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POND SITING REPORT

CENTRAL POLK PARKWAY

FROM SR 570 (POLK PARKWAY) TO SR 35 (US 17)
ROADWAY CONSTRUCTION PROJECT
FPID: 440897-2-52-01

POLK COUNTY

PREPARED FOR:

FLORIDA DEPARTMENT OF TRANSPORTATION
FLORIDA'S TURNPIKE ENTERPRISE

The analysis in this document has been supplemented by the CSER Addendum to Mainline and Pond CSER's.

Draft-Subject to change.

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EXECUTIVE SUMMARY

Kisinger Campo and Associates Corporation is developing a Pond Siting Report for the Central Polk Parkway (CPP) from SR 570 (Polk Parkway) to SR 35 (US 17), a distance of approximately 6.4 miles. This project includes a new alignment for the proposed four-lane divided limited access facility. The proposed typical section includes 12' wide travel lanes with 8' inside and 12' outside shoulders and a median width of 62 to 106 feet. The proposed right-of-way varies from 124 to 482 feet. During the Project Development and Environment Study (PD&E Study), a Conceptual Pond Siting Report was submitted to the Florida Department of Transportation (FDOT) (Inwood, March 2011).

This Pond Siting Report (PSR) is used as an engineering tool to identify potential pond sites utilizing an "alternatives" methodology. The calculations presented in this report are preliminary and help in estimating the preliminary size of the stormwater and floodplain ponds for each basin. The pond sizes and the limits of the basins associated with each pond alternative shown on the figures, tables, and included in the documentation are subject to change throughout the project design phases (I through final).

This report addresses the stormwater management facility (SMF) and floodplain compensation (FPC) site requirements and includes alternatives analysis for selection of a preferred regional stormwater management option. The FPC sites are selected based on their locations in reference to the floodplain impact areas along the project. Only one FPC site alternative was evaluated per basin, since the pond requirements, based on the required hydraulic connections, are located within a single owner parcel, with similar potential impacts. This study provides pond locations that are hydraulically functional and environmentally permittable based on the best available information and are sized to provide the required stormwater management and floodplain compensation for the future six-lane typical section. Pond site locations were analyzed and evaluated for Section 4(f) properties, environmental wetland impacts, threatened and endangered species involvement, hazardous materials contamination, historical and archeological resources, right-of-way acquisition, and hydrology (soil types and seasonal high water table) and hydraulics. There are no Section 4(f) property involvement for any of the pond sites and SMF and FPC designs are consistent with the Highway Beautification Policy and Context Sensitive Solutions Policy. The

ponds are configured to have curvilinear shapes and additional space for landscaping opportunities. Aesthetics were evaluated as per FDOT policy 000-650-011-c and Section 5.4.4.2 of the FDOT Drainage Design Guide. The proposed ponds will be integrated with existing and proposed landscaping and adjoining uses. During design, an interdisciplinary team including a landscape Architect will address aesthetics of the pond sites. The basin boundaries are shown in **Appendix I**. The preferred pond sites listed in Table 1 provide the required stormwater management and floodplain compensation for this project. Regional stormwater management option 3 will not require any pond excavation and the water quality net benefit is achieved through removing the sources of nutrients (cattle) by changing the land use on approximately 300 acres of pastureland to pond/conservation. All referenced elevations correspond to the NAVD 1988 datum. To convert from NAVD '88 to NGVD '29 add 0.85 feet to the given NAVD elevation.

Table 1: Summary of Preferred Pond and Floodplain Sites

Preferred Sites	Location (Station/ Side)	Archeological	Historic	Contamination Ranking	T & E Species Ranking	Wetland Ranking	R/W Area (acres)
SMF 1	126+77 to 146+63 LT	Low to Moderate	Low	Low	Moderate	High	Within R/W
SMF 2	1052+50 to 1071+72 LT	Low to Moderate	Low	No	Moderate	None	16.20
Regional stormwater management option 3	1210+00 to 1315+00 RT	N/A	N/A	N/A	N/A	N/A	300.15
FPC 1	1097+21 to 1107+89 RT	Low to Moderate	Low	Low	High	Moderate	11.50
FPC 2-3	4216+40 to 4234+76 LT	Low to Moderate	Low	Medium	High	Moderate	15.95
FPC 4	845+62 to 850+80 LT	Low	Low	Low	Low	Low	2.70

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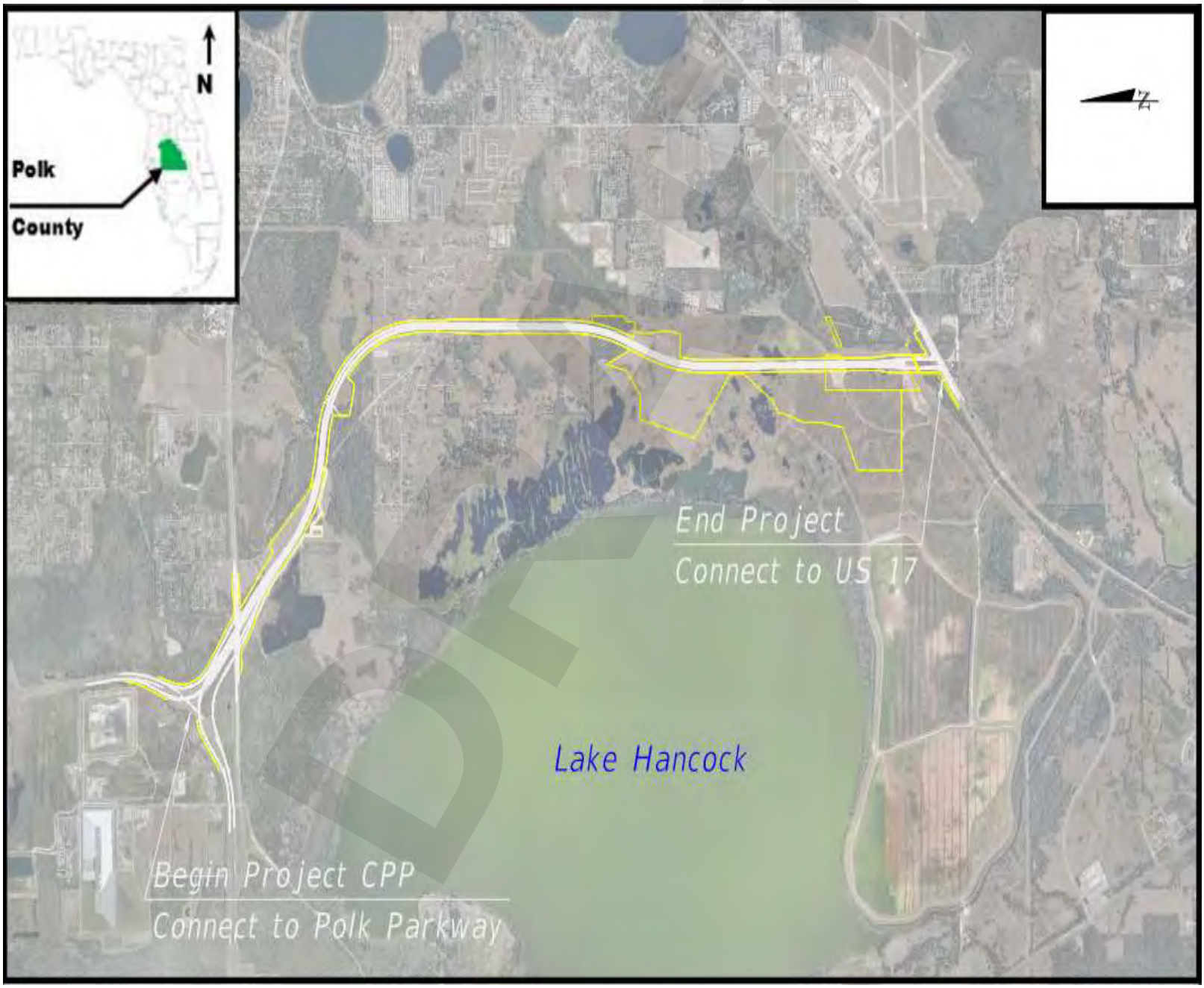
1.0 INTRODUCTION

Florida's Turnpike Enterprise proposes to construct 6.4 miles of Central Polk Parkway from SR 570 to SR 35 in Polk County, Florida (**Figure 1**). This report documents alternative locations of potential pond sites and assesses the suitability of each site based on hydraulic, environmental, and economic factors for use as a stormwater management facility or floodplain compensation site for the design phase of the project.

FIGURE 1: LOCATION MAP



This Pond Siting report (PSR) is used as an engineering tool to identify potential pond sites utilizing an "alternatives" methodology. The calculations presented in this report help in estimating the sizes of the stormwater and floodplain ponds for each basin. The pond sizes, the limits of the basins associated with each pond alternative shown on the figures, tables, and included in the documentation are subject to change throughout the preliminary engineering and project design phases (I through final).

This project includes a new alignment for the proposed four-lane divided limited access facility. The proposed typical section includes 12' wide travel lanes with 8' inside and 12' outside shoulders and a median width varying from 62 to 106 feet. The proposed right-of-way varies from 188 to 342 feet (**Appendix A, Figure 2** and **2a**). Stormwater will be conveyed to ponds and roadside ditches that are designed for the future six-lane configuration.

The existing drainage patterns were determined using United States Geological Survey (USGS) quadrangle maps, LIDAR contours, and survey data. Drainage basins are considered open with basins east of CPP flowing to the west through wetlands that outfall to Lake Hancock.

2.0 PROJECT DESCRIPTION

The project is located in Sections 28, 29, 30, 31, 32, 33, and 34 of Township 28 East, Range 25 East and Sections 3, 10, 15 and 22 Township 29 South and Range 25 East in Polk County (**Appendix A, Figure 3**). Land use in the area generally includes large sections of pasture with residential housing concentrated near SR 540, Thornhill Road and US 17. There is a large section of conservation lands located west of CPP adjacent of Lake Hancock. All referenced elevations correspond to the NAVD 1988 datum. To convert from NAVD '88 to NGVD '29 add 0.85 feet to the given NAVD elevation.

The Bartow Executive Airport is located within 2 miles of the CPP Segment 2 project. The FAA recommends a separation of 10,000 feet from the airports Air Operations Area (AOA) and the hazardous wildlife attractant (wet ponds). Wet ponds within this area are

recommended to use mitigation measures such as using steep side slopes that are lined with riprap. Linear attenuation ditches within the limits will be designed to be dry to eliminate this issue.

2.1 SOIL CHARACTERISTICS

The *Soil Survey of Polk County* classifies the majority of soils within the project area as Tavares (#15), Arents-Water complex (#11), Smyrna/ Myakka (#17) and Paisley (#44) (**Appendix A, Figure 4**). Tavares fine sand is described as a moderately well-drained soil with a seasonal high water table (SHWT) depth of 3.5 to 6 foot below the existing ground and hydrologic soil group (HSG) Type A. Arents-Water complex is a well-drained soil with a SHWT depth of more than 6 feet below the existing ground. Smyrna and Myakka fine sands are described as a poorly drained soils with a SHWT depth of 0.5 to 1.5 foot below the existing ground and HSG Type A/D. Paisley fine sand is described as a poorly drained soil with a SHWT depth of 0 to 1 foot below the existing ground and HSG Type C/D. Refer to **Appendix A, Figure 4** for a map of the soils along the corridor.

Tierra performed over one hundred hand auger borings and over 220 Standard Penetration Test (SPT) borings to determine the soil characteristics and estimate the SHWT along the proposed roadway alignment (**Appendix C**). The hand auger borings were performed by manually twisting and advancing a bucket auger into the ground, typically in 4 to 6 inch increments. As the hand auger was slowly advanced, representative samples were obtained for classification of the soils. Each soil boring ranged from 2 to 15 feet in depth below the existing ground surface.

The soil consists predominantly of sandy soils. Organic to highly organic soils were found within 0.5 to one foot of the surface at various locations along the project. In addition, cemented sands were found at depth from 3.5 to 6 feet below the existing ground. The SHWT ranges from at or above the existing ground surface to approximately four feet below the existing ground. The assumptions for the SHWT determinations are critical for pond site design. For each pond site, control elevation was determined based on the SHWT

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water elevation of the outfall, adjacent wetlands and the SHWT elevations for the site from the geotechnical borings.

3.0 DATA COLLECTION

3.1 MEETINGS

The drainage kickoff meeting was held on June 15, 2018 at Turnpike Headquarters (**Appendix M**). Pre-application meetings were held with staff from the Southwest Florida Water Management District (SWFWMD) on September 4, 2012; November 5, 2014; October 11, 2018 and February 18, 2020 to discuss the permitting requirements of the project. These meeting minutes are provided in **Appendix B**.

3.2 CURVE NUMBERS

The land use and curve numbers (CN) for each basin using antecedent moisture condition II is included in **Appendix E**.

3.3 RAINFALL INTENSITY DATA

In accordance with SWFWMD requirements, the SWFWMD 25 year/24 hour storm (8 inches) will be modeled for the existing and proposed conditions.

4.0 DESIGN CRITERIA

The project is located within the SWFWMD. Stormwater management for water quality (treatment) and water quantity (attenuation) will be provided using wet detention stormwater management facilities and dry linear attenuation ditches. The design of the drainage and stormwater facilities will comply with the standards set forth by the FDOT Drainage Manual and the Statewide Environmental Resource Permitting (SWERP) Manual.

Stormwater runoff will be collected with roadside ditches and storm sewer systems and will be conveyed to stormwater management facilities within the proposed FDOT right of way. Stormwater management for water quality (treatment) and water quantity (attenuation) will be provided in infield and offsite ponds, and linear attenuation ditches.

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4.1 WATER QUALITY CRITERIA

The method of stormwater treatment for this project will include wet detention design. The wet detention method involves storing the stormwater in a wet pond above the SHWT. Treatment will be provided for the first one inch of stormwater runoff from the contributing basin. For wet detention, the treatment volume shall be no greater than 18 inches above the control elevation [orifice elevation/Seasonal High Water Level (SHWL)]. An orifice shall be designed allowing no more than one-half of this treatment volume to bleed down in the first 60 hours and the remainder of the treatment volume in not less than 120 hours. Due to the detention time required for wet detention systems, only that volume which drains below the overflow elevation within 36 hours may be counted as part of the volume required for water quantity storage.

4.2 WATER QUANTITY CRITERIA

For an open basin, the SWFWMD requires that the 25-year/24-hour post-development maximum discharge rate must be attenuated to no greater than the 25-year/24-hour pre-development discharge rate.

4.3 IMPAIRED WATERBODY CRITERIA

The CPP project includes six basins within Group 3 of Upper Peace River. These include water body identification numbers (WBID) 1497, 1545, 1501A, 1623L, 1623N, 1586A from north to south (**Table 2**). Refer to **Appendix J** for the Florida Department of Environmental Protection (FDEP) spreadsheet and **Appendix A, Figure 7**.

Table 2: Impaired Waterbodies

WBID	Name	Planning Unit	Group	Comments
1501A	Lake Lena Run	Upper Peace River	3	Bacteria (Fecal Coliform)
1497	Saddle Creek	Upper Peace River	3	Nutrients (Macrophytes) Bacteria (Fecal Coliform)
1545	Unnamed Drain	Upper Peace River	3	Not Impaired
1586A	Lake Hancock Drain	Upper Peace River	3	Not Impaired
1623N	Eagle Lake Outlet	Upper Peace River	3	Not Impaired
1623L	Lake Hancock	Upper Peace River	3	Nutrients (Total Phosphorous, Chlorophyll-a, Total Oxygen)

Lake Lena Run (1501A) is verified impaired for fecal coliform. Saddle Creek (1497) is verified impaired for nutrients (macrophytes) and fecal coliform. Unnamed drain (1545), Lake Hancock Drain (1586A) and Eagle Lake Outlet (1623N) are not impaired. The ultimate project outfall is Lake Hancock (1623L) which is verified impaired for nutrients. For impaired water bodies, there can be no increase in nutrient loadings for nitrogen and phosphorous between the pre and post conditions. None of the stormwater ponds have direct connection to Lake Hancock and therefore do not require nutrient loading analysis. The nutrient loading analysis was used for Regional stormwater management option 3 to show a net improvement of the nutrient loading for Lake Hancock. Refer to **Appendix A, Figure 7** for the impaired waterbodies map and **Appendix J** for nutrient loading analysis for the Regional stormwater management option 3.

5.0 ENVIRONMENTAL LOOK AROUND

A meeting was held with the SWFWMD land management and regulatory on October 11, 2018 to explore watershed wide stormwater needs that could provide mutual benefit and explore alternative permitting approaches. The SWFWMD Lake Hancock project was constructed to improve the lake water quality by pumping and routing it through series of swales and ditches located in a large trac along the south side of Lake Hancock and bounded by Lower Saddle Creek and Old Bartow Eagle Lake Road. We asked if the SWFWMD had any additional enhancement projects ongoing or anticipated for Lake Hancock that this project can benefit by enhancing and/or contributing funds. The SWFWMD indicated that there were no new projects anticipated for Lake Hancock at this time. The SWFWMD along with Polk County also have the lake connectivity projects crossing the CPP alignment approximately one mile north of US 17 (at Station 1275 +/-). A Joint-use pond at this location was discussed in this meeting, but was not evaluated further, since raising the control elevation of the lakes to provide the stormwater requirements for the CPP may effect upstream properties since these lakes are a part of an interconnected conveyance system and could be isolated. Refer to Appendix B (B-5) for meeting minutes.

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6.0 EXISTING AND PROPOSED CONDITIONS

6.1 EXISTING DRAINAGE CONDITIONS

The existing drainage patterns were determined using United States Geological Survey (USGS) quadrangle maps and LIDAR contours. The off-site drainage basins are shown in the Drainage Maps (**Appendix I**). This project includes open basins flowing to the west with the ultimate outfall location being Lake Hancock. Offsite areas draining to the project site will outfall to Lake Hancock through proposed crossdrains. The area surrounding the project consists mostly of wetland/forest, residential and open pastureland. There is an existing FDOT pond, SMF 1, located in the interchange of SR 540 and SR 570 that will be modified for this project.

6.1.1 EXISTING CROSSDRAINS

There is one existing 42" crossdrain located along US 17 and a double 8'x8' box culvert along SR 570 (**Table 3**).

Table 3: Existing Crossdrain Summary

Number	Sta. CL Const.	Road	Description	Outfall
CD-1A	1018+68	SR 570	2-8'x8'	SW to wetland
CD-14	802+92	US 17	42"	Offsite ditch E of CPP

Additional crossdrains have been added along the CPP alignment to maintain flow. Refer to Section 6.2.1 for details.

6.2 PROPOSED DRAINAGE CONDITIONS

Stormwater management for water quality and water quantity will be provided in ponds. The design of the drainage and stormwater facilities will comply with the standards set forth by the FDOT Drainage Manual, and the SWFWMD ERP Manual. Six pond sites have been proposed within the project limits. These ponds will be used to either compensate for the floodplain encroachment, attenuate, or used for treatment. Regional stormwater management option 3 will not require any pond excavation and the water quality net benefit is achieved through removing the sources of nutrients (cattle) by

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changing the land use on 300 acres of pastureland to pond/conservation. Aerial photographs, LIDAR contours and information from the Polk County Property Appraiser were used to locate the potential pond sites. All of the stormwater ponds are sized for the contributing basins with treatment and attenuation for the proposed six lane roadway.

6.2.1 PROPOSED CROSSDRAINS

There are sixteen proposed crossdrains (**Table 4**). The cross drains have been analyzed for the existing and proposed condition using HY-8. The location of the crossdrains are shown on **Figure 7** of **Appendix A** and **Drainage maps in Appendix I** .

Table 4: Proposed Crossdrain Summary

No.	Station	Road	Description	Outfall
CD-1A	1018+68	CPP	2-8'x8' CBC	Wetland SW of CPP
CD-1C	229+95	Ramp B	2-8'x8' CBC	Wetland SW of CPP
CD-2	3042+00	CPP	Single 36" Pipe	Waterbody
CD-3	3090+86	CPP	Single 66" Pipe	Lake Lena Run
CD-4	3100+85	CPP	2-9'x6' CBC	Lake Lena Run
CD-6	1169+00	CPP	Double 54" Pipe	Tributary to Lake
CD-7	1178+00	CPP	Double 66" Pipe	Tributary to Lake
CD-8	1187+00	CPP	Single 48" Pipe	Tributary to Lake
CD-9	1198+00	CPP	8'x5' CBC	SMF 3/FPC 2
CD-9A	1206+84	CPP	2-7'x4' CBC	Wetland W of CPP
CD-9B	1211+88	CPP	2-8'x5' CBC	Wetland W of CPP
CD-10	4233+00	CPP	Single 48" Pipe	E of CPP
CD-13A	1327+41	CPP	Single 30" Pipe	E of CPP
CD-13C	1328+52	CPP	Single 30" Pipe	E to CD-13A
CD-14	845+42	US 17	Single 42" Pipe	N of US 17
CD-15	1315+00	CPP	Single 24" Pipe	E of CPP

6.2.2 BASE CLEARANCE

The base clearance water elevations (BCWE) for this project were established based on the estimated SHWT elevations. The required base clearance for the mainline portion of the project per the FDOT Florida Design Manual (FDM) Section 210.10.3 is three feet. All ramps within the project require a base clearance

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of two feet per the FDOT FDM. The base clearance calculations are shown in Stormwater Management Design Report (submitted separately).

7.0 FLOODPLAIN AND WETLAND INFORMATION

The following factors were considered in the selection of potential pond and floodplain compensation sites:

- Present use of the land (vacant, proposed, developed or conservation)
- Parcel Size
- Proximity of the sites to CPP
- Utilize parcel remainders or existing right of way
- Proximity of the sites to an outfall
- Location of any nearby wells
- Which portions of roadway can be drained to the potential pond sites
- SHWT elevations
- Are the sites accessible for construction and future maintenance of the ponds
- Jurisdictional Wetlands
- Threatened/ Endangered Species
- Hazardous Materials Contamination
- Archeological/ Historical Resources
- R/W Cost

7.1 FLOODPLAIN INFORMATION

The project site is located on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community-Panel Numbers 12105C0340G, 12105C0345G, 12105C0505G, and 12105C0510G (dated December 22, 2016), in Polk County. The alignment impacts many FEMA floodplains which are designated as Zone A and Zone AE. Zone AE are areas of the 100-year floodplain where the base flood elevation has been determined. Zone A are areas of the 100-year floodplain where the base flood elevation has not been determined (**Appendix A, Figure 5**). The project does not cross any FEMA

floodways. The CPP project is included within the SWFWMD *Lake Hancock Watershed* and the *Saddle Creek Watershed* ICPR Watershed model. The 100-year, 5-day stages from this model was used to update the current FEMA maps base flood elevations in and around Lake Hancock and adjacent to Polk Parkway interchange. The 100-year floodplain encroachment and compensation calculations were based on the FEMA floodplain maps. For the floodplain elevations from the FEMA maps and location of encroachment and compensation, see **Table 5.** Refer to **Appendix A** for the FEMA and SWFWMD floodplain maps.

7.2 FLOODPLAIN ENCROACHMENT

Floodplain encroachment was evaluated using the FEMA maps and Cup for Cup compensation was provided within the offsite ponds, infield areas and remnant parcels. Floodplain encroachment calculations are shown in **Appendix F**. **Table 5** summarizes the impacts to the FEMA floodplain.

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Table 5: Floodplain Elevations

Floodplain Compensation and Encroachment					
Area	**Begin Station**	**End Station**	**Ramp/ Mainline**	**FEMA 100 Year Elevation (NAVD 88)**	**Compensation Location**
1	105+00	122+00	Ramp A	105.75	SMF 1
2	205+00	218+00	Ramp B	106.69	SMF 1
3	218+00	232+00	Ramp B	103.55	Ditch along Ramp B
3A	300+00	330+00	Ramp C	107.00	SMF 1
4	3087+00	3102+00	Mainline	110.00	FPC 1
5	1157+69	1162+22	Mainline	112.70	FPC 2-3
5A	1162+16	1165+22	Mainline	111.80	FPC 2-3
5B	1167+42	1170+70	Mainline	111.40	FPC 2-3
5C	1175+84	1179+82	Mainline	110.00	FPC 2-3
5D	1182+49	1192+66	Mainline	108.90	FPC 2-3
5E	1195+38	1199+35	Mainline	109.20	FPC 2-3
5F	1200+89	1201+76	Mainline	109.50	FPC 2-3
6	1204+76	1208+49	Mainline	106.40	FPC 2-3
7	4236+22	4238+82	Mainline	109.38	FPC 2-3
8	833+09	833+95	US 17	108.90	FPC 4
9	843+00	851+00	US 17	108.80	FPC 4

7.3 FPC SITE SIZING

The SWFWMD requires no net encroachment into the floodplain, up to that encompassed by the 100-year event, which will adversely affect conveyance, storage, water quality or adjacent lands. Any required compensating storage will equivalently be provided between the seasonal high water level and the 100-year flood level to allow storage function during all lesser flood events. Floodplain compensation sites were sized using the 100-year elevations from the approved FEMA maps. GIS data provided with the model was

converted into CADD files and used to determine impact locations. Compensation for floodplain impacts was provided in floodplain compensation ponds and within the right of way. In addition to the three preferred FPC sites listed below. SMF 1 also provide floodplain compensation in that basin. FPC site locations were evaluated for Section 4(f) properties and show no involvement.

7.4 FLOODPLAIN COMPENSATION POND SITES

7.4.1 FLOODPLAIN COMPENSATION SITE 1 (PREFERRED)

The Central Polk Parkway roadway crosses the 100-year floodplain from Stations 1086+89 to 1100+14. The 100 year is 110.0 feet, with a total encroachment volume of 13.03 ac-ft. FPC 1 is located on the south side of Central Polk Parkway from Sta. 1097+21 to 1107+89 RT within a 204.68 acre parcel 252834000000011010, part of which is becoming roadway right of way. The site requires an additional 11.5 acres of right of way. This site will provide 13.36 ac-ft of floodplain compensation. The pond has moderate ranking for wetland involvement with 0.56 acres of stream and lake swamps. An investigation by ACI was conducted to determine if the site has any historic resources or archeological potential. This site had a low to moderate rating for archeological potential and a low rating for historical resources.

The site was investigated to determine any threatened and endangered species issues. The pond site has a high potential for threatened and endangered species. During a field review, a Bald Eagle was observed at the pond site. The potential for occurrence of each species can be seen in Table 3-3 of **Appendix G** in the Final Environmental Pond Siting Report. Site is within a potential sand skink habitat and is not within any eagle nest locations see Figure 3-2 and Figure 3-3 in **Appendix G**. The site has a low risk of contamination (**Appendix H**). The majority soils on this site include Adamsville fine sand (31) with a depth to water table of 0 feet to 1.0 feet. Other soils within this site are Smyrna and Myakka fine sand (17) and Placid

fine sand, frequently flooded (37). The ground elevation at the pond site was estimated at 108.33 feet. The SHWT elevation was estimated to be 108.33 feet based on soils.

7.4.2 FLOODPLAIN COMPENSATION SITE 2-3 (PREFERRED)

The Central Polk Parkway roadway crosses the 100-year floodplain from Stations 1157+69 to 1208+49. The FEMA 100 year floodplain (Zone A) elevation ranges from 106.40 – 112.70 feet, with a total encroachment volume of 38.4 ac-ft (**Appendix F)**. FPC 2-3 is located on the east side of Central Polk Parkway from Sta. 4216+40 to 4234+76 LT within a Southwest Florida Water Management District owned parcels (252910000000041000 and 25291000000023030). The site requires an additional 15.95 acres of right of way. This site will provide 42.1 ac-ft of floodplain compensation. The pond includes moderate wetland involvement with 0.50 acres of freshwater marshes. An investigation by ACI was conducted to determine if the site has any historic resources or archeological potential. This site had a low to moderate rating for archeological potential and a low rating for historical resources.

The site was investigated to determine any threatened and endangered species issues. The pond site has a high potential for threatened and endangered species. A Bald Eagle and little blue heron were observed adjacent to the pond site. The potential for occurrence of each species can be seen in Table 3-3 of **Appendix G** in the Final Environmental Pond Siting Report. Site is not within any potential sand skink habitats and is within an eagle nest location see Figure 3-2 and Figure 3-3 in **Appendix G**. The site has a medium risk of contamination (**Appendix H**). Level II field contamination screening may be required during design to finalize the selection of this site. The soils include some Neilhurst sand (12) but the majority of the site is Arents (68). Neilhurst sand has a depth to water table of 24” to 48” and Arents has a depth to water table of more than 80”. The

ground elevation at the pond site was estimated at 110 feet. The SHWT elevation was estimated to be 108.2 feet based on soils. Compensation is provided in FPC 2-3 between the pond bottom elevation of 104.7' and berm elevation of 109.0' which provides cup for cup compensation.

7.4.3 FLOODPLAIN COMPENSATION SITE 4 (PREFERRED)

The US 17 roadway crosses the 100-year floodplain from Stations 840+54 to 848+92. The FEMA 100 year floodplain (Zone A) elevation is 108.8 feet, with a total encroachment volume of 0.64 ac-ft. FPC 4 is located west of US 17 from Sta 845+62 to 850+80 LT within a residential parcel (252922361000003902, 252922361000003907, 252922361000003913, 252922361000003914, 252922361000003908, 252922361000003905, 252922361000004402 and 252922361000004504), part of which is becoming roadway right of way. The site requires an additional 2.7 acres of right of way. This site will provide 1.56 ac-ft of floodplain compensation with an additional 0.08 ac-ft from the US 17 ditch.

The pond is ranked low for wetland involvement with 0.12 acres of streams and waterways and 0.10 acres of wet prairies. The site has a low archeological potential and low historic archaeological potential. The pond site has a low potential for threatened and endangered species. The potential for occurrence of each species can be seen in Table 3-3 of **Appendix G** in the Final Environmental Pond Siting Report. Site is not within any potential sand skink habitats and is not within any eagle nest locations see Figure 3-2 and Figure 3-3 in **Appendix G**. The site has a low risk of contamination (**Appendix H**). The majority of soils on this site include Pomona (7) with a depth to water table of 0 to 1.5 feet. Other soils within this site are Placid and Myakka fine sand (25) with depth to water table of 0 to 2.0 feet. The ground elevation at the pond site was estimated at 108 feet. The SHWT elevation was estimated to be 106.8 feet based on soils.

8.0 STORMWATER PONDS

8.1 POND SITE CONFIGURATION

The infield and offsite ponds will include a 20' berm for maintenance activities, minimum 1:4 side slopes from low edge of berm to 2' below control elevation (unless restricted due to proximity of the airport), 1:2 side slopes from 2' below control elevation to pond bottom and a minimum of 1' of freeboard, in accordance with FDOT Drainage Design Manual Section 5.4.4.2. The inside berm radius of the pond is a minimum of 30'. A 25' buffer will be provided between the pond locations and wetlands, if possible. The design will provide treatment for the future 6-lane typical section. SMF and FPC designs are consistent with the Highway Beautification Policy and Context Sensitive Solutions Policy. Aesthetics were evaluated as per FDOT policy 000-650-011-c and Section 5.4.4.2 of the FDOT Drainage Design Guide. The ponds are configured to have curvilinear shapes and additional space for landscaping opportunities. In some cases, existing trees in the pond sites will be preserved.

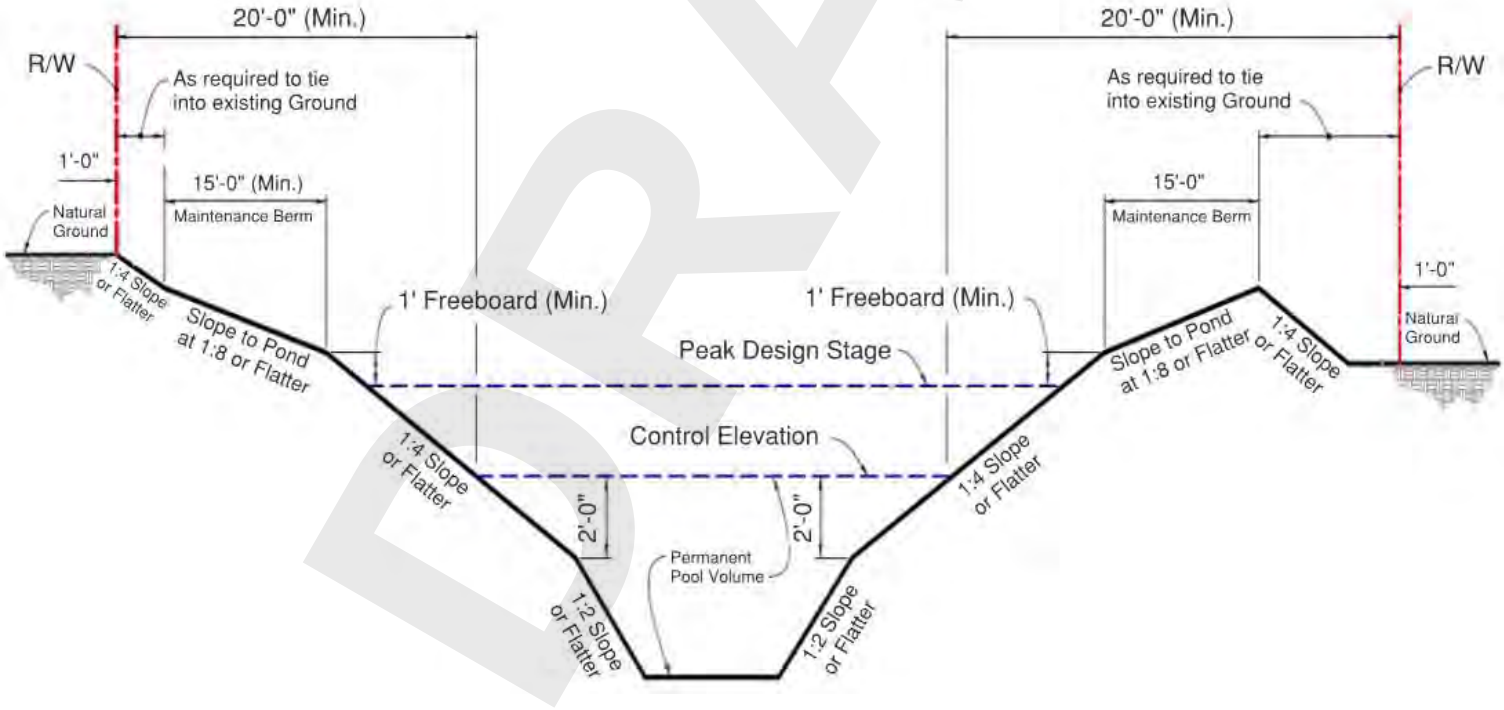

FIGURE 2: POND TYPICAL SECTION

8.1.1 POND SITE SIZING

The pond sizes were estimated using SWFWMD water quality treatment and attenuation requirements. All offsite-runoff was assumed by-passed using ditches or piping (**Appendix E**).

8.2 STORMWATER MANAGEMENT POND SITES

Three SMF pond sites have been proposed within the project limits. SMF 1 is a proposed modification of an existing interchange pond by SR 570. SMF 2 is adjacent to Thornhill and the mainline. The Regional stormwater stormwater management option 3 is located from Sta. 1210+00 to 1315+00 on the west side of CPP. This site will compensate for the additional pollutant loading due to CPP improvements from the northern Thornhill crossing to the end of project at US 17 and also includes excess treatment volume for approximately 40 acres of CPP Segment 2 (FPID 440897-4-24-01). Only one pond site alternative was evaluated per basin for SMF 1 and SMF 2, since the pond requirements based on the required hydraulic connections are located within single owner parcel, with similar potential impacts. Aerial photographs, LIDAR contours and information from the Polk County Property Appraiser were used to locate the potential pond sites. All of the ponds are sized for the contributing basins with treatment and attenuate for the proposed six lanes. SMF site locations were evaluated for Section 4(f) properties and show no involvement.

8.2.1 REGIONAL STORMWATER MANAGEMENT ALTERNATIVES

Three regional alternatives were evaluated for this project. The first alternative (option 1) requires 41.3 acres of right of way and is located both within a private property and the adjacent SWFWMD property. The pond will treat onsite and offsite areas to compensate for the additional impervious areas being added. Regional stormwater management option 2 requires 43.4 acres of right of way and is located within the SWFWMD property. The pond will treat onsite and offsite areas to compensate for the additional impervious being added. Regional stormwater management option 3 and will not require any pond excavation and the water quality net benefit is achieved through removing the sources of nutrients

(cattle) by changing the land use on approximately 300 acres of pastureland to pond/conservation.

8.2.1.1 REGIONAL STORMWATER MANAGEMENT OPTION 1

Regional stormwater pond option 1 is located from Sta. 1195+60 to 1201+25 on the west side of CPP, approximately 2.3 miles north of US 17. This pond will compensate for the additional pollutant loading due to CPP improvements from the northern Thornhill crossing to the end of project at US 17 and also includes excess treatment volume for approximately 40 acres of CPP Segment 2 (FPID 440897-4-24-01). The site requires 41.3 acres of right of way. This pond is sized to treat 280 acres of offsite area by diverting it into the pond using a box culvert. This offsite area equates to the entire contributing area from the northern Thornhill crossing to the end of project at US 17 in addition to Basin 1 of CPP Segment 2 (FPID 440897-4-24-01). The land use for contributing offsite area consists of pastureland, agricultural, residential and woodlands. The pond includes a partial take of parcels 252910000000011010 (private pasture land) and 252910000000033010 (SWFWMD pasture land). The site impacts 7.9 acres of 100-year floodplain. This site has 1.6 acres of freshwater marsh impacts, 0.17 acres of mixed wetland hardwood impacts, 0.01 acres of stream and lake swamps and 0.36 acres of streams and waterways.

An investigation by ACI was conducted to determine if the site has any historic resources or archeological potential. This site had a moderate rating for archeological potential (8PO06845 & 8PO06846 within and 8PO04128 adjacent) and a low rating for historical archeological potential. The site was investigated to determine any threatened and endangered species issues and given a high rating. There was a Bald Eagle observed and a Florida sandhill crane observation adjacent to the pond site. The potential for occurrence of each species can be seen in Table 3-3 of **Appendix G** in the Final Environmental Pond Siting Report. Site is not within any potential

sand skink habitats and is within an eagle nest location see Figure 3-2 and Figure 3-3 in **Appendix G**. This site has a low risk for contamination. The soils include a small portion of Immokalee sand (21) and Placid and Myakka fine sands, depressional (25). The majority of the soil includes Smyrna and Myakka fine sand (17) which has a depth to water table of 6" to 18". The average ground elevation at the pond site is estimated at 106.3 feet. The SHWT elevation was estimated to be 101.5 feet based on 2.4 feet above Lake Hancock. An estimation of the cost of the right of way for this site is $555,975. This pond is not a preferred site since it has the highest overall cost.

8.2.1.2 REGIONAL STORMWATER MANAGEMENT OPTION 2

Regional stormwater management option 2 is located from Sta. 4211+96 to 4234+64 on the west side of CPP. This pond will compensate for the additional pollutant loading due to CPP improvements from the northern Thornhill crossing to the end of project at US 17 and also includes excess treatment volume for approximately 40 acres of CPP Segment 2 (FPID 440897-4-24-01). The site requires 43.4 acres of right of way. This pond is sized to treat 280 acres of offsite area by diverting it into the pond using a box culvert. This offsite area equates to the entire contributing area from the northern Thornhill crossing to the end of project at US 17, in addition to Basin 1 of CPP Segment 2 (FPID 440897-4-24-01). The land use for contributing offsite area consists of pastureland, agricultural and woodlands. The pond includes a partial take of parcel 252910000000041000 (SWFWMD pasture land), 252915000000023030 (SWFWMD pasture land), 252909000000021010 (SWFWMD pasture land) and 252916000000010000 (SWFWMD pasture land). The site does not impact the 100-year floodplain. This site has no wetland impacts.

An investigation by ACI was conducted to determine if the site has any historic resources or archeological potential. This site had a low rating for

archeological potential and a low rating for historical archeological potential. The site was investigated to determine any threatened and endangered species issues and given a high rating. There was a Bald Eagle observed and a Florida sandhill crane observation adjacent to the pond site. The potential for occurrence of each species can be seen in Table 3-3 of **Appendix G** in the Final Environmental Pond Siting Report. Site is not within any potential sand skink habitats and is not within any eagle nest locations see Figure 3-2 and Figure 3-3 in **Appendix G**. This site has a low risk for contamination. The soils are comprised of Neilhurst sand (12) and Arents (68). Neilhurst sand has a depth to water table of 24" to 48" and Arents has a depth to water table of more than 80". The average ground elevation at the pond site is estimated at 113.5 feet. The SHWT elevation was estimated to be 101.5 feet based on 2.4 feet above Lake Hancock. An estimation of the cost of the right of way for this site is $555,975. This pond is not a preferred site since it has the second highest overall cost.

8.2.1.3 REGIONAL STORMWATER MANAGEMENT OPTION 3 (PREFERRED)

The Regional stormwater pond option 3 is located from Sta. 1210+00 to 1315+00 on the west side of CPP and requires 300.2 acres of right of way. This site will compensate for the additional pollutant loading due to CPP improvements from the northern Thornhill crossing to the end of project at US 17 and also includes excess treatment volume for approximately 40 acres of CPP Segment 2 (FPID 440897-4-24-01). Regional stormwater management option 3 will not require any pond excavation and the water quality net benefit is achieved through removing the sources of nutrients (cattle) by changing the land use on approximately 300 acres of pastureland to pond/conservation. This site contains 11.8 acres Reservoirs, 0.26 Acres Cypress, and 14.34 Acres of Freshwater Marshes. Site is not within any potential sand skink habitats and is within an eagle nest location see Figure 3-2 and Figure 3-3 in **Appendix G**. However, the environmental

considerations are not applicable and were not considered since no pond construction activity other than fencing is proposed. The net benefit is demonstrated through nutrient loading analysis and is provided in **Appendix J**. This includes a partial take of parcels 252910000000041000, 252915000000023030, 2529122361000000500, 252909000000021010, 252916000000010000 and 25291000000011010. Right of way cost for this site was estimated by first estimating a cost per acre from the information provided by FDOT and then applying it to the acreage of this site. This site is the preferred site since it has the lowest overall cost.

8.2.2 SMF POND LOCATIONS

8.2.2.1 SMF 1 (PREFERRED)

Pond Site 1 is a wet detention pond located on the north side of SR 540 from Sta. 126+77 to 146+63 LT and is located within the FDOT right of way. The proposed pond will be used for treatment and attenuation. The pond is ranked high for wetland impacts with 12.44 acres of reservoirs and 0.96 acres of exotic hardwood wetlands. An investigation by ACI was conducted to determine if the site has any historic resources or archeological potential. This site had a low to moderate rating for archeological potential and a low rating for historical archeological potential. The site has a low risk for contamination. The site was investigated to determine any threatened and endangered species issues and given a moderate ranking. The potential for occurrence of each species can be seen in Table 3-3 of **Appendix G** in the Final Environmental Pond Siting Report. Site is not within any potential sand skink habitats and not within any eagle nest locations see Figure 3-2 and Figure 3-3 in **Appendix G**. The soils includes Floridana mucky fine sand (19) with 0 to 1 percent slopes and has a depth to water table of 0” and 6” and Felda fine sand (42) with 0 to 2 percent slopes and has a depth to water table of 0” to 12” below the existing ground. The ground elevation at the pond site was estimated at 105 feet. The SHWT elevation was estimated

to be 100.8 feet based on soils. The ground elevation at the soil boring was estimated at 103.5 feet.

8.2.2.2 SMF 2 (PREFERRED)

Pond Site 2 is a wet detention pond and is located from Sta. 1052+50 to 1071+72 LT in the apex area between the CPP and Thornhill Road. The proposed pond will be used for treatment and attenuation. The pond includes a 16.2 acre partial take of a 351.71 acre vacant SWFWMD parcel 252833000000014010. The pond is located outside the 100-year floodplain. This site has no wetland impacts. An investigation by ACI was conducted to determine if the site has any historic resources or archeological potential. This site had a low to moderate rating for archeological potential and a low rating for historical archeological potential. The site has no risk of contamination. The site was investigated to determine any threatened and endangered species issues and given a moderate ranking. The potential for occurrence of each species can be seen in Table 3-3 of **Appendix G** in the Final Environmental Pond Siting Report. Site is not within any potential sand skink habitats and not within any eagle nest locations see Figure 3-2 and Figure 3-3 in **Appendix G**. The soils includes Smyrna and Myakka fine sands (17) with 0 to 2 percent slopes and has a depth to water table of 6" and 18", Immokalee sand (21) with 0 to 2 percent slopes and has a depth to water table of 0" to 12", and Zolfo fine sand (47) with 0 to 2 percent slopes and a depth to water table of 18" to 42". The ground elevation at the pond site was estimated to be 117 feet. The SHWT elevation was estimated to be 111.5 feet based on soil borings. The ground elevation at the soil borings were estimated at 116.5 feet. The required right of way cost is estimated at $331,295.

