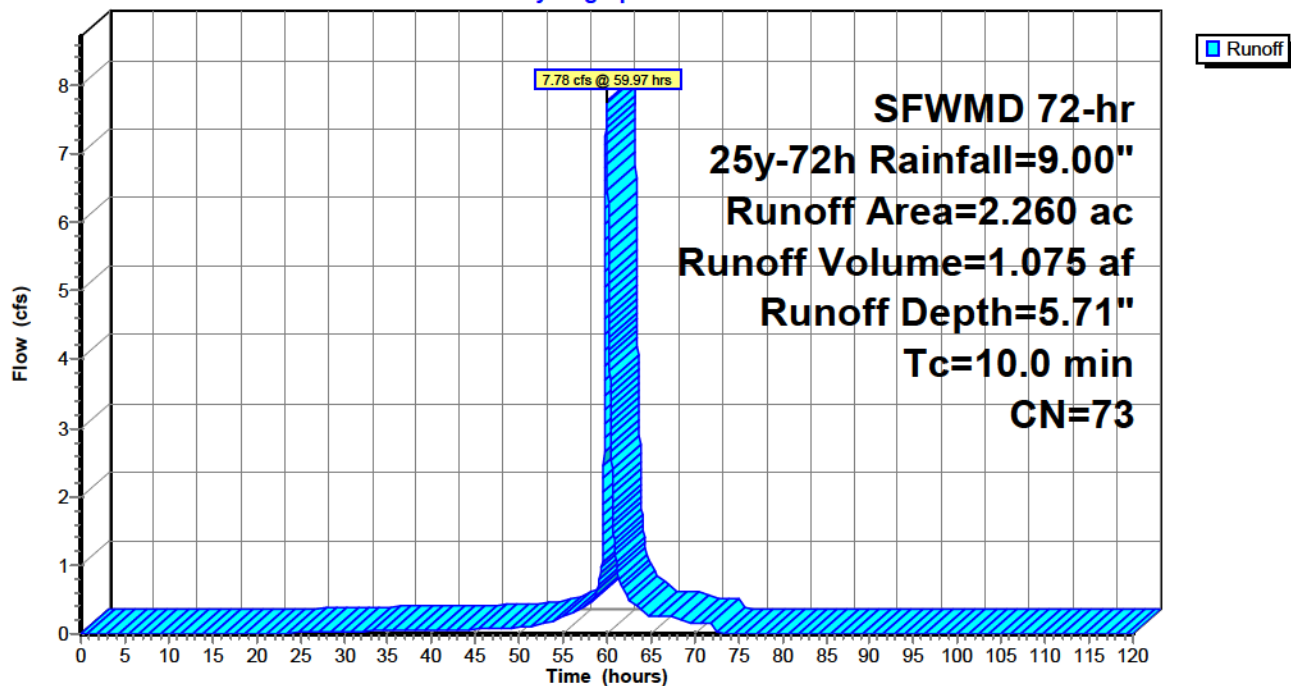
Runoff by SCS TR-20 method, UH=SFWMD-256, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 25y-72h Rainfall=9.00"

Area (ac)	CN	Description
0.760	98	Paved parking, HSG A
1.500	61	>75% Grass cover, Good, HSG B
2.260	73	Weighted Average
1.500	61	66.37% Pervious Area
0.760	98	33.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 1S: BLOCK 110

Hydrograph



Summary for Subcatchment 2S: BLOCK 121

Runoff = 8.09 cfs @ 59.97 hrs, Volume= 1.117 af, Depth= 5.71"