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8.3 LINEAR ATTENUATION

Attenuation will be provided within roadside ditches along the project and there are no adverse impacts shown in the post condition. in linear ditches for the additional runoff in the post condition.

9.0 RESULTS

9.1 EVALUATION OF ALTERNATIVES

The regional stormwater management alternatives were identified using recent aerials and lidar contours along with the additional survey information. Factors considered in evaluating alternative pond sites included hydraulics, land costs for pond right-of-way and any required inflow or outflow easements, costs of inflow and outflow structures and long term maintenance, wetland impacts, potential for presence of protected species, hazardous material contamination ranking, the potential for presence of cultural and/or historical resources and aesthetics. Aesthetics was evaluated using FDOT policy 000-650-011-c and Section 5.4.4.2 of the FDOT Drainage Design Guide. The above factors were used to determine the preferred alternative pond and floodplain compensation sites. **Table 6** is a matrix for the Regional stormwater management options.

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Table 6: SUMMARY OF REGIONAL STORMWATER MANAGEMENT OPTIONS

The following table summarizes the Regional stormwater management options

Factors	Regional stormwater management option 1	Regional stormwater management option 2	Regional stormwater management option 3
Pond Location (Station)	1195+60 to 1201+25	4211+96 to 4234+64	1**210+0**0 to 1**315**+**00**
Roadway Segment	CPP	CPP	CPP
Size (ac)	41.3	43.4	300.2
Avg. Ground Elev. (ft)	106	113	N/A
Est. SHWT Elev. (NAVD	101.5	101.5	N/A
Treatment System	Wet detention	Wet detention	Net Improvement
Soils Name & Symbol	Smyrna and Myakka fine sand (17) Immokalee sand (21) Placid and Myakka fine sands (25)	Neilhurst Sand (12) Arents (68)	N/A
Hydrologic Soil Group	A/D B/D A/D	A	N/A
Land Use	Pastureland	Pastureland	Pastureland
# Residences impacted	None	None	None
Wetland Impact (acres)	2.14	0	0
Wetland Mitigation Cost*	$ 280,554	$ 0	$ 0
T&E Species Impacted	High	High	N/A
Contamination Ranking	Low	Low	N/A
Archeological	Moderate	Low	N/A
Historic	Low	Low	N/A
Easement Required	No	Yes	No
Number of Parcels	2	4	6
Partial (P) or Whole (W)	P	P	P
Floodplain Impact (acres)	7.9	0	0
ROW Cost Estimate	$ 921,151	$ 555,975	$ 3,511,680
Pond Maintenance Cost**	$ 1,858,500	$ 1,953,000	$ 0
Construction Cost***	$ 1,607,880	$ 1,709,714	$ 0
Total Estimated Costs	$ 4,387,531	$ 4,218,689	$ 3,511,680

*Assume $115,000 per acre for wetland mitigation
** Pond maintenance cost is based on assuming $1500 per acre per year projected for 30 years
*** Construction cost includes Pond /FPC excavation @ $9 per cubic yard and associated drainage @ $120 per linear foot (Regional stormwater management options 1 & 2 have 2,000 linear feet of drainage)

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9.2 POND RIGHT-OF-WAY COST ESTIMATES

Right-of-way cost estimates for the alternative pond sites evaluated in this report were determined by the FTE.

9.3 ENVIRONMENTAL EVALUATION

Environmental factors that were investigated included wetland impacts, potential for presence of protected species, hazardous material contamination potential, and potential of presence of cultural and/or historic resources, the reports can be found in **Appendix G** and **Appendix H** .

9.3.1 JURISDICTIONAL WETLAND INVOLVEMENT

All existing and available data was reviewed to determine if any wetlands would be adversely affected by the proposed construction of the Central Polk Parkway from SR 570 to US 17. Of the three SMF and three FPC sites, SMF 1, regional option 1 and regional option 3 were ranked high while FPC 1 and FPC 2-3 were ranked moderate for wetland involvement. Pond site FPC 4 was given a low potential for wetland involvement due to the on-site wetlands occupying less than 0.5 acres. SMF 2 and regional option 2 have no potential for wetland involvement due to the absence of wetlands and surface waters on-site.

9.3.2 THREATENED AND ENDANGERED SPECIES

Kisinger Campo and Associates evaluated this project for impacts to federal and state listed threatened and endangered species. The potential for occurrence for each species was designated as Low, Moderate, or High based on the type of habitat present within the assessment areas, its relative condition, if the species has been previous documented within one mile of the assessment areas, or if the species was observed in the assessment areas. A “None” for involvement indicates that no suitable habitat for protected species exists within the assessment area. A “Low” potential for involvement indicates that minimal/suboptimal habitat exists within the assessment area for protected species. A “Moderate” potential for involvement

indicates that suitable habitat exists, and conditions are favorable for protected species. A "High" potential for involvement indicates protected species have been confirmed or are highly likely to occur within the pond site.

Based upon in house assessments, site reviews, and species specific surveys, several federal- and state-listed protected species were identified as occurring or having the potential to occur within the assessment areas. Regional stormwater management options 1,2,&3, FPC 1, and FPC 2-3 were given a high potential for protected species involvement due to the confirmed observations of the Bald Eagle, Florida sandhill crane, and Southeastern American Kestrel. Two sites, (SMF 1 and SMF 2) were given a "Moderate" potential for protected species involvement due to the favorable habitat conditions available. FPC 4 was given a low potential for protected species involvement due to the minimal/suboptimal habitat present for protected species (**Appendix G**).

9.3.3 HAZARDOUS MATERIALS CONTAMINATION

In accordance with FDOT policy and the FHWA requirements, a contamination screening evaluation has been performed to evaluate potential impacts from contaminated sites to the project. The purpose of the Contamination Report has been to identify contamination sites within or adjacent to the preferred Stormwater Management Facilities (SMFs) and Floodplain Compensation (FPCs) areas and provide risk ratings for each SMF/FPC. After reviewing data obtained from on-site reviews of the parcels, a review of historical land use, hazardous/petroleum site lists, and other data, risk ratings were assigned to each FPC/SMF in accordance with FDOT contamination rating system. See FDOT PD&E Manual: Part 2, Chapter 20. Refer to **Appendix H** for the Contamination Screening Evaluation Report. The environmental screening evaluation has resulted in a "Medium" ranking for one site (FPC 2-3), a "Low" ranking for three sites (SMF 1, FPC 1, and FPC 4), and a "No" risk ranking for one site (SMF 2).

9.3.4 HISTORICAL/ ARCHEOLOGICAL RESOURCES

An investigation by Archeological Consultant Incorporated (ACI) was conducted to determine if the site has any historic resources or archeological potential. The archaeological field survey consisted of a visual reconnaissance and 101 shovel test pits of areas not previously investigated. Four previously recorded sites were found within the APE none of which were deemed eligible for listing in the NRHP by SHPO. The 2019 historical/architectural field survey resulted in the identification and evaluation of nine historic resources. These include four Frame Vernacular (8PO08231, 8PO08234, 8PO08236, 8PO08237) style buildings, three Masonry Vernacular (8PO08232, 8PO08233, 8PO08235) style buildings, one Mobile Home with no style (8PO08230), all constructed between ca. 1955 and ca. 1969; and a segment of the Old Bartow Road Railroad Bed (8PO06108). None appear eligible for listing in the NRHP either individually or as part of a historic district. The segment of the Old Bartow Road Railroad Bed does not appear eligible for listing in the NRHP either individually or as part of a historic district.

Thus, each of the proposed SMF and FPC sites was evaluated for archaeological site potential. Each was reviewed and assigned to one of three site potential categories: low, low to moderate, and moderate; there were no high potential areas.

10.0 CONCLUSIONS

Users of this report are cautioned that the following recommendations of pond sizes and locations determined from initial data, calculations, reasonable engineering judgment and assumptions. Pond sizes and configurations may change during final design of plans as more detailed information on the environmental and geotechnical field investigations become available. The recommended pond and floodplain sites are included in **Table 7**. Prior comments from the previous Pond Siting Report (Prior to the roadway re-alignment) are included in **Appendix L.**

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Table 7: Summary of Preferred Pond and Floodplain Sites

Preferred Sites	Location (Station/ Side)	Archeological	Historic	Contamination Ranking	T & E Species Ranking	Wetland Ranking	R/W Area (acres)
SMF 1	126+77 to 146+63 LT	Low to Moderate	Low	Low	Moderate	High	Within R/W
SMF 2	1052+50 to 1071+72 LT	Low to Moderate	Low	No	Moderate	None	16.20
Regional stormwater management option 3	1210+00 to 1315+00 RT	N/A	N/A	N/A	N/A	N/A	300.15
FPC 1	1097+21 to 1107+89 RT	Low to Moderate	Low	Low	High	Moderate	11.50
FPC 2-3	4216+40 to 4234+76 LT	Low to Moderate	Low	Medium	High	Moderate	15.95
FPC 4	845+62 to 850+80 LT	Low	Low	Low	Low	Low	2.70

11.0 RESOURCES FOR ANALYSIS

The following sources were used to locate and size the alternative pond sites and floodplain compensation sites:

- PD&E Conceptual Pond Siting Report (Inwood, March 2011)
- PD&E Location Hydraulics Report (Inwood, March 2011)
- Pre Final Pond Siting Report (KCA, November 2019)
- FDOT Drainage Manual
- FDOT Drainage Design Guide
- Florida Design Manual
- Environmental Resource Permit (ERP) Applicant's Handbook Volumes I and II
- Lidar (SWFWMD, 2005)
- USDA SCS Soil Survey of Polk County, Florida, October 1990
- USGS Quadrangle Maps (Bartow, Eloise)
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), December 20, 2000 (12105C0505G, 12105C0510G 12105C0520F, and 12105C0540F)
- Polk County Property Appraisers

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APPENDIX A

FIGURES

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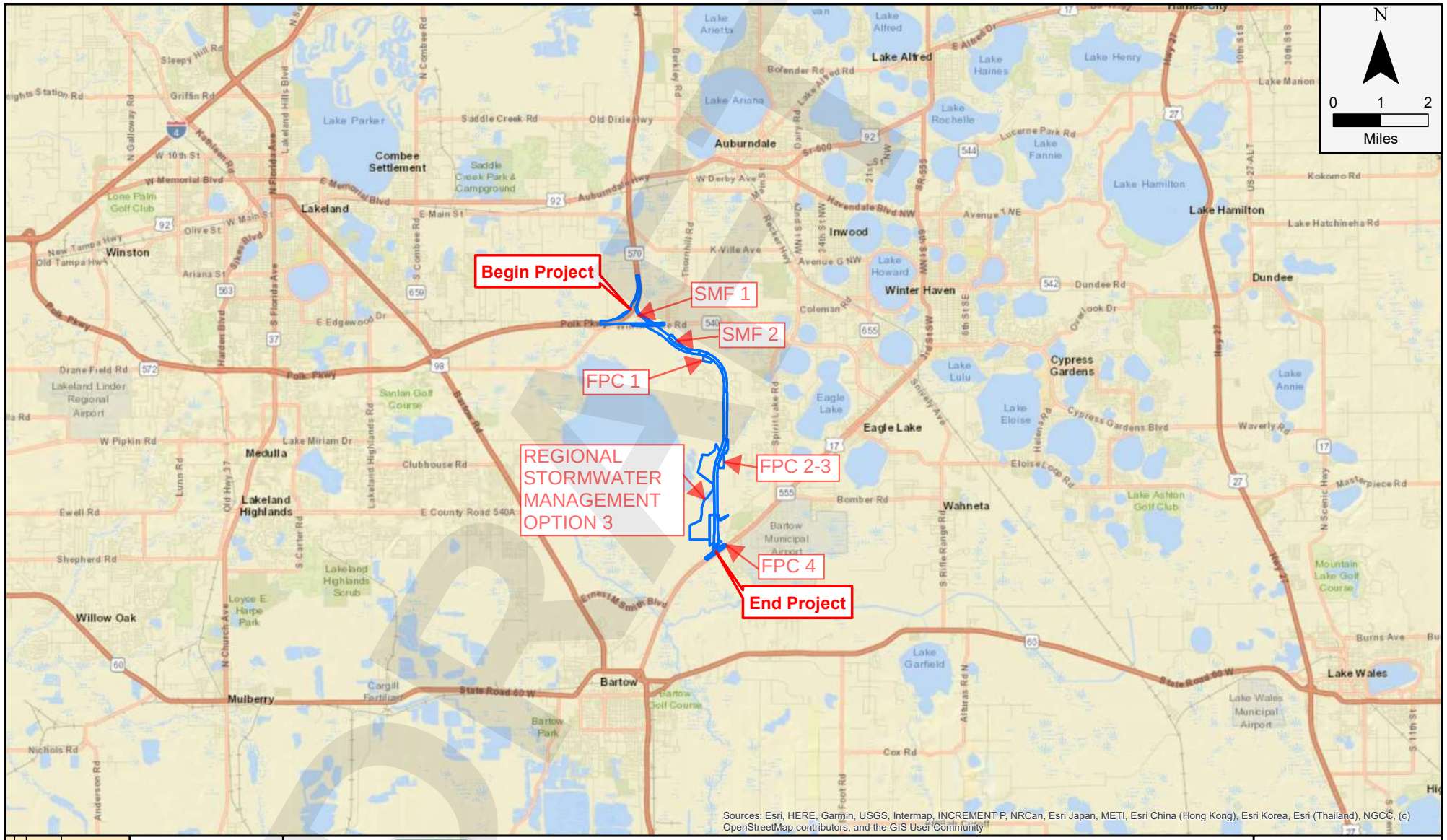
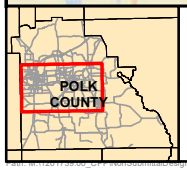




Legend

Proposed ROW

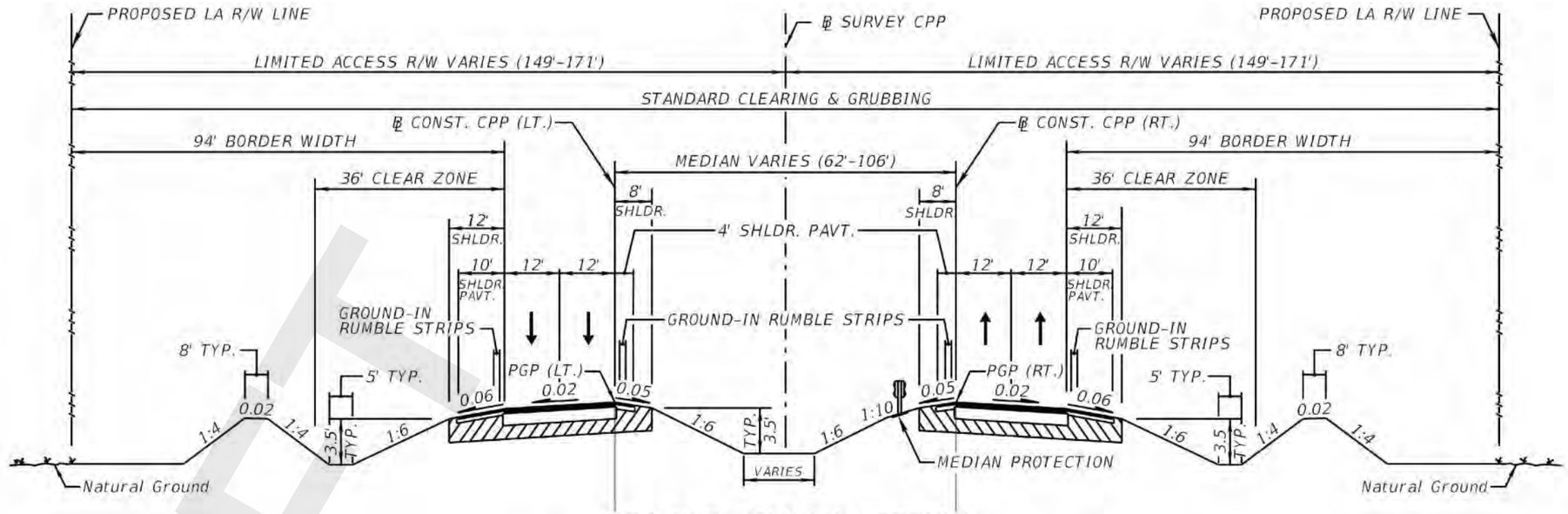
FLORIDA'S TURNPIKE

Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

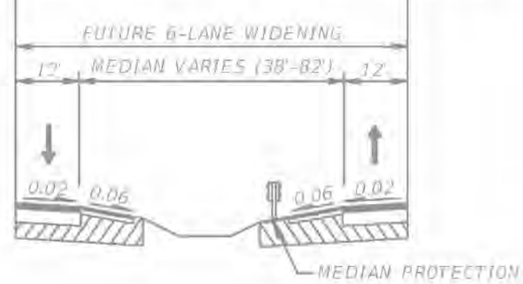
Polk County, Florida
FPID Number: 440897-1-52-01

Project Location Map

Figure 1



ROADWAY TYPICAL SECTION
CENTRAL POLK PARKWAY MAINLINE (SR 570B)



TRAFFIC DATA

CURRENT YEAR = 2018 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 16,200
ESTIMATED DESIGN YEAR = 2045 AADT = 24,600
K = 10% D = 56.5% T = 12.3% (24 HOUR)
DESIGN HOUR T = 7.0%
2045 TRUCK DDHV = 97
DESIGN SPEED = 70 MPH
POSTED SPEED = 65 MPH

STATION LIMITS

STA. 2036+00.00 (MP 0.682) TO STA. 2142+85.53 (MP 2.760) ℄ CONST. CPP (LT.)
STA. 3036+00.00 (MP 0.682) TO STA. 3141+88.26 (MP 2.760) ℄ CONST. CPP (RT.)
STA. 2252+00.00 (MP 4.763) TO STA. 2302+09.80 (MP 5.712) ℄ CONST. CPP (LT.)
STA. 3252+00.00 (MP (4.763) TO STA. 3302+10.72 (MP 5.712) ℄ CONST. CPP (RT.)

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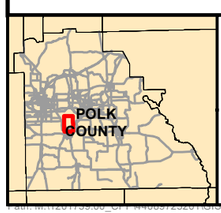


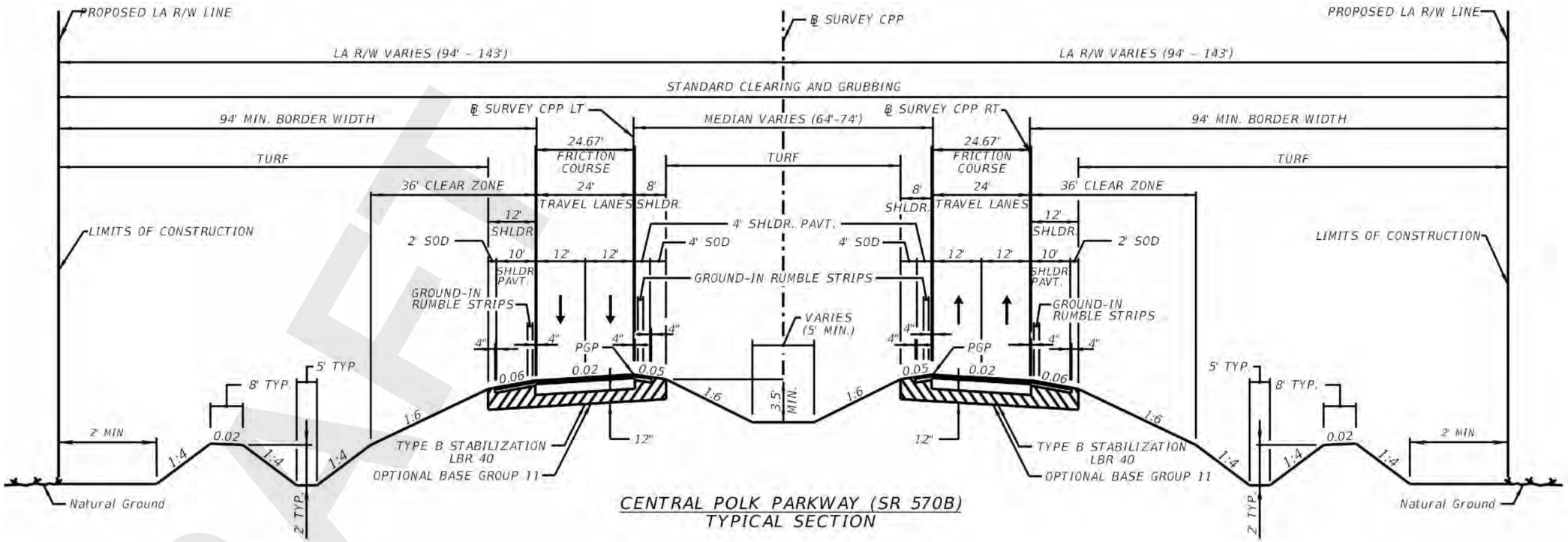
FLORIDA'S TURNPIKE

Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

Polk County, Florida
FPID Number: 440897-1-52-01

Proposed 4-Lane Typical Section

Figure 2



CENTRAL POLK PARKWAY (SR 570B)
TYPICAL SECTION

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 16,200
ESTIMATED DESIGN YEAR = 2045 AADT = 24,600
K = 10% D = 56.5% T = 12.3% (24 HOUR)
DESIGN HOUR T = 7.0%
2045 TRUCK DDHV = 97
DESIGN SPEED = 70 MPH
POSTED SPEED = 65 MPH

STATION LIMITS

STA. 1045+83.50 (MP 0.858) TO STA. 1317+47.99 (MP 6.003)

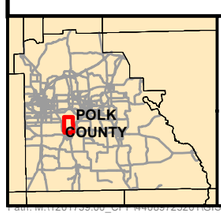
TRAVEL LANES

OPTIONAL BASE GROUP 11 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (7.0") AND
FRICTION COURSE FC-5 (0.75") (PG 76-22)

SHOULDER PAVEMENT

OPTIONAL BASE GROUP 2 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1.5")

DRAFT



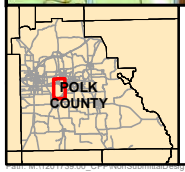
FLORIDA'S TURNPIKE

Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

Polk County, Florida
FPID Number: 440897-1-52-01

Proposed 4-Lane Typical Section

Figure 2a



Legend

Proposed ROW

FLORIDA'S TURNPIKE

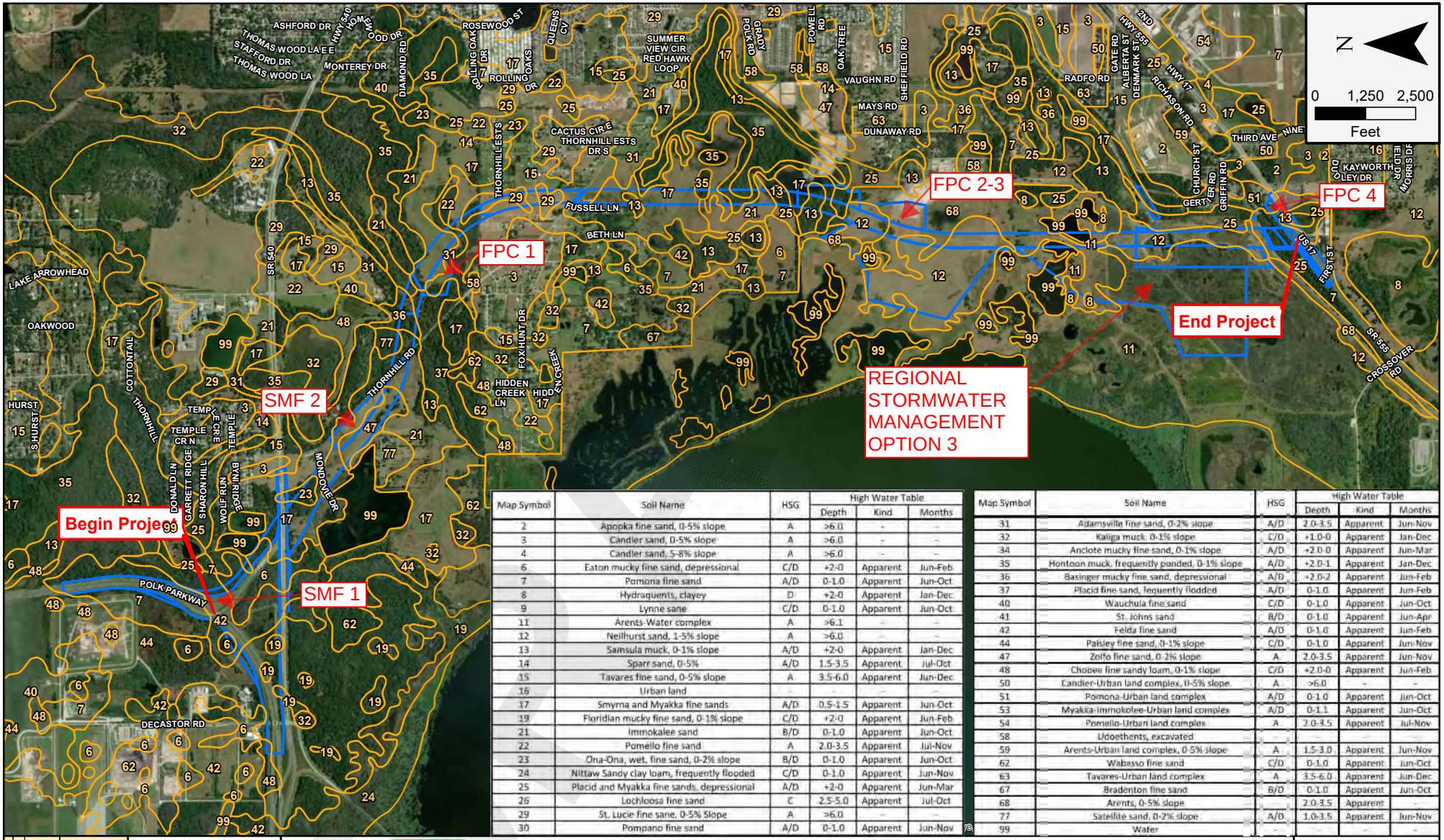
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

Polk County, Florida
FPID Number: 440897-1-52-01

USGS Quadrangle Map

Figure 3

DRAFT



Map Symbol	Soil Name	HSG	High Water Table		
			Depth	Kind	Months
2	Apopka fine sand, 0-5% slope	A	>6.0	-	-
3	Candler sand, 0-5% slope	A	>6.0	-	-
4	Candler sand, 5-8% slope	A	>6.0	-	-
6	Eaton mucky fine sand, depressional	C/D	+2-0	Apparent	Jun-Feb
7	Pomona fine sand	A/D	0-1.0	Apparent	Jun-Oct
8	Hydraquents, clayey	D	+2-0	Apparent	Jan-Dec
9	Lynne sane	C/D	0-1.0	Apparent	Jun-Oct
11	Arents-Water complex	A	>6.1	-	-
12	Neilhurst sand, 1-5% slope	A	>6.0	-	-
13	Samsula muck, 0-1% slope	A/D	+2-0	Apparent	Jan-Dec
14	Sparr sand, 0-5%	A/D	1.5-3.5	Apparent	Jul-Oct
15	Tavares fine sand, 0-5% slope	A	3.5-6.0	Apparent	Jun-Dec
16	Urban land	-	-	-	-
17	Smyrna and Myakka fine sands	A/D	0.5-1.5	Apparent	Jun-Oct
19	Floridian mucky fine sand, 0-1% slope	C/D	+2-0	Apparent	Jun-Feb
21	Immokalee sand	B/D	0-1.0	Apparent	Jun-Oct
22	Pomello fine sand	A	2.0-3.5	Apparent	Jul-Nov
23	Ona-Ona, wet, fine sand, 0-2% slope	B/D	0-1.0	Apparent	Jun-Oct
24	Nittaw Sandy clay loam, frequently flooded	C/D	0-1.0	Apparent	Jun-Nov
25	Placid and Myakka fine sands, depressional	A/D	+2-0	Apparent	Jun-Mar
26	Lochloosa fine sand	C	2.5-5.0	Apparent	Jul-Oct
29	St. Lucie fine sane, 0-5% Slope	A	>6.0	-	-
30	Pompano fine sand	A/D	0-1.0	Apparent	Jun-Nov

Map Symbol	Soil Name	HSG	High Water Table		
			Depth	Kind	Months
31	Adamsville fine sand, 0-2% slope	A/D	2.0-3.5	Apparent	Jun-Nov
32	Kaliga muck, 0-1% slope	C/D	+1.0-0	Apparent	Jan-Dec
34	Anclote mucky fine sand, 0-1% slope	A/D	+2.0-0	Apparent	Jun-Mar
35	Hontoon muck, frequently ponded, 0-1% slope	A/D	+2.0-1	Apparent	Jan-Dec
36	Basinger mucky fine sand, depressional	A/D	+2.0-2	Apparent	Jun-Feb
37	Placid fine sand, fequently flodded	A/D	0-1.0	Apparent	Jun-Feb
40	Wauchula fine sand	C/D	0-1.0	Apparent	Jun-Oct
41	St. Johns sand	B/D	0-1.0	Apparent	Jun-Apr
42	Felda fine sand	A/D	0-1.0	Apparent	Jun-Feb
44	Paisley fine sand, 0-1% slope	C/D	0-1.0	Apparent	Jun-Nov
47	Zolfo fine sand, 0-2% slope	A	2.0-3.5	Apparent	Jun-Nov
48	Chobee fine sandy loam, 0-1% slope	C/D	+2.0-0	Apparent	Jun-Feb
50	Candler-Urban land complex, 0-5% slope	A	>6.0	-	-
51	Pomona-Urban land complex	A/D	0-1.0	Apparent	Jun-Oct
53	Myakka-Immokolee-Urban land complex	A/D	0-1.1	Apparent	Jun-Oct
54	Pomello-Urban land complex	A	2.0-3.5	Apparent	Jul-Nov
58	Udoethents, excavated	-	-	-	-
59	Arents-Urban land complex, 0-5% slope	A	1.5-3.0	Apparent	Jun-Nov
62	Wabasso fine sand	C/D	0-1.0	Apparent	Jun-Oct
63	Tavares-Urban land complex	A	3.5-6.0	Apparent	Jun-Dec
67	Bradenton fine sand	B/D	0-1.0	Apparent	Jun-Oct
68	Arents, 0-5% slope		2.0-3.5	Apparent	-
77	Satellite sand, 0-2% slope	A/D	1.0-3.5	Apparent	Jun-Nov
99	Water	-	-	-	-

Legend

- Soils
- Proposed ROW

FLORIDA'S TURNPIKE

Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

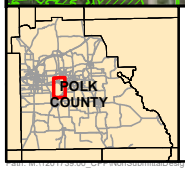
Polk County, Florida

FPID Number: 440897-1-52-01

NRCS Soils Map

Figure 4

Path: M:\1201739.00_CPP\NonSubmittalDesign\44089725201\GIS\Maps\Figures\CPP - Figure 4 - Soils Map.mxd 10/19/2020



Legend

- Proposed ROW
- FEMA Zone A
- FEMA Zone AE

FLORIDA'S TURNPIKE

Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

Polk County, Florida
FPID Number: 440897-1-52-01

FEMA Floodplain Map

Figure 5

NOTES TO USERS

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NGS Information Services
National Geodetic Survey, NOAA,
N/NGS12
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Example Datum Offset Calculation
using datum offset table below
NAVD88 = NGVD29 + (datum offset value)

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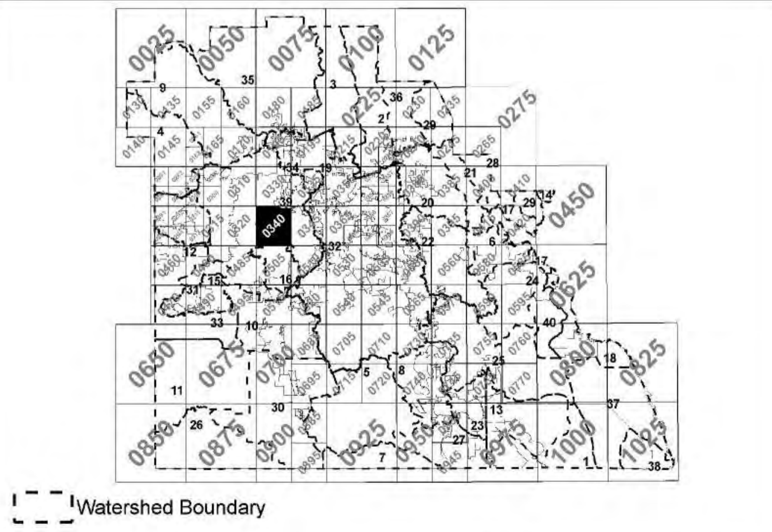


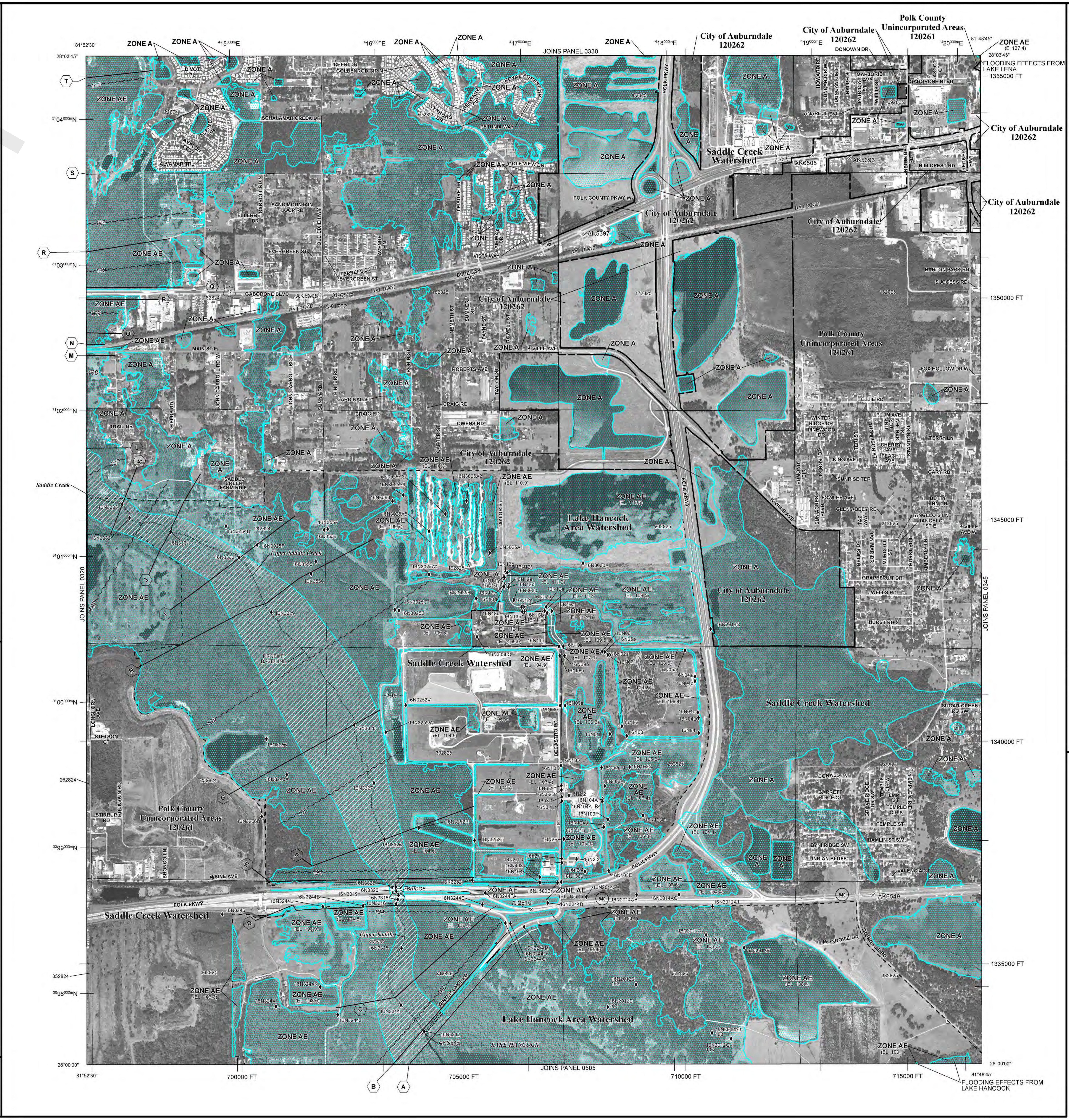
Watershed Boundary

Watershed*	Datum Offset (ft)	Study Type	Total Rainfall Volume (in) 1 Day 100yr	5 Day 100yr	Multi-Day Rainfall Used**	Date of Model
1. Arbuckle Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
2. Big Creek East	-0.96	Historical Delineation				
3. Big Creek West	-0.96	Historical Delineation				
4. Blackwater Creek	-0.96	Redelineation				
5. Bowlegs Creek	-0.96	Redelineation				
6. Catfish Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
7. Charlie Creek	-0.96	Historical Delineation				
8. Crooked Lake	-0.96	Redelineation				
9. Gator Creek	-0.96	Historical Delineation				
10. Homeland	-0.96	Redelineation				
11. Hookers Prairie/South Alafia	-0.96	Historical Delineation				
12. Itchepackesassa Creek	-0.96	Redelineation				
13. Lake Arbuckle	-1.0	Historical Delineation	11.0		YES	11/19/03
14. Lake Cypress	-1.0	Historical Delineation	11.0		YES	11/19/03
15. Lake Drain	-0.96	Redelineation				
16. Lake Hancock Area	-0.87	Detailed	10.5	16.0	YES	04/03/13
17. Lake Hatchineha	-1.0	Redelineation	11.0		YES	11/19/03
18. Lake Kissimmee	-1.0	Redelineation	11.0		YES	11/19/03
19. Lake Van	-0.86	Detailed	10.0	16.0	NO	09/13/12
20. Lake Marion	-1.0	Redelineation	11.0		YES	11/19/03
21. Lake Marion Creek	-1.0	Detailed	--		YES	11/23/09
22. Lake Pierce	-1.0	Redelineation	11.0		YES	11/19/03
23. Lake Reedy	-1.0	Redelineation	11.0		NO	11/19/03
24. Lake Rosalie	-1.0	Redelineation	11.0		YES	11/19/03
25. Lake Weohyakapka	-1.0	Redelineation	11.0		YES	11/19/03
26. Little Payne Creek	-0.96	Historical Delineation				
27. Livingston Creek	-1.0	Historical Delineation	11.0		NO	11/19/03
28. London Creek	-1.0	Limited Detailed	--		YES	11/23/09
29. Lower Reedy Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
30. McCullough Creek	-0.96	Redelineation				
31. Mulberry (aka Christina)	-1.1	Detailed	10.5	16.0	NO	12/16/10
32. Peace Creek	-0.91	Detailed	9.0	16.0	YES	10/23/13
33. Poley Creek/North Alafia	-0.96	Redelineation				
34. Polk City	-0.86	Detailed	10.0	16.0	NO	09/13/12
35. Pony Creek	-0.96	Historical Delineation				
36. Reedy Creek	-0.96	Historical Delineation				
37. S-65A	-1.0	Historical Delineation	11.0		YES	11/19/03
38. S-65BC	-1.0	Historical Delineation	11.0		YES	11/19/03
39. Saddle Creek	-0.96	Redelineation				
40. Tiger Lake	-1.0	Historical Delineation	11.0		YES	11/19/03

* All Polk County watersheds listed.

** Mulit-Day event used only in specific sub-basins, refer to FIS report.

This digital Flood Insurance Rate Map (FIRM) was produced through a cooperative partnership between the Southwest Florida Water Management District (SWFWMD), the South Florida Water Management District (SFWMD), Polk County, Federal Emergency Management Agency (FEMA), and the associated communities within Polk County.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities

~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)——(A)	Cross section line
(23)- - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4275000mE	1000-meter Universal Transverse Mercator grid ticks, zone 17
6000000 FT	5000-foot grid values: Florida State Plane coordinate system, West Zone (FIPSZONE = 0902), Transverse Mercator projection
DX5510×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile
222218	Section - Township - Range
7NX1000 ♦	Junction - Points defining locations of flow accumulation or hydraulic connectivity. The first two characters of the Junction name represents the specific watershed (as shown in the map collar locator map) in which the Junction is located (note that boundary Junctions, without an associated floodplain, are also shown).
-·-·-·-·-	Hydraulic Connectivity - Flow pathway between junctions.