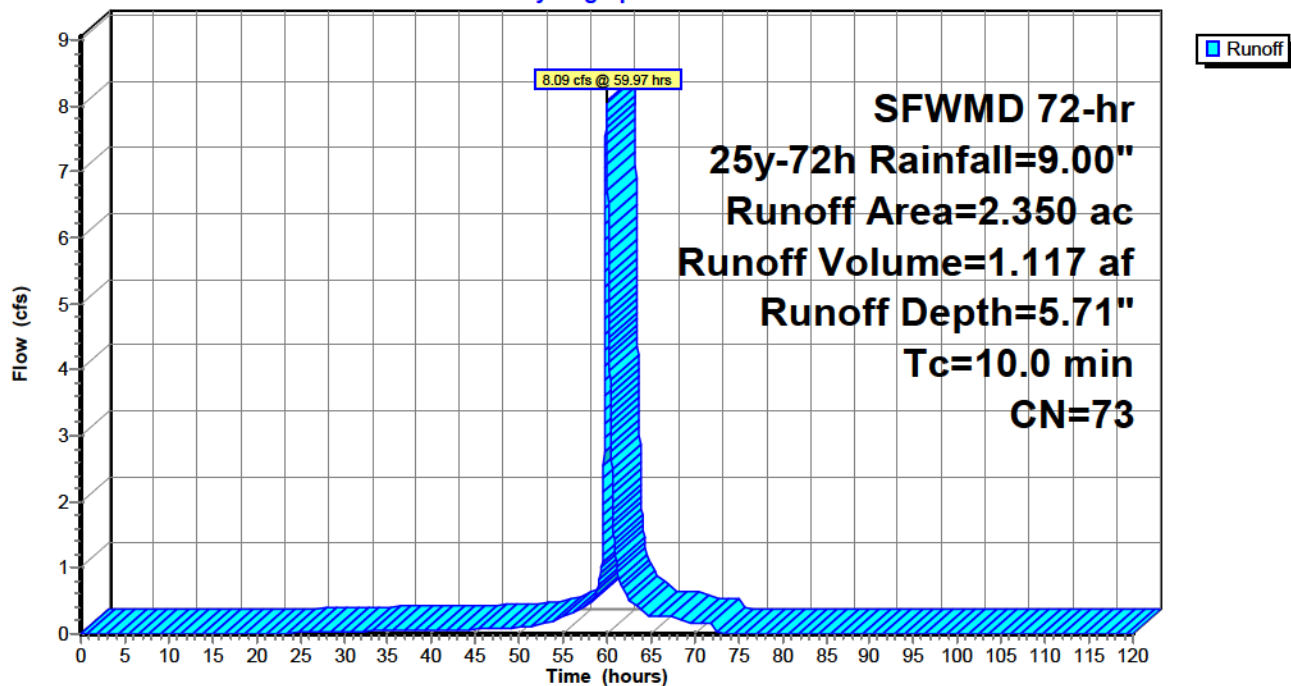
Runoff by SCS TR-20 method, UH=SFWMD-256, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
SFWMD 72-hr 25y-72h Rainfall=9.00"

Area (ac)	CN	Description
0.760	98	Paved parking, HSG A
1.590	61	>75% Grass cover, Good, HSG B
2.350	73	Weighted Average
1.590	61	67.66% Pervious Area
0.760	98	32.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 2S: BLOCK 121

Hydrograph



Summary for Pond 3P: BLOCK 110

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2.260 ac, 33.63% Impervious, Inflow Depth = 5.71" for 25y-72h event
 Inflow = 7.78 cfs @ 59.97 hrs, Volume= 1.075 af
 Outflow = 0.38 cfs @ 63.72 hrs, Volume= 1.075 af, Atten= 95%, Lag= 225.0 min
 Primary = 0.38 cfs @ 63.72 hrs, Volume= 1.075 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 Peak Elev= 25.90' @ 63.72 hrs Surf.Area= 0.000 ac Storage= 0.542 af

Plug-Flow detention time= 531.7 min calculated for 1.075 af (100% of inflow)
 Center-of-Mass det. time= 531.8 min (4,047.5 - 3,515.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	3.500 af	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (acre-feet)
24.00	0.000
24.50	0.024
25.00	0.100
25.50	0.270
26.00	0.610
26.50	1.120
27.00	1.790
27.50	2.590
28.00	3.500

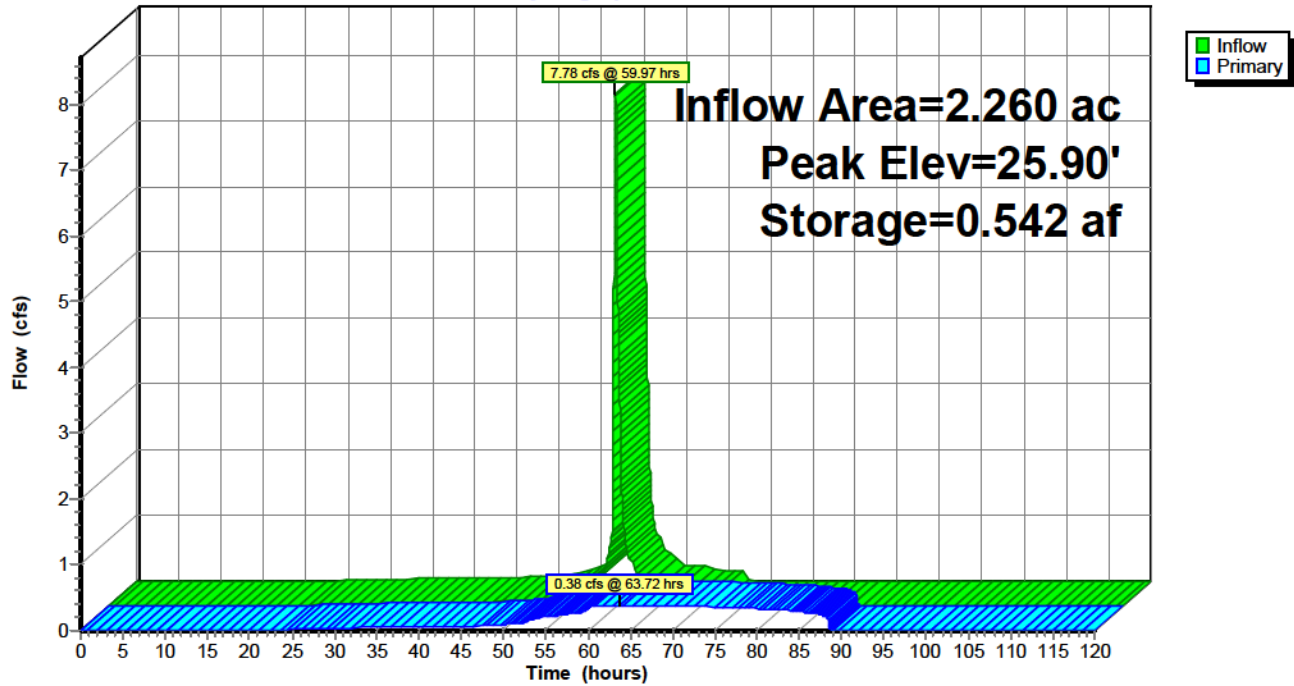
Device	Routing	Invert	Outlet Devices
#1	Primary	23.33'	18.0" Round Culvert L= 32.0' Ke= 0.500 Inlet / Outlet Invert= 23.33' / 23.30' S= 0.0009 ' S= 0.0009 ' Cc= 0.900 n= 0.025, Flow Area= 1.77 sf
#2	Device 1	23.00'	3.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	26.50'	24.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.38 cfs @ 63.72 hrs HW=25.90' (Free Discharge)

1=Culvert (Passes 0.38 cfs of 7.77 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.38 cfs @ 7.72 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

Pond 3P: BLOCK 110

Hydrograph



Summary for Pond 4P: BLOCK 121

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2.350 ac, 32.34% Impervious, Inflow Depth = 5.71" for 25y-72h event
 Inflow = 8.09 cfs @ 59.97 hrs, Volume= 1.117 af
 Outflow = 0.36 cfs @ 64.05 hrs, Volume= 1.117 af, Atten= 96%, Lag= 245.3 min
 Primary = 0.36 cfs @ 64.05 hrs, Volume= 1.117 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 Peak Elev= 26.66' @ 64.05 hrs Surf.Area= 0.000 ac Storage= 0.578 af

Plug-Flow detention time= 588.5 min calculated for 1.117 af (100% of inflow)
 Center-of-Mass det. time= 588.5 min (4,104.2 - 3,515.7)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	5.030 af	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (acre-feet)
25.00	0.000
25.50	0.026
26.00	0.100
26.50	0.380
27.00	1.000
27.50	1.850
28.00	2.810
28.50	3.850
29.00	5.030