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
December 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

December 22, 2016 – for reasons of revision, refer to the Notice to Flood Insurance Users contained within the Flood Insurance Study (FIS) report that accompanies this FIRM.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0340G

FIRM
FLOOD INSURANCE RATE MAP
POLK COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 340 OF 1025

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
AUBURNDALE, CITY OF	120262	0340	G
POLK COUNTY	120261	0340	G

Figure 5B

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12105C0340G

MAP REVISED
DECEMBER 22, 2016

Federal Emergency Management Agency

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National Geodetic Survey, NOAA,
N/NGS12
SSMC-3, #9202
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Silver Spring, Maryland 20910-3282
(301) 713-3242

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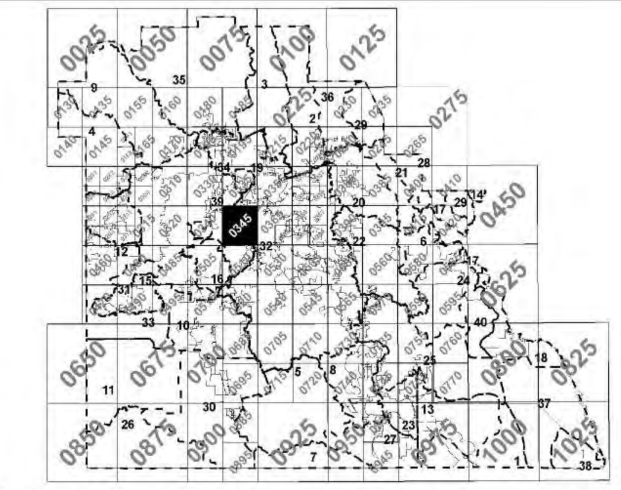


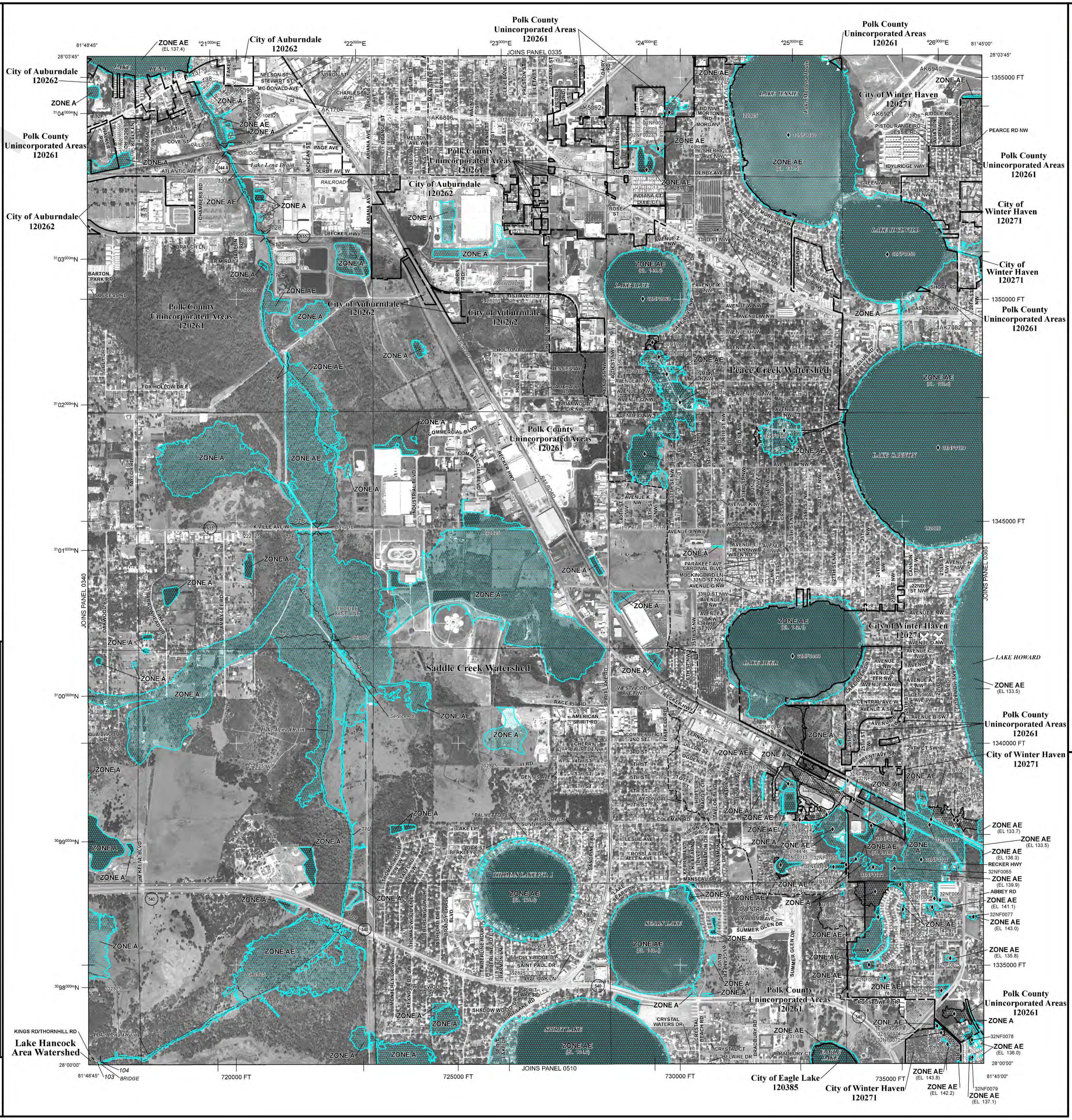
Watershed Boundary

Watershed*	Datum Offset (ft)	Study Type	Total Rainfall Volume (in) 1 Day 100yr	5 Day 100yr	Multi-Day Rainfall Used**	Date of Model
1. Arbuckle Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
2. Big Creek East	-0.96	Historical Delineation				
3. Big Creek West	-0.96	Historical Delineation				
4. Blackwater Creek	-0.96	Redelineation				
5. Bowlegs Creek	-0.96	Redelineation				
6. Catfish Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
7. Charlie Creek	-0.96	Historical Delineation				
8. Crooked Lake	-0.96	Redelineation				
9. Gator Creek	-0.96	Historical Delineation				
10. Homeland	-0.96	Redelineation				
11. Hookers Prairie/South Alafia	-0.96	Historical Delineation				
12. Itchepackesassa Creek	-0.96	Redelineation				
13. Lake Arbuckle	-1.0	Historical Delineation	11.0		YES	11/19/03
14. Lake Cypress	-1.0	Historical Delineation	11.0		YES	11/19/03
15. Lake Drain	-0.96	Redelineation				
16. Lake Hancock Area	-0.87	Detailed	10.5	16.0	YES	04/03/13
17. Lake Hatchineha	-1.0	Redelineation	11.0		YES	11/19/03
18. Lake Kissimmee	-1.0	Redelineation	11.0		YES	11/19/03
19. Lake Van	-0.86	Detailed	10.0	16.0	NO	09/13/12
20. Lake Marion	-1.0	Redelineation	11.0		YES	11/19/03
21. Lake Marion Creek	-1.0	Detailed	–		YES	11/23/09
22. Lake Pierce	-1.0	Redelineation	11.0		YES	11/19/03
23. Lake Reedy	-1.0	Redelineation	11.0		NO	11/19/03
24. Lake Rosalie	-1.0	Redelineation	11.0		YES	11/19/03
25. Lake Weohyakapka	-1.0	Redelineation	11.0		YES	11/19/03
26. Little Payne Creek	-0.96	Historical Delineation				
27. Livingston Creek	-1.0	Historical Delineation	11.0		NO	11/19/03
28. London Creek	-1.0	Limited Detailed	–		YES	11/23/09
29. Lower Reedy Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
30. McCullough Creek	-0.96	Redelineation				
31. Mulberry (aka Christina)	-1.1	Detailed	10.5	16.0	NO	12/16/10
32. Peace Creek	-0.91	Detailed	9.0	16.0	YES	10/23/13
33. Poley Creek/North Alafia	-0.96	Redelineation				
34. Polk City	-0.86	Detailed	10.0	16.0	NO	09/13/12
35. Pony Creek	-0.96	Historical Delineation				
36. Reedy Creek	-0.96	Historical Delineation				
37. S-65A	-1.0	Historical Delineation	11.0		YES	11/19/03
38. S-65BC	-1.0	Historical Delineation	11.0		YES	11/19/03
39. Saddle Creek	-0.96	Redelineation				
40. Tiger Lake	-1.0	Historical Delineation	11.0		YES	11/19/03

* All Polk County watersheds listed.

** Mulit-Day event used only in specific sub-basins, refer to FIS report.

This digital Flood Insurance Rate Map (FIRM) was produced through a cooperative partnership between the Southwest Florida Water Management District (SWFWMD), the South Florida Water Management District (SFWMD), Polk County, Federal Emergency Management Agency (FEMA), and the associated communities within Polk County.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities

~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)——(A)	Cross section line
(23)- - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4275000mE	1000-meter Universal Transverse Mercator grid ticks, zone 17
6000000 FT	5000-foot grid values: Florida State Plane coordinate system, West Zone (FIPSZONE = 0902), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile
222218	Section - Township - Range
7NX1000 ♦	Junction - Points defining locations of flow accumulation or hydraulic connectivity. The first two characters of the Junction name represents the specific watershed (as shown in the map collar locator map) in which the Junction is located (note that boundary Junctions, without an associated floodplain, are also shown).
-·-·-·-·-	Hydraulic Connectivity - Flow pathway between junctions.

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
December 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
December 22, 2016 – for reasons of revision, refer to the Notice to Flood Insurance Users contained within the Flood Insurance Study (FIS) report that accompanies this FIRM.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0345G

FIRM

FLOOD INSURANCE RATE MAP

POLK COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 345 OF 1025

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
AUBURNDALE, CITY OF	120262	0345	G
EAGLE LAKE, CITY OF	120385	0345	G
POLK COUNTY	120261	0345	G
WINTER HAVEN, CITY OF	120271	0345	G

Figure 5C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 12105C0345G

MAP REVISED DECEMBER 22, 2016

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded tenth-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

Base map information shown on this FIRM was provided in digital format by the Southwest Florida Water Management District. The original orthophotographic base imagery was provided in color with a one-foot pixel resolution at a scale of 1" = 100' from photography flown January - March 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **MapService Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

DATUM INFORMATION

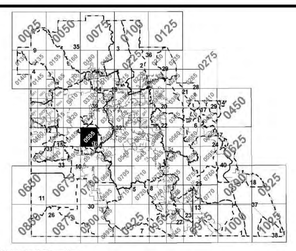
The **projection** used in the preparation of this map was State Plane Florida West. The **horizontal datum** was HARN. GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane Zone used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not reflect the accuracy of this FIRM.

Base Flood Elevation (BFEs) on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
National Geodetic Survey, NOAA,
N/NGS12
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Example Datum Offset Calculation
using datum offset table below
NAVD88 = NGVD29 + (datum offset value)

To obtain current elevation, description, and/or location information for **benchmarks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.



Watershed*	Datum Offset (ft)	Study Type	Total Rainfall Volume (in) 1 Day 100yr	5 Day 100yr	Multi-Day Rainfall Used**	Date of Model
1. Arbuckle Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
2. Big Creek East	-0.96	Historical Delineation				
3. Big Creek West	-0.96	Historical Delineation				
4. Blackwater Creek	-0.96	Redelineation				
5. Bowlegs Creek	-0.96	Redelineation				
6. Catfish Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
7. Charlie Creek	-0.96	Historical Delineation				
8. Crooked Lake	-0.96	Redelineation				
9. Gator Creek	-0.96	Historical Delineation				
10. Homeland	-0.96	Redelineation				
11. Hookers Prairie/South Alafia	-0.96	Historical Delineation				
12. Itchepackesassa Creek	-0.96	Redelineation				
13. Lake Arbuckle	-1.0	Historical Delineation	11.0		YES	11/19/03
14. Lake Cypress	-1.0	Historical Delineation	11.0		YES	11/19/03
15. Lake Drain	-0.96	Redelineation				
16. Lake Hancock Area	-0.87	Detailed	10.5	16.0	YES	04/03/13
17. Lake Hatchineha	-1.0	Redelineation	11.0		YES	11/19/03
18. Lake Kissimmee	-1.0	Redelineation	11.0		YES	11/19/03
19. Lake Van	-0.86	Detailed	10.0	16.0	NO	09/13/12
20. Lake Marion	-1.0	Redelineation	11.0		YES	11/19/03
21. Lake Marion Creek	-1.0	Detailed	--		YES	11/23/09
22. Lake Pierce	-1.0	Redelineation	11.0		YES	11/19/03
23. Lake Reedy	-1.0	Redelineation	11.0		NO	11/19/03
24. Lake Rosalie	-1.0	Redelineation	11.0		YES	11/19/03
25. Lake Wauchula	-1.0	Redelineation	11.0		YES	11/19/03
26. Little Payne Creek	-0.96	Historical Delineation				
27. Livingston Creek	-1.0	Historical Delineation	11.0		NO	11/19/03
28. London Creek	-1.0	Limited Detailed	--		YES	11/23/09
29. Lower Reedy Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
30. McCullough Creek	-0.96	Redelineation				
31. Mulberry (aka Christina)	-1.1	Detailed	10.5	16.0	NO	12/16/10
32. Peace Creek	-0.91	Detailed	9.0	16.0	YES	10/23/13
33. Poley Creek/North Alafia	-0.96	Redelineation				
34. Polk City	-0.86	Detailed	10.0	16.0	NO	09/13/12
35. Pony Creek	-0.96	Historical Delineation				
36. Reedy Creek	-0.96	Historical Delineation				
37. S-65A	-1.0	Historical Delineation	11.0		YES	11/19/03
38. S-65BC	-1.0	Historical Delineation	11.0		YES	11/19/03
39. Saddle Creek	-0.96	Redelineation				
40. Tiger Lake	-1.0	Historical Delineation	11.0		YES	11/19/03

* All Polk County watersheds listed.

** Multi-Day event used only in specific sub-basins, refer to FIS report.

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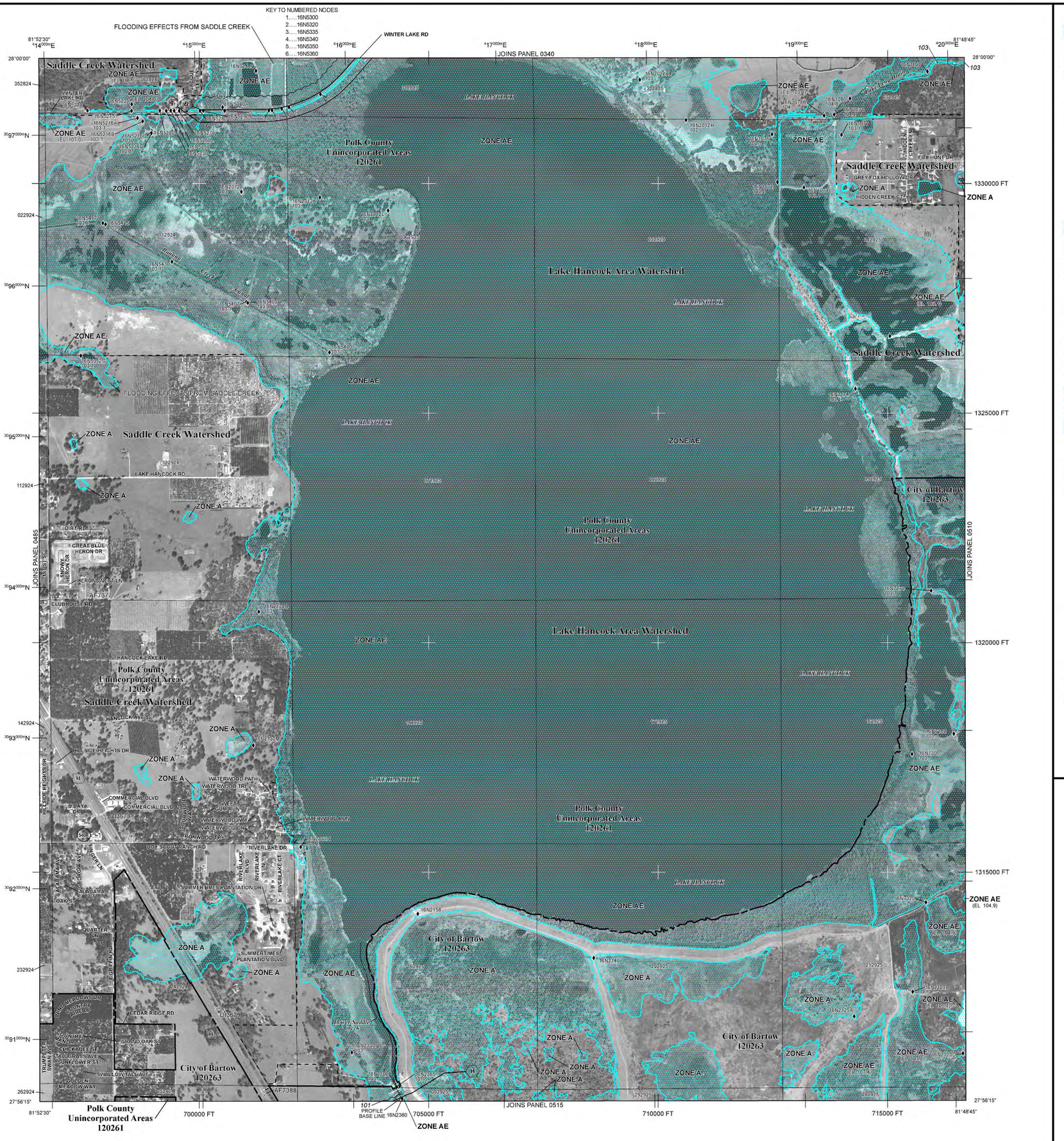

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 - - - - 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
475000mE	1000-meter Universal Transverse Mercator grid ticks, zone 17
6000000 FT	5000-foot grid values: Florida State Plane coordinate system, West Zone (FIPSZONE = 0902), Transverse Mercator projection
DX5510×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile
222218	Section - Township - Range
7NX1000 ♦	Junction - Points defining locations of flow accumulation or hydraulic connectivity. The first two characters of the Junction name represents the specific watershed (as shown in the map collar locator map) in which the Junction is located (note that boundary Junctions, without an associated floodplain, are also shown).
-·-·-·-·-·-	Hydraulic Connectivity - Flow pathway between junctions.

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
December 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

December 22, 2016 – for reasons of revision, refer to the Notice to Flood Insurance Users contained within the Flood Insurance Study (FIS) report that accompanies this FIRM.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0505G

FIRM

FLOOD INSURANCE RATE MAP

POLK COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 505 OF 1025

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BARTOW, CITY OF	120283	0505	G
POLK COUNTY	120261	0505	G

Figure 5D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12105C0505G

MAP REVISED
DECEMBER 22, 2016

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

Base map information shown on this FIRM was provided in digital format by the Southwest Florida Water Management District. The original orthophotographic base imagery was provided in color with a one-foot pixel resolution at a scale of 1" = 100' from photography flown January - March 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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DATUM INFORMATION

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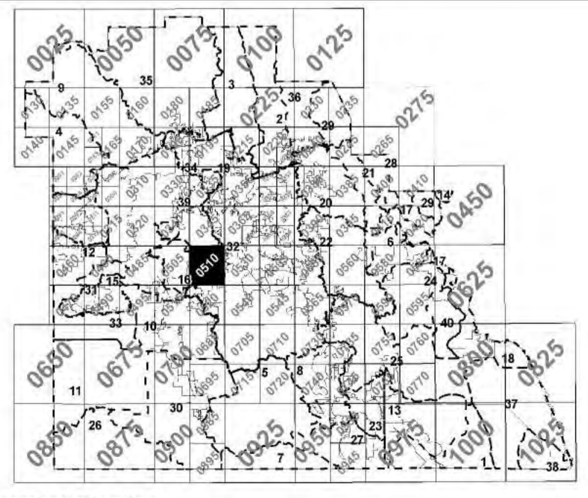
NGS Information Services
National Geodetic Survey, NOAA,
N/NGS12
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Example Datum Offset Calculation
using datum offset table below
NAVD88 = NGVD29 + (datum offset value)

To obtain current elevation, description, and/or location information for **benchmarks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

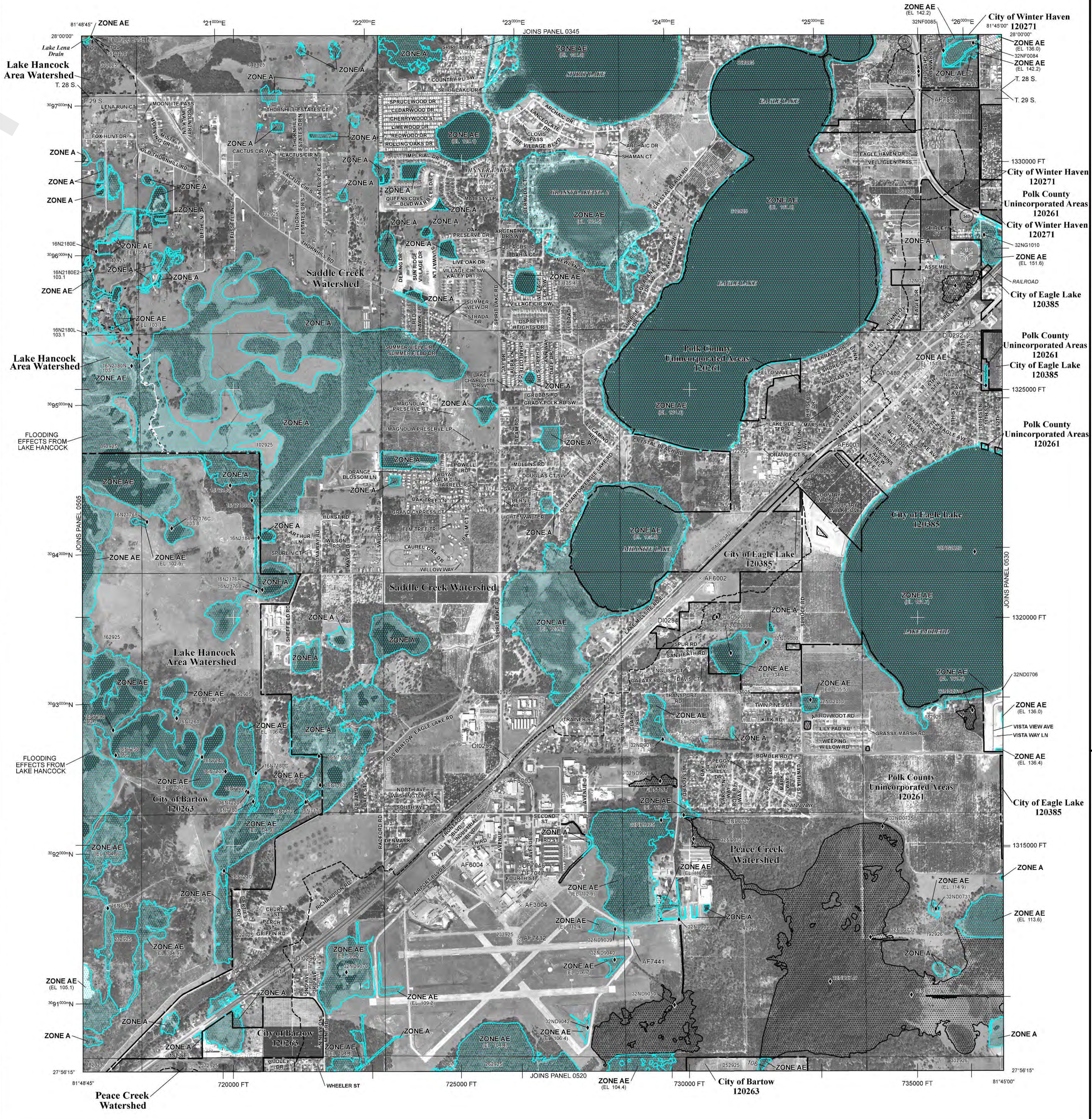


Watershed Boundary

Watershed*	Datum Offset (ft)	Study Type	Total Rainfall Volume (in) 1 Day 100yr	5 Day 100yr	Multi-Day Rainfall Used**	Date of Model
1. Arbuckle Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
2. Big Creek East	-0.96	Historical Delineation				
3. Big Creek West	-0.96	Historical Delineation				
4. Blackwater Creek	-0.96	Redelineation				
5. Bowlegs Creek	-0.96	Redelineation				
6. Catfish Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
7. Charlie Creek	-0.96	Historical Delineation				
8. Crooked Lake	-0.96	Redelineation				
9. Gator Creek	-0.96	Historical Delineation				
10. Homeland	-0.96	Redelineation				
11. Hookers Prairie/South Alafia	-0.96	Historical Delineation				
12. Itchepackesassa Creek	-0.96	Redelineation				
13. Lake Arbuckle	-1.0	Historical Delineation	11.0		YES	11/19/03
14. Lake Cypress	-1.0	Historical Delineation	11.0		YES	11/19/03
15. Lake Drain	-0.96	Redelineation				
16. Lake Hancock Area	-0.87	Detailed	10.5	16.0	YES	04/03/13
17. Lake Hatchineha	-1.0	Redelineation	11.0		YES	11/19/03
18. Lake Kissimmee	-1.0	Redelineation	11.0		YES	11/19/03
19. Lake Van	-0.86	Detailed	10.0	16.0	NO	09/13/12
20. Lake Marion	-1.0	Redelineation	11.0		YES	11/19/03
21. Lake Marion Creek	-1.0	Detailed	--		YES	11/23/09
22. Lake Pierce	-1.0	Redelineation	11.0		YES	11/19/03
23. Lake Reedy	-1.0	Redelineation	11.0		NO	11/19/03
24. Lake Rosalie	-1.0	Redelineation	11.0		YES	11/19/03
25. Lake Weohyakapka	-1.0	Redelineation	11.0		YES	11/19/03
26. Little Payne Creek	-0.96	Historical Delineation				
27. Livingston Creek	-1.0	Historical Delineation	11.0		NO	11/19/03
28. London Creek	-1.0	Limited Detailed	--		YES	11/23/09
29. Lower Reedy Creek	-1.0	Historical Delineation	11.0		YES	11/19/03
30. McCullough Creek	-0.96	Redelineation				
31. Mulberry (aka Christina)	-1.1	Detailed	10.5	16.0	NO	12/16/10
32. Peace Creek	-0.91	Detailed	9.0	16.0	YES	10/23/13
33. Poley Creek/North Alafia	-0.96	Redelineation				
34. Polk City	-0.86	Detailed	10.0	16.0	NO	09/13/12
35. Pony Creek	-0.96	Historical Delineation				
36. Reedy Creek	-0.96	Historical Delineation				
37. S-65A	-1.0	Historical Delineation	11.0		YES	11/19/03
38. S-65BC	-1.0	Historical Delineation	11.0		YES	11/19/03
39. Saddle Creek	-0.96	Redelineation				
40. Tiger Lake	-1.0	Historical Delineation	11.0		YES	11/19/03

* All Polk County watersheds listed.
** Mulit-Day event used only in specific sub-basins, refer to FIS report.

This digital Flood Insurance Rate Map (FIRM) was produced through a cooperative partnership between the Southwest Florida Water Management District (SWFWMD), the South Florida Water Management District (SFWMD), Polk County, Federal Emergency Management Agency (FEMA), and the associated communities within Polk County.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities

~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A —— A	Cross section line
23 - - - - 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4275000mE	1000-meter Universal Transverse Mercator grid ticks, zone 17
6000000 FT	5000-foot grid values: Florida State Plane coordinate system, West Zone (FIPSZONE = 0902), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile
222218	Section - Township - Range
7NX1000 ♦	Junction - Points defining locations of flow accumulation or hydraulic connectivity. The first two characters of the Junction name represents the specific watershed (as shown in the map collar locator map) in which the Junction is located (note that boundary Junctions, without an associated floodplain, are also shown).
-·-·-·-·-	Hydraulic Connectivity - Flow pathway between junctions.

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
December 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
December 22, 2016 – for reasons of revision, refer to the Notice to Flood Insurance Users contained within the Flood Insurance Study (FIS) report that accompanies this FIRM.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 500 1,000 1,500 2,000 FEET
300 0 300 600 METERS

NFIP

PANEL 0510G

FIRM
FLOOD INSURANCE RATE MAP
POLK COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 510 OF 1025
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BARTOW, CITY OF	120263	0510	G
EAGLE LAKE, CITY OF	120385	0510	G
POLK COUNTY	120261	0510	G
WINTER HAVEN, CITY OF	120271	0510	G

Figure 5E

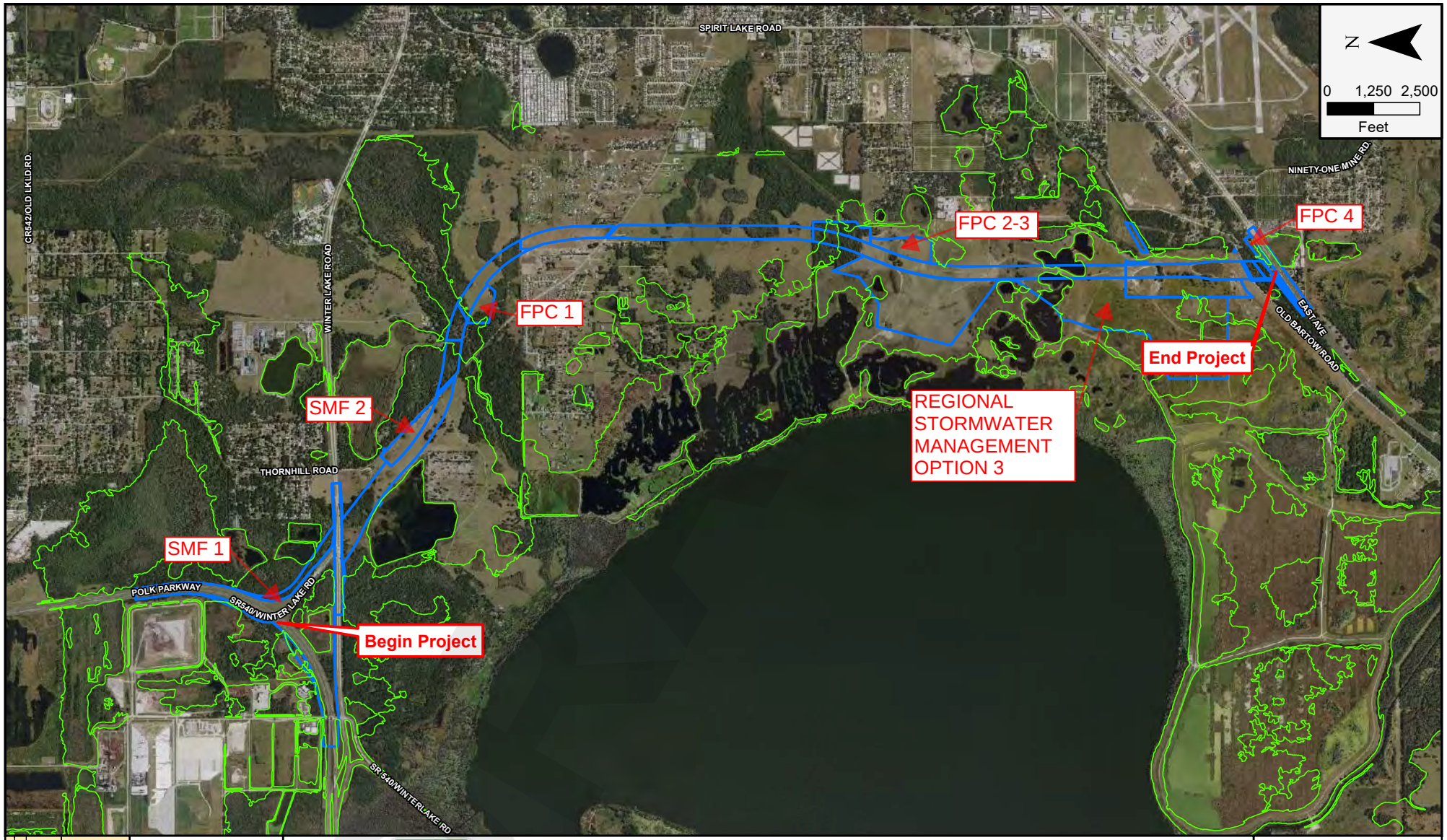
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

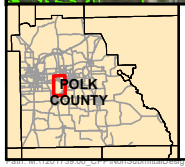
MAP NUMBER 12105C0510G

MAP REVISED DECEMBER 22, 2016

NATIONAL FLOOD INSURANCE PROGRAM

Federal Emergency Management Agency





Legend

- Floodplain
- Proposed ROW

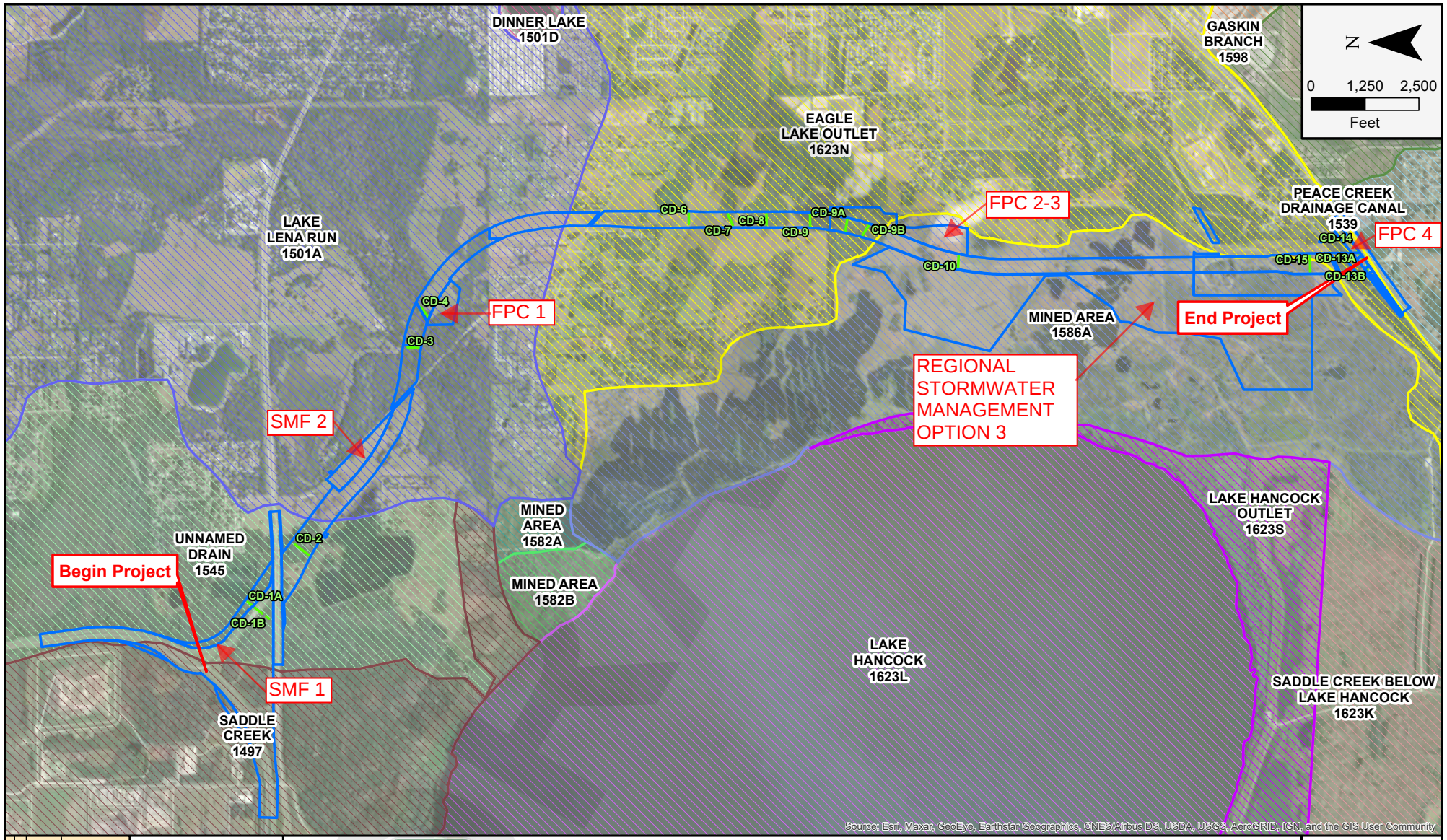
FLORIDA'S TURNPIKE

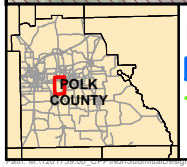
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

Polk County, Florida
FPID Number: 440897-1-52-01

SWFWMD Floodplain Map

Figure 6





Legend

- Proposed ROW
- Cross Drain

FLORIDA'S TURNPIKE

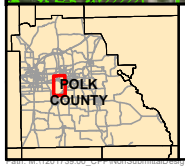
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

Polk County, Florida

FPID Number: 440897-1-52-01

Impaired Waterbodies Map

Figure 7



Legend

- Proposed ROW
- FEMA Zone A
- FEMA Zone AE

FLORIDA'S TURNPIKE

Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)

Polk County, Florida
FPID Number: 440897-1-52-01

FEMA Floodplain Map with Area Callouts

Figure 8

APPENDIX B
SWFWMD COORDINATION

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THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER: PA 399486

Date:	9/04/2012
Time:	10:00 AM
Project Name:	Polk Parkway East Side Lake Hancock – Southern Terminus US 17
Attendees:	Richard Alt, Joe Andress, Terry Cartwright, Craig Jenne, Tammy Kreisle, Tom Pride, URS Corp 813-675-6631, terry.cartwright@urs.com Joe Quinn SWFWMD

County:	Polk	**Sec/Twp/Rge:**	10/29/25 center point
Total Land Acreage:	100+ acres	**Project Acreage:**	100+ acres

Prior On-Site/Off-Site Permit Activity:
- Vacant – District owned lands
- From 570 to US 17

Project Overview:
- DRI – Old Florida Plantation; FDOT ETDM #8487, PA 7093
- Extension of Polk County Parkway

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)
- Provide the limits of jurisdictional wetlands.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- Demonstrate elimination and reduction of wetland impacts.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)
- Existing roadway/intersections.
- WBID - Julie.Espy@dep.state.fl.us contact Julie Espy to verify impairments, if any.
- Possibly discharging to impaired waters.
- On District lands.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)
- Demonstrate that discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- For projects or portions of projects that discharge to a closed basin, limit the post-development 100-year discharge volume to the pre-development 100-year, 24-hour volume.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)
- Provide water quality treatment for entire project area and all contributing off-site flows.
- In addition, if the project discharges to an impaired water body, must provide a net environmental improvement.
- Applicant must demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use.
- Also replace treatment function of existing ditches to be filled.
- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)
- N/A

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Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to the property owner(s).
- Provide proof of ownership in the form of a deed or contract for sale.
- Provide appropriate O&M instructions.
- Provide detailed construction surface water management plan.

Application Type and Fee Required:

- Individual Construction ERP – Sections A, C and E of the ERP Application.
- - $4,550.00

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- Should do another pre-application meeting.

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

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Meeting Minutes

Meeting: SWFWMD/FDOT Monthly Coordination Meeting – November 2014

Project: FPID 431641-1
Central Polk Parkway Segment 1

Date/Time: November 5, 2014 / 2:00 PM

Location: SWFWMD Tampa

Attendees: Brent Setchell FDOT, Nicole Monies FDOT, JP Marchand SWFWMD, David Kramer SWFWMD, Al Gagne SWFWMD, Craig Jenne URS, Jeff Blazowski URS

Prepared by: Jeff Blazowski - URS

Central Polk Parkway (CPP) Segment 1 was the first agenda item for November's monthly Coordination Meeting. The following is a brief summary of the discussion items:

- Brent provided a brief description of the project and scope of work. R/W funding CPP Segment 1 is anticipated in 2020.
- Stormwater treatment and attenuation is currently under design and is anticipated to occur in linear facilities within the mainline CPP ROW.
- Floodplain impacts are concentrated in two locations – Lake Lena Run in the northern portion of the project and the Millsite Lake Flow Way near the southern end of the project north of the proposed US-17 interchange.
- Prior to the meeting, SWFMWD Staff were provided graphics indicating potential floodplain compensation sites based on a "cup for cup" approach. This approach results in the need for very large sites to provide the required compensation. URS will next model, utilizing the latest SWFWMD Lake Hancock regional watershed model, the impacts the CPP Segment 1 has on Lake Hancock to determine if the sizes of the floodplain compensation sites can be reduced.
- Brent stated that the FDOT would like to explore the potential for regional stormwater management facility opportunities where FDOT and SWFWMD can partner together to create facilities that meet both project requirements and regional needs.
- JP Marchand w/SWFWMD indicated that he reviewed the locations of the "cup for cup" compensation sites and had no objections, but had not looked at the graphics to identify regional opportunities.
- Several ideas were discussed in general terms for regional opportunities at Lake Lena Run such as providing treatment and storage through the use of a filter marsh treating upland land uses that produce stormwater impairments, the use of bridges for the CPP

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Segment 1 crossing to improve wildlife movements and high flow capabilities (alleviating flooding conditions upland), and improvements to existing structures that are controlling inflows to Lake Hancock (such as the recently permitted Upper Peace Legacy Trail project).

- JP Marchand w/SWFWMD indicated that there are localized flooding issues adjacent to the Millsite Lake Flow Way crossing location identified in the proposed alignment. Improving the capacity of this outfall could be a regional improvement worth looking into. He indicated that Harry Downing was working on this issue for SWFWMD.
- Brent suggested that URS contact Jim Bernard with CardoTBE to discuss discharge conditions into Lake Hancock. They are working on the Upper Peace Legacy Trail which is located on the perimeter of Lake Hancock and may have information on these existing structures.
- URS agreed to develop preliminary alternatives similar to what was discussed and summarized above and present findings to both FDOT and SWFWMD to further the partnership discussions.

The CPP Segment 1 portion of the meeting adjourned at 2:50 pm.

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FPID 440897-2-32-01
SR 570B (Central Polk Parkway)
Segment 1 from SR 570 (Polk Parkway) to SR 35 (US 17)
PRE-APPLICATION MEETING WITH THE SWFWMD
THURSDAY, OCTOBER 11TH, 2018 9:30 A.M.
TPA BLDG 1 LAUREL OAKS VIDEO CONF RM 1005-1006

- ## Introductions/Project Description

The Central Polk Parkway (CPP) Segment 1 projects limits will extend from the SR 570 (Polk Parkway) north of SR 540 (Winter Lake Rd.) to SR 35 (U.S. 17), approximately 7 miles in Polk County. Access to this new alignment from the south at SR 35 (U.S. 17) will be by an at-grade intersection and the facility will feature All-Electronic Tolling (AET). This project also includes new interchanges at SR 570 (Polk Parkway) and SR 540 (Winter Lake Road (Rd.). Purpose of this meeting is to discuss and review the environmental and drainage permitting requirements and to confirm that the recent improvements to Lake Hancock have already been taken into account (no additional changes to attenuation, etc.).

- ## Lake Hancock Minimum Flow levels and Requirements

  - Lake Hancock control elevation was raised from 98.7' to 100.0' NGVD in order to maintain a desired minimum flow rate to the upper Peace Creek and to improve water quality.
  - Does SWFWMD need more water for the Lake Hancock Projects?
  - Are there any other SWFWMD projects to improve Lake Hancock water quality that this project can benefit by enhancing and/or contributing fund?
  - Does SWFWMD have any information or as-built plans on the improvements to the existing interconnected pond/lake system that outfalls to Lake Hancock? The connectivity of this pond system appears to be improved within the last few years based on the comparison with historical maps.
  - Opportunity for a joint-use pond at this location and provide treatment for the bridge and approaches crossing directly above this pond.

- ## Summary of Approach

  - Impaired Waterbodies: Saddle Creek (1497) – nutrients, fecal coliform
    Lake Hancock (1623L) – nutrients
    Lake Lena Run (1501A) – fecal coliform
  - Equivalent treatment will be provided in a regional pond in the middle of the project to compensate for the entire project. Additional treatment may be provided within the interchange infield areas and remnant parcels.

- Attenuation will be provided within the roadside ditches, interchange infield areas and remnant parcels prior to outfalling to existing waterways.
- SMF 1 is an existing in-field pond that will be expanded to provide treatment and attenuation for in the interchange of CPP & SR 540 at the north end of the project.
- SMF 2 is within a remnant parcel located at the northern Thornhill Road crossing of CPP, and we are planning to provide treatment and attenuation of Thornhill Road and a segment of the mainline in this pond.
- SMF Regional is sized to treat existing offsite area to compensate for the treatment requirements of the entire project.
- SMF 4 is an existing pond that is a part of an interconnected pond/lake system that outfalls to Lake Hancock. The connectivity of this pond system appears to be improved within the last few years based on the comparison of historical maps. We are considering treatment in this pond for the bridge and approaches crossing this pond and would like to request as-built plans and feedback from the SWFWMD.
- Floodplain encroachment will be evaluated using the latest FEMA maps and Cup for Cup compensation will be provided within the regional pond, infield areas, and remnant parcels.

- **Environmental**
  - Wetland Boundary Determinations
    - Originally done by URS Corporation for FDOT District 1 (2013)
    - Field reviewed by SWFWMD (2013)
    - Informal approval never requested
    - UMAM forms never completed or reviewed
  - Wetlands Impacts
    - Mainline (86.2 acres)
      - Forested (49.1 acres)
      - Herbaceous (13.6 acres)
      - Channels (0.2 acres)
      - Reservoirs (23.3 acres)
    - Ponds (5.1 acres)
      - Forested (2.9 acres)
      - Herbaceous (2.1 acres)
      - Reservoirs (0.1 acres)
    - Overall (91.3 acres)
      - Forested (52.0 acres)
      - Herbaceous (15.7 acres)

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        - Channels (0.2 acres)
        - Reservoirs (23.4 acres)
- Wetlands Mitigation
    - Project located within Peace River Basin
    - Boran Ranch Mitigation Bank
    - Peace River Mitigation Bank
- Protected Species
    - Consultation Area:
        - Florida Scrub Jay
        - Sand Skink / Blue-tailed Mole Skink*
        - Crested Caracara*
        - Florida Grasshopper Sparrow
        - Everglades Snail Kite
        - Florida Bonneted Bat
    - Additional Federal Species:
        - Wood Stork*
        - Eastern Indigo Snake*
    - Additional State Species:
        - Southeastern American Kestrel
        - Florida Sandhill Crane*
        - Sherman's Fox Squirrel
        - Wading Birds*
    - Additional Species:
        - Bald Eagle*
        - Osprey*
- Environmental Permits
    - Individual Environmental Resource Permit - SWFWMD
    - Individual 404 Dredge and Fill Permit - USACE
    - NPDES Permit - FDEP
    - Eagle Nest Take Permit - USFWS
    - Gopher Tortoise Relocation Permit - FFWCC
    - Nest Take Permit (potential) – FFWCC

*** = species observed within the project corridor**

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Date/Time	**Location**
Thursday, October 11, 2018, 10:30 am	SWFWMD Tampa Office

FDOT/Florida's Turnpike Enterprise (FTE) Project:
Central Polk Parkway (SR 570B) from Polk Parkway (SR 570)
To US 17 (SR 35)
FPID Number: 440897-2-32-01

Purpose of Meeting

Pre-Application meeting with the SWFWMD regulatory and land management to discuss and review the environmental and drainage permitting approach and requirements for the proposed project, to confirm that the recent improvements to Lake Hancock have already been taken into account (no additional changes to attenuation, etc.), and to discuss potential opportunities to work together.

Participants

Please see attached sign in sheet for all meeting participants

The following is a summary of the discussion items:

- Fred Gaines provided an overview of the meeting and asked if SWFWMD needs any water from this project for their Lake Hancock Minimum Flow Levels (MFL) projects. Additionally, a brief status of FDOT District One's Central Polk Parkway Segment 1 from US 17 to Polk Parkway project that has been stopped and taken over by Florida's Turnpike Enterprise.
- Tom Presby provided an overview of the project. The Central Polk Parkway (CPP) project limits will extend from the Polk Parkway (SR 570) north of Winter Lake Rd. (SR 540) to US 17 (SR 35), approximately 7 miles in Polk County. Access to this new alignment from the south at US 17 will be by an at-grade intersection and the facility will feature All-Electronic Tolling (AET). This project also includes new interchanges at Polk Parkway and Winter Lake Road.
- Ali Tayebnejad asked if attenuation would be required when outfalling through state owned lands into Lake Hancock.
- Dave Kramer stated that the additional flow rate would be acceptable as long as no adverse impacts are demonstrated to Lake Hancock, the surrounding watershed and the floodplain extent and elevation. There is information in the files regarding the MFL project, which raised lake levels to 100' NGVD.