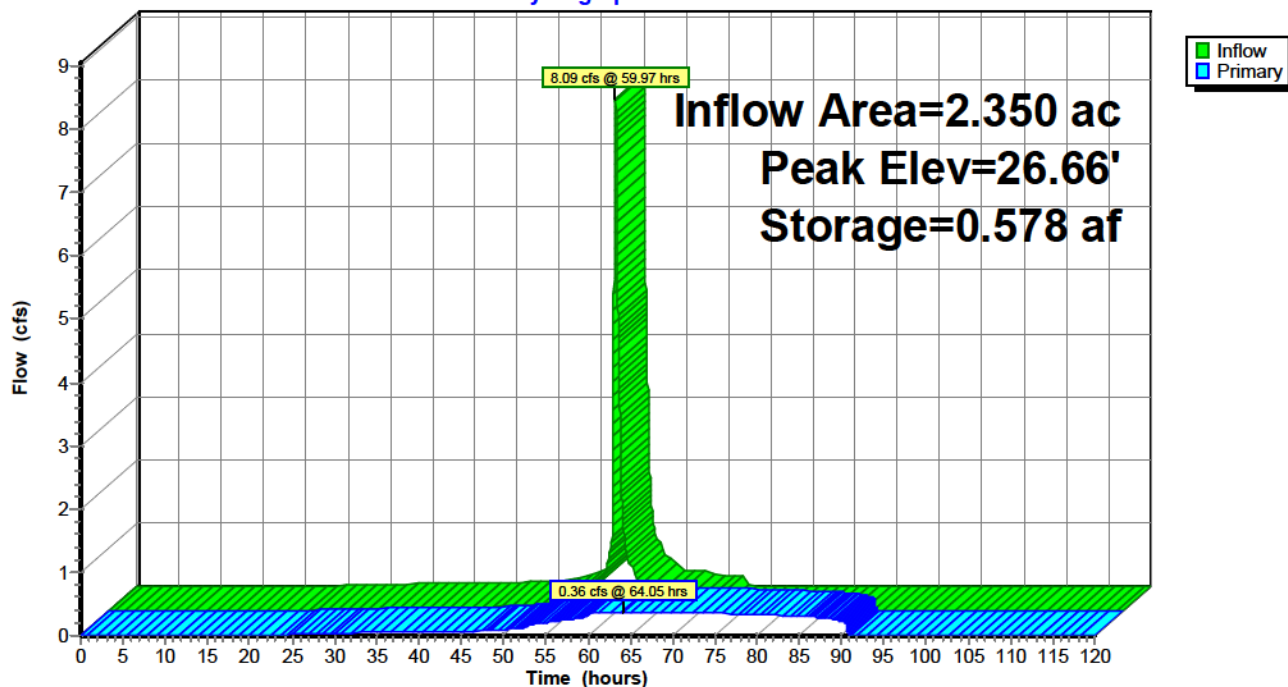
Device	Routing	Invert	Outlet Devices
#1	Primary	24.33'	18.0" Round Culvert L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 24.33' / 24.30' S= 0.0010 ' S= 0.0010 ' Cc= 0.900 n= 0.025, Flow Area= 1.77 sf
#2	Device 1	24.00'	3.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	27.00'	24.0" x 36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.36 cfs @ 64.05 hrs HW=26.66' (Free Discharge)

1=Culvert (Passes 0.36 cfs of 7.07 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.36 cfs @ 7.35 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