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- Colleen Kruk indicated that there were lake connectivity projects by the County/SWFWMD and additional information and as-built plans may be available.
- Ali Tayebnejad requested as-built plans to be provided for the lake connectivity project crossing the CPP alignment approximately one mile north of US 17 (at station 1275 +/-).
- Ali Tayebnejad asked if there was an opportunity for a joint-use pond at this location to provide treatment for the bridge crossing directly above this pond. If treatment can be provided in this lake, then scuppers could be used to avoid conveying runoff to the ends of the bridge and disturbing the pond slopes.
    - Use of scuppers is not an issue, but raising the control elevation of the lake may effect upstream properties since this lake is a part of an interconnected conveyance system and cannot be isolated.
- Ali Tayebnejad asked if there are any other SWFWMD projects to improve Lake Hancock water quality that this project can benefit by enhancing and/or contributing funds.
    - During the meeting, no other project was identified that this project can benefit by joining or enhancing.
- Ali Tayebnejad indicated, since the entire project outfalls to Lake Hancock, a regional pond would be provided toward the middle of the project to provide equivalent treatment for the entire project. Additional treatment may be provided within the interchange infield areas and remnant parcels.
- Attenuation will be provided within the roadside ditches, interchange infield areas and remnant parcels prior to outfalling to existing waterways.
- SMF 1 is an existing in-field pond that will be expanded to provide treatment and attenuation for the interchange of CPP & SR 540 at the north end of the project.
- SMF 2 is within a remnant parcel located at the northern Thornhill Road crossing of CPP and the plan is to provide attenuation for Thornhill Road and a segment of the mainline in this pond.
- Floodplain encroachment will be evaluated using the latest FEMA maps and Cup for Cup compensation will be provided within the regional pond, infield areas, and remnant parcels.
- Erin Yao indicated that the floodplain encroachment and calculations will be based on the floodplain elevations and shadings in the effective FEMA maps (dated 2016), and the SWFWMD model will only be used as an additional tool when needed to clarify or determine information.
- Dave Kramer recommended obtaining and utilizing the most accurate and up-to-date data including the SWFWMD's model to determine if the roadway project will result in adverse impacts.
- Following the subsequent email correspondences, it was decided that floodplain encroachment will be evaluated using the 100-year 5-day stages from the latest SWFWMD's Lake Hancock model,

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and compensation will be provided using Cup for Cup methodology. The SWFWMD's Lake Hancock model may be used to evaluate improving conveyance across and adjacent to project (i.e., at SR 540, and Landfill Road) in order to reduce floodplain impacts, when it improves flooding and benefits this project.

- **Environmental**
  - Wetland Boundary Determinations
    - Mark Easley stated that wetland boundaries along the project alignment were originally done by URS Corporation for FDOT District One in 2013.
    - These boundaries were field reviewed by SWFWMD in 2013 but an informal approval was never requested as the project was stopped. In addition, no UMAM forms were completed by URS or reviewed by the SWFWMD.
    - Mark Easley stated that KCA had reviewed the wetland lines set by URS and it appeared that boundaries had not changes. He asked if it would be acceptable if SWFWMD spot checked the URS lines, and if wetland boundaries are still consistent with these line if they could be used. Al Gagne stated that would be acceptable.
      - Fred Gaines asked when KCA would perform the spot check. Mark responded that the review would occur early next year under Part B.
  - Wetlands Impacts
    - Mark Easley then discussed preliminary estimates of wetland impacts. Based on the existing proposed alignment and assuming everything within the right-of-way would be impacted, the total estimated impacts for the project mainline was approximately 86 acres. However, this number will likely decrease when the project design progresses. Mainline impacts include forested (49 acres) and herbaceous (14 acres) wetland, as well as man-made channels (<1 acre) and reservoirs (23 acres).
    - In addition to mainline wetland impacts, there will be approximately 5 acres of impacts associated with proposed stormwater ponds. These include forested (3 acres) and herbaceous (2 acres) wetlands, and reservoirs (<1 acre).
      - Forested (2.9 acres)
      - Herbaceous (2.1 acres)
      - Reservoirs (0.1 acres)
    - Overall (91.3 acres)
      - Forested (52.0 acres)

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        - Herbaceous (15.7 acres)
        - Channels (0.2 acres)
        - Reservoirs (23.4 acres)
- Wetlands Mitigation
    - Mark Easley stated that there are two wetland mitigation banks within the Peace River basin; Boran Ranch Mitigation Bank and Peace River Mitigation Bank.
    - With the anticipated acreage of wetland impact, Mark Easley questioned if there would be adequate mitigation credits available for the project. He asked if the SWFWMD had any additional enhancement projects ongoing or anticipated for Lake Hancock. Janie Hagberg stated that there were no new projects anticipated for Lake Hancock at this time.
    -
    - The Stewart Ranch Mitigation was discussed. It is a private property and SWFWMD has only had a pre-application meeting on this site. No further actions are in SWFWMD database.
    - Brent Setchell with District One noted that the Circle B Bar mitigation bank could also possibly be used. Brent noted that District One only used a small portion of the site.
- Protected Species
    - Mark Easley then discussed federal and state listed species that are known or anticipated to be within the project corridor.
    - The project falls within the consultation area of:
        - Florida Scrub Jay
        - Sand Skink / Blue-tailed Mole Skink
        - Crested Caracara
        - Florida Grasshopper Sparrow
        - Everglades Snail Kite
        - Florida Bonneted Bat (east of project)
    - The sand skink has been identified within the project alignment and the crested caracara have not been seen within the project alignment but within the project corridor.
    - Additional federal species that have been seen within the project corridor include:
        - Wood Stork
        - Eastern Indigo Snake
    - State species that could occur within the project area include:
        - Southeastern American Kestrel
        - Florida Sandhill Crane

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        - Sherman's Fox Squirrel
        - Wading Birds
    - Of these, the Florida Sandhill Crane and multiple wading birds have been seen within the project corridor.
    - Mark Easley stated that additional species that have been identified within the project corridor include the bald eagle and osprey.
        - Mark noted that the eagle's nest is active.
- Mark Easley stated that the anticipated environmental permits that would be needed for the project include:
    - Individual Environmental Resource Permit - SWFWMD
    - Individual 404 Dredge and Fill Permit - USACE
    - NPDES Permit - FDEP
    - Eagle Nest Take Permit - USFWS
    - Gopher Tortoise Relocation Permit - FFWCC
    - Nest Take Permit (potential) – FFWCC
- A question was asked to SWFWMD if they want FTE to relocate any Gopher Tortoise that require relocation from existing SWFWMD land to another location on SWFWMD property.
    - Colleen Kruk stated that they look at relocation on a case by case basis.
    - FTE noted that they would proceed with relocations per FFWCC guidelines.
    - Colleen noted that further discussion on the relocation of Gopher Tortoise would need to occur.

Action Items:

1. Interconnected lake/ponds as-built plans – FTE and KCA to request from SWFWMD.
2. Future coordination is needed for the Gopher Tortoise relocation.
3. Coordinate with Hamid Faraji with Cardno for the latest revisions to the SWFWMD model.
4. Coordinate with Dawn Turner for obtaining the latest SWFWMD model (determine if/how it will be utilized for this project).
5. Collen Kruk will be the point of contact for the SWFWMD lands.

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Central Polk Parkway Interagency Meeting 10/11 9:30

David Kramer	SWFWMD	dave.kramer@~~swfwmd~~ watermatters.org
Al Gagne	SWFWMD	albert.gagne@watermatters.org
Janie Hagberg	SWFWMD - SWIM	janie.hagberg@swfwmd.state.fl.us
THOMAS LAROUE	SWFWMD - SWIM	thomas.larove@swfwmd.state.fl.us
Fred Gaines	Atkins / FTE	fred.gains@dot.state.fl.us
James Fine	SWFWMD	James.fine@watermatters.org
Tom Presby	~~SWFWMD~~ KCA	TPresby@KCAENG.com
Mark Easley	KCA	mark.easley@kisingercampo.com
Ali Tayebnejad	KCA	atayebnejad@kcaeng.com
Martin Horwitz	FDOT/FTE	martin.horwitz@dot.state.fl.us
Pam Nagot	HNTB/FTE	pamela.nagot@dot.state.fl.us
Colleen E. Kruk	SWFWMD	colleen.kruk@swfwmd.state.fl.us
Erin Yao	FTE/Manage	Erin.Yao@Dot.state.fl.us
RICK VAUGHN	SWFWMD	RICK.VAUGHN@SWFWMD.STATE.FL.US

DRAFT

Tiffany Buchanan

From: Ali Tayebnejad
Sent: Thursday, October 18, 2018 4:20 PM
To: Tiffany Buchanan; Tony Fromen
Subject: FW: Polk Parkway Interdepartmental Meeting w Turnpike

KISINGER CAMPO & ASSOCIATES

Ali Tayebnejad, PE
Stormwater Department Manager

Email: Ali.Tayebnejad@kisingercampo.com
Work: 813.871.5331 ext 4139
Cell: 813.997.6639
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Dave Kramer <dave.kramer@swfwmd.state.fl.us>
Sent: Thursday, October 18, 2018 3:38 PM
To: Dawn Turner <Dawn.Turner@swfwmd.state.fl.us>; Yao, Erin <Erin.Yao@dot.state.fl.us>; Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk <Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; Mark Easley <Mark.Easley@kisingercampo.com>; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

Thank you for the information Dawn. Erin, I would agree (with Dawn) that the most accurate and representative data should be used and should supersede any FEMA mapping that is based on dated or inaccurate information.
Dave

David Kramer, P.E.
ERP Evaluation Manager
Environmental Resource Permit Bureau
Regulation Division
Southwest Florida Water Management District
(800) 836-0797 or (813) 985-7481, ext. 2009
dave.kramer@watermatters.org

DRAFT

Introducing ERP eCompliance Online Permit Condition Reporting at
WaterMatters.org/ePermitting

From: Dawn Turner
Sent: Thursday, October 18, 2018 3:15 PM
To: Yao, Erin <Erin.Yao@dot.state.fl.us>; Dave Kramer <dave.kramer@swfwmd.state.fl.us>; Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk <Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; mark.easley@kisingercampo.com; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

Erin,

As you and I discussed previously, the only area that was updated on the FEMA FIRMS to reflect the Lake Hancock model is the area affected by the new outfall structure at Lake Hancock.

The Lake Hancock model was developed using the earlier Saddle Creek model (circa 2002). Areas affected by the Lake Hancock outfall structure were updated to reflect recent land alterations. The 100 year – 5 day event was used to update the floodplain near Lake Hancock. The same event was used to update the Saddle Creek floodway north of the lake. The rest of the watershed was re-delineated to reshape existing FEMA floodplain polygons to reflect 2005 LiDAR based terrain information. The Saddle Creek model is not reflected in the earlier FEMA information.

It will be the consultant's responsibility to ensure they have the best available information regarding the 100 year floodplain. Consequently, they should obtain the Lake Hancock model and GIS information.

Please contact me if you have any questions.

Dawn

_____

Dawn Turner, P.E.
Southwest Florida Water Management District
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or 1-800-836-0797 (Florida only), ext. 4199

From: Yao, Erin <Erin.Yao@dot.state.fl.us>
Sent: Tuesday, October 16, 2018 5:18 PM

DRAFT

To: Dave Kramer <dave.kramer@swfwmd.state.fl.us>; Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk <Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; mark.easley@kisingercampo.com; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Dawn Turner <Dawn.Turner@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

Hello Dave,

Thank you for the email and for meeting with us last week. I appreciate that SWFWMD has invested so much into understanding the functionality of the Lake Hancock system. This model can certainly be a tool available to our team as we continue with our design, but I wanted to follow up on the approach to the floodplain evaluation. Given that the FEMA maps appear to have been updated recently to include the improvements that have been made to Lake Hancock, it was my assumption that it is reasonable to assume the FEMA maps will be sufficient to demonstrate no adverse impacts for the 100 year floodplain. Based on the meeting, it was my understanding that KCG would obtain the model to use if it would help to clarify or determine any information on the FEMA maps (for example any FEMA zones that do not have a base flood elevation established). Please let me know if you are in agreement with this approach.

Thank you,

Erin T Yao, PE, CFM
Florida's Turnpike Enterprise
District Drainage Engineer

P.O.Box 613069
MP 263, Blg 5315
Ocoee, Florida 34761-3069

☎: Direct: (407) 264-3479
☎: Cell: (407) 756-7063
✉: erin.yao@dot.state.fl.us

From: Dave Kramer [mailto:dave.kramer@swfwmd.state.fl.us]
Sent: Thursday, October 11, 2018 2:26 PM
To: Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk <Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>; Yao, Erin <Erin.Yao@dot.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; mark.easley@kisingercampo.com; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Dawn Turner <Dawn.Turner@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

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EXTERNAL SENDER: Use caution with links and attachments.

Fred and Erin,
I wanted to follow up on the water quantity discussion we had this morning. We discussed the permittability of potential increased discharge rates and volumes to Lake Hancock, as well as estimation of flood elevations and floodplain extent within the lake and in the surrounding watershed. As mentioned, the District has invested a significant amount of time and effort to understand the behavior of the lake and its hydraulic and hydrologic input and output. We recommend obtaining and utilizing the most accurate and up-to-date data (including modeling) to determine if the roadway project will result in adverse impacts. I've included Mark Keck and Dawn Turner (not in attendance this morning) on this email to help facilitate coordination and acquisition of the data we have available.
Thanks,
Dave

David Kramer, P.E.
ERP Evaluation Manager
Environmental Resource Permit Bureau
Regulation Division
Southwest Florida Water Management District
(800) 836-0797 or (813) 985-7481, ext. 2009
dave.kramer@watermatters.org

Introducing ERP eCompliance Online Permit Condition Reporting at
WaterMatters.org/ePermitting

-----Original Appointment-----
From: Dave Kramer
Sent: Wednesday, September 12, 2018 3:57 PM
To: Dave Kramer; Carmen L. Sanders; Jerry Mallams; Janie Hagberg; Rick M. Vaughn; Colleen Kruk; James Fine; Cliff Ondercin; Gaines, Fred; Horwitz, Martin; Nagot, Pamela
Cc: Thomas J. Presby II; Ali Tayebnejad; Mark Easley; Albert A. Gagne
Subject: Polk Parkway Interdepartmental Meeting w Turnpike
When: Thursday, October 11, 2018 9:30 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: TPA Bldg 1 Laurel Oaks Video Conf Rm 1005-1006

Interdepartmental meeting with Florida's Turnpike Enterprise to discuss the following:

Turnpike has started design of the Central Polk Parkway in the vicinity of Lake Hancock (please see attached draft location map exhibit). This project has the potential to involve several different SWFWMD Departments/disciplines. Turnpike has recently met with SWFWMD land management regarding some aspects of the project's potential involvement with the Old Florida Plantation DRI. The Design Team would like to meet with SWFWMD ERP staff and others associated with SWFWMD's various Lake Hancock projects.

CONFIDENTIALITY NOTE: This communication may be privileged and confidential. It should not be disseminated to others. If received in error, please immediately reply that you have received this communication in error and then delete it. Thank you.

DRAFT

Florida Department of Transportation

RON DESANTIS
GOVERNOR

Florida's Turnpike Enterprise
P.O. Box 613069, Ocoee, FL 34761
407-532-3999

KEVIN J. THIBAULT, P.E.
SECRETARY

FPID 440897-2-52-01
SR 570B (Central Polk Parkway)
Segment 1 from SR 570 (Polk Parkway) to SR 35 (US 17)
PRE-APPLICATION MEETING WITH THE SWFWMD
FEBRUARY 18, 2020 AT 1:30 PM
SWFWMD TAMPA OFFICE

Attendees:

SWFWMD:	FTE:	KCA
Dave Kramer	Pam Nagot	Ali Tayebnejad,
Albert Gagne	Tiffany Crosby	Catie Neal
Cindy Rodríguez	Adriana Kirwan	Curt Sprunger
Rob McDaniel	Annemarie Hammond AH	Tom Presby
Colleen Kruk	Fred Gaines	
Brian Starford	Erin Yao	

I. Overview of Project

Turnpike provided an overview of the project with brief history of previous coordination with SWFWMD. The Central Polk Parkway Segment 1 project limits will extend from the SR 570 (Polk Parkway) north of SR 540 (Winter Lake Rd.) to SR 35 (U.S. 17), approximately 7 miles in Polk County. The current project schedule includes permitting in 2021 with construction in 2022/2023. The design and construction of the project is for a four-lane typical section, but the proposed drainage design includes sizing of the ponds for a six-lane typical section with excess volume potentially available for a future widening.

II. Summary of Drainage Approach

Turnpike provided proposed treatment approach to include 1" of treatment over contributing area. Proposed design includes three stormwater ponds (SMF) and three floodplain compensation (FPC) ponds. All three stormwater ponds are sized for future 6-lane typical section. SMF 1 and 2 provide treatment and attenuation for onsite water. Turnpike noted that SMF 1 is an existing Polk Parkway pond that is being improved and increased in size. SMF 2 is a new pond located on the westside of Thornhill Road. SMF 3 (regional pond) outfalls into a drainage canal that discharges to Lake Hancock. Lake Hancock is impaired for nutrients. The proposed approach is to treat offsite water to compensate for treatment requirements for the CPP improvements from Thornhill Road to US 17.

III. SMF 3 (Regional Pond)

Turnpike provided details of the regional pond (RP) approach which has been further developed since the previous pre-application meeting. Turnpike has developed three options for this pond approach.

Option 1. The pond is located north of SWFWMD property on privately owned land. The previous location was further south near the SWFWMD mine pits location, and SWFWMD had concerns about offsite impacts upstream of the RP by restricting inflows for treatment. The proposed RP discharges to the south into a canal to Lake Hancock. The design will provide treatment volume based on presumptive criteria sufficient to offset stormwater runoff from 252 acres of the proposed roadway right of way. The RP is sized to treat 252 acres of runoff from a 410-acre offsite area by diverting more than half of the runoff into the pond using a box culvert at Station 1198+/. The 252 acres is based on the presumed ultimate condition of the 410-acre land use. KCA noted that the nutrient loading analysis is checking nitrogen and phosphorous, and that nitrogen is the controlling element.

- *SWFWMD noted that the presumptive criteria is the minimum requirement for treatment facilities. The minimum reduction must equal the baseline condition contribution. As long as the pollutant loading of the offsite area being treated in the RP is more than that calculated for the proposed roadway, SWFWMD is fine with the approach.*
- *SWFWMD indicated Turnpike should verify there are no planned District projects that may affect the RP approach.*

Turnpike requested clarification for the offsite contributing area's presumed changes in land use relative to the future of the roadway treatment requirements and permit compliance. KCA noted that there is vacant pastureland in the upstream offsite area that could be developed in the future.

- *SWFWMD noted that the approach is not dependent on future developable land, as permit required treatment scenarios are limited to existing pollutant loads as opposed to future conditions. If the land was developed, the developer would need to show a net improvement from the undeveloped nutrient loadings. There is not much risk for Turnpike even if Turnpike does not control the offsite land. Using undeveloped nutrient loading for vacant pastureland in the CPP analysis is more appropriate. Turnpike would not be penalized for something (development) that occurs upstream. SWFWMD sees no significant risk with the current approach.*

Turnpike inquired if any extra treatment provided by the RP could be used for future projects.

- *SWFWMD indicated that excess volume is possible as long as the proposed area discharged to the same waterbody (Lake Hancock).*

- *SWFWMD requested clarification about the offsite contributing area basin boundary and noted a specific wetland on the east side of the proposed ROW, opposite of the regional pond that may provide a hydrologic connection allowing surface water to flow outside of the basin boundary. There are concerns that the proposed contributing basin boundary is not accurate and surface water may bypass the interceptor ditch and cross drains CD 9 and CD 9A.*
  - *KCA indicated the basin is based on the SWFWMD Lidar contours and they would further investigate to verify the boundaries are accurate and the surface water flows as proposed toward the canal. If necessary, additional conveyances under the proposed CPP will be included to channel the surface water to the RP.*

Option 2. The RP will be placed just south of the Option 1 location (private property) within SWFWMD property and Turnpike obtains a portion of the DRI for the required drainage needs. The treatment approach would be the same however, there would be a different offsite contributing area. A portion of which would be within SWFWMD property and the DRI.

- *SWFWMD indicated there did not appear to be any issues if the same criteria and conditions are met as the first option. Also noted, purpose is to improve water quality within the basin.*
- *SWFWMD indicated a concern with District land connectivity from the south end of the SWFWMD lands to the north. There was the potential for additional access challenges with the alternative pond location. The DRI property value is based on current access points. Sheffield Road is a primary access point*

Option 3. Turnpike would purchase the entire DRI, thereby maintaining the existing land use and eliminate the physical RP or reduce its size by improving water quality. The goal would be to get water quality credit and not provide water quantity.

- *SWFWMD indicated that just maintaining the existing land use would not provide the water quality benefit needed as the proposed DRI would provide the required treatment if constructed. Turnpike could investigate the benefit of removing the cattle from the area for treatment benefit by changing the land use (the calculations would need to show net environmental improvements). It appears the RP option 1 is a more straight-forward option.*
- *SWFWMD inquired if the development densities related to the DRI were discussed with Polk County. Clarifying that if the DRI was removed, what are the tax impacts to Polk County?*
  - *Turnpike will forward the question to FTE Right of Way.*

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IV. Pond control elevation below the site and adjacent wetlands SHW elevations

- *SWFWMD confirmed the project should address adjacent wetlands SHW elevations.*

V. Attenuation swales

The proposed design includes attenuation swales (predominately dry). Turnpike requested clarification on the permit compliance requirements for these swales. Will the attenuation swales require similar standard inspections done for permitted stormwater features? Are there any special compliance conditions for attenuation swales?

- *SWFWMD indicated all stormwater features including ponds, storm sewer pipes, and ditches/swales will need to be as-built certified and inspected together every five years. There are no special conditions for attenuation only facilities. Attenuation swales do not have to be dry. No concern if the swales are holding water longer.*

VI. Floodplain

Turnpike evaluated floodplain encroachment using the latest SWFWMD Lake Hancock model 100-year 5-day storm stages. The cup-for-cup compensation approach was used for SMF 1, SMF 3, FPC 1, FPC 3, and FPC 4. The cup-for-cup approach showed the impacted volume at any stage increment was available in the ponds. SMF 1 and 3 provide floodplain compensation by stacking the required floodplain volume on top of the pond DHW elevation.

- *SWFWMD indicated concerns with this approach as compensation must be provided within the geographic area of floodplain impacts and Turnpike must demonstrate storage volumes are available/connected at the appropriate time. This would best be shown using the model.*
  - *Turnpike noted that the design needed to show that they were hydrologically connected and requested clarification on the floodplain compensation approach and the requested modeling.*
- *SWFWMD clarified that the floodplain approach must show hydraulic connection and demonstrate volume is immediately available. This can be done through modeling. There is more than cup-for-cup due to the complexity of area such as storage within wetlands and depressional areas. Use Lake Hancock SWFWMD model to make sure not impacting adjacent lands areas. If this information is not provided sufficiently to remove the concerns, it could affect permitting.*

  - *Turnpike requested the opportunity to submit the information prior to the application for SWFWMD review.*

- *SWFWMD indicated that was possible but would review as their schedule allows and would likely not be at an application level. Alternatively, Turnpike could set up another meeting (2-hours) to review the information.*

VII. Environmental

Turnpike provided a summary of anticipated impacts to wetlands/other surface waters. The proposed design includes 35 forested and herbaceous wetlands and 9 surface waters totaling approximately 90 acres of impacts (wetlands- 68 acres, OSW- 22 acres). Current mitigation approach is to purchase mitigation credits from an approved mitigation bank with service area that covers the impacts (such as Boran Ranch and/or Peace River MB). Most of the wetland lines within the proposed alignment were previously field reviewed by SWFWMD in 2013. KCA conducted another field review of previous lines and performed additional jurisdictional delineations in new impact areas in 2018/2019. Turnpike requested a field review with SWFWMD to confirm the delineations. Turnpike has reached out to Cliff Ondercin to set up a meeting.

- *SWFWMD indicated they will coordinate with Cliff to set up a meeting. They also noted that additional banks may become available.*
  - *Turnpike noted that if new mitigation banks open, they will include them as mitigation options.*

The proposed project alignment has the potential to impact several state and federal listed species. Turnpike is coordinating with FFWCC and USFWS to address any unavoidable impacts and obtain permits as needed. There are three bald eagle's nests that will potentially be impacted by the project. KCA is evaluating alternative alignments to avoid impacts.

- **Anticipated Permits**

Turnpike anticipates that the ERP application would be for a new permit.

SWFWMD confirmed the project should be submitted as a new permit application. SWFWMD indicated any modification to existing permitted facilities (SR 570 Section 5 ponds) should be included so they can modify those permits as needed in-house.

DRAFT

APPENDIX C

GEOTECHNICAL SOIL BORINGS

DRAFT

October 16, 2020

Kisinger Campo & Associates, Corp.
201 N. Franklin St., Suite 400
Tampa, Florida 33602

Attn: Mr. Thomas J. Presby II

RE: Pond and FPC Geotechnical Final PSR Submittal Letter
Central Polk Parkway (SR 570B)
From Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
FPN: 440897-2-52-01
Tierra Project No.: 6511-17-181-001

Mr. Presby:

Tierra, Inc. (Tierra) has completed geotechnical engineering services for the preferred Stormwater Management Facility (SMF) locations and Flood Plain Compensation (FPC) sites for the above referenced project to support the Final Pond Siting Report (PSR). The results of our subsurface exploration are presented herein. We understand that SMF 3 Option 2 is the preferred pond site for SMF 3. Option 2 utilizes existing lands and soil excavation is not proposed. Thus, geotechnical borings were not required nor performed for Option 2. Option 2 is shown in this report for consistency with the project PSR.

The objective of our study was to obtain information concerning the existing subsurface conditions within the selected SMF and FPC sites to provide geotechnical design parameters including *insitu* near-surface soil conditions and Seasonal High Groundwater Table (SHGWT) estimates for the project Final Pond Siting Report. It should be noted that as pond design progresses, Tierra will perform additional final level pond geotechnical test borings to assist with final design.

The project consists of the design of approximately 6½ miles of new alignment of the Central Polk Parkway (CPP) from the existing Polk Parkway (SR 570) to US 17 (SR 35) in Polk County, Florida. Based on our understanding, the proposed typical section will consist of a four-lane rural section with two travel lanes in each direction.

Approximately the first sixty percent of the project alignment (Station 1000+00, B/L Survey CPP to Station 4214+00, C/L CPP Eagle) traverses open and wooded natural areas, wetlands, and agricultural lands. The remainder of the project alignment primarily traverses reclaimed mine lands where past phosphate mining operations occurred. Based on our review, it appears that past mining operations occurred north of Old Bartow Eagle Lake Road (Station 1320+00, B/L Survey CPP) but not south of it. Station 1320+00 to US 17 consists of open and wooded natural areas and several residential areas.

The reclaimed mined lands have been modified from their natural conditions. They are characterized by open fields, low-lying areas, open water bodies and mounds/hills.

Review of Published Information and Past Mining Activities

Tierra has reviewed the Soil Survey of Polk County, Florida" published by the USDA, the "Auburndale, Florida" and "Bartow, Florida" Quadrangle Maps produced by the USGS, and historical

aerial imagery. A summary of the soil mapping units in the vicinity of the SMF and FPC sites is presented on **Table 1** in the **Attachments** of this report. Reproductions of the **USDA Soil Survey Map**, **USGS Quadrangle Map** and **Historical Aerials** are also provided in the **Attachments**.

The importance of the characterization of areas identified as past mined land is because the soils that occupy these areas are not "natural" and have been disturbed, mixed, and modified from past mining phosphate operations. Phosphate mining operations performed in the project area typically consisted of strip-mining. The mining process consisted of removing unconsolidated overburden soils from above the "matrix" layer containing the phosphate pebble. The matrix was typically excavated with draglines, slurried and pumped to a benefication processing plant. The phosphate pebble and grains were then separated from the coarse-grained materials (sand) and fine-grained tailings (silt and clay).

The separated sand portion from the matrix is often referred to as "tailing sand" and is characterized by relatively few fines (percent passing the #200 sieve) and having wider gradation spread than typical natural Florida fine sands. Waste phosphatic clays/slimes, another by-product of this process, are characterized by high fines content (percent passing the #200 sieve), high plasticity, and high moisture contents. The overburden soils can consist of various types of soils that were above the "matrix" (sand, clay or organic soils) and were often mixed during the excavation process.

The mine cut areas were then often backfilled with phosphate mining "waste"; the backfilling materials could be the previously removed overburden soils, tailings sands and/or hydraulically placed highly plastic waste phosphatic clays/slimes. Therefore, variable soil conditions are typical in previous mined areas. Waste phosphatic clays are highly moisture sensitive, highly plastic, have high shrink-swell potential, are very soft (low strength) and are susceptible to very large settlements under increased stress.

Based on a review of the published data, FPC 2-3 and SMF 3 (Option 2) are located within an area of past mining activity.

Field Exploration Program

Tierra performed hand auger borings to depths ranging from approximately 3 to 11½ feet below existing grades to identify the subsurface conditions near or within the footprint of the proposed SMF and FPC sites. The hand auger borings were performed by manually twisting and advancing a bucket auger into the ground, typically in 6-inch increments. As each soil type was revealed, representative portions of the soil samples were sealed, labeled and transferred to our laboratory for classification and analysis.

In addition, Standard Penetration Test (SPT) borings were performed to depths ranging from approximately 20 to 30 feet below existing grades to evaluate deeper soil conditions near or within the footprint of the proposed SMF and FPC sites. The SPT borings were performed with the use of a mechanical drill rig using Bentonite Mud drilling procedures. The soil sampling was performed in general accordance with ASTM test designation D-1586. Generally, SPT resistance N-values were taken at intervals of 2 feet in the initial 10 feet and at intervals of 5 feet thereafter to the boring termination depths. Representative portions of the soil samples were sealed in glass jars, labeled and transferred to our laboratory for classification and analysis.

DRAFT

The locations and elevations of some of the borings were determined by the project surveyor and are denoted as such on the **Pond Soil Survey** sheets provided in the **Attachments**. The locations of the remaining borings were estimated in the field by Tierra with hand-held, non-survey grade Garmin eTrex® Global Positioning System (GPS) equipment with a manufacturer's reported accuracy of ±10 feet. The estimated and surveyed boring locations were converted to station and offset using project design files provided by KCA. The ground surface elevations at the estimated boring locations were estimated from project design files data provided by KCA. The locations of the borings performed within each SMF and FPC site are provided in the attached **Pond Soil Survey** sheets.

Results of Field Exploration Program

Groundwater table levels were measured at the boring locations at depths ranging from above the existing ground surface to 10 feet below the ground surface at the time of our field exploration. In general, for the SMFs and FPCs in natural non-reclaimed mine lands, sandy soils were encountered within the top 3 to 10 feet below the ground surface. Below the sandy soils, plastic to more clayey soils were encountered to the boring termination depths.

The soils within FPC 2-3 (located within the reclaimed mine land area) generally consisted of soils associated with past mining activities – tailing sand and over-burden/cast soils. Specific information on the soil conditions encountered within the borings performed to date can be found on the attached **Pond Soil Survey** sheets. Preliminary recommendations for soil utilization can be found on the attached **Roadway Soil Survey** sheets.

Seasonal High Groundwater Table Recommendations

Tierra has estimated the SHGWT at select boring locations within the SMF and FPC sites. The estimated SHGWT levels are provided in **Table 2** in the **Attachments**. It should be noted that groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. In addition, a seasonal effect will occur in which higher groundwater levels are normally recorded in rainy seasons.

SMF 1 is an existing pond. Tierra recommends existing permitted information and any other available information be reviewed for this pond in conjunction with our estimated values.

DRAFT

Should there be any questions regarding this letter, please do not hesitate to contact our office at (813) 989-1354. We look forward to working with you and your organization on this and future projects.

Respectfully Submitted,

TIERRA, INC.

Kaitlyn C. Waterman, E.I.
Geotechnical Engineering Intern

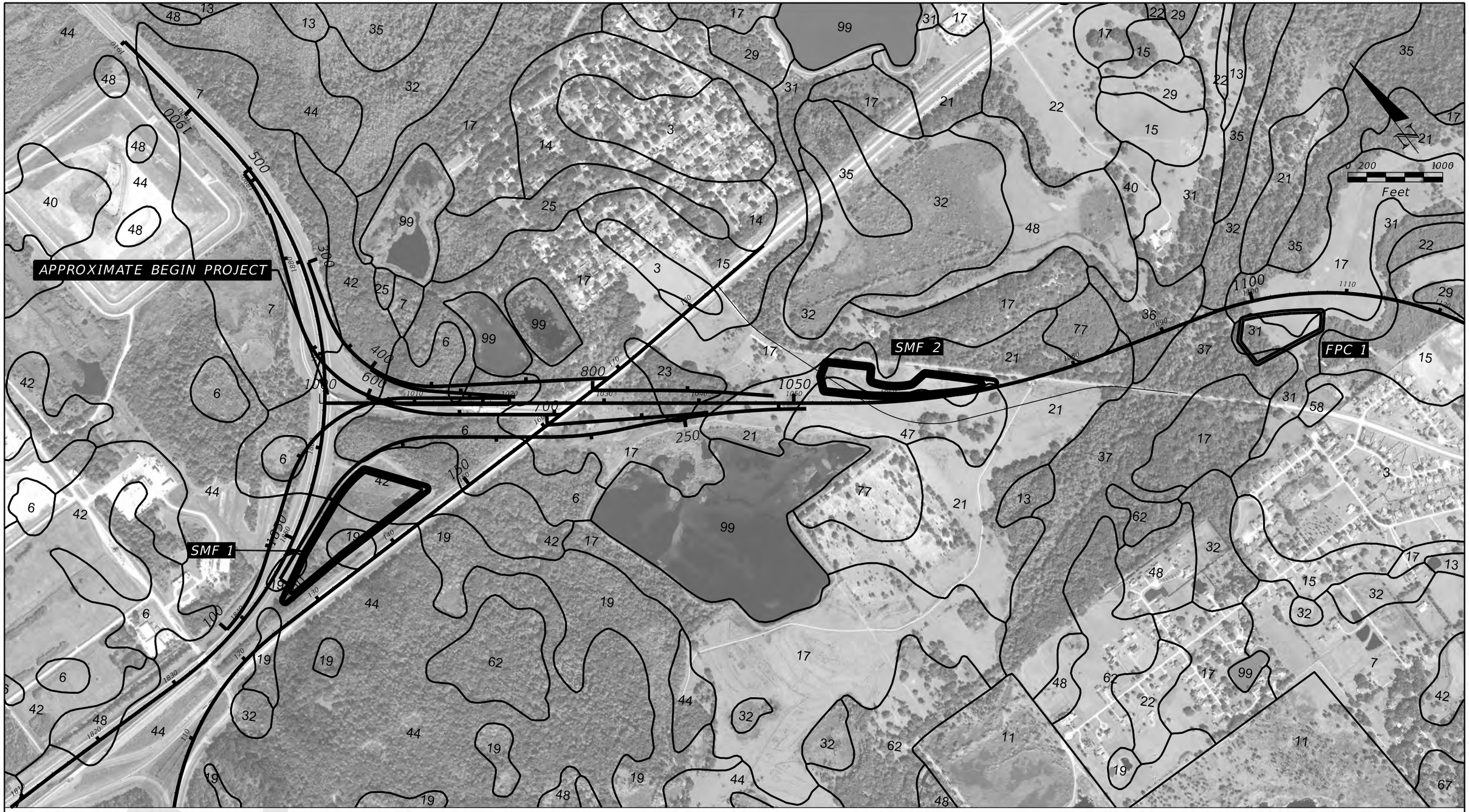
Marc E. Novak, Ph.D., P.E.
Senior Geotechnical Engineer
Florida License No. 67431

Kevin H. Scott, P.E.
Senior Geotechnical Engineer
Florida License No. 65514

Attachments:

USDA Soil Survey Map
USGS Quadrangle Maps
Roadway Soil Survey
Pond Soil Survey Sheets
Table 1 – Summary of USDA Soil Survey Information
Table 2 – Summary of Seasonal High Groundwater Table Estimates

DRAFT



REFERENCE: USDA SOIL SURVEY OF POLK COUNTY, FLORIDA

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

USDA SOIL SURVEY MAP (1)

SHEET NO.
C - 5

REFERENCE: USDA SOIL SURVEY OF POLK COUNTY, FLORIDA

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

REVISIONS			
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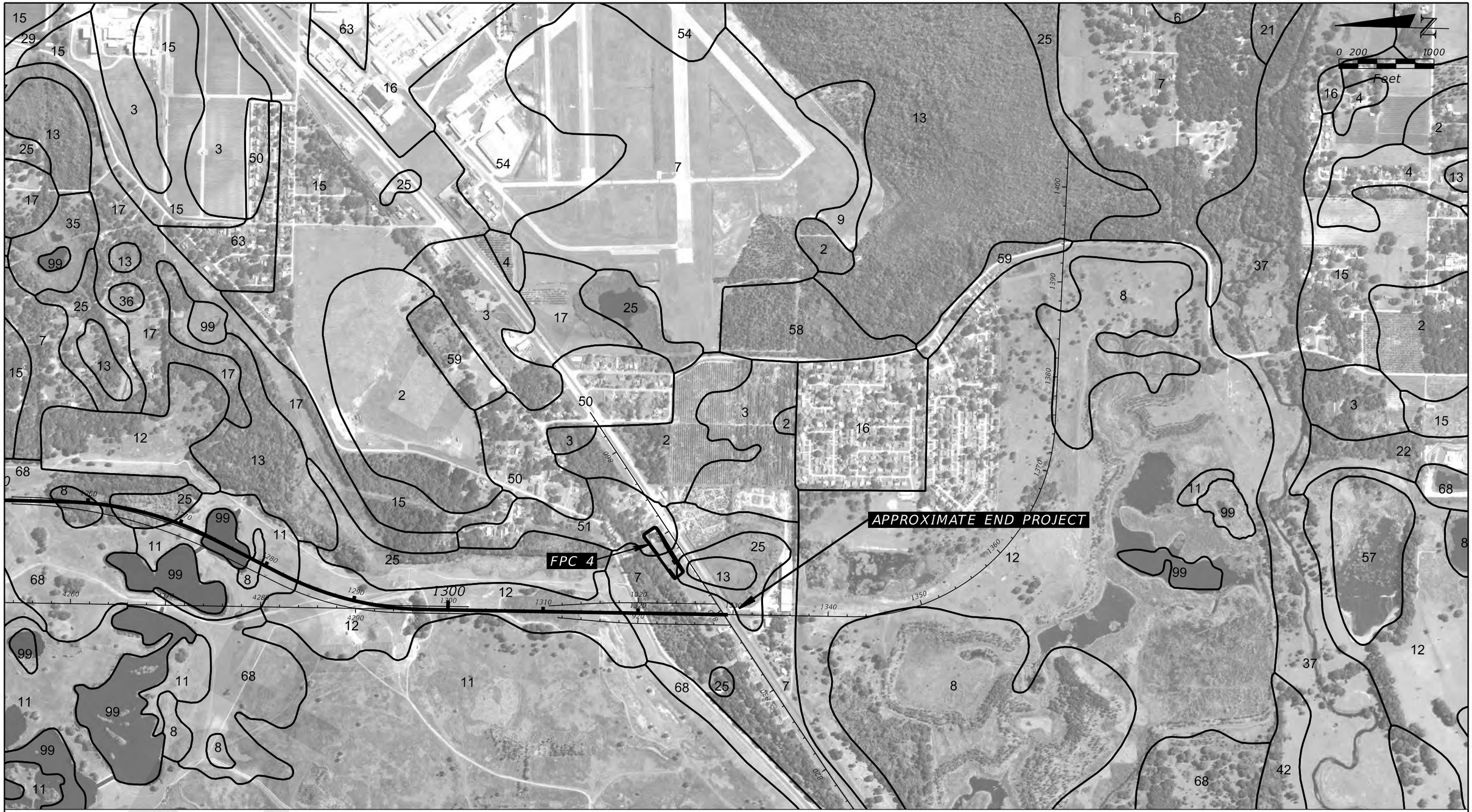
SR 570B	POLK	440897-2-52-01

USDA SOIL SURVEY MAP (2)

SHEET NO.
C - 6

DRAFT



REFERENCE: USDA SOIL SURVEY OF POLK COUNTY, FLORIDA

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

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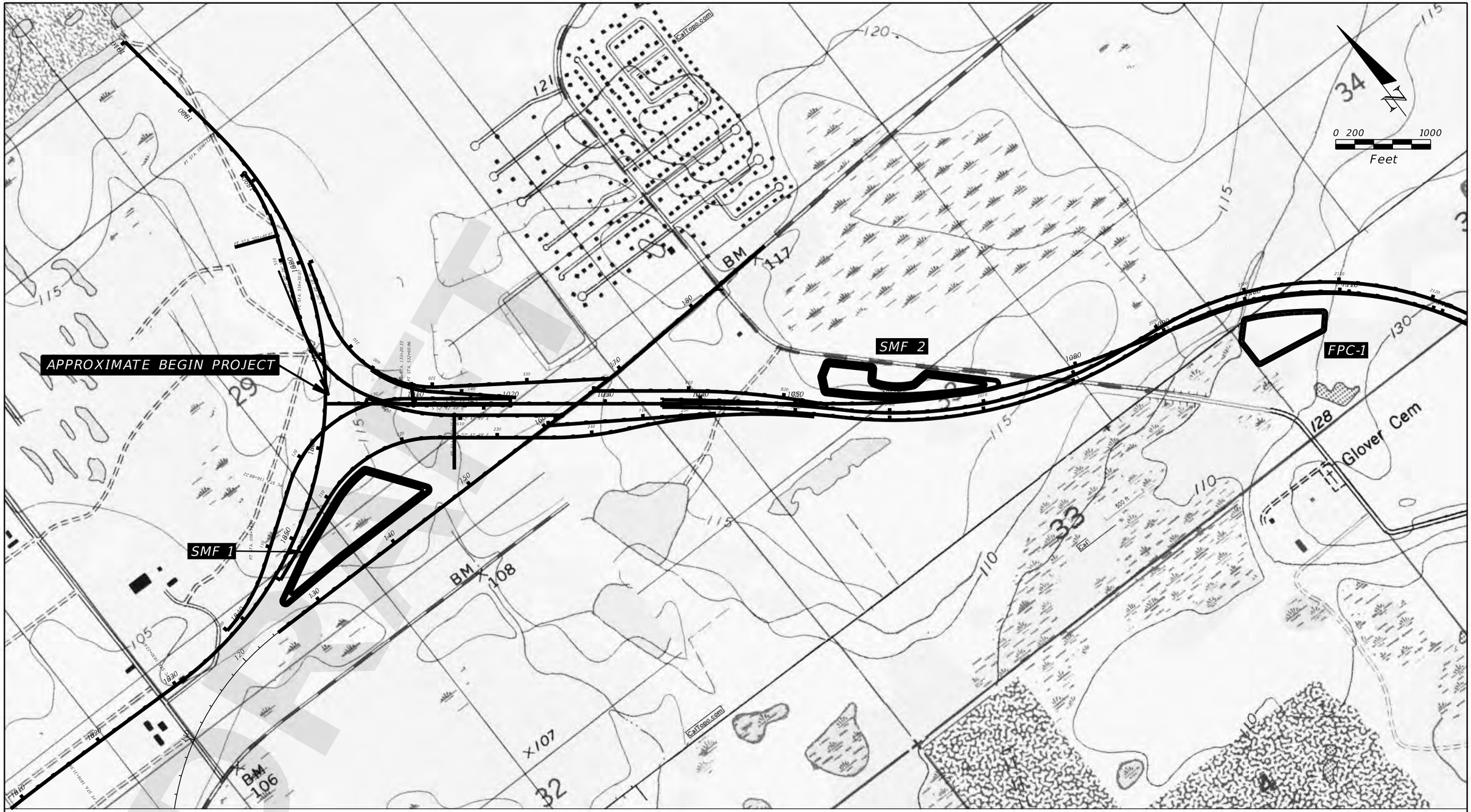
USDA SOIL SURVEY MAP (3)