Pond 4P: BLOCK 121

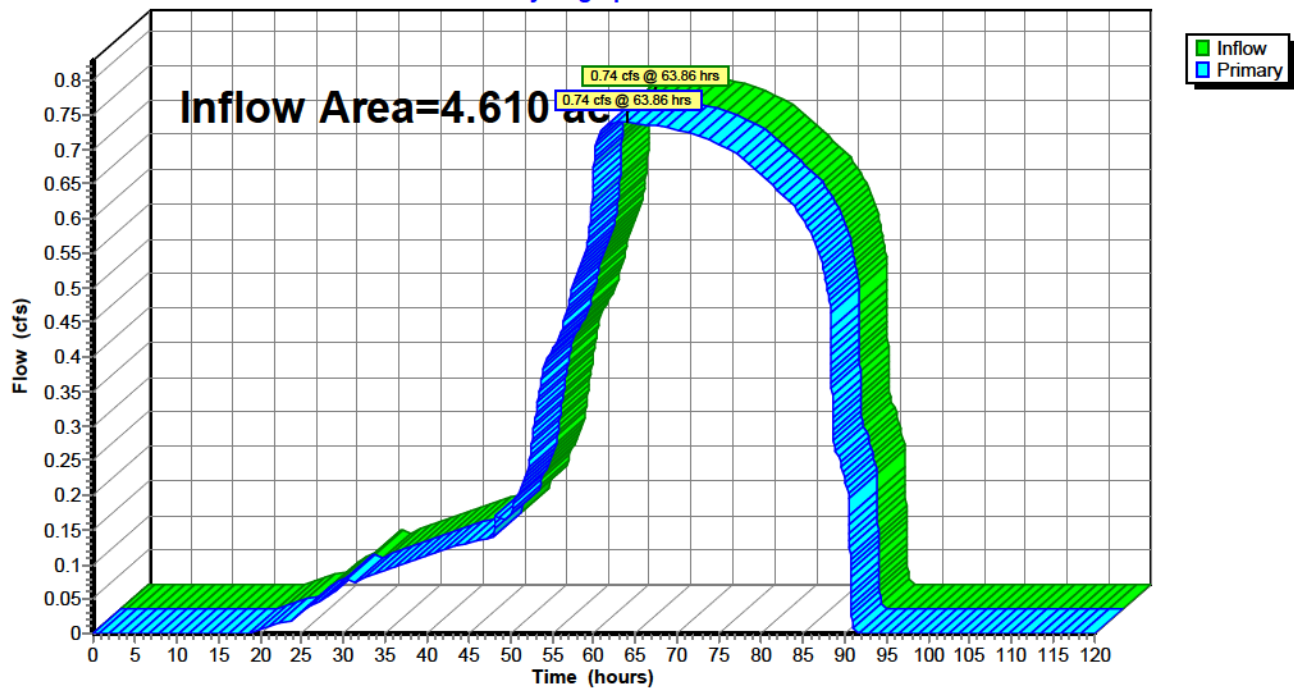
Hydrograph



Summary for Link 5L: FDOT

Inflow Area = 4.610 ac, 32.97% Impervious, Inflow Depth = 5.71" for 25y-72h event
Inflow = 0.74 cfs @ 63.86 hrs, Volume= 2.192 af
Primary = 0.74 cfs @ 63.86 hrs, Volume= 2.192 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Link 5L: FDOT**Hydrograph**

FL22024 POST

SFWMD 72-hr 25y-72h Rainfall=9.00"

Prepared by HP

Printed 29/03/2023

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Summary for Pond 13P: BLOCK 110 - 100Y-72H

Inflow Area = 2.260 ac, 33.63% Impervious, Inflow Depth = 5.71" for 25y-72h event
 Inflow = 7.78 cfs @ 59.97 hrs, Volume= 1.075 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 Peak Elev= 26.39' @ 73.01 hrs Surf.Area= 0.000 ac Storage= 1.075 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	23.33'	3.570 af	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (acre-feet)
23.33	0.000
23.50	0.002
24.00	0.030
24.50	0.080
25.00	0.160
25.50	0.340
26.00	0.680
26.50	1.180
27.00	1.850
27.50	2.660
28.00	3.570

FL22024 POST

SFWMD 72-hr 25y-72h Rainfall=9.00"

Prepared by HP

Printed 29/03/2023

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Summary for Pond 14P: BLOCK 121 - 100Y-72H

Inflow Area = 2.350 ac, 32.34% Impervious, Inflow Depth = 5.71" for 25y-72h event
 Inflow = 8.09 cfs @ 59.97 hrs, Volume= 1.117 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 Peak Elev= 27.03' @ 73.01 hrs Surf.Area= 0.000 ac Storage= 1.117 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	24.33'	5.100 af	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (acre-feet)
24.33	0.000
24.50	0.002
25.00	0.030
25.50	0.080
26.00	0.170
26.50	0.450
27.00	1.070
27.50	1.920
28.00	2.880
28.50	3.920
29.00	5.100