SHEET NO.
C - 7



REFERENCE: USGS QUADRANGLE MAP OF "AUBURNDALE, FLORIDA" AND "BARTOW, FLORIDA"

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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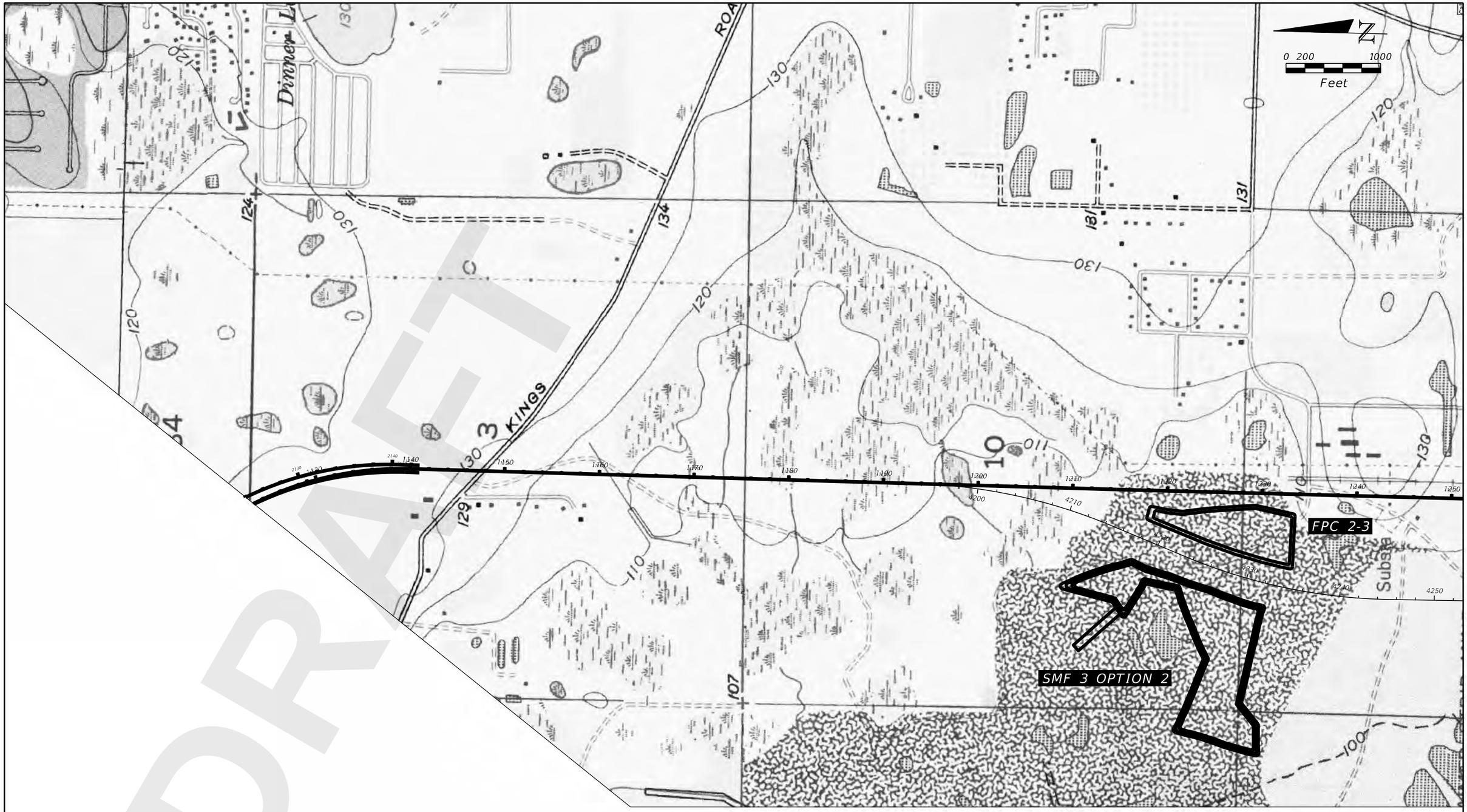
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

USGS QUADRANGLE MAP (1)

SHEET NO.
C - 8



REFERENCE: USGS QUADRANGLE MAP OF "AUBURNDALE, FLORIDA" AND "BARTOW, FLORIDA"

TOWNSHIP:	28S	29S
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SECTION:	29,32,33,34	3,10,15,22,27

REVISIONS			
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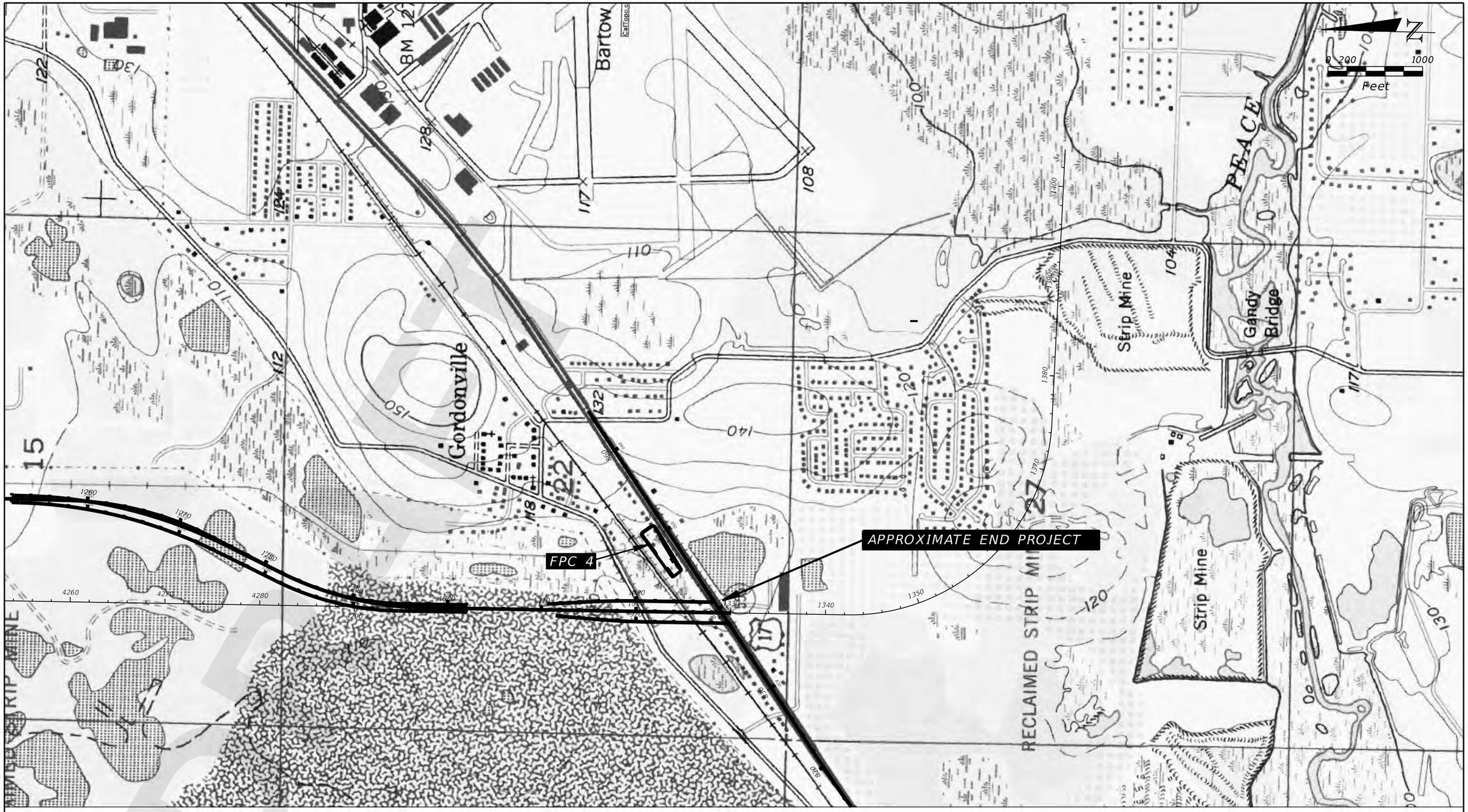
USGS QUADRANGLE MAP (2)

SHEET NO.
C - 9

DRAFT



REFERENCE: USGS QUADRANGLE MAP OF "AUBURNDALE, FLORIDA" AND "BARTOW, FLORIDA"

TOWNSHIP:	28S	29S
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

USGS QUADRANGLE MAP (3)

SHEET NO.
C - 10

DATE OF SURVEY: APRIL 2013 TO NOVEMBER 2019
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: MARC E. NOVAK, Ph. D., P.E.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DISTRICT: TURNPIKE
ROAD NO.: SR 570B
COUNTY: POLK

FINANCIAL PROJECT ID : 440897-2-52-01
PROJECT NAME: SR 570B (CENTRAL POLK PARKWAY) FROM SR 570 (POLK PARKWAY) TO SR 35 (US 17)

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

CENTRAL POLK PARKWAY MAINLINE SURVEY BEGINS STA. : 1000+53.07 SURVEY ENDS STA. : 1329+03.43 REFERENCE : B SURVEY CENTRAL POLK PARKWAY

STRATUM NO.	ORGANIC CONTENT NO. OF TESTS	ORGANIC CONTENT % ORGANIC	MOISTURE CONTENT NO. OF TESTS	MOISTURE CONTENT MOISTURE CONTENT	SIEVE ANALYSIS RESULTS PERCENT PASS (%) NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	ATTERBERG LIMITS (%) NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	CORROSION TEST RESULTS NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULFATES ppm	pH
1	2	3	10	6-42	73	100	88-95	11-64	9-33	3-15	2	NP	NP	A-3/A-2-4	LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT	26	4,700-120,000	15-45	<5-24	3.9-7.8
2	2	2-3	58	3-39	87	100	92-95	52-67	24-38	16-33	28	NP-34	NP-10	A-2-4	LIGHT GRAY TO GRAY TO BROWN SILTY SAND	12	3,200-37,000	15-45	<5-45	4.2-8.0
3	--	--	43	7-54	43	--	--	--	--	21-35	43	23-49	11-28	A-2-6/A-2-7	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND	2	2,500-22,000	30-45	<5-36	6.4-8.2
4	2	3-4	26	13-51	32	--	--	--	--	36-80	25	22-49	7-29	A-4/A-6/ A-7-5/A-7-6	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY	1	19,000	30	60	4.2
5	--	--	51	16-110	51	--	--	--	--	22-86	51	52-172	15-99	A-7-5/A-7-6/ A-2-7	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY	--	--	--	--	--
6	57	7-65	57	15-312	63	--	--	--	--	4-55	1	NP	NP	A-8	DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK	--	--	--	--	--
7	--	--	3	16-20	5	100	90	58	27	8-19	--	--	--	A-3/A-2-4	DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN)	1	22,000	30	<5	4.0
8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	LIMESTONE	--	--	--	--	--

NOTES:

THE ROADWAY SOIL SURVEY IS PRESENTED ON TWO (2) SHEETS. STRATA 1 THROUGH 8 ARE SOILS THAT ARE IN THEIR NATURAL INSITU STATE. STRATA 9 THROUGH 14 ARE SOILS THAT WERE ENCOUNTERED IN THE PORTION OF THE ALIGNMENT WHERE PHOSPHATE MINING ACTIVITY OCCURRED AND APPEAR TO HAVE BEEN DISTURBED AS A RESULT OF PAST MINING ACTIVITY AND ARE NOT IN THEIR NATURAL STATE. THESE SOILS ARE HIGHLY VARIABLE.

1. THE MATERIAL FROM STRATUM 1 (A-3/A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
2. THE MATERIAL FROM STRATUM 2 (A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION.
3. THE MATERIAL FROM STRATA 3 AND 4 (A-2-6/A-4/A-6/A-7-6/A-7-5/A-2-7) IS PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
4. THE MATERIAL FROM STRATUM 5 (A-7-5/A-7-6/A-2-7) IS HIGH PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▼ - WATER TABLE ENCOUNTERED

▼+ - GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE

GNE - GROUNDWATER NOT ENCOUNTERED

▽ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE

▽+ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GROUND SURFACE

NP - NON-PLASTIC

GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID

5. THE MATERIAL FROM STRATUM 6 (A-8) IS ORGANIC MATERIAL TO MUCK. THIS MATERIAL SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. THIS MATERIAL SHALL NOT BE USED WITHIN THE SUBGRADE OR EMBANKMENT PORTION OF THE ROADBED. REMOVAL LIMITS ARE SHOWN ON THE ROADWAY CROSS-SECTIONS.
6. THE MATERIAL FROM STRATUM 7 (HARDPAN) IS CEMENTED AND IS LOCATED IN SOME AREAS ALONG THE PROPOSED ROADWAY ALIGNMENTS. EXCAVATIONS INTO AND THROUGH THIS MATERIAL MAY BE DIFFICULT AND MAY REQUIRE SPECIALIZED EQUIPMENT. VARIATIONS IN THE DEPTH AND RELATIVE DENSITY OF THIS MATERIAL SHALL BE ANTICIPATED. THE MATERIAL FROM STRATUM 7 (A-3/A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
7. THE MATERIAL FROM STRATUM 8 (WEATHERED LIMESTONE) IS ROCK AND WAS ENCOUNTERED AT DEPTHS GREATER THAN 30 FEET BELOW GRADE. EXCAVATION INTO AND THROUGH THIS MATERIAL MAY BE DIFFICULT. THE CONTRACTOR SHOULD BE PREPARED TO USE SPECIALIZED EQUIPMENT TO EXCAVATE INTO AND THROUGH LIMESTONE. LIMESTONE IS ALSO POROUS AND WILL BE DIFFICULT TO DEWATER.
8. THE MATERIALS FROM STRATA 9 THROUGH 14 CONSIST OF SOILS RELATED TO PAST MINING ACTIVITY AND ARE NOT IN A NATURAL STATE. THEY ARE DISTURBED AND CAN BE HIGHLY VARIABLE AND DIFFICULT TO SEPARATE. THEIR ABILITY FOR UTILIZATION FOR EMBANKMENT MATERIAL SHOULD BE VERIFIED DURING CONSTRUCTION. THE UTILIZATION OF THESE MATERIALS INDICATED IN NOTES 9, 10, 11, AND 14 SHOULD BE CONSIDERED AS A GUIDELINE ONLY AND ARE SUBJECT TO THE REQUIREMENTS OF THE STANDARD PLANS, INDEX 120-001.

DRAFT FROM PHASE II ROADWAY PLANS SUBMITTAL

REVISIONS DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph. D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

ROADWAY SOIL SURVEY (1)

SHEET NO. C - 11

DATE OF SURVEY: APRIL 2013 TO NOVEMBER 2019
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: MARC E. NOVAK, Ph. D., P.E.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DISTRICT: TURNPIKE
ROAD NO.: SR 570B
COUNTY: POLK

FINANCIAL PROJECT ID : 440897-2-52-01

PROJECT NAME: SR 570B (CENTRAL POLK PARKWAY) FROM SR 570 (POLK PARKWAY) TO SR 35 (US 17)

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

CENTRAL POLK PARKWAY MAINLINE SURVEY BEGINS STA. : 1000+53.07 SURVEY ENDS STA. : 1329+03.43 REFERENCE : B SURVEY CENTRAL POLK PARKWAY

STRATUM NO.	ORGANIC CONTENT NO. OF TESTS	ORGANIC CONTENT % ORGANIC	MOISTURE CONTENT NO. OF TESTS	MOISTURE CONTENT MOISTURE CONTENT	SIEVE ANALYSIS RESULTS PERCENT PASS (%) NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	ATTERBERG LIMITS (%) NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	CORROSION TEST RESULTS NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULFATES ppm	pH
9	2	1	7	4-55	48	100	83-97	28-90	4-60	1-9	1	NP	NP	A-3	LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND)	11	2,600-45,000	15-45	<5-15	4.7-8.1
10	6	2-4	33	16-98	44	100	91-96	47-87	16-61	11-34	24	NP	NP	A-2-4	LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED)	3	6,200-41,000	30-60	<5-72	5.4-7.2
11	--	--	37	9-104	37	100	94	73	57	19-69	37	23-49	11-29	A-2-6/A-4/ A-6/A-7-5/ A-7-6/A-2-7	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO CLAY (DISTURBED)	--	--	--	--	--
12	--	--	19	27-111	23	--	--	--	--	54-98	18	54-151	28-99	A-7-5/A-7-6	SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME)	--	--	--	--	--
13	44	6-96	44	7-612	34	--	--	--	--	6-93	7	NP-86	NP-38	A-8	DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED)	--	--	--	--	--
14	--	--	43	9-58	43	100	86-97	57-87	29-63	17-38	43	16-40	2-10	A-2-4	LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED)	--	--	--	--	--

NOTES:

9. THE MATERIAL FROM STRATUM 9 (A-3) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE AND DIFFICULT TO SEPARATE.

10. THE MATERIAL FROM STRATUM 10 (A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE AND DIFFICULT TO SEPARATE.

11. THE MATERIAL FROM STRATUM 11 IS MIXED/DISTURBED AND VARIABLE DUE TO PAST MINING ACTIVITY IN THE PROJECT AREA. THIS MATERIAL IS PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE AND DIFFICULT TO SEPARATE.

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▼ - WATER TABLE ENCOUNTERED

▼+ - GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE

GNE - GROUNDWATER NOT ENCOUNTERED

▽ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE

▽+ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GROUND SURFACE

NP - NON-PLASTIC

GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID

12. THE MATERIAL FROM STRATUM 12 (A-7-5/A-7-6) IS SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) AND IS HIGH PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. REMOVAL LIMITS ARE SHOWN ON THE PROJECT ROADWAY CROSS-SECTIONS. THIS MATERIAL IS HIGHLY PLASTIC AND MOISTURE SENSITIVE AND MAY PRESENT DIFFICULTY IN HANDLING. THIS MATERIAL, WHEN REMOVED, SHALL NOT BE USED WITHIN THE PROJECT LIMITS. STRATUM 12 MAY REMAIN IN PLACE IN OTHER PORTIONS OF THE PROJECT PROVIDED THAT THE REMEDIATION PLAN SHOWN IN THE PLANS IS IMPLEMENTED. LIMITS AND DETAILS OF THE REMEDIATION PLAN ARE SHOWN IN THE PHASE II PLANS. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE AND DIFFICULT TO SEPARATE.

13. THE MATERIAL FROM STRATUM 13 (A-8) IS ORGANIC MATERIAL TO MUCK/PEAT. THIS MATERIAL SHALL BE REMOVED AS MUCK IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. THIS MATERIAL, WHEN REMOVED, SHALL NOT BE USED WITHIN THE PROJECT LIMITS. REMOVAL LIMITS ARE SHOWN ON THE PROJECT ROADWAY CROSS-SECTIONS. IN OTHER AREAS, DUE TO ITS DEPTH, THIS MATERIAL MAY REMAIN PLACE PROVIDED THAT THE REMEDIATION PLAN SHOWN IN THE PLANS IS IMPLEMENTED. LIMITS AND DETAILS OF THE REMEDIATION PLAN ARE SHOWN IN THE PHASE II PLANS.

14. THE MATERIAL FROM STRATUM 14 IS PLASTIC A-2-4 SOIL. DUE TO ITS VARIABLE NATURE, ASSOCIATION WITH PAST MINING ACTIVITY AND OFTEN INTER-MINGLED WITH STRATUM 11, STRATUM 14 SHOULD BE CONSIDERED AS PLASTIC (P) MATERIAL IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. IT MAY BE UTILIZED IN THE EMBANKMENT IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. THIS STRATUM IS INTER-MIXED WITH OTHER STRATA AND IS HIGHLY VARIABLE AND DIFFICULT TO SEPARATE.

DRAFT FOR PHASE II ROADWAY PLANS SUBMITTAL

REVISIONS DATE	DESCRIPTION	DATE	DESCRIPTION

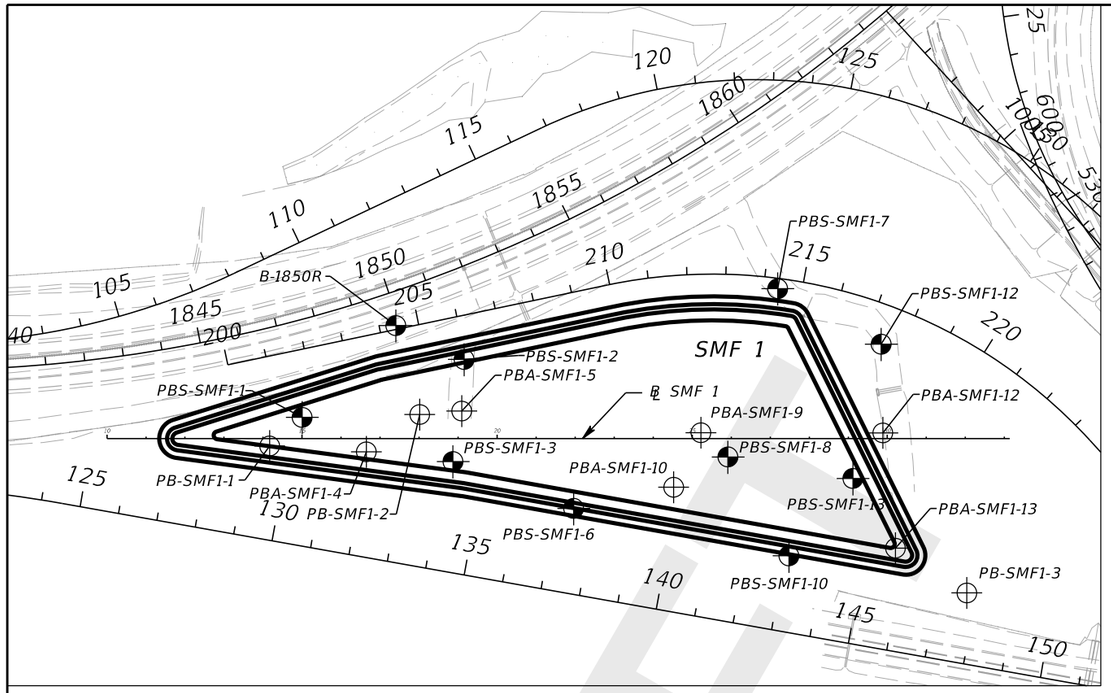
MARC E. NOVAK, Ph. D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

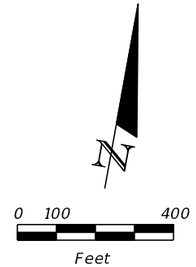
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

ROADWAY SOIL SURVEY (2)

SHEET NO.
C - 12





BORING LOCATION PLAN

℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

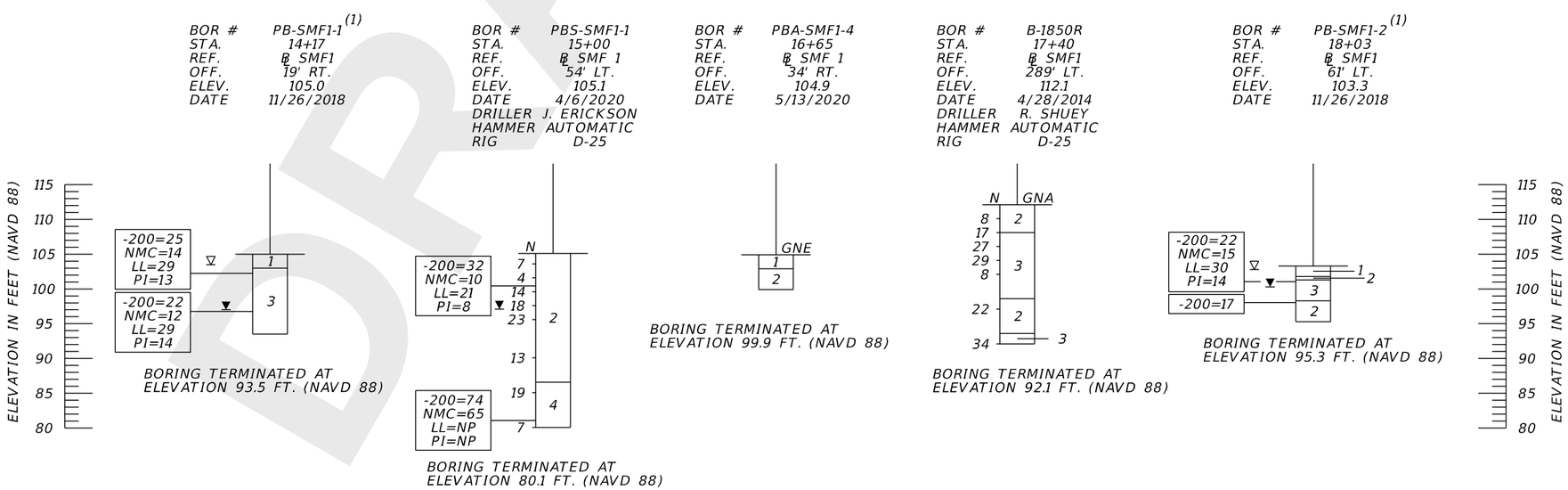
LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



SMF 1

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

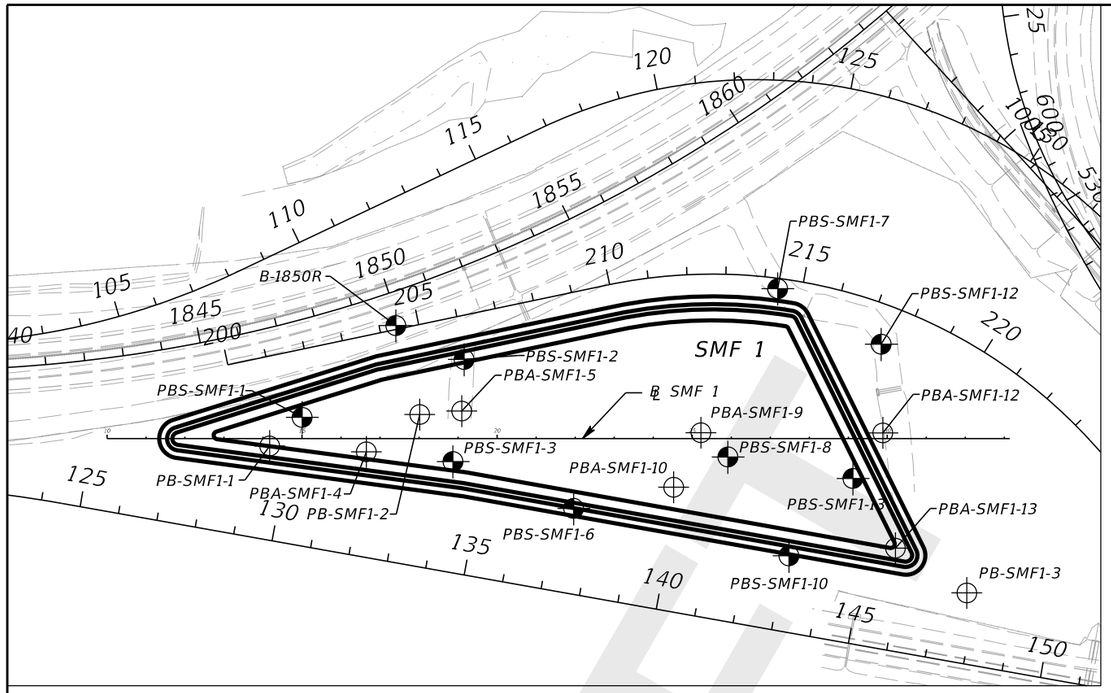
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

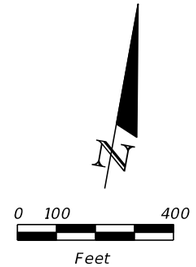
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (1)

SHEET NO.
C - 13



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

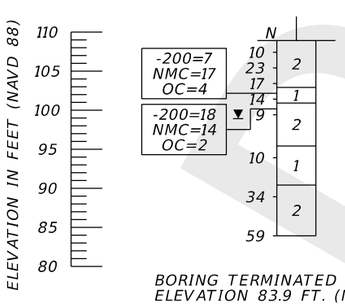
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR # PBS-SMF1-3
STA. 18+87
REF. ℄ SMF 1
OFF. 59' RT.
ELEV. 108.9
DATE 4/6/2020
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25

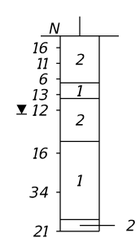


BORING TERMINATED AT ELEVATION 83.9 FT. (NAVD 88)

BOR # PBA-SMF1-5
STA. 19+09
REF. ℄ SMF 1
OFF. 70' LT.
ELEV. 109.2
DATE 5/8/2020

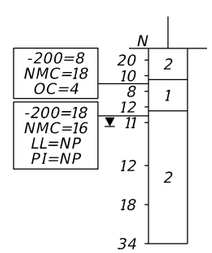
BORING TERMINATED AT ELEVATION 104.2 FT. (NAVD 88)

BOR # PBS-SMF1-2
STA. 19+15
REF. ℄ SMF 1
OFF. 202' LT.
ELEV. 109.5
DATE 4/6/2020
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



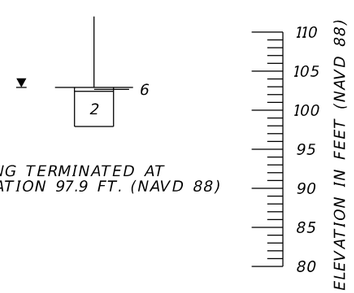
BORING TERMINATED AT ELEVATION 84.5 FT. (NAVD 88)

BOR # PBS-SMF1-6
STA. 21+96
REF. ℄ SMF 1
OFF. 179' RT.
ELEV. 107.9
DATE 4/6/2020
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 82.9 FT. (NAVD 88)

BOR # PBA-SMF1-10
STA. 24+53
REF. ℄ SMF 1
OFF. 125' RT.
ELEV. 102.9
DATE 5/8/2020



BORING TERMINATED AT ELEVATION 97.9 FT. (NAVD 88)

SMF 1

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

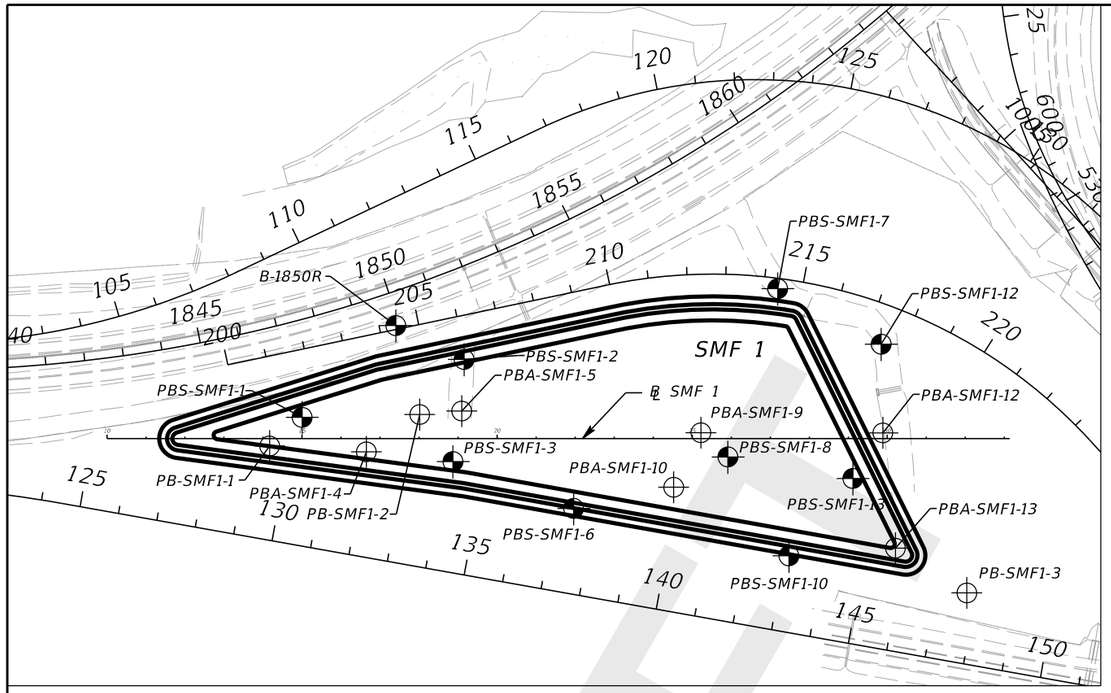
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

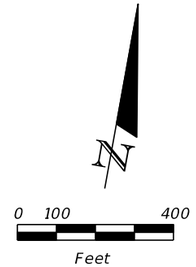
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (2)

SHEET NO.
C - 14



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

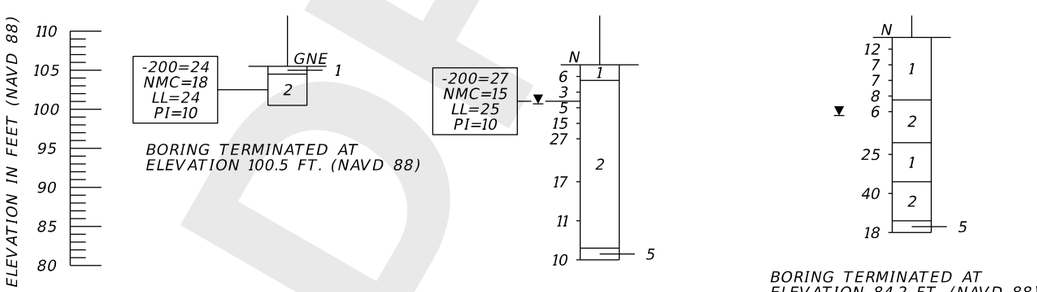
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR # PBA-SMF1-9
STA. 25+22
REF. ℄ SMF 1
OFF. 15' LT.
ELEV. 105.5
DATE 5/8/2020



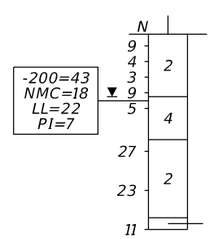
BOR # PBS-SMF1-8
STA. 25+92
REF. ℄ SMF 1
OFF. 47' RT.
ELEV. 105.7
DATE 4/7/2020
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25

BORING TERMINATED AT ELEVATION 80.7 FT. (NAVD 88)

BOR # PBS-SMF1-7
STA. 27+19
REF. ℄ SMF 1
OFF. 384' LT.
ELEV. 109.2
DATE 4/7/2020
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25

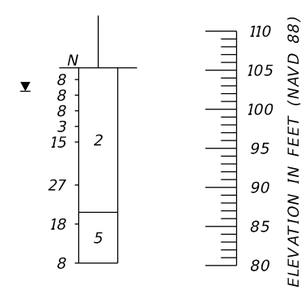
BORING TERMINATED AT ELEVATION 84.2 FT. (NAVD 88)

BOR # PBS-SMF1-10
STA. 27+48
REF. ℄ SMF 1
OFF. 300' RT.
ELEV. 109.6
DATE 4/7/2020
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 84.6 FT. (NAVD 88)

BOR # PBS-SMF1-13
STA. 29+12
REF. ℄ SMF 1
OFF. 102' RT.
ELEV. 105.3
DATE 4/7/2020
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 80.3 FT. (NAVD 88)

SMF 1

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

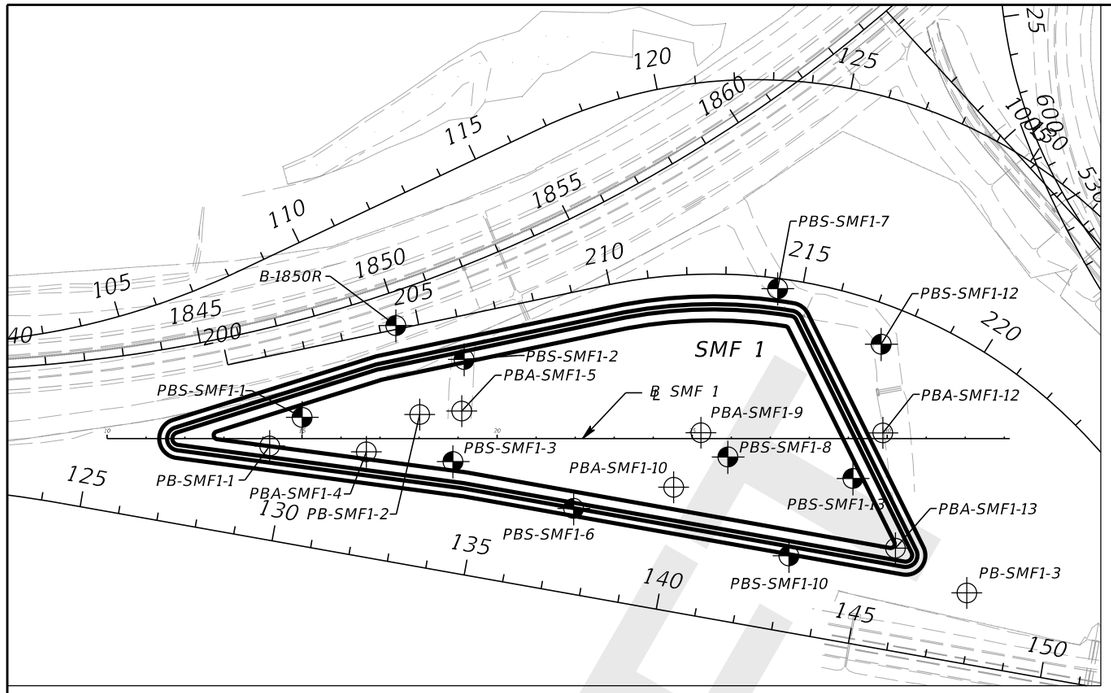
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

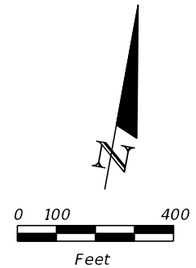
POND SOIL SURVEY (3)

SHEET NO.
C - 15

DRAFT



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

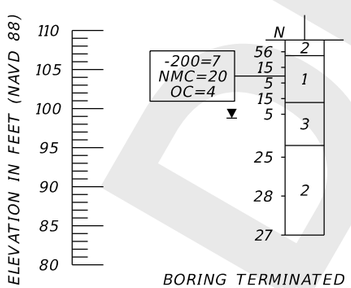
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

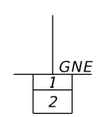
SMF 1

BOR # PBS-SMF1-12
STA. 29+84
REF. ℄ SMF 1
OFF. 242' LT.
ELEV. 108.8
DATE 4/7/2020
DRILLER J. ERICKSON
HAMMER AUTOMATIC
RIG D-25



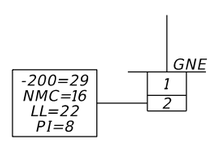
BORING TERMINATED AT ELEVATION 83.8 FT. (NAVD 88)

BOR # PBA-SMF1-12
STA. 29+88
REF. ℄ SMF 1
OFF. 14' LT.
ELEV. 104.4
DATE 5/8/2020



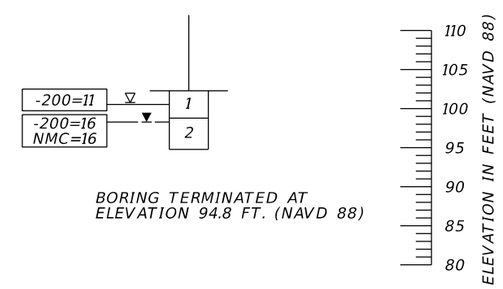
BORING TERMINATED AT ELEVATION 99.4 FT. (NAVD 88)

BOR # PBA-SMF1-13
STA. 30+21
REF. ℄ SMF 1
OFF. 281' RT.
ELEV. 104.7
DATE 5/8/2020



BORING TERMINATED AT ELEVATION 99.7 FT. (NAVD 88)

BOR # PB-SMF1-3 (1)
STA. 32+05
REF. ℄ SMF1
OFF. 396' RT.
ELEV. 102.3
DATE 11/26/2018



BORING TERMINATED AT ELEVATION 94.8 FT. (NAVD 88)

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

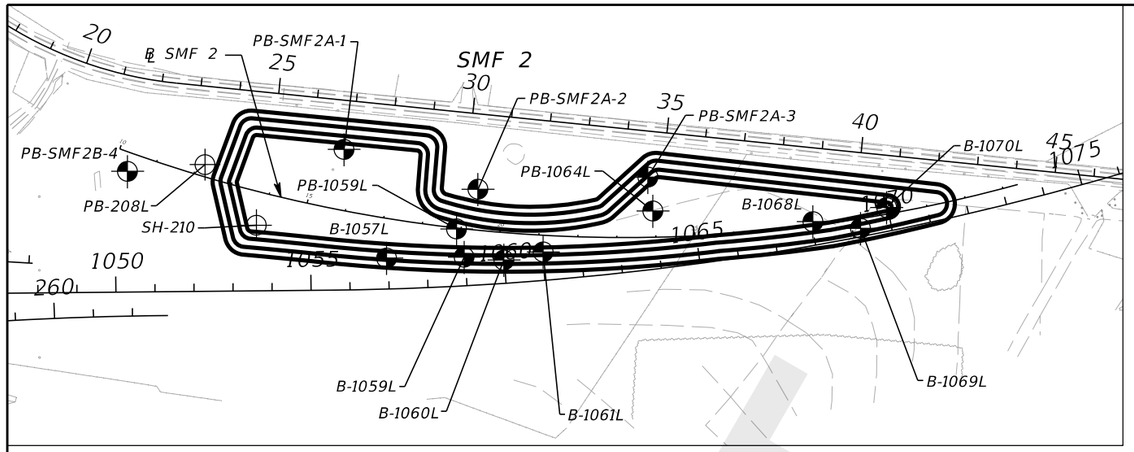
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

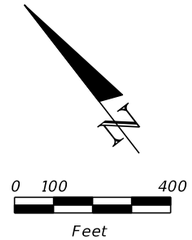
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (4)

SHEET NO.
C - 16



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

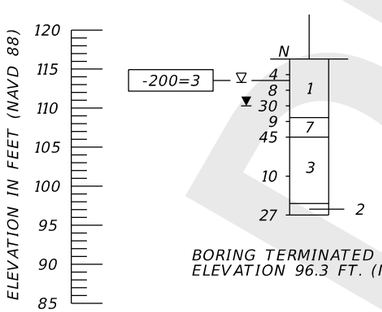
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

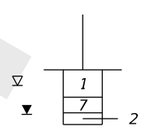
	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR # PB-SMF2B-4 (1)
STA. 10+37
REF. ℄ SMF2
OFF. 47' RT.
ELEV. 116.3
DATE 11/26/2018
DRILLER C. FLOREZ
HAMMER AUTOMATIC
RIG D-25



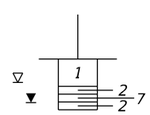
BORING TERMINATED AT ELEVATION 96.3 FT. (NAVD 88)

BOR # PB-208L (1)
STA. 12+20
REF. ℄ SMF2
OFF. 30' LT.
ELEV. 114.9
DATE 10/27/2014



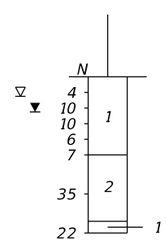
BORING TERMINATED AT ELEVATION 107.9 FT. (NAVD 88)

BOR # SH-210 (1)
STA. 13+87
REF. ℄ SMF2
OFF. 85' RT.
ELEV. 116.4
DATE 10/13/2013



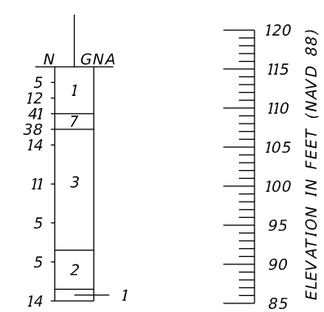
BORING TERMINATED AT ELEVATION 109.8 FT. (NAVD 88)

BOR # PB-SMF2A-1 (1)
STA. 15+65
REF. ℄ SMF2
OFF. 154' LT.
ELEV. 114.0
DATE 11/26/2018
DRILLER C. FLOREZ
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 94.0 FT. (NAVD 88)

BOR # B-1057L
STA. 17+23
REF. ℄ SMF2
OFF. 100' RT.
ELEV. 115.3
DATE 5/22/2014
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 85.3 FT. (NAVD 88)

SMF 2

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

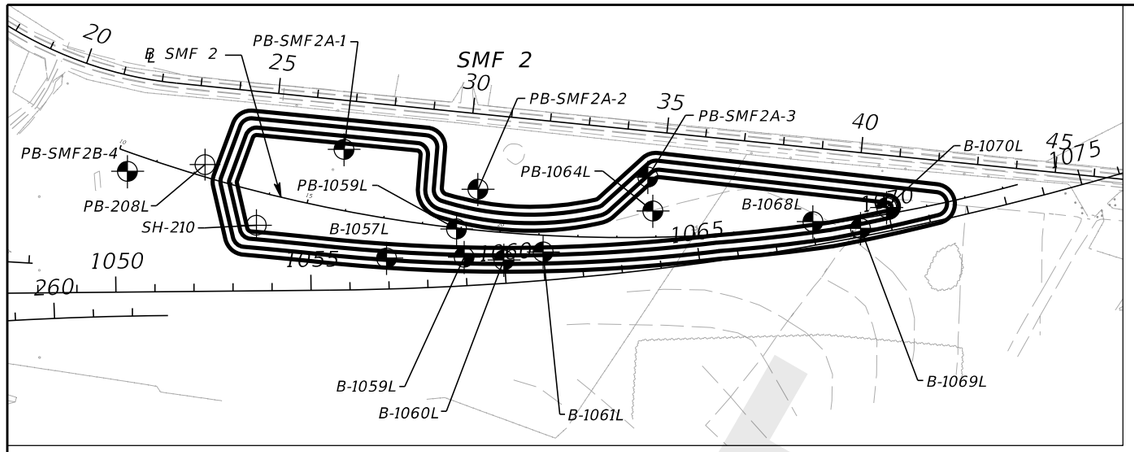
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

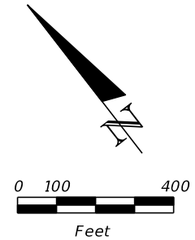
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (5)

SHEET NO.
C - 17



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
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▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
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▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
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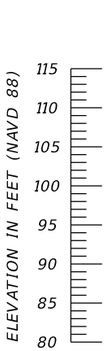
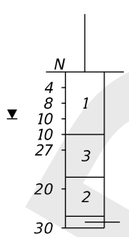
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

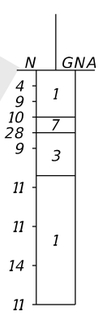
BOR # PB-1059L
STA. 18+88
REF. ℄ SMF2
OFF. 3' RT.
ELEV. 114.6
DATE 8/27/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25





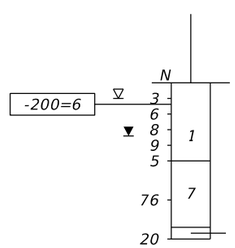
BORING TERMINATED AT ELEVATION 94.6 FT. (NAVD 88)

BOR # B-1059L
STA. 19+15
REF. ℄ SMF2
OFF. 72' RT.
ELEV. 114.8
DATE 5/22/2014
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



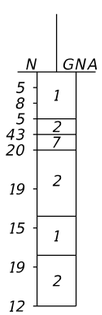
BORING TERMINATED AT ELEVATION 84.8 FT. (NAVD 88)

BOR # PB-SMF2A-2 (1)
STA. 19+33
REF. ℄ SMF2
OFF. 105' LT.
ELEV. 113.2
DATE 11/27/2018
DRILLER C. FLOREZ
HAMMER AUTOMATIC
RIG D-25



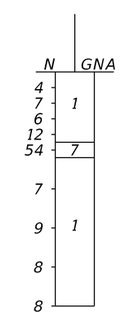
BORING TERMINATED AT ELEVATION 93.2 FT. (NAVD 88)

BOR # B-1060L
STA. 20+16
REF. ℄ SMF2
OFF. 70' RT.
ELEV. 114.6
DATE 6/12/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

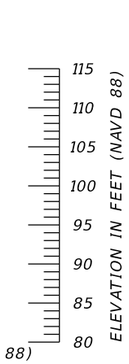


BORING TERMINATED AT ELEVATION 84.6 FT. (NAVD 88)

BOR # B-1061L
STA. 21+13
REF. ℄ SMF2
OFF. 42' RT.
ELEV. 114.6
DATE 6/12/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 84.6 FT. (NAVD 88)



SMF 2

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

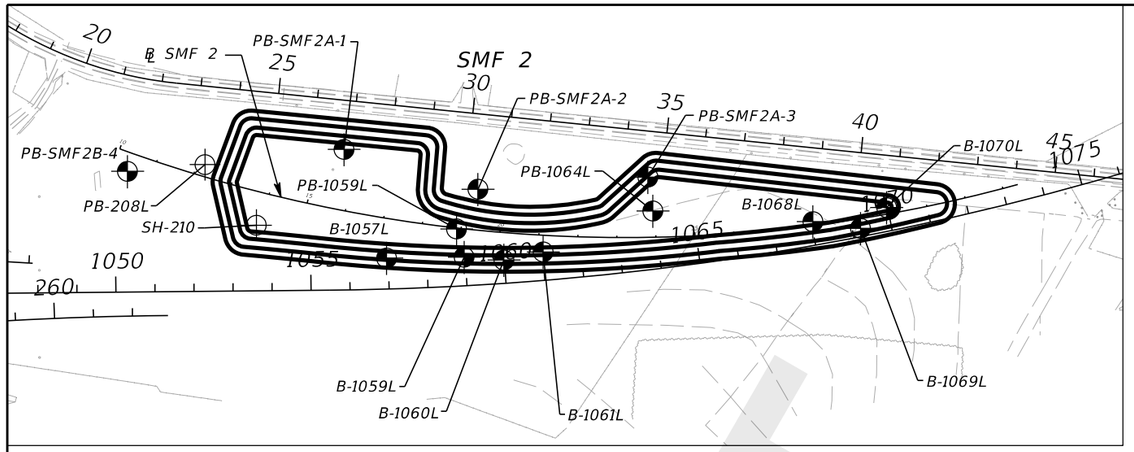
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (6)

SHEET NO.
C - 18



BORING LOCATION PLAN

0 100 400
Feet

℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR # PB-SMF2A-3 (1)
STA. 23+82
REF. ℄ SMF2
OFF. 154' LT.
ELEV. 114.4
DATE 11/27/2018
DRILLER C. FLOREZ
HAMMER AUTOMATIC
RIG D-25

N: 6, 7, 9, 9, 7, 50/6

BORING TERMINATED AT ELEVATION 94.4 FT. (NAVD 88)

BOR # PB-1064L
STA. 23+94
REF. ℄ SMF2
OFF. 67' LT.
ELEV. 114.4
DATE 8/27/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

N: 4, 8, 7, 4, 17, 81, 22

BORING TERMINATED AT ELEVATION 94.4 FT. (NAVD 88)

BOR # B-1068L
STA. 28+05
REF. ℄ SMF2
OFF. 10' LT.
ELEV. 115.0
DATE 6/11/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

N: 5, 13, 10, 29, 36, 27, 9, 7, 5 GNA

BORING TERMINATED AT ELEVATION 85.0 FT. (NAVD 88)

BOR # B-1069L
STA. 29+23
REF. ℄ SMF2
OFF. 24' RT.
ELEV. 115.1
DATE 6/11/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

N: 3, 9, 15, 50/5, 30, 17, 16, 12, 2

BORING TERMINATED AT ELEVATION 85.1 FT. (NAVD 88)

BOR # B-1070L
STA. 29+98
REF. ℄ SMF 2
OFF. 17' LT.
ELEV. 114.6
DATE 6/11/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

N: 4, 8, 10, 17, 11, 20, 15, 11, 2

BORING TERMINATED AT ELEVATION 84.6 FT. (NAVD 88)

ELEVATION IN FEET (NAVD 88): 120, 115, 110, 105, 100, 95, 90, 85, 80

SMF 2

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

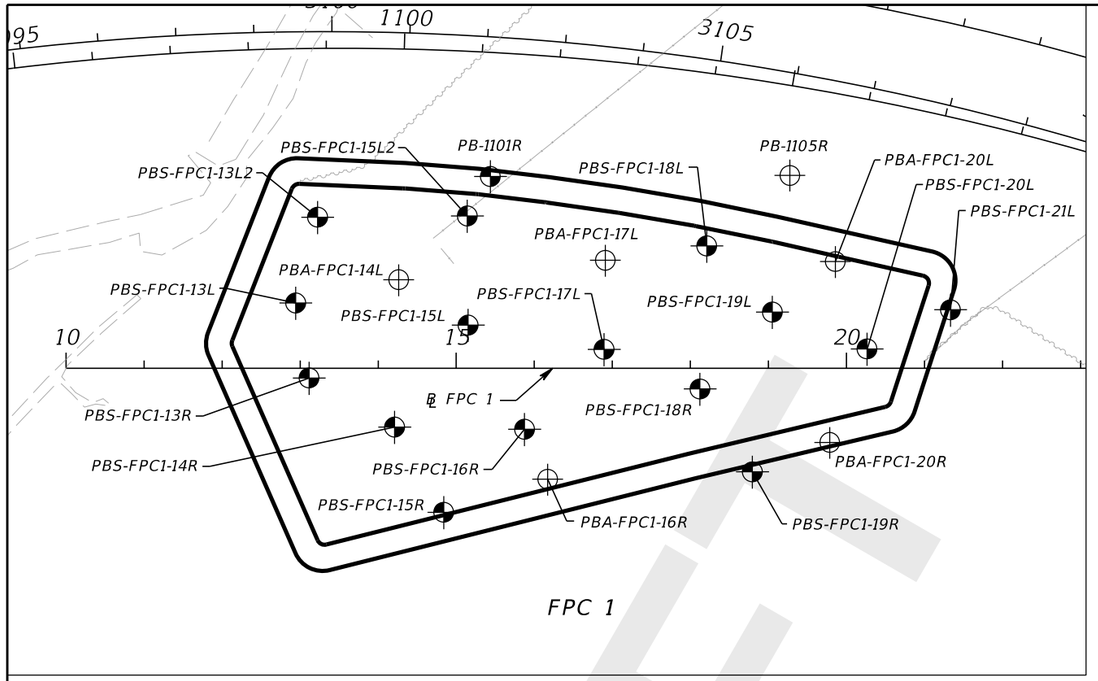
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

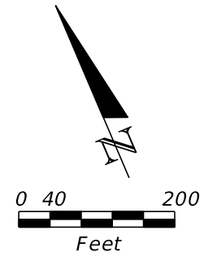
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (7)

SHEET NO.
C - 19



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

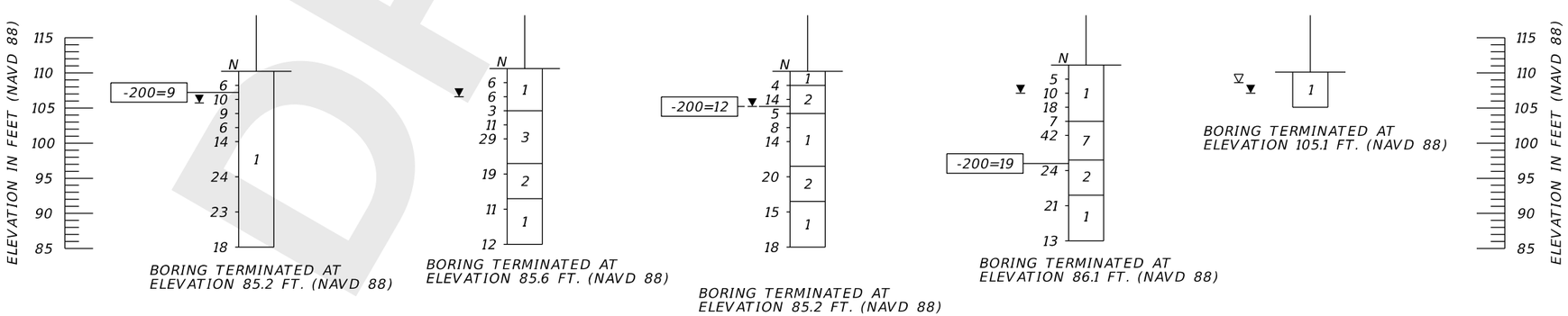
BOR #	PBS-FPC1-13L
STA.	12+94
REF.	℄ FPC1
OFF.	84' LT.
ELEV.	110.2
DATE	10/11/2019
DRILLER	B. CRAIG
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PBS-FPC1-13R
STA.	13+11
REF.	℄ FPC1
OFF.	12' RT.
ELEV.	110.6
DATE	10/14/2019
DRILLER	B. CRAIG
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PBS-FPC1-13L2
STA.	13+22
REF.	℄ FPC1
OFF.	194' LT.
ELEV.	110.2
DATE	10/10/2019
DRILLER	B. CRAIG
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PBS-FPC1-14R
STA.	14+21
REF.	℄ FPC1
OFF.	75' RT
ELEV.	111.1
DATE	10/14/2019
DRILLER	B. CRAIG
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PBA-FPC1-14L(1)
STA.	14+26
REF.	℄ FPC1
OFF.	114' LT.
ELEV.	110.1
DATE	6/17/2019



FPC 1

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

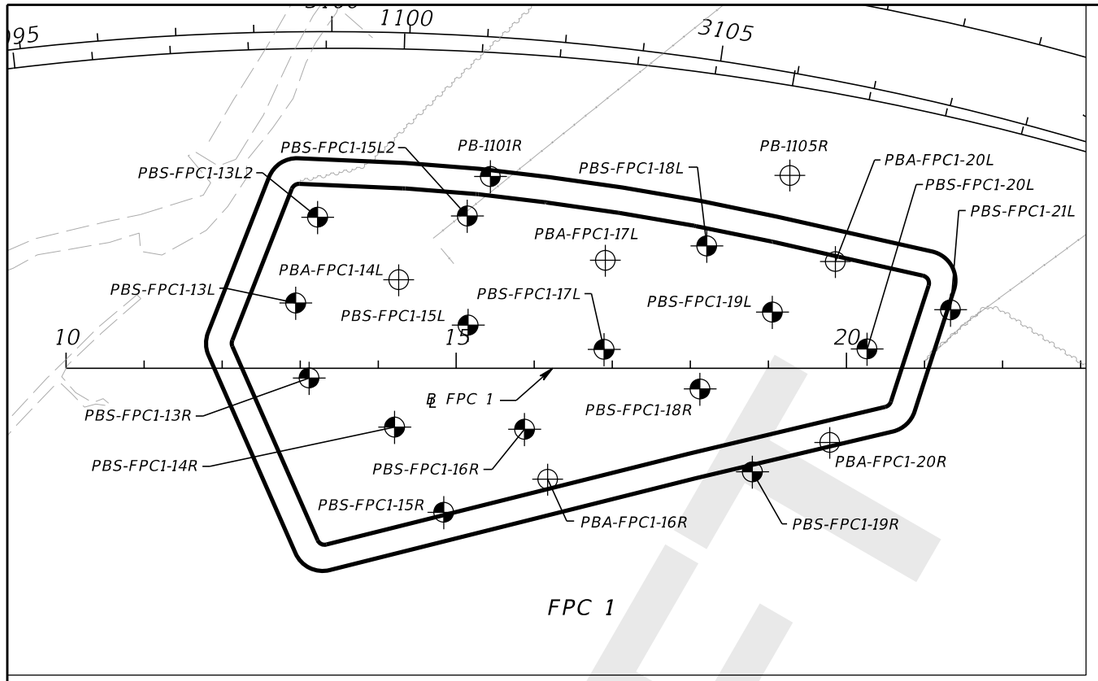
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

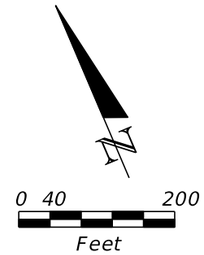
POND SOIL SURVEY (8)

SHEET NO.
C - 20

DRAFT



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

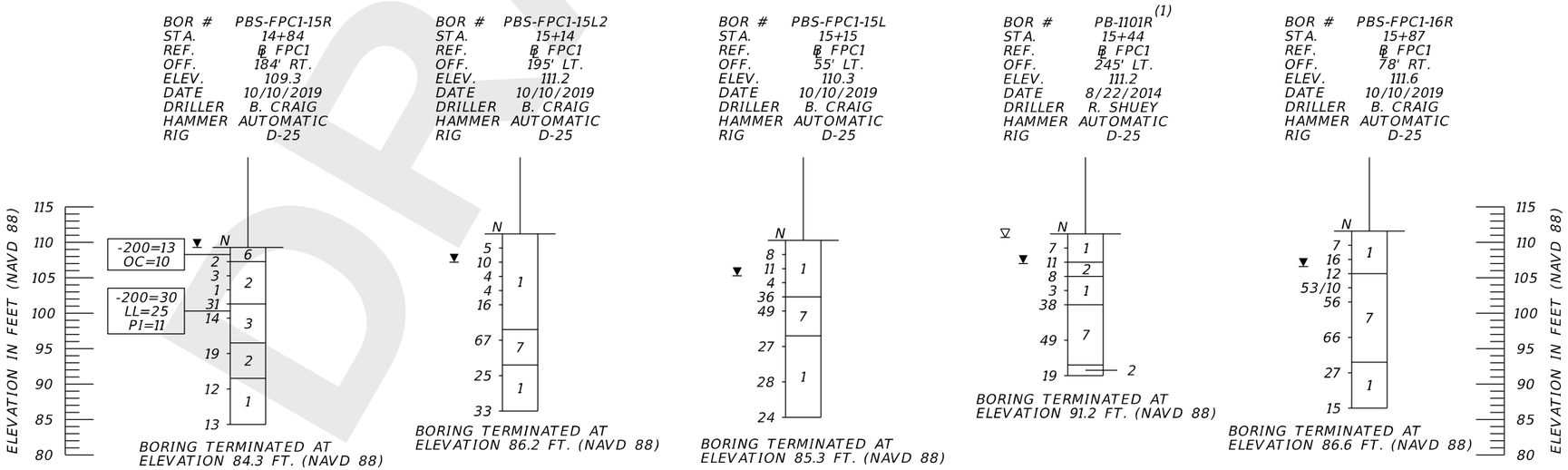
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FPC 1



DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

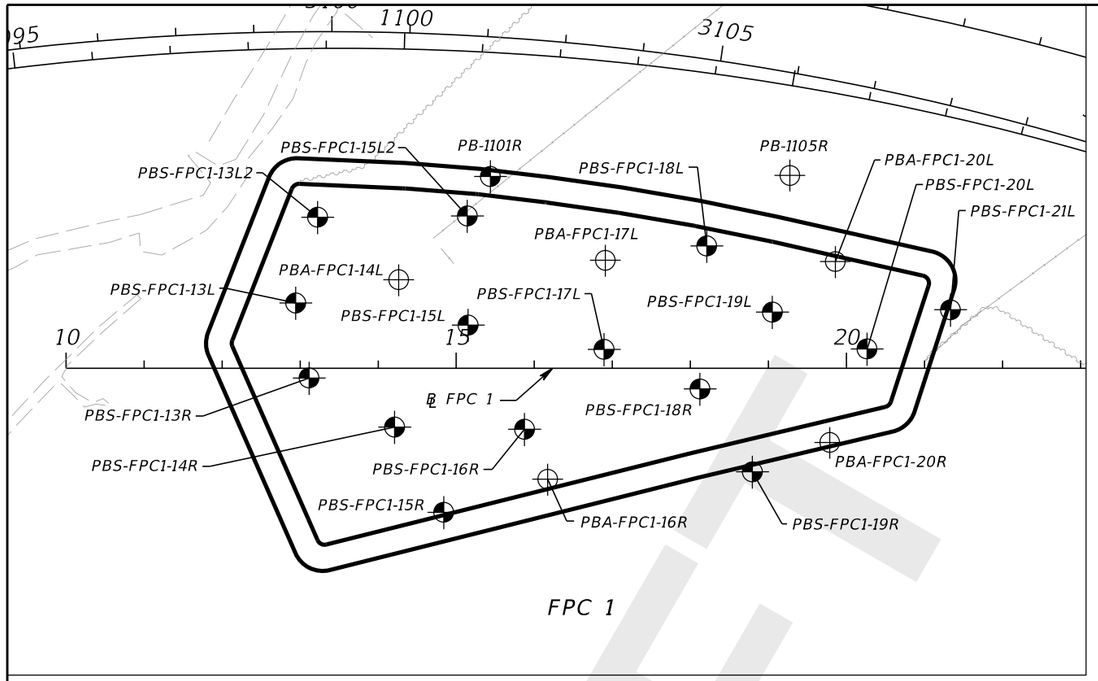
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

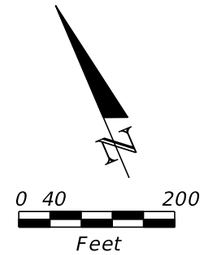
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (9)

SHEET NO.
C - 21



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

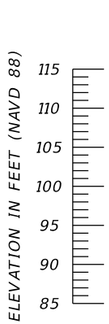
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

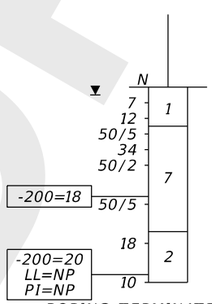
	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR # PBA-FPC1-16R (1)
STA. 16+17
REF. ℄ FPC1
OFF. 142' RT.
ELEV. 111.6
DATE 6/17/2019



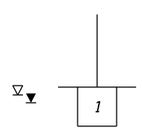
BORING TERMINATED AT ELEVATION 106.6 FT. (NAVD 88)

BOR # PBS-FPC1-17L
STA. 16+89
REF. ℄ FPC1
OFF. 24' LT.
ELEV. 112.7
DATE 10/14/2019
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



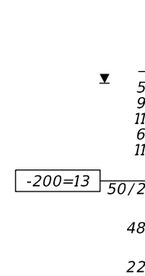
BORING TERMINATED AT ELEVATION 87.7 FT. (NAVD 88)

BOR # PBA-FPC1-17L (1)
STA. 16+91
REF. ℄ FPC1
OFF. 138' LT.
ELEV. 112.7
DATE 6/17/2019



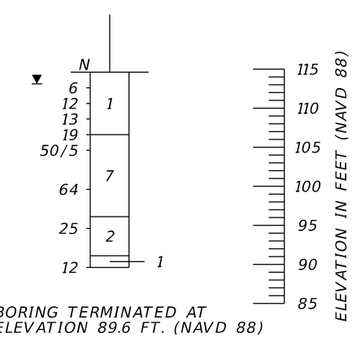
BORING TERMINATED AT ELEVATION 107.7 FT. (NAVD 88)

BOR # PBS-FPC1-18R
STA. 18+12
REF. ℄ FPC1
OFF. 26' RT.
ELEV. 114.7
DATE 10/11/2019
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 89.7 FT. (NAVD 88)

BOR # PBS-FPC1-18L
STA. 18+21
REF. ℄ FPC1
OFF. 157' LT.
ELEV. 114.6
DATE 10/11/2019
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 89.6 FT. (NAVD 88)

FPC 1

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

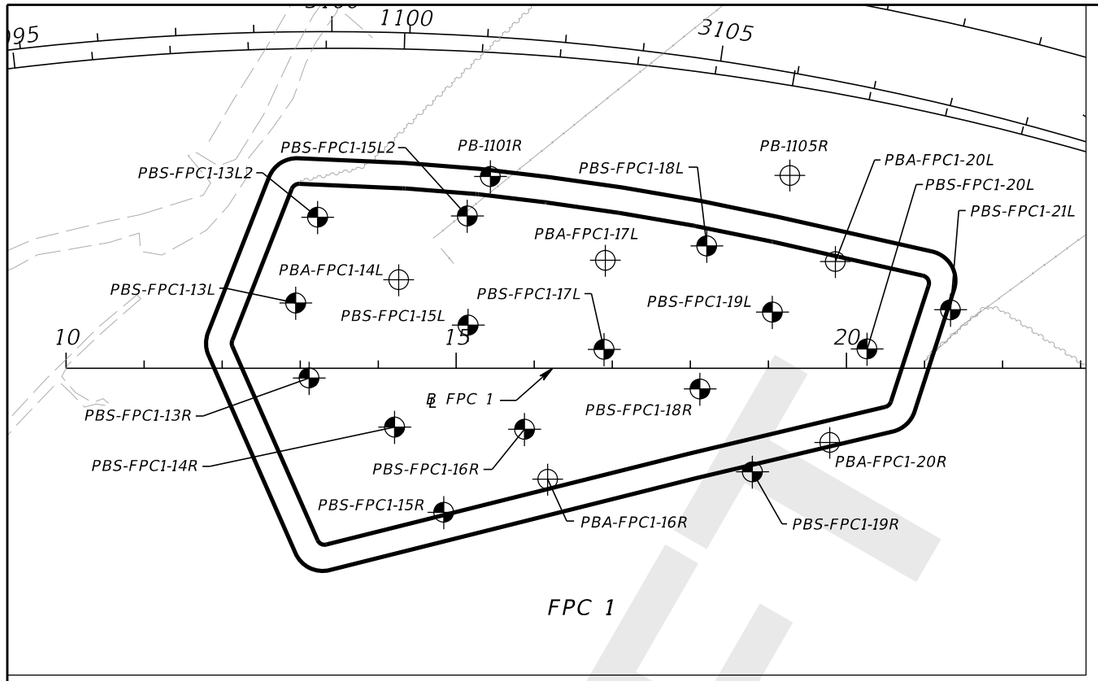
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

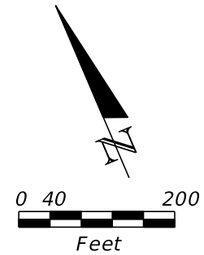
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (10)

SHEET NO.
C - 22



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

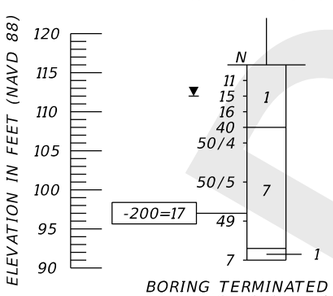
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

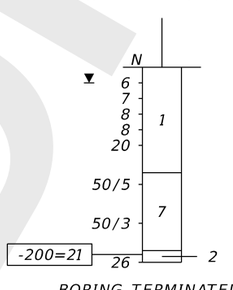
	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR #	PBS-FPC1-19R
STA.	18+79
REF.	℄ FPC1
OFF.	133' RT.
ELEV.	116.0
DATE	10/11/2019
DRILLER	B. CRAIG
HAMMER	AUTOMATIC
RIG	D-25



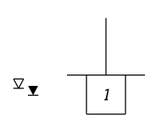
BORING TERMINATED AT ELEVATION 91.0 FT. (NAVD 88)

BOR #	PBS-FPC1-19L
STA.	19+05
REF.	℄ FPC1
OFF.	72' LT.
ELEV.	115.7
DATE	10/11/2019
DRILLER	B. CRAIG
HAMMER	AUTOMATIC
RIG	D-25



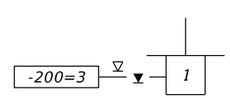
BORING TERMINATED AT ELEVATION 90.7 FT. (NAVD 88)

BOR #	PB-1105R (1)
STA.	19+28
REF.	℄ FPC1
OFF.	247' LT.
ELEV.	114.7
DATE	8/22/2014



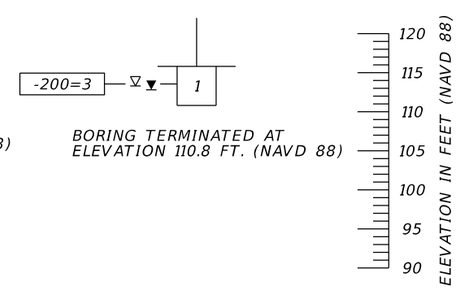
BORING TERMINATED AT ELEVATION 109.7 FT. (NAVD 88)

BOR #	PBA-FPC1-20R (1)
STA.	19+79
REF.	℄ FPC1
OFF.	95' RT.
ELEV.	117.2
DATE	6/17/2019



BORING TERMINATED AT ELEVATION 112.2 FT. (NAVD 88)

BOR #	PBA-FPC1-20L (1)
STA.	19+86
REF.	℄ FPC1
OFF.	137' LT.
ELEV.	115.8
DATE	6/17/2019



BORING TERMINATED AT ELEVATION 110.8 FT. (NAVD 88)

FPC 1

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

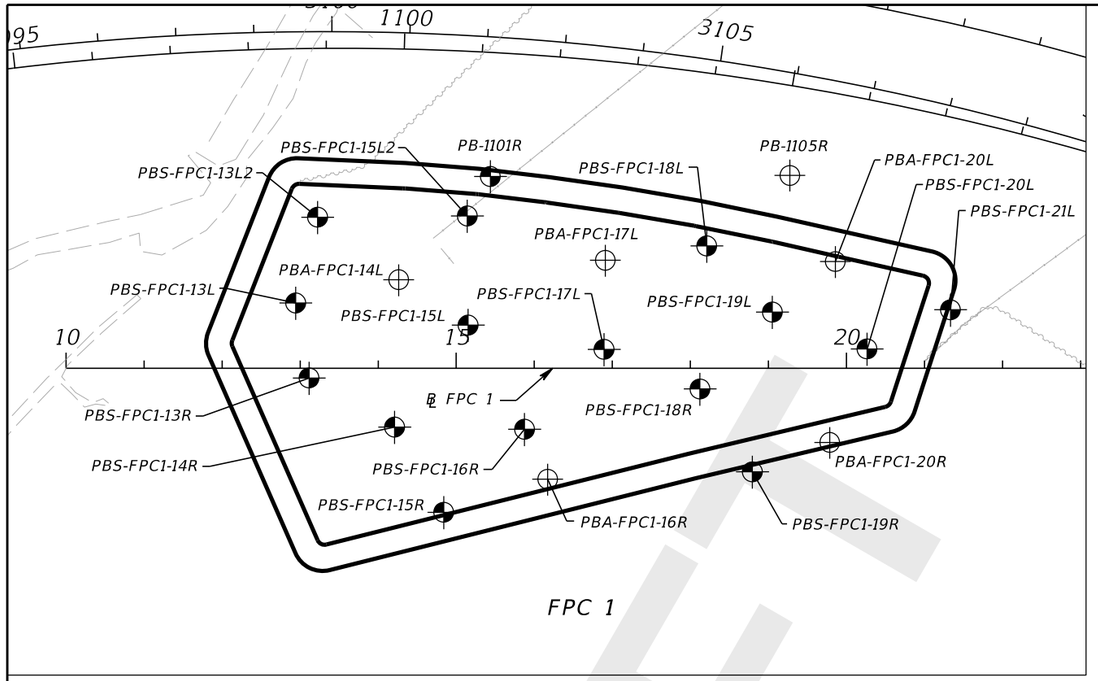
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

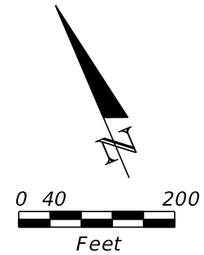
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (11)

SHEET NO.
C - 23



BORING LOCATION PLAN



℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

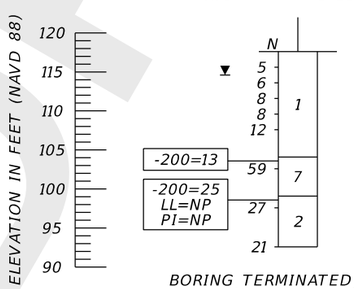
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

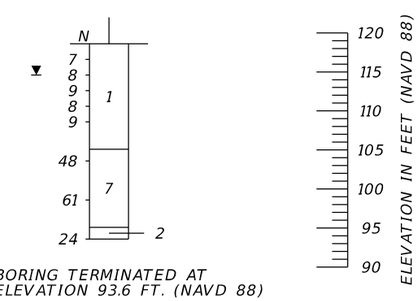
FPC 1

BOR # PBS-FPC1-20L
STA. 20+26
REF. ℄ FPC1
OFF. 25' LT.
ELEV. 117.6
DATE 10/14/2019
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 92.6 FT. (NAVD 88)

BOR # PBS-FPC1-21L
STA. 21+33
REF. ℄ FPC1
OFF. 75' LT.
ELEV. 118.6
DATE 10/11/2019
DRILLER B. CRAIG
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 93.6 FT. (NAVD 88)

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

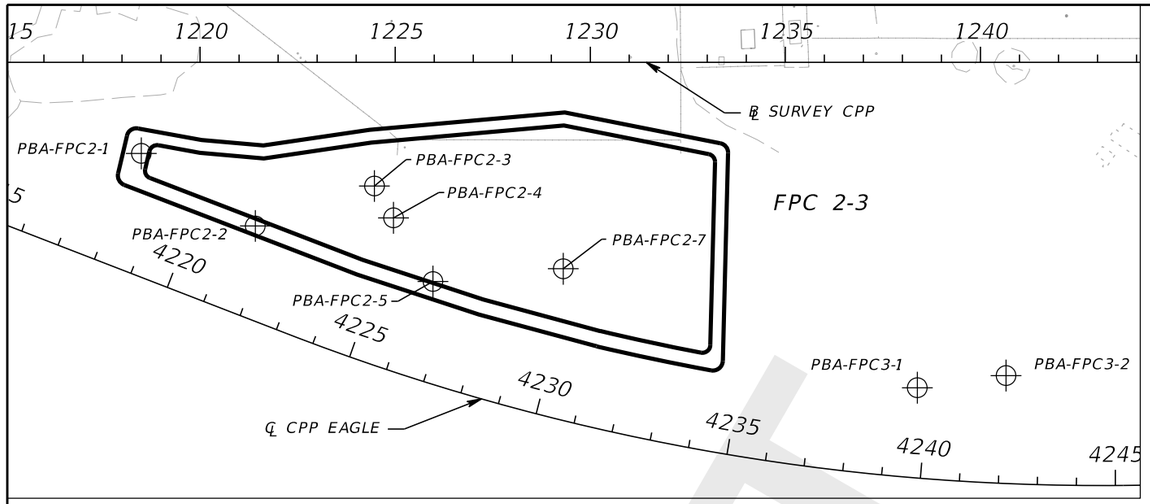
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

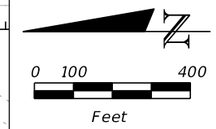
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (12)

SHEET NO.
C - 24





BORING LOCATION PLAN

℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

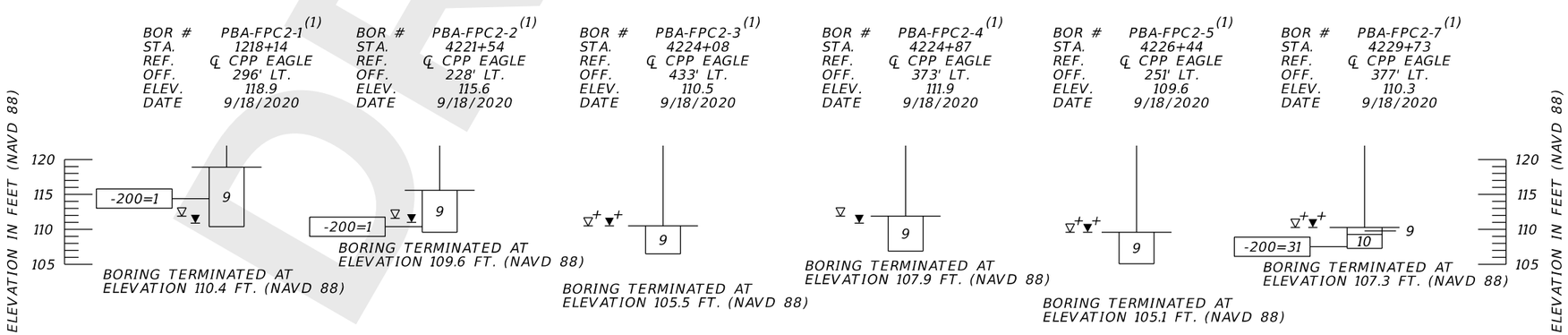
LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▽+	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GRADE
GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



FPC 2-3

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

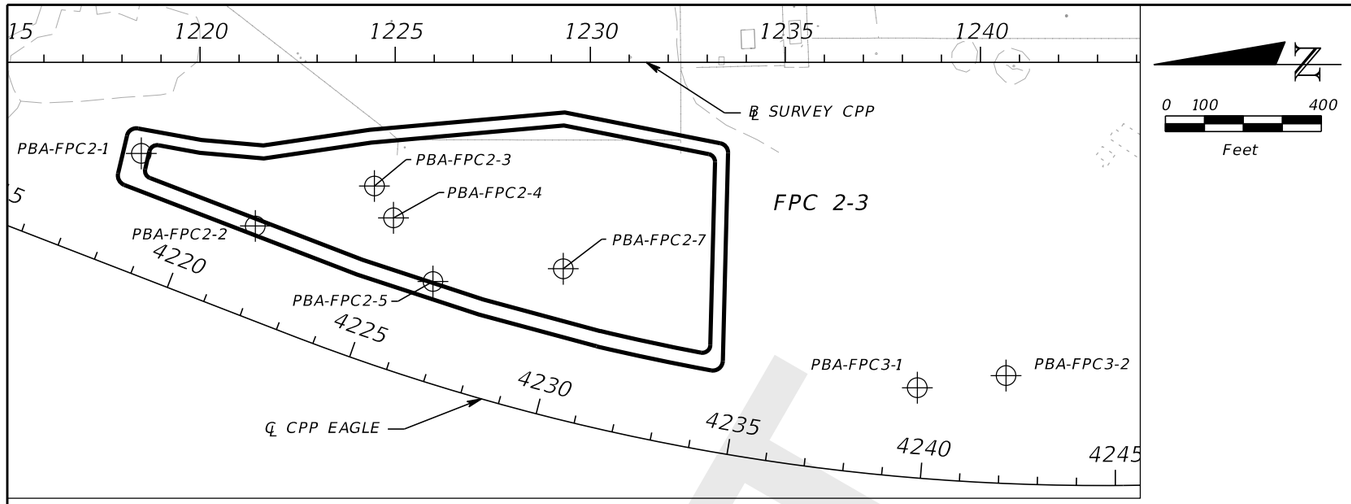
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (13)

SHEET NO.
C - 25



BORING LOCATION PLAN

℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
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A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NP	NON-PLASTIC
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
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GNE	GROUNDWATER NOT ENCOUNTERED
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
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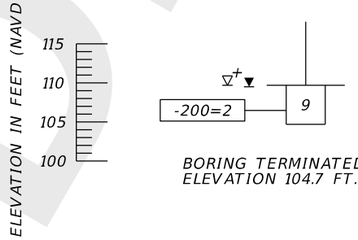
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

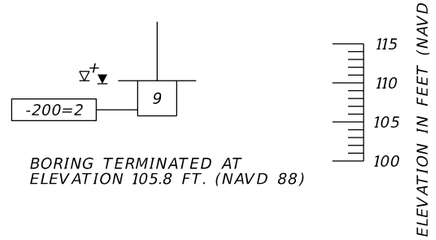
FPC 2-3

BOR # PBA-FPC3-1 (1)
STA. 4239+72
REF. ℄ CPP EAGLE
OFF. 231' LT.
ELEV. 109.7
DATE 9/18/2020



BORING TERMINATED AT ELEVATION 104.7 FT. (NAVD 88)

BOR # PBA-FPC3-2 (1)
STA. 4242+08
REF. ℄ CPP EAGLE
OFF. 276' LT.
ELEV. 110.3
DATE 9/18/2020



BORING TERMINATED AT ELEVATION 105.8 FT. (NAVD 88)

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

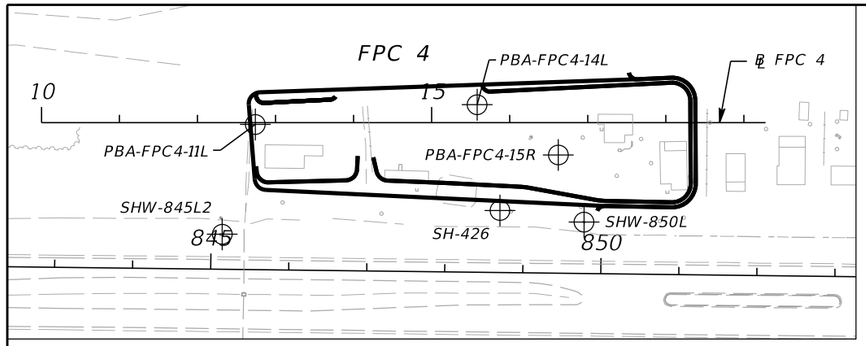
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

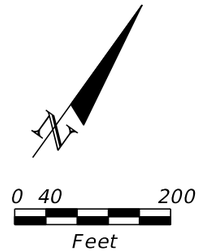
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (14)

SHEET NO.
C - 26





BORING LOCATION PLAN

℄ SMF 1	BASELINE SURVEY SMF 1
℄ SMF 2	BASELINE SURVEY SMF 2
℄ FPC 1	BASELINE SURVEY FPC 1
℄ SURVEY CPP	BASELINE SURVEY CPP
℄ CPP EAGLE	CENTERLINE CONSTRUCTION CPP EAGLE
℄ FPC 4	BASELINE SURVEY FPC 4

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
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⊕	APPROXIMATE SPT BORING LOCATION
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CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

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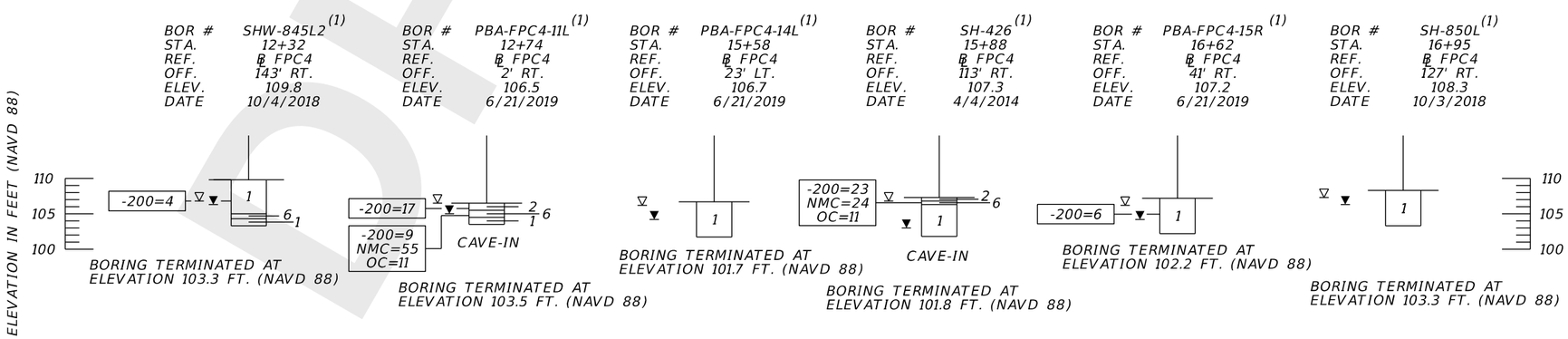
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



FPC 4

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
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7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (15)

SHEET NO.
C - 27

TABLE 1
SUMMARY OF USDA SOIL SURVEY
POLK COUNTY, FLORIDA

USDA Map Symbol and Soil Name	Soil Classification				pH	Seasonal High Water Table	
	Depth (in)	USCS	AASHTO	Permeability (in/hr)		Depth (feet)	Months
(7) Pomona, non-hydric- Pomona, hydric	0-6	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.5 - 1.5	June-Oct
	6-21	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	21-26	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	26-48	SP, SP-SM	A-2-4, A-3	2.0-20.0	3.5-6.0		
	48-73	SC, SP-SM, SM	A-2, A-4, A-6	0.2-2.0	3.5-5.5		
	73-80	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	0-6	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.0 - 1.0	June-Oct
	6-21	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	21-26	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	26-48	SP, SP-SM	A-2-4, A-3	2.0-20.0	3.5-6.0		
	48-73	SC, SC-SM, SM	A-2, A-4, A-6	0.2-2.0	3.5-5.5		
	73-80	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
(11) Arents- Water	0-80	SP, SP-SM	A-3	20.0-50.0	3.5-6.5	> 6.0	Jan-Dec
	---	---	---	---	---		
(12) Neilhurst	0-3	SP, SP-SM	A-2-4, A-3	20.0-50.0	5.1-6.5	> 6.0	Jan-Dec
	3-80	SP, SP-SM	A-2-4, A-3	20.0-50.0	5.1-6.5		
(17) Myakka- Smyrna, non-hydric- Smyrna, hydric	0-7	SP, SP-SM	A-3	6.0-20.0	3.5-6.5	0.5 - 1.5	June-Oct
	7-25	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
	25-36	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-6.5		
	36-80	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
	0-4	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3	0.5 - 1.5	June-Oct
	4-12	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
	12-25	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-7.3		
	25-42	SP, SP-SM	A-3	6.0-20.0	4.5-7.3		
	42-48	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-7.3		
	48-80	SM, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
	0-4	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3	0.0 - 1.0	June-Oct
	4-12	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
	12-25	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-7.3		
	25-42	SP, SP-SM	A-3	6.0-20.0	4.5-7.3		
	42-48	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-7.3		
	48-80	SM, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
(19) Floridana, depressional	0-8	SM, SP-SM	A-2-4, A-3	6.0-20.0	4.5-8.4	+2.0 - 0.0	Jan-Dec
	8-15	SM, SP-SM	A-2-4, A-3	6.0-20.0	4.5-8.4		
	15-28	SP, SP-SM	A-3	6.0-20.0	4.5-8.4		
	28-80	SC, SC-SM	A-2-4, A-2-6	0.06-0.2	4.5-8.4		
(21) Immokalee, non-hydric- Immokalee, hydric	0-7	SP, SP-SM	A-3	6.0-20.0	3.5-6.0	0.5 - 1.5	June-Oct
	7-39	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	39-58	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	58-66	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	66-80	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	0-7	SP, SP-SM	A-3	6.0-20.0	3.5-6.0	0.0 - 1.0	June-Oct
	7-39	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	39-58	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	58-66	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	66-80	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
(25) Placid, depressional- Myakka, depressional	0-18	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	+2.0 - 0.0	Jan-Dec
	18-80	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	0-3	SP, SP-SM	A-3	6.0-20.0	3.5-6.5	+2.0 - 0.0	Jan-Dec
	3-25	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
	25-35	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-6.5		
	35-80	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
(31) Adamsville	0-6	SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.8	2.0 - 3.5	June-Nov
	6-80	SP, SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.8		
(37) Placid	0-18	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.0 - 1.0	Jan-Feb, June-Dec
	18-80	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
(42) Felda	0-5	SP, SP-SM	A-3	6.0-20.0	5.1-7.8	0.0 - 1.0	Jan-Mar, July-Dec
	5-22	SP, SP-SM	A-3	6.0-20.0	5.1-7.8		
	22-50	SC, SC-SM, SM	A-2-4, A-2-6	0.6-6.0	6.1-8.4		
	50-80	SP, SP-SM	A-2-4, A-3	6.0-20.0	6.1-8.4		

TABLE 1
SUMMARY OF USDA SOIL SURVEY
POLK COUNTY, FLORIDA

USDA Map Symbol and Soil Name	Soil Classification				pH	Seasonal High Water Table	
	Depth (in)	USCS	AASHTO	Permeability (in/hr)		Depth (feet)	Months
(44) Paisley, non-hydric - Paisley, hydric	0-3	SP-SM	A-2-4, A-3	6.0-20.0	4.5-6.5	1.0 - 1.5	June-Oct
	3-14	SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.3		
	14-30	CH, CL	A-7	0.06-0.2	5.6-8.4		
	30-80	CH, CL	A-7	0.06-0.2	5.6-8.4		
	0-3	SP-SM	A-2-4, A-3	6.0-20.0	4.5-6.5	0.0 - 1.0	June-Nov
	3-14	SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.3		
	14-30	CH, CL	A-7	0.06-0.2	5.6-8.4		
	30-80	CH, CL	A-7	0.06-0.2	5.6-8.4		
(47) Zolfo	0-7	SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.3	2.0 - 3.5	June-Nov
	7-71	SM, SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.3		
	71-80	SM, SP-SM	A-2-4, A-3	0.2-6.0	3.5-6.5		
(51) Pomona, non-hydric - Urban land- Pomona, hydric	0-6	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.5 - 1.5	June-Oct
	6-21	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	21-26	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	26-48	SP, SP-SM	A-2-4, A-3	2.0-20.0	3.5-6.0		
	48-73	SC, SC-SM, SM	A-2, A-4, A-6	0.2-2.0	3.5-5.5		
	73-80	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	Information not provided for Urban land						
	0-6	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.0 - 1.0	June-Oct
	6-21	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	21-26	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	26-48	SP, SP-SM	A-2-4, A-3	2.0-20.0	3.5-6.0		
	48-73	SC, SC-SM, SM	A-2, A-4, A-6	0.2-2.0	3.5-5.5		
(68) Arents	0-80	SP, SP-SM	A-3	20.0-50.0	3.5-6.5	2.0 - 4.0	Jan, June-Dec

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TABLE 2
SUMMARY OF SEASONAL HIGH GROUNDWATER TABLE ESTIMATES WITHIN SMF AND FPC AREAS
SR 570B (CENTRAL POLK PARKWAY) FROM SR 570 (POLK PARKWAY) TO SR 35 (US 17)
POLK COUNTY, FLORIDA
FPN: 440897-2-52-01
TIERRA PROJECT NO: 6511-17-181-001

Boring Name	Boring Location[1]		Reference	Boring Depth (feet)[2]	Ground Elevation[1] (feet, NAVD 88)	Measured Groundwater Table			USDA Soil Survey		Estimated SHGWT[4]	
	Station (feet)	Offset (feet)				Date Recorded	Depth[2] (feet)	Elevation (feet, NAVD88)	Map Symbol	Estimated SHGWT[3] Depth (feet)	Depth (feet)	Elevation (feet, NAVD88)
SMF 1												
PB-SMF-1-1	14+17	19' RT.	BL SMF1	11.5	105.0	11/26/2018	8.0	97.0	44	1.0-1.5; 0.0-1.0	1.5	103.5
PB-SMF-1-2	18+03	61' LT.	BL SMF1	8.0	103.3	11/26/2018	3.0	100.3	44	1.0-1.5; 0.0-1.0	0.5	102.8
PB-SMF-1-3	32+05	396' RT.	BL SMF1	7.5	102.3	11/26/2018	4.5	97.8	42	0.0-1.0	1.5	100.8
SMF 2												
PB-SMF2B-4	10+37	47' RT.	BL SMF2	8.0	116.3	11/26/2018	6.0	110.3	17	0.5-1.5; 0.0-1.0	3.0	113.3
PB-208L	12+20	30' LT.	BL SMF2	7.0	114.9	10/27/2014	5.7	109.2	21, 17	0.0-1.0, 0.5-1.5	2.0	112.9
SH-210	13+87	85' RT.	BL SMF2	6.5	116.4	10/13/2013	5.6	110.8	47, 21	2.0-3.5, 0.0-1.0	3.0	113.4
PB-SMF2A-1	15+65	154' LT.	BL SMF2	8.5	114.0	11/26/2018	4.5	109.5	21	0.5-1.5; 0.0-1.0	2.5	111.5
PB-SMF2A-2	19+33	105' LT.	BL SMF2	9.0	113.2	11/27/2018	6.8	106.4	21	0.5-1.5; 0.0-1.0	2.0	111.2
PB-SMF2A-3	23+82	154' LT.	BL SMF2	9.5	114.4	11/27/2018	7.8	106.6	21	0.5-1.5; 0.0-1.0	3.0	111.4
FPC 1												
PBA-FPC1-14L	14+26	114' LT.	BL FPC1	5.0	110.1	6/17/2019	3.0	107.1	31	2.0-3.5	1.5	108.6
PB-1101R	15+44	245' LT.	BL FPC1	5.0	111.2	8/22/2014	4.2	107.0	17,31	0.0-1.0; 2.0-3.5	0.5	110.7
PBA-FPC1-16R	16+17	142' RT.	BL FPC1	5.0	111.6	6/17/2019	3.0	108.6	31	2.0-3.5	1.0	110.6
PBA-FPC1-17L	16+91	138' LT.	BL FPC1	5.0	112.7	6/17/2019	2.0	110.7	17	0.5-1.5; 0.0-1.0	1.0	111.7
PB-1105R	19+28	247' LT.	BL FPC1	5.0	114.7	8/22/2014	2.6	112.1	17	0.5-1.5; 0.0-1.0	1.7	113.0
PBA-FPC1-20R	19+79	95' RT.	BL FPC1	5.0	117.2	6/17/2019	3.5	113.7	31	2.0-3.5	2.0	115.2
PBA-FPC1-20L	19+86	137' LT.	BL FPC1	5.0	115.8	6/17/2019	3.0	112.8	17	0.5-1.5; 0.0-1.0	2.5	113.3
SMF 3 (No Longer in Consideration)												
PB-SMF-3B-9	12+57	155' LT.	BL SMF3	7.5	107.7	11/27/2018	5.6	102.1	25	+2.0-0.0	1.5	106.2
PB-SMF-3B-1	13+92	559' RT.	BL SMF3	10.0	108.0	11/26/2018	3.6	104.4	21	0.5-1.5; 0.0-1.0	1.0	107.0
PB-SMF-3B-4	18+70	260' RT.	BL SMF3	10.5	107.2	11/26/2018	6.0	101.2	7	0.5-1.5; 0.0-1.0	1.0	106.2
PB-SMF-3B-7	21+01	7' RT.	BL SMF3	10.5	106.9	11/26/2018	3.8	103.1	7	0.5-1.5; 0.0-1.0	1.5	105.4
PB-SMF-3B-10	24+87	259' LT.	BL SMF3	5.5	105.2	11/27/2018	3.6	101.6	7	0.5-1.5; 0.0-1.0	1.0	104.2
PB-SMF-3B-6	28+30	150' RT.	BL SMF3	6.0	104.7	11/27/2018	3.3	101.4	7	0.5-1.5; 0.0-1.0	0.5	104.2
PB-SMF-3B-17	1203+57	1677' RT.	B/L SURVEY CPP	8.5	105.3	11/26/2018	5.0	100.3	11	> 6.0	1.0	104.3
PB-SMF-3B-18	1203+95	1165' RT.	B/L SURVEY CPP	6.5	104.0	11/26/2018	2.7	101.3	11	> 6.0	1.0	103.0

(1) Boring locations and ground elevations were provided by the project surveyor. Station and offset of the boring locations were determined using the surveyed GPS coordinates in conjunction with project design files provided by KCA.
(2) Depth below existing grades at time of augering.
(3) Seasonal high groundwater table (SHGWT) depth based on the Polk County, Florida USDA Soil Survey information.
(4) SHGWT estimates based on soil stratigraphy, measured groundwater levels from the borings, the Polk County, Florida USDA Soil Survey information and past experience with similar soil conditions.
(5) AG: Groundwater or estimated SHGWT level is above the existing ground surface. The SHGWT is recommended to be determined by the project biologist utilizing biological indicators or through wetland data.
(6) Soil units 12 and 68 primarily consist of soils from mining operations as reported in the Polk County, Florida USDA Soil Survey.

TABLE 2
SUMMARY OF SEASONAL HIGH GROUNDWATER TABLE ESTIMATES WITHIN SMF AND FPC AREAS
SR 570B (CENTRAL POLK PARKWAY) FROM SR 570 (POLK PARKWAY) TO SR 35 (US 17)
POLK COUNTY, FLORIDA
FPN: 440897-2-52-01
TIERRA PROJECT NO: 6511-17-181-001

Boring Name	Boring Location[1]		Reference	Boring Depth (feet)[2]	Ground Elevation[1] (feet, NAVD 88)	Measured Groundwater Table			USDA Soil Survey		Estimated SHGWT[4]	
	Station (feet)	Offset (feet)				Date Recorded	Depth[2] (feet)	Elevation (feet, NAVD88)	Map Symbol	Estimated SHGWT[3] Depth (feet)	Depth (feet)	Elevation (feet, NAVD88)
SMF 3A (No Longer in Consideration)												
PB-SMF-3A-1	1192+83	327' LT.	B/L SURVEY CPP	5.5	109.2	11/27/2018	3.3	105.9	21	0.5-1.5; 0.0-1.0	1.0	108.2
PB-SMF-3A-3	1196+93	308' LT.	B/L SURVEY CPP	6.0	109.1	11/27/2018	4.4	104.7	25	+2.0-0.0	1.0	108.1
PB-SMF-3A-5	1200+30	490' LT.	B/L SURVEY CPP	6.5	109.9	11/27/2018	3.9	106.0	17	0.5-1.5; 0.0-1.0	1.0	108.9
PB-SMF-3A-6	1200+62	242' LT.	B/L SURVEY CPP	7.5	109.4	11/27/2018	5.3	104.1	17	0.5-1.5; 0.0-1.0	1.0	108.4
PB-SMF-3A-8	1204+03	425' LT.	B/L SURVEY CPP	7.5	109.1	11/27/2018	3.8	105.3	17	0.5-1.5; 0.0-1.0	1.5	107.6
FPC 3 (No Longer in Consideration)												
PB-FPC3-AB1	13+86	11' RT.	BL FPC3	9.5	108.8	9/19/2019	3.9	104.9	68[6]	2.0-4.0	3.9	104.9
PB-FPC3-AB2	15+82	1' LT.	BL FPC3	5.5	108.8	4/29/2019	7.9	100.9	68[6]	2.0-4.0	4.0	104.8
PB-FPC3-AB3	18+39	10' RT.	BL FPC3	11.5	108.4	9/19/2019	5.8	102.6	68[6]	2.0-4.0	5.4	103.0
FPC 2-3												
PBA-FPC2-1	4218+14	296' LT.	CL CPP EAGLE	8.5	118.9	9/18/2020	8.0	110.9	12[6]	> 6.0	7.0	111.9
PBA-FPC2-2	4221+54	228' LT.	CL CPP EAGLE	6.0	115.6	9/18/2020	4.6	111.0	12[6]	> 6.0	4.0	111.6
PBA-FPC2-3	4224+08	433' LT.	CL CPP EAGLE	4.0	110.5	9/18/2020	AG[5]	> 110.5	68[6]	2.0-4.0	AG[5]	> 110.5
PBA-FPC2-4	4224+87	373' LT.	CL CPP EAGLE	5.0	111.9	9/18/2020	1.0	110.9	68[6]	2.0-4.0	0.0	111.9
PBA-FPC2-5	4226+44	251' LT.	CL CPP EAGLE	4.5	109.6	9/18/2020	AG[5]	> 109.6	68[6]	2.0-4.0	AG[5]	> 109.6
PBA-FPC2-7	4229+73	377' LT.	CL CPP EAGLE	3.0	110.3	9/18/2020	AG[5]	> 110.3	68[6]	2.0-4.0	AG[5]	> 110.3
PBA-FPC3-1	4239+72	231' LT.	CL CPP EAGLE	5.0	109.7	9/18/2020	0.2	109.5	68[6]	2.0-4.0	AG[5]	> 109.7
PBA-FPC3-2	4242+08	276' LT.	CL CPP EAGLE	4.5	110.3	9/18/2020	0.4	109.9	68[6]	2.0-4.0	AG[5]	> 110.3
FPC 4												
SHW-845L2	12+32	143' RT.	BL FPC4	6.5	109.8	10/4/2018	3.5	106.3	13	+2.0 - 0.0	3.0	106.8
PBA-FPC4-11L	12+74	2' RT.	BL FPC4	3.0	106.5	6/21/2019	1.5	105.0	25	+2.0-0.0	0.0	106.5
PBA-FPC4-14L	15+58	23' LT.	BL FPC4	5.0	106.7	6/21/2019	2.5	104.2	7	0.5-1.5; 0.0-1.0	0.5	106.2
SH-426	15+88	113' RT.	BL FPC4	5.5	107.3	4/4/2014	4.3	103.0	51, 7	0.5-1.5; 0.5-1.5; 0.0-1.0	0.5	106.8
PBA-FPC4-15R	16+62	41' RT.	BL FPC4	5.0	107.2	6/21/2019	3.0	104.2	51	0.5-1.5	1.0	106.2
SHW-850L	16+95	127' RT.	BL FPC4	5.0	108.3	10/3/2018	2.0	106.3	51	0.5-1.5	0.8	107.5

(1) Boring locations and ground elevations were provided by the project surveyor. Station and offset of the boring locations were determined using the surveyed GPS coordinates in conjunction with project design files provided by KCA.
(2) Depth below existing grades at time of augering.
(3) Seasonal high groundwater table (SHGWT) depth based on the Polk County, Florida USDA Soil Survey information.
(4) SHGWT estimates based on soil stratigraphy, measured groundwater levels from the borings, the Polk County, Florida USDA Soil Survey information and past experience with similar soil conditions.
(5) AG: Groundwater or estimated SHGWT level is above the existing ground surface. The SHGWT is recommended to be determined by the project biologist utilizing biological indicators or through wetland data.
(6) Soil units 12 and 68 primarily consist of soils from mining operations as reported in the Polk County, Florida USDA Soil Survey.

November 4, 2019

Kisinger Campo & Associates, Inc.
201 N. Franklin St., Suite 400
Tampa, Florida 33602

Attn: Mr. Thomas Presby

RE: Pond and FPC Geotechnical Final PSR Submittal Letter
Central Polk Parkway (SR 570B)
From Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
FPN 440897-2-52-01
Tierra Project No.: 6511-17-181-001

Mr. Presby:

Tierra, Inc. (Tierra) has completed geotechnical engineering services for the preferred Stormwater Management Facility (SMF) locations and Flood Plain Compensation (FPC) sites for the above referenced project to support the Final Pond Siting Report (PSR). The results of our subsurface exploration are presented herein.

The objective of our study was to obtain information concerning subsurface conditions within the selected SMF and FPC sites to provide geotechnical design parameters including *insitu* near-surface soil conditions and estimated and Seasonal High Groundwater Table (SHGWT) depths to the project drainage engineer for the project Final Pond Siting Report. It should be noted that as pond design progresses, Tierra will perform additional final level pond geotechnical test borings to assist with final design.

The project consists of the design of seven miles of new alignment of the Central Polk Parkway (CPP) proposed to include a new four-lane roadway from the existing Polk Parkway (SR 570) to SR 35 (US 17) in Polk County, Florida. Approximately the first half of the project alignment (Station 1000+00 to 1213+00) traverses open and wooded natural areas, wetlands, and agricultural lands. The remainder of the project alignment mostly traverses reclaimed mine lands where past phosphate mining operations occurred to approximately Station 1320+00. Based on our review, it appears that past mining operations occurred north of Old Bartow Eagle Lake Road (Station 1320+00) but not south of it.

Review of Published Information and Past Mining Activities

Tierra has reviewed the Soil Survey of Polk County, Florida" published by the USDA, the "Auburndale, Florida" and "Bartow, Florida" Quadrangle Maps produced by the USGS, and historical aerial imagery. A summary of the soil mapping units in the vicinity of the SMF and FPC sites is presented on **Table 1** in the **Attachments** of this report. Reproductions of the **USDA Soil Survey Map**, **USGS Quadrangle Map** and **Historical Aerials** are also provided in the **Attachments**.

The importance of the characterization of areas identified as past mined land is because the soils that occupy these areas are not "natural" and have been disturbed, mixed, and modified from past mining phosphate operations. Phosphate mining operations performed in the project area typically consisted of strip-mining. The mining process consisted of removing unconsolidated overburden soils from above the "matrix" layer containing the phosphate pebble. The matrix was typically

excavated with draglines, slurried and pumped to a benefication processing plant. The phosphate pebble and grains were then separated from the coarse-grained materials (sand) and fine-grained tailings (silt and clay).

The separated sand portion from the matrix is often referred to as “tailing sand” and is characterized by relatively few fines (percent passing the #200 sieve) and having wider gradation spread than typical natural Florida fine sands. Waste phosphatic clays/slimes, another by-product of this process, are characterized by high fines content (percent passing the #200 sieve), high plasticity, and high moisture contents. The overburden soils can consist of various types of soils that were above the “matrix” (sand, clay or organic soils) and were often mixed during the excavation process.

The mine cut areas were then often backfilled with phosphate mining “waste”; the backfilling materials could be the previously removed overburden soils, tailings sands and/or hydraulically placed highly plastic waste phosphatic clays/slimes. Therefore, variable soil conditions are typical in previous mined areas. Waste phosphatic clays are highly moisture sensitive, highly plastic, have high shrink-swell potential, are very soft (low strength) and are susceptible to very large settlements under increased stress.

Based on a review of the published data, only FPC-3 is located within an area of past mining activity.

Field Exploration Program

Tierra performed hand auger borings to depths ranging to approximately 3 to 12½ feet below existing grades to identify the subsurface conditions near or within the footprint of the proposed SMF and FPC sites. The hand auger borings were performed by manually twisting and advancing a bucket auger into the ground, typically in 6 inch increments. As each soil type was revealed, representative samples were obtained and returned to our office for confirmation of the field classification by a geotechnical engineer.

In addition, Standard Penetration Test (SPT) borings were performed to evaluate deeper soil conditions near or within the footprint of the proposed SMF and FPC sites. The SPT borings were performed with the use of a truck-mounted drill rig using Bentonite Mud drilling procedures. The soil sampling was performed in general accordance with ASTM test designation D-1586. Generally, SPT resistance N-values were taken at intervals of 2 feet in the initial 10 feet and at intervals of 5 feet thereafter. Within some of the SPT borings performed, the initial 2 to 4 feet were manually augered to verify utility clearances. Representative portions of these soil samples were sealed in glass jars, labeled and transferred to our laboratory for classification and analysis.

The locations and elevations of some of the borings were located by the project surveyor and are denoted as such on the attached **Pond Soil Survey** sheets. The locations of the remaining borings were estimated by Tierra by using the recorded GPS coordinates obtained in the field with hand-held, non-survey grade GPS equipment with a manufacturer’s reported accuracy of ±10 feet. The GPS coordinates of these boring locations were later converted to station and offset using Microstation design files provided by KCA. The ground surface elevations at these boring locations were estimated from Microstation TIN design files data provided by KCA. The locations of the borings performed are shown on the attached **Pond Soil Survey** sheets.

Results of Field Exploration Program

Groundwater table levels were measured at the boring locations at depths ranging from above the existing ground surface to 10 feet below the ground surface at the time of our field exploration. In general, for the SMFs and FPCs in natural non-reclaimed mine lands, sandy soils were encountered within the top 3 to 10 feet below the ground surface. Below the sandy soils, plastic to more clayey soils were encountered to the boring termination depths.

The soils within FPC-3 (in the reclaimed mine land) generally consisted of soils associated with past mining activities – tailing sand, over-burden/cast soils and waste phosphatic clay (slime). Specific information on the soil conditions encountered within the borings performed to date can be found on the attached **Pond Soil Survey** sheets. Preliminary recommendations for soil utilization can be found on the attached **Roadway Soil Survey** sheets.

Seasonal High Groundwater Table Recommendations

Tierra has estimated the SHGWT at selected boring locations. The estimated SHGWT within the SMF and FPC sites is provided in **Table 2**. It should be noted that groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. In addition, a seasonal effect will occur in which higher groundwater levels are normally recorded in rainy seasons.

SMF 1 is an existing pond. We recommend existing permitted information and any other available information be reviewed for this pond in conjunction with our estimated values.

DRAFT

Should there be any questions regarding this letter, please do not hesitate to contact our office at (813) 989-1354. We look forward to working with you and your organization on this and future projects.

Respectfully Submitted,

TIERRA, INC.

Kaitlyn C. Waterman
Engineering Assistant

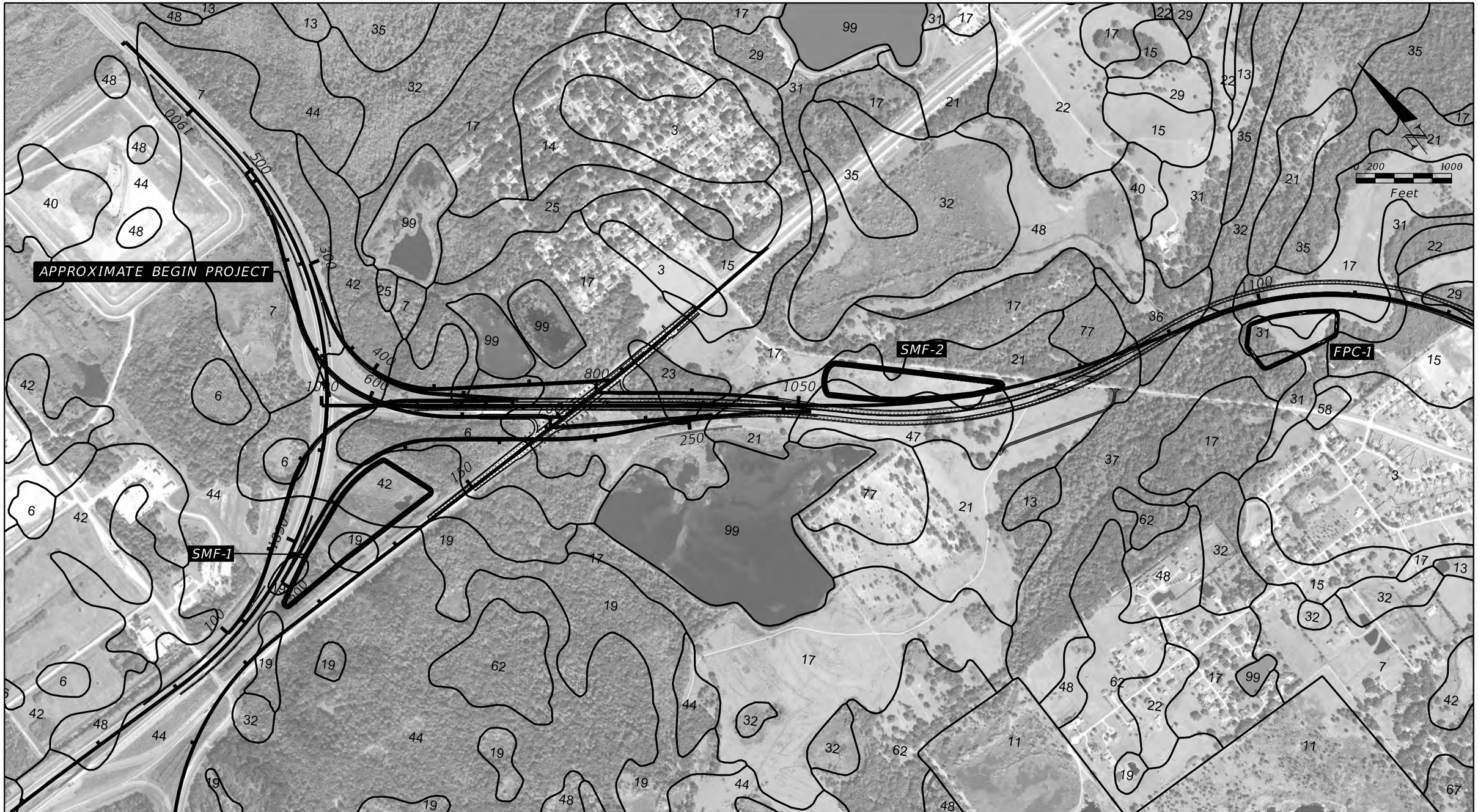
Marc E. Novak, Ph.D., P.E.
Senior Geotechnical Engineer
Florida License No. 67431

Lawrence P. Moore, P.E.
Principal Geotechnical Engineer
Florida License No. 47673

Attachments:

USDA Soil Survey Map
USGS Quadrangle Maps
Historical Aerials
Roadway Soil Survey
Pond Soil Survey Sheets
Table 1 – Summary of USDA Soil Survey Information
Table 2 – Summary of Seasonal High Groundwater Table Estimates

DRAFT



REFERENCE: USDA SOIL SURVEY OF POLK COUNTY, FLORIDA

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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P.E. LICENSE NUMBER 67431
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CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

USDA SOIL SURVEY MAP (1)

SHEET NO.
C - 36

REFERENCE: USDA SOIL SURVEY OF POLK COUNTY, FLORIDA

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

USDA SOIL SURVEY MAP (2)

SHEET NO.
C - 37

DRAFT

REFERENCE: USDA SOIL SURVEY OF POLK COUNTY, FLORIDA

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

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DEPARTMENT OF TRANSPORTATION

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SR 570B	POLK	440897-2-52-01

USDA SOIL SURVEY MAP (3)

SHEET NO.
C - 38

REFERENCE: USGS QUADRANGLE MAP OF "AUBURNDALE, FLORIDA" AND "BARTOW, FLORIDA"

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

REVISIONS			
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

USGS QUADRANGLE MAP (1)

SHEET NO.
C - 39

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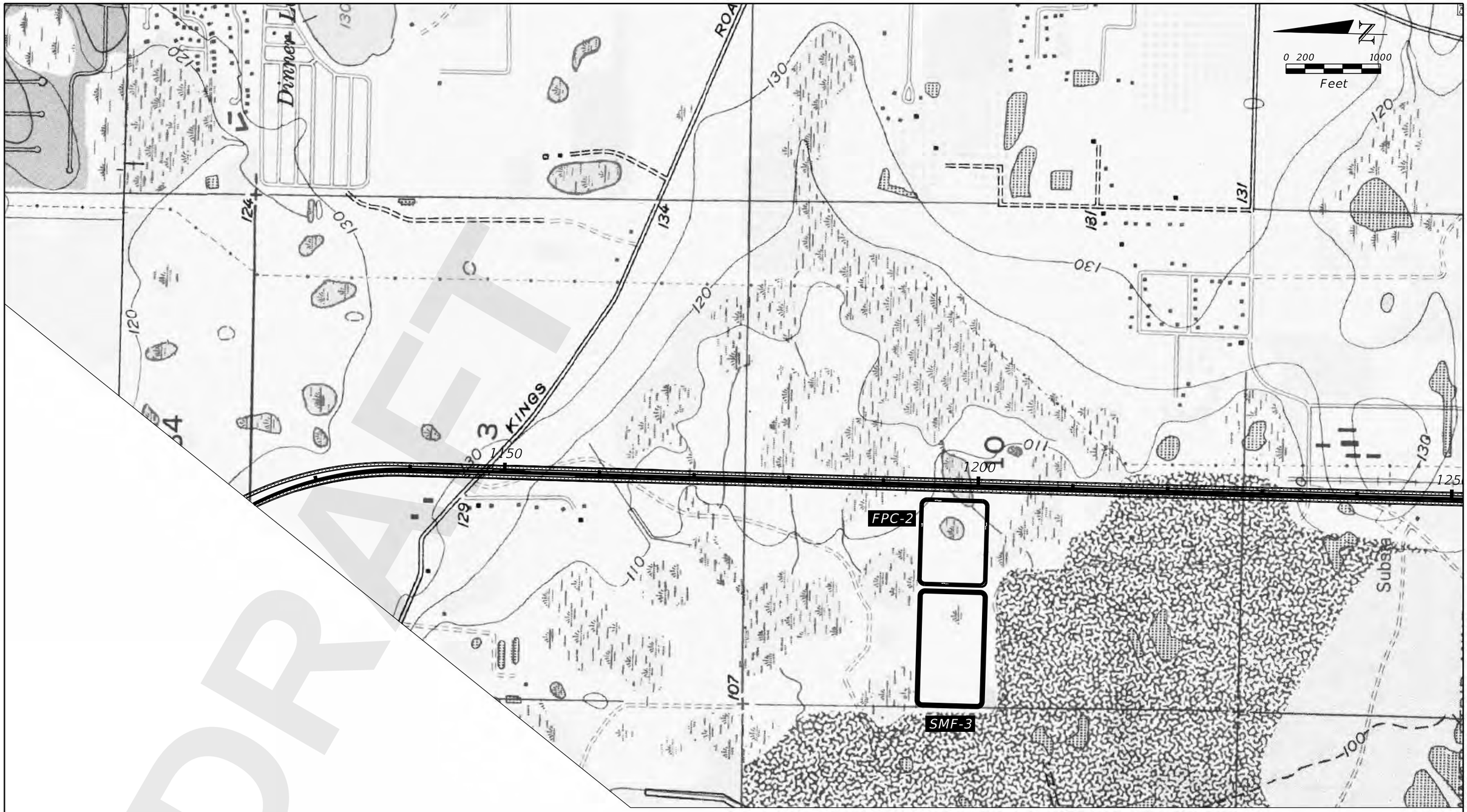

REFERENCE: USGS QUADRANGLE MAP OF "AUBURNDALE, FLORIDA" AND "BARTOW, FLORIDA"

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

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REVISIONS			
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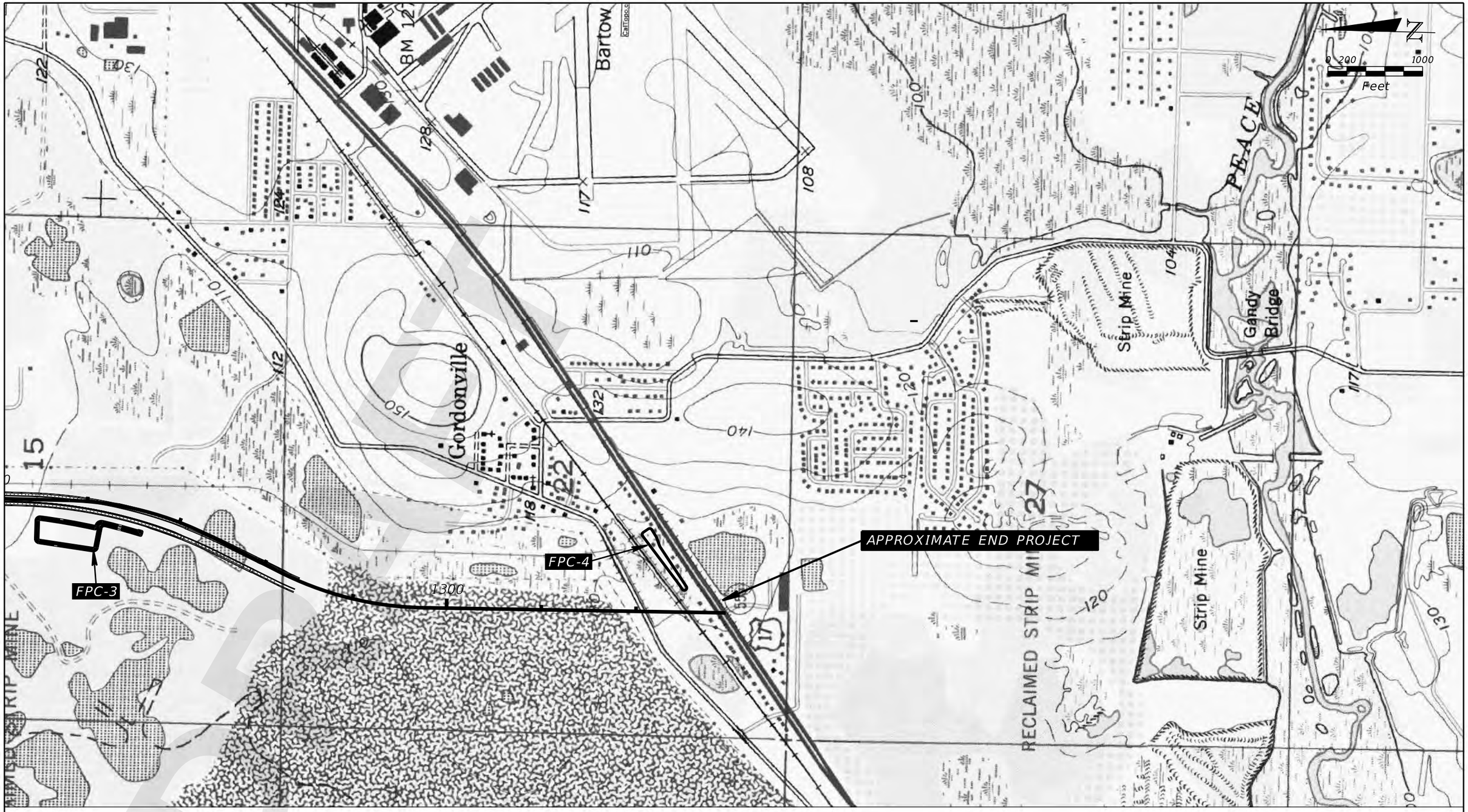
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

USGS QUADRANGLE MAP (2)

SHEET NO.
C - 40



REFERENCE: USGS QUADRANGLE MAP OF "AUBURNDALE, FLORIDA" AND "BARTOW, FLORIDA"

TOWNSHIP:	28S	29S
RANGE:	25E	25E
SECTION:	29,32,33,34	3,10,15,22,27

REVISIONS			
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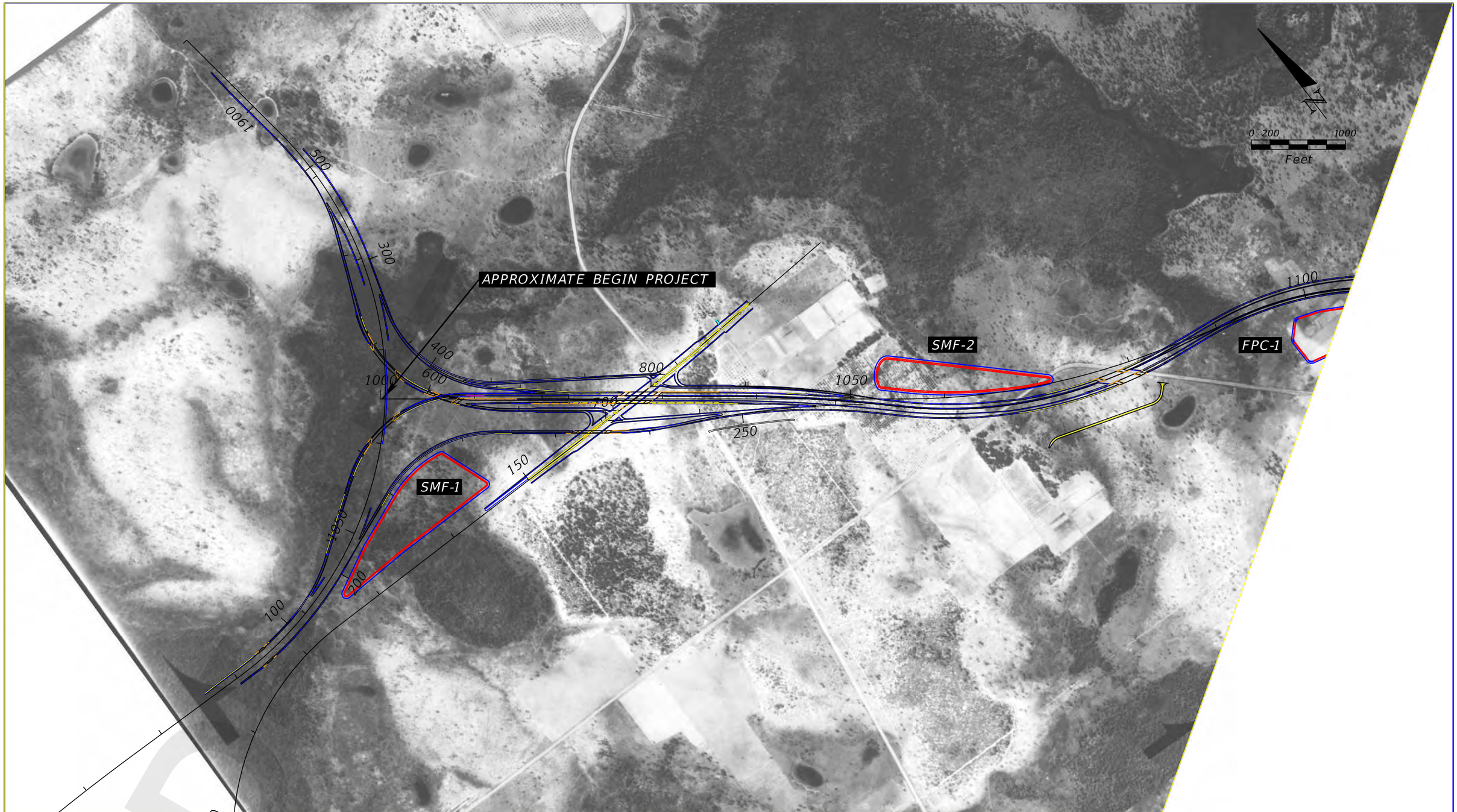
USGS QUADRANGLE MAP (3)

SHEET NO.
C - 41



SOURCE: UNIVERSITY OF FLORIDA

1941 HISTORICAL AERIAL PHOTOGRAPH

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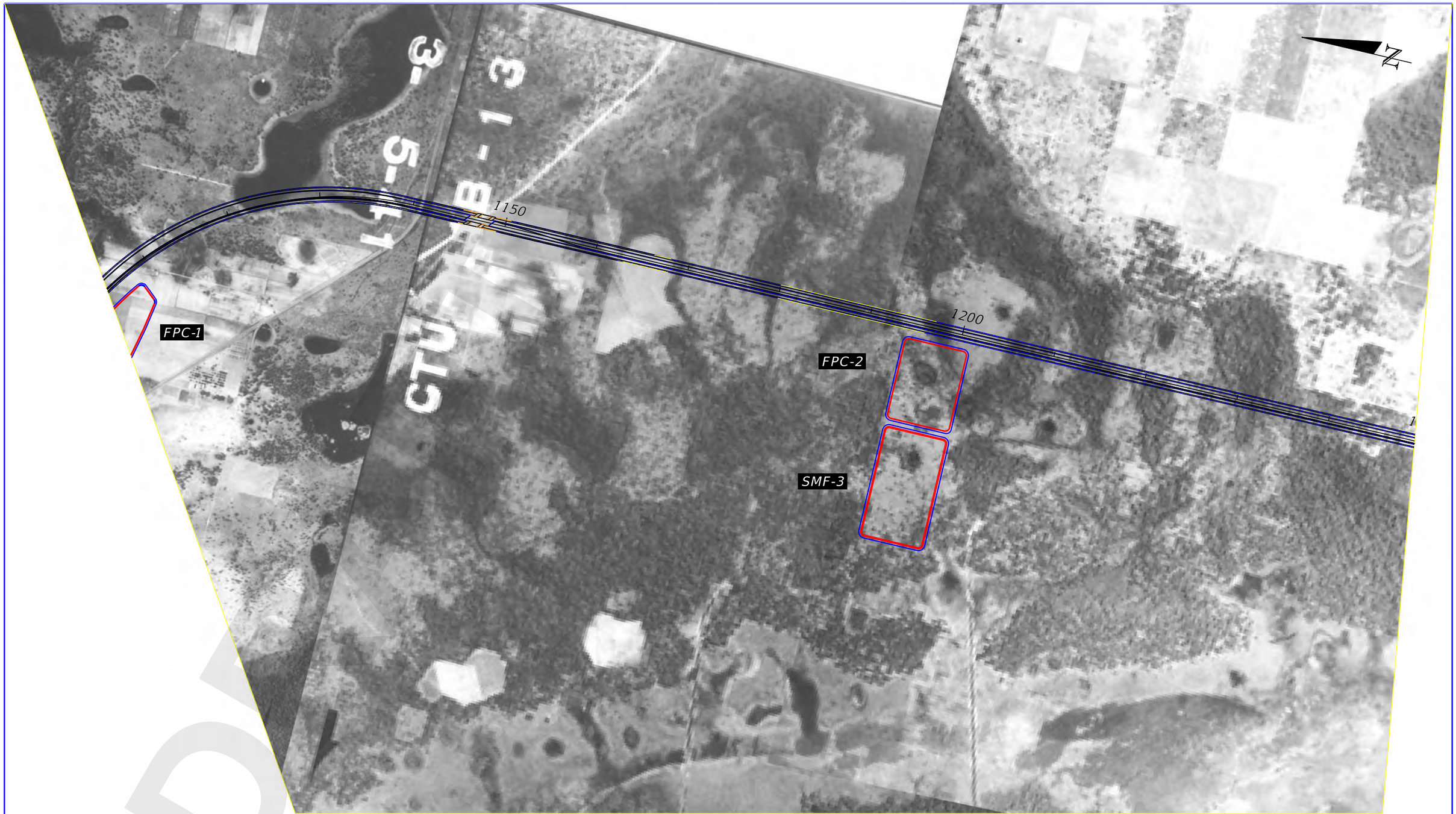
N/A	POLK	440897-2-52-01

HISTORICAL MAP (1)

SHEET NO.
C - 42



SOURCE: UNIVERSITY OF FLORIDA

1941 HISTORICAL AERIAL PHOTOGRAPH

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N/A	POLK	440897-2-52-01

HISTORICAL MAP (2)

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C - 43

SOURCE: UNIVERSITY OF FLORIDA

1941 HISTORICAL AERIAL PHOTOGRAPH

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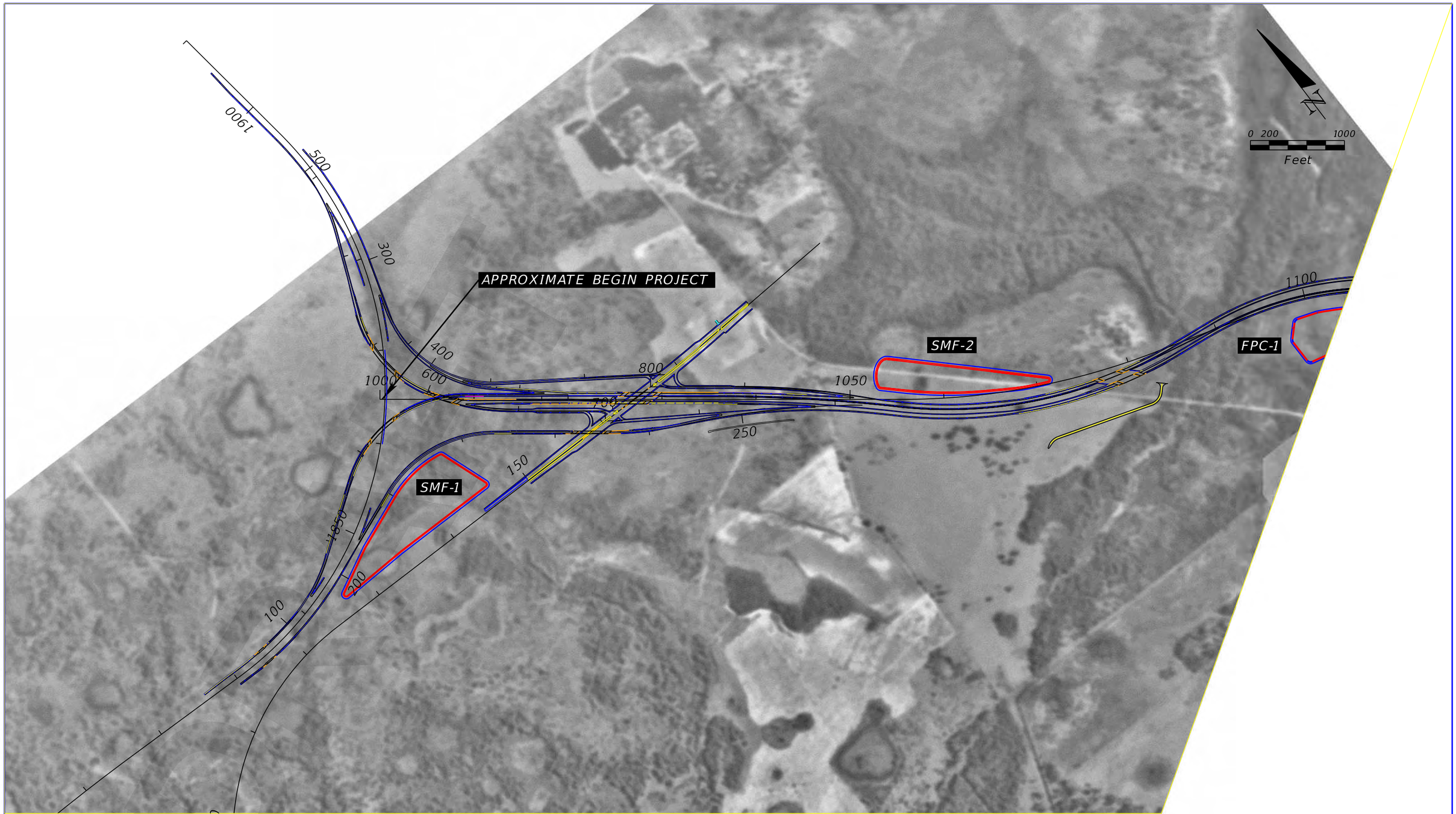
N/A	POLK	440897-2-52-01

HISTORICAL MAP (3)

SHEET NO.
C - 44



SOURCE: USGS EARTH RESOURCES OBSERVATION AND SCIENCE (EROS) CENTER

1959 HISTORICAL AERIAL PHOTOGRAPH

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HISTORICAL MAP (4)

SHEET NO.
C - 45

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SOURCE: USGS EARTH RESOURCES OBSERVATION AND SCIENCE (EROS) CENTER

1959 HISTORICAL AERIAL PHOTOGRAPH

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REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (5)

SHEET NO.
C - 46

SOURCE: USGS EARTH RESOURCES OBSERVATION AND SCIENCE (EROS) CENTER

1959 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
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STATE OF FLORIDA
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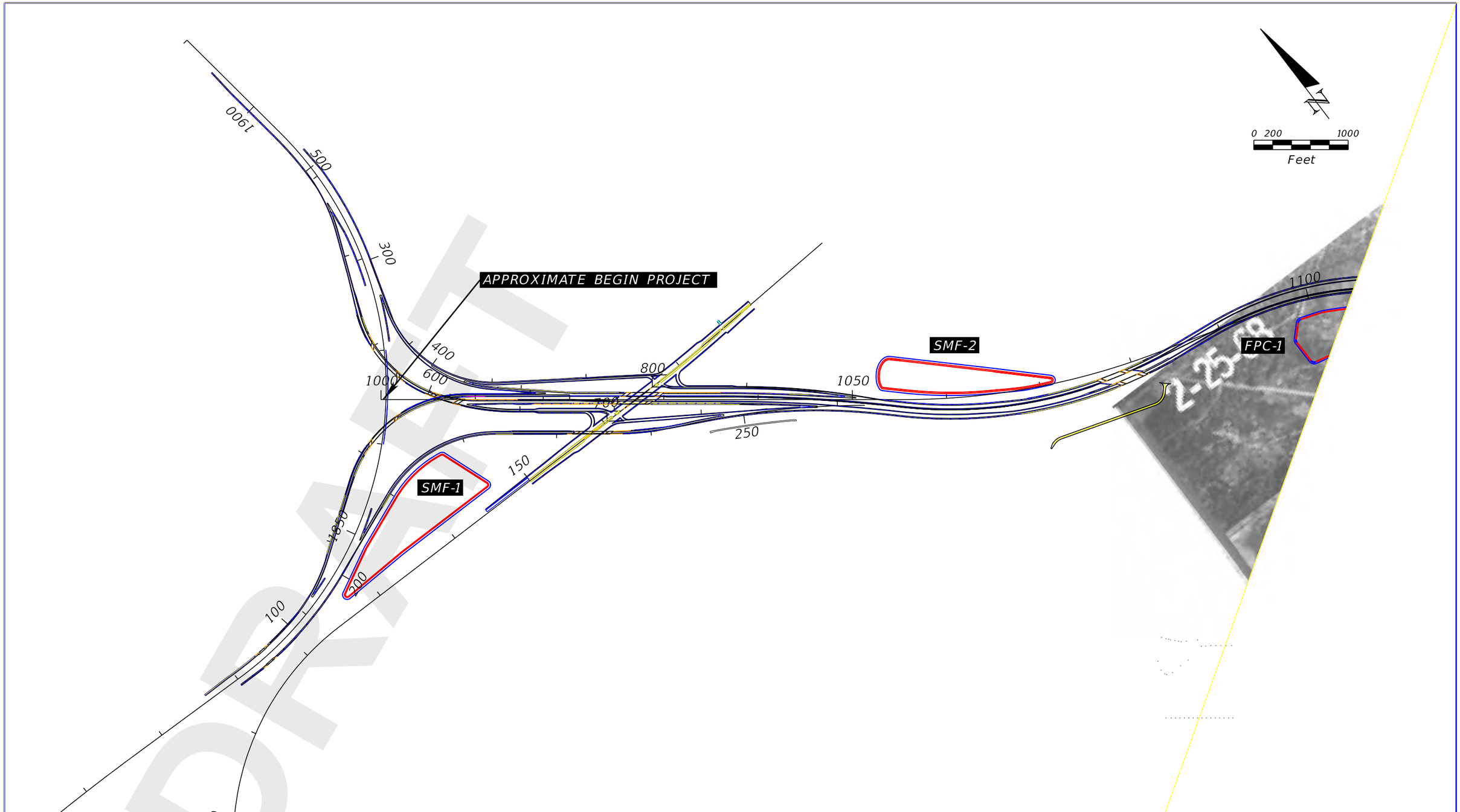
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (6)

SHEET NO.
C - 47



SOURCE: UNIVERSITY OF FLORIDA

1968 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
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N/A	POLK	440897-2-52-01

HISTORICAL MAP (7)

SHEET NO.
C - 48

SOURCE: UNIVERSITY OF FLORIDA

1968 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
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N/A	POLK	440897-2-52-01

HISTORICAL MAP (8)

SHEET NO.
C - 49

SOURCE: UNIVERSITY OF FLORIDA

1968 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
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TAMPA, FLORIDA 33637
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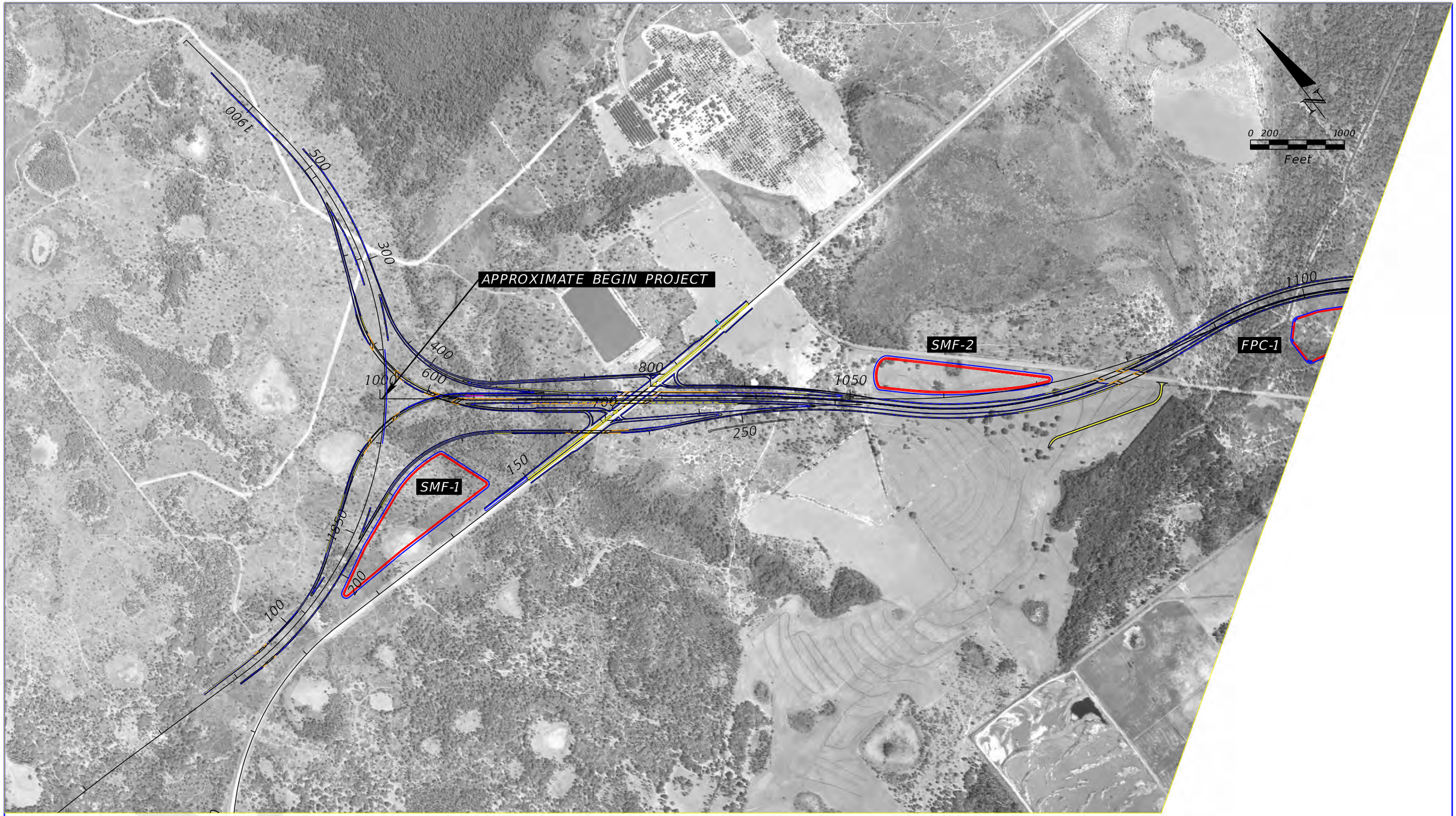
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (9)

SHEET NO.
C - 50



SOURCE: FDOT SURVEY AND MAPPING

1971 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (10)

SHEET NO.
C - 51

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SOURCE: FDOT SURVEY AND MAPPING

1971 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (11)

SHEET NO.
C - 52

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SOURCE: FDOT SURVEY AND MAPPING

1971 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA
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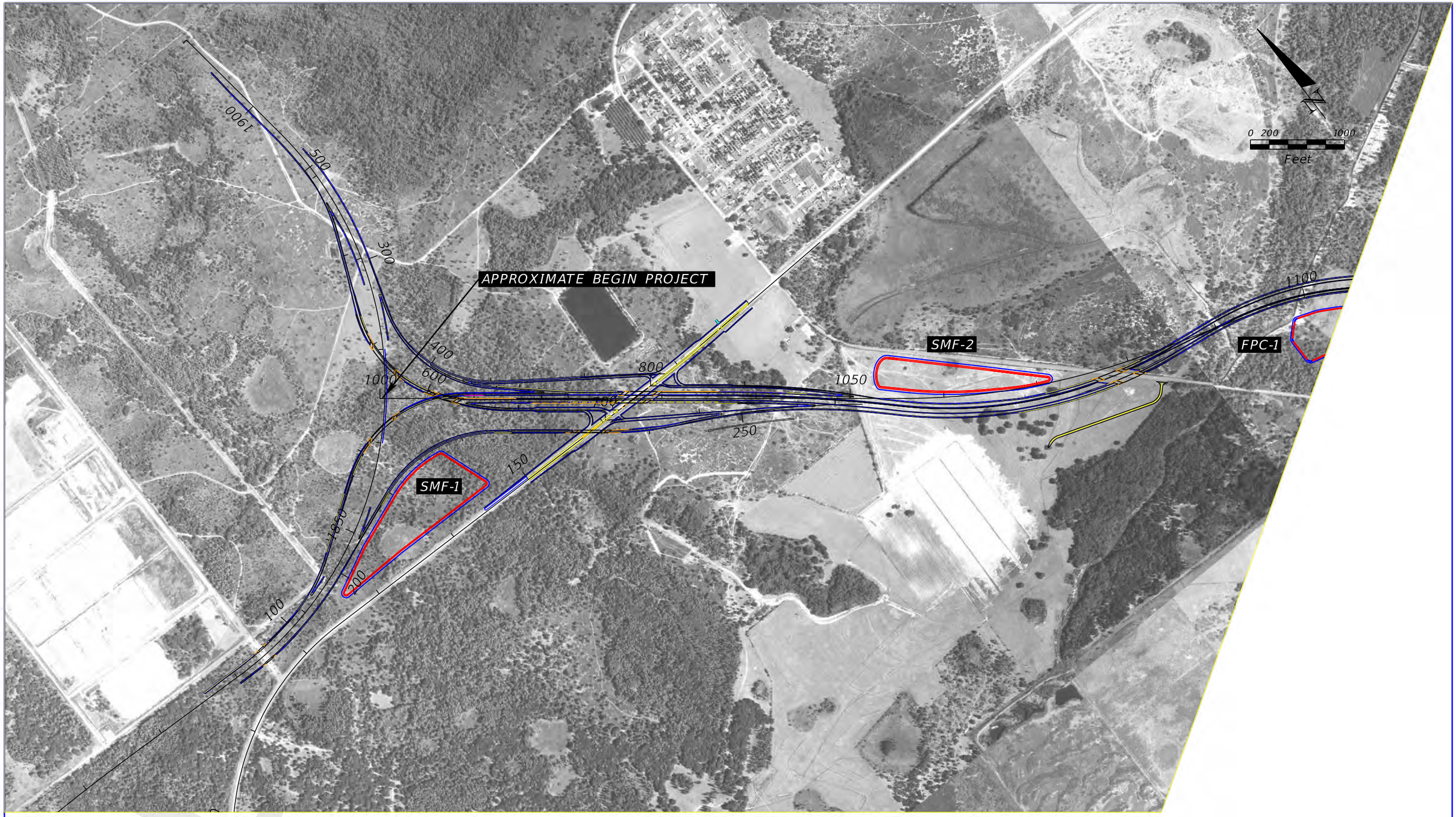
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (12)

SHEET NO.
C - 53



SOURCE: FDOT SURVEY AND MAPPING

1980 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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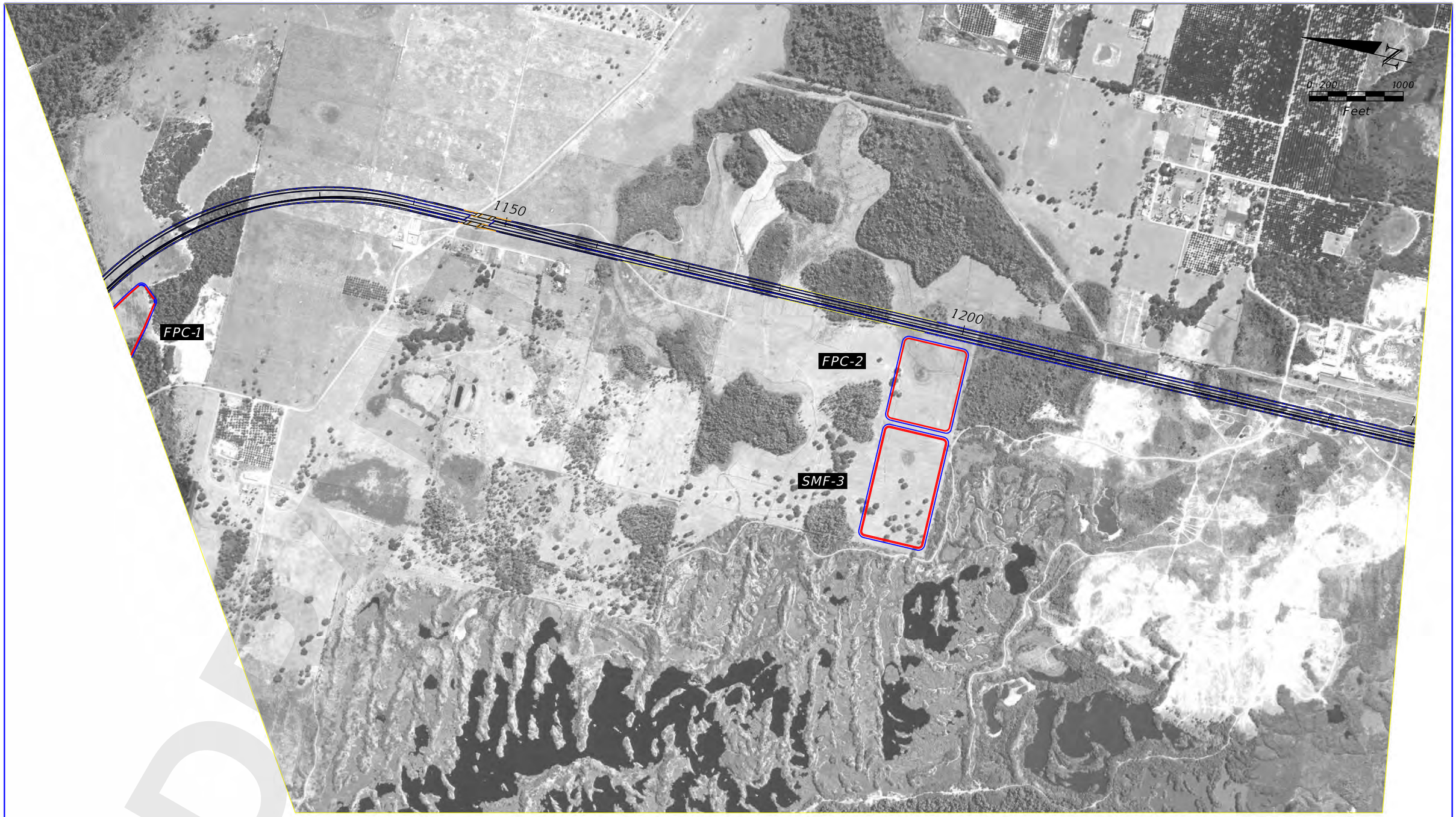
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (13)

SHEET NO.
C - 54



SOURCE: FDOT SURVEY AND MAPPING

1980 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (14)

SHEET NO.
C - 55

SOURCE: FDOT SURVEY AND MAPPING

1980 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
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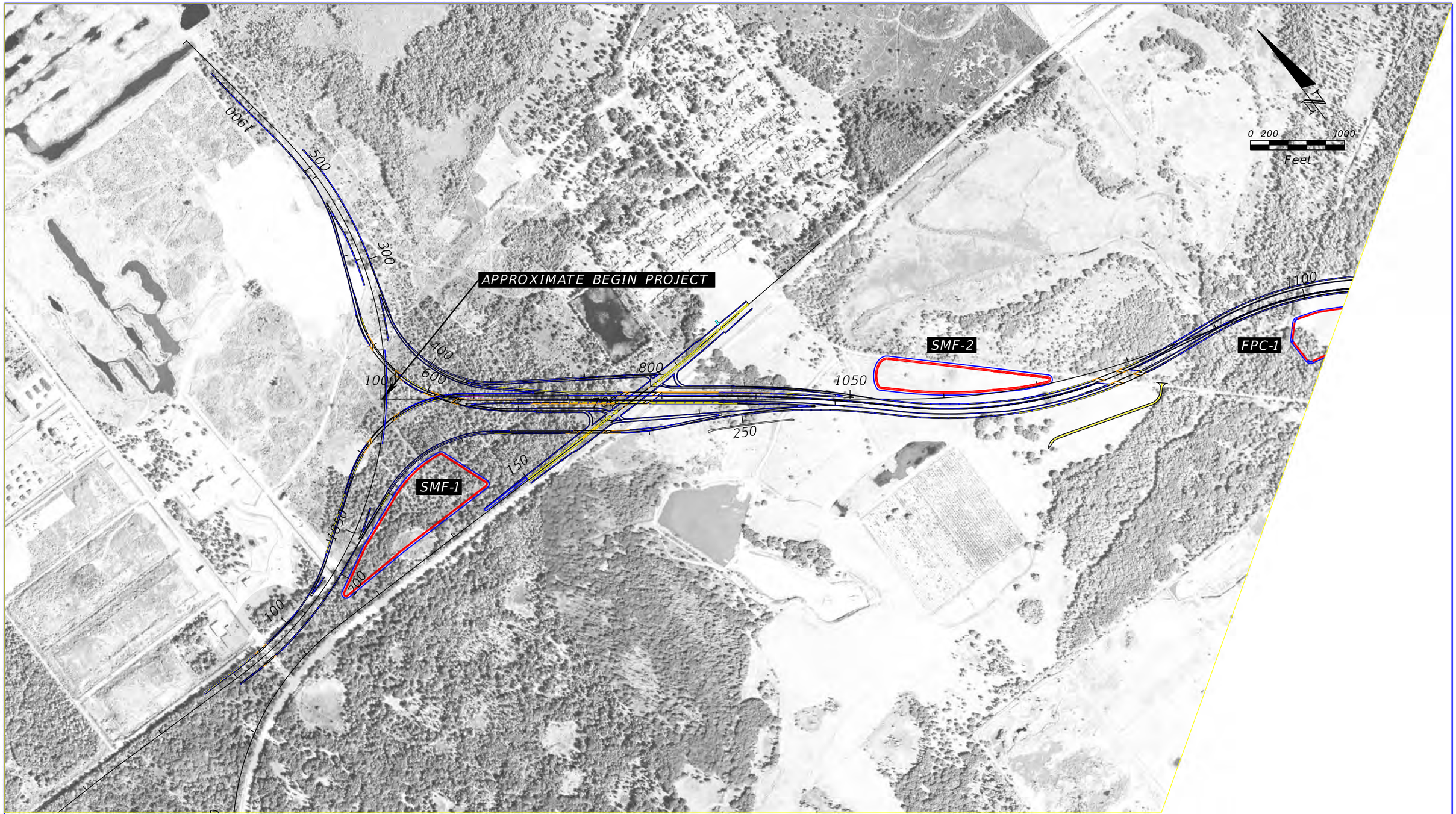
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (15)

SHEET NO.
C - 56



SOURCE: FDOT SURVEY AND MAPPING

1993 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (16)

SHEET NO.
C - 57

SOURCE: FDOT SURVEY AND MAPPING

1993 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph. D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
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TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (17)

SHEET NO.
C - 58

SOURCE: FDOT SURVEY AND MAPPING

1993 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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TAMPA, FLORIDA 33637
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-52-01

HISTORICAL MAP (18)

SHEET NO.
C - 59

DATE OF SURVEY: APRIL 2013 TO NOVEMBER 2019
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: MARC E. NOVAK, Ph. D., P.E.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DISTRICT: TURNPIKE
ROAD NO.: SR 570B
COUNTY: POLK

FINANCIAL PROJECT ID : 440897-2-52-01
PROJECT NAME: CENTRAL POLK PARKWAY (SR 570B) FROM SR 570 (POLK PARKWAY) TO US 17 (SR 35)

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

CENTRAL POLK PARKWAY MAINLINE SURVEY BEGINS STA. : 1000+53.07 SURVEY ENDS STA. : 1329+03.43 REFERENCE : ℄ SURVEY CENTRAL POLK PARKWAY

	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS PERCENT PASS (%)						ATTERBERG LIMITS (%)					CORROSION TEST RESULTS				
STRATUM NO.	NO. OF TESTS	% ORGANIC	NO. OF TESTS	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULFATES ppm	pH
1	3	3	11	6-42	73	100	88-95	11-64	9-33	3-14	2	NP	NP	A-3/A-2-4	LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT	26	4,700-120,000	15-45	<5-9	3.9-7.8
2	2	2-3	55	3-39	85	100	92-95	52-67	24-38	16-33	27	NP-30	NP-10	A-2-4	LIGHT GRAY TO GRAY TO BROWN SILTY SAND	12	3,200-37,000	15-45	<5-45	4.2-8.0
3	--	--	43	7-54	43	--	--	--	--	21-35	43	23-49	11-28	A-2-6/A-2-7	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND	2	2,500-22,000	30-45	<5-36	6.4-8.2
4	2	3-5	26	13-51	32	--	--	--	--	36-80	25	22-49	7-29	A-4/A-6/ A-7-5/A-7-6	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY	1	19,000	30	60	4.2
5	--	--	51	16-110	51	--	--	--	--	22-86	51	52-172	15-99	A-7-5/A-7-6/ A-2-7	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY	--	--	--	--	--
6	65	7-65	65	15-312	63	--	--	--	--	4-55	1	NP	NP	A-8	DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK	--	--	--	--	--
7	--	--	3	16-20	5	100	90	58	27	8-19	--	--	--	A-3/A-2-4	DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN)	1	22,000	30	<5	4.0
8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	WEATHERED LIMESTONE	--	--	--	--	--

NOTES:

THE ROADWAY SOIL SURVEY IS PRESENTED ON TWO (2) SHEETS. STRATA 1 THROUGH 8 ARE SOILS THAT ARE IN THEIR NATURAL INSITU STATE. STRATA 9 THROUGH 14 ARE SOILS THAT WERE ENCOUNTERED IN THE HISTORIC PHOSPHATE MINED PORTION OF THE ALIGNMENT AND APPEAR TO HAVE BEEN DISTURBED AS A RESULT OF PAST MINING ACTIVITY AND ARE NOT IN THEIR NATURAL STATE.

1. THE MATERIAL FROM STRATUM 1 (A-3/A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
2. THE MATERIAL FROM STRATUM 2 (A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION.
3. THE MATERIAL FROM STRATA 3 AND 4 (A-2-6/A-4/A-6/A-7-6/A-7-5/A-2-7) IS PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
4. THE MATERIAL FROM STRATUM 5 (A-7-5/A-7-6/A-2-7) IS HIGH PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▼ - WATER TABLE ENCOUNTERED

▼+ - GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE

GNE - GROUNDWATER NOT ENCOUNTERED

▽ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE

▽+ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GROUND SURFACE

NP - NON-PLASTIC

GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID

5. THE MATERIAL FROM STRATUM 6 (A-8) IS ORGANIC MATERIAL TO MUCK. THIS MATERIAL SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. THIS MATERIAL SHALL NOT BE USED WITHIN THE SUBGRADE OR EMBANKMENT PORTION OF THE ROADBED. REMOVAL LIMITS ARE SHOWN ON THE ROADWAY CROSS-SECTIONS.
6. THE MATERIAL FROM STRATUM 7 (HARDPAN) IS CEMENTED AND IS LOCATED IN SOME AREAS ALONG THE PROPOSED ROADWAY ALIGNMENTS. EXCAVATIONS INTO AND THROUGH THIS MATERIAL MAY BE DIFFICULT AND MAY REQUIRE SPECIALIZED EQUIPMENT. VARIATIONS IN THE DEPTH AND RELATIVE DENSITY OF THIS MATERIAL SHALL BE ANTICIPATED. THE MATERIAL FROM STRATUM 7 (A-3/A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.
7. THE MATERIAL FROM STRATUM 8 (WEATHERED LIMESTONE) IS ROCK AND WAS ENCOUNTERED AT DEPTHS GREATER THAN 40 FEET BELOW GRADE. EXCAVATION INTO AND THROUGH THIS MATERIAL MAY BE DIFFICULT. THE CONTRACTOR SHOULD BE PREPARED TO USE SPECIALIZED EQUIPMENT TO EXCAVATE INTO AND THROUGH LIMESTONE. LIMESTONE IS ALSO POROUS AND WILL BE DIFFICULT TO DEWATER.
8. THE MATERIALS FROM STRATA 9 THROUGH 14 CONSIST OF SOILS RELATED TO PAST MINING ACTIVITY AND ARE NOT IN A NATURAL STATE. THEY ARE DISTURBED AND CAN BE HIGHLY VARIABLE. THEY SHOULD BE CONSIDERED AS UNCLASSIFIED MATERIAL AND THEIR ABILITY FOR UTILIZATION FOR EMBANKMENT MATERIAL SHOULD BE VERIFIED DURING CONSTRUCTION. THE UTILIZATION OF THESE MATERIALS INDICATED IN NOTES 9, 10, 11, AND 14 SHOULD BE CONSIDERED AS A GUIDELINE ONLY AND ARE SUBJECT TO THE REQUIREMENTS OF THE STANDARD PLANS, INDEX 120-001.

DRAFT

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph. D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

ROADWAY SOIL SURVEY (1)

SHEET NO.
C - 60

DATE OF SURVEY: APRIL 2013 TO NOVEMBER 2019
SURVEY MADE BY: TIERRA, INC.
SUBMITTED BY: MARC E. NOVAK, Ph. D., P.E.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DISTRICT: TURNPIKE
ROAD NO.: SR 570B
COUNTY: POLK

FINANCIAL PROJECT ID : 440897-2-52-01
PROJECT NAME: CENTRAL POLK PARKWAY (SR 570B) FROM SR 570 (POLK PARKWAY) TO US 17 (SR 35)

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

CENTRAL POLK PARKWAY MAINLINE SURVEY BEGINS STA. : 1000+53.07 SURVEY ENDS STA. : 1329+03.43 REFERENCE : B SURVEY CENTRAL POLK PARKWAY

	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS PERCENT PASS (%)						ATTERBERG LIMITS (%)					CORROSION TEST RESULTS				
STRATUM NO.	NO. OF TESTS	% ORGANIC	NO. OF TESTS	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohm-cm	CHLORIDE ppm	SULFATES ppm	pH
9	2	1	7	4-55	48	100	83-97	28-90	4-60	1-9	1	NP	NP	A-3	LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND)	11	2,600-45,000	15-45	<5-15	4.7-8.1
10	6	2-4	34	16-98	47	100	91-96	47-87	16-63	11-34	25	NP	NP	A-2-4	LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED)	3	6,200-41,000	30-60	<5-72	5.4-7.2
11	--	--	37	9-104	37	100	94	76	57	19-69	40	23-49	11-29	A-2-6/A-4/ A-6/A-7-5/ A-7-6/A-2-7	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO CLAY (DISTURBED)	--	--	--	--	--
12	--	--	19	27-111	23	--	--	--	--	54-98	18	54-151	28-99	A-7-5/A-7-6	SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME)	--	--	--	--	--
13	39	6-69	39	7-407	34	--	--	--	--	6-93	7	NP-86	NP-38	A-8	DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED)	--	--	--	--	--
14	--	--	45	9-58	45	100	86-97	57-87	29-63	17-38	45	16-40	2-10	A-2-4	LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED)	--	--	--	--	--

NOTES:

9. THE MATERIAL FROM STRATUM 9 (A-3) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

10. THE MATERIAL FROM STRATUM 10 (A-2-4) APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION.

11. THE MATERIAL FROM STRATUM 11 IS MIXED/DISTURBED AND VARIABLE DUE TO PAST MINING ACTIVITY IN THE PROJECT AREA. THIS MATERIAL IS PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002 AND UTILIZED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

12. THE MATERIAL FROM STRATUM 12 (A-7-5/A-7-6) IS SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) AND IS HIGH PLASTIC MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. REMOVAL LIMITS ARE SHOWN ON THE PROJECT ROADWAY CROSS-SECTIONS. THIS MATERIAL IS HIGHLY PLASTIC AND MOISTURE SENSITIVE AND MAY PRESENT DIFFICULTY IN HANDLING. THIS MATERIAL, WHEN REMOVED, SHALL NOT BE USED WITHIN THE PROJECT LIMITS. STRATUM 12 MAY REMAIN IN PLACE IN OTHER PORTIONS OF THE PROJECT PROVIDED THAT THE REMEDIATION PLAN SHOWN IN THE PLANS IS IMPLEMENTED. LIMITS AND DETAILS OF THE REMEDIATION PLAN ARE SHOWN IN THE PHASE II PLANS.

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▼ - WATER TABLE ENCOUNTERED

▼+ - GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE

GNE - GROUNDWATER NOT ENCOUNTERED

▽ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE

▽+ - ESTIMATED SEASONAL HIGH GROUNDWATER TABLE ABOVE EXISTING GROUND SURFACE

NP - NON-PLASTIC

GNA - GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID

13. THE MATERIAL FROM STRATUM 13 (A-8) IS ORGANIC MATERIAL TO MUCK/PEAT. THIS MATERIAL SHALL BE REMOVED AS MUCK IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-002. THIS MATERIAL, WHEN REMOVED, SHALL NOT BE USED WITHIN THE PROJECT LIMITS. REMOVAL LIMITS ARE SHOWN ON THE PROJECT ROADWAY CROSS-SECTIONS. IN OTHER AREAS, DUE TO ITS DEPTH, THIS MATERIAL MAY REMAIN PLACE PROVIDED THAT THE REMEDIATION PLAN SHOWN IN THE PLANS IS IMPLEMENTED. LIMITS AND DETAILS OF THE REMEDIATION PLAN ARE SHOWN IN THE PHASE II PLANS.

14. THE MATERIAL FROM STRATUM 14 IS PLASTIC A-2-4 SOIL. DUE TO ITS VARIABLE NATURE, ASSOCIATION WITH PAST MINING ACTIVITY AND OFTEN INTER-MINGLED WITH STRATUM 11, STRATUM 14 SHOULD BE CONSIDERED AS PLASTIC (P) MATERIAL IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001. IT MAY BE UTILIZED IN THE EMBANKMENT IN ACCORDANCE WITH STANDARD PLANS, INDEX 120-001.

DRAFT

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

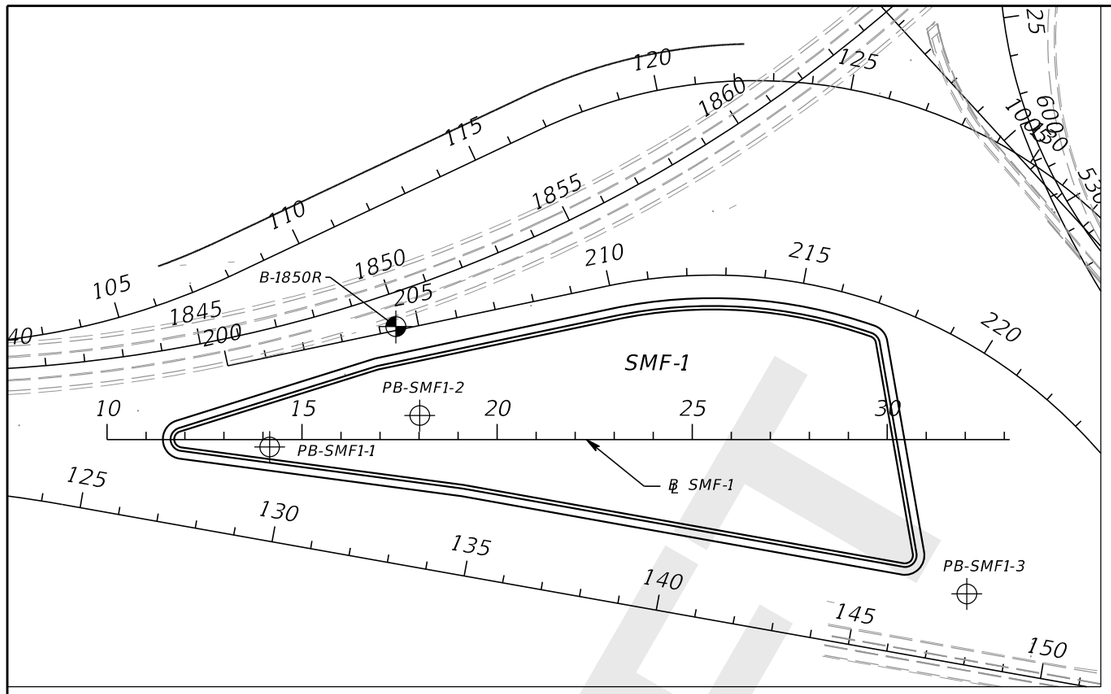
MARC E. NOVAK, Ph. D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

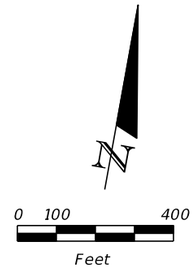
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

ROADWAY SOIL SURVEY (2)

SHEET NO.
C - 61



BORING LOCATION PLAN



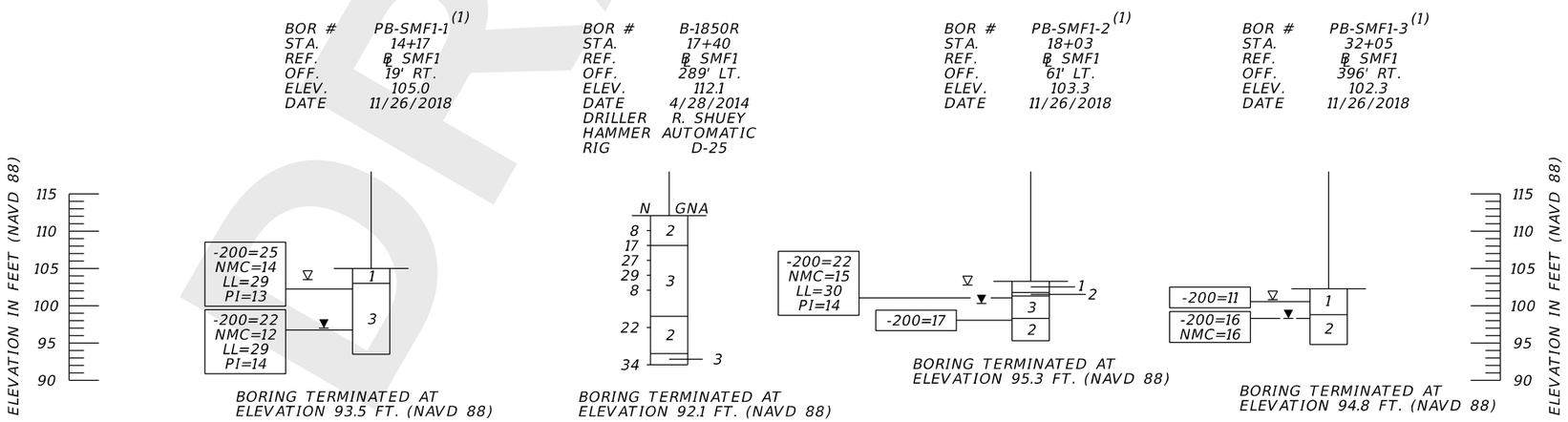
LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



SMF-1

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

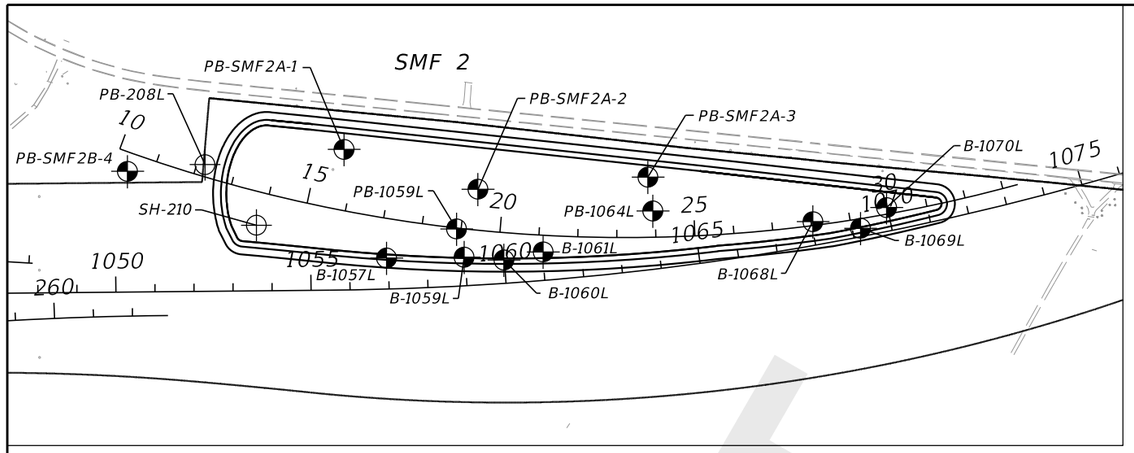
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

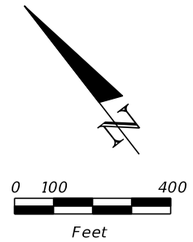
POND SOIL SURVEY (1)

SHEET NO.
C - 62

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

DRAFT





BORING LOCATION PLAN

LEGEND

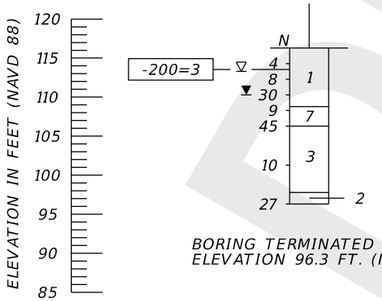
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

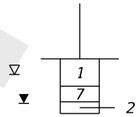
	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR # PB-SMF2B-4 (1)
STA. 10+37
REF. ℄ SMF2
OFF. 47' RT.
ELEV. 116.3
DATE 11/26/2018
DRILLER C. FLOREZ
HAMMER AUTOMATIC
RIG D-25



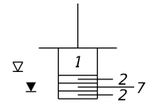
BORING TERMINATED AT ELEVATION 96.3 FT. (NAVD 88)

BOR # PB-208L (1)
STA. 12+20
REF. ℄ SMF2
OFF. 30' LT.
ELEV. 114.9
DATE 10/27/2014



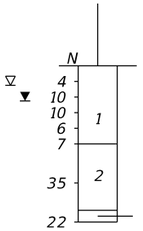
BORING TERMINATED AT ELEVATION 107.9 FT. (NAVD 88)

BOR # SH-210 (1)
STA. 13+87
REF. ℄ SMF2
OFF. 85' RT.
ELEV. 116.4
DATE 10/13/2013



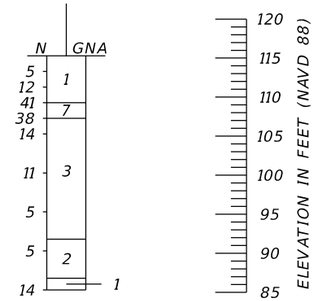
BORING TERMINATED AT ELEVATION 109.8 FT. (NAVD 88)

BOR # PB-SMF2A-1 (1)
STA. 15+65
REF. ℄ SMF2
OFF. 154' LT.
ELEV. 114.0
DATE 11/26/2018
DRILLER C. FLOREZ
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 94.0 FT. (NAVD 88)

BOR # B-1057L
STA. 17+23
REF. ℄ SMF2
OFF. 100' RT.
ELEV. 115.3
DATE 5/22/2014
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 85.3 FT. (NAVD 88)

SMF-2

DRAFT

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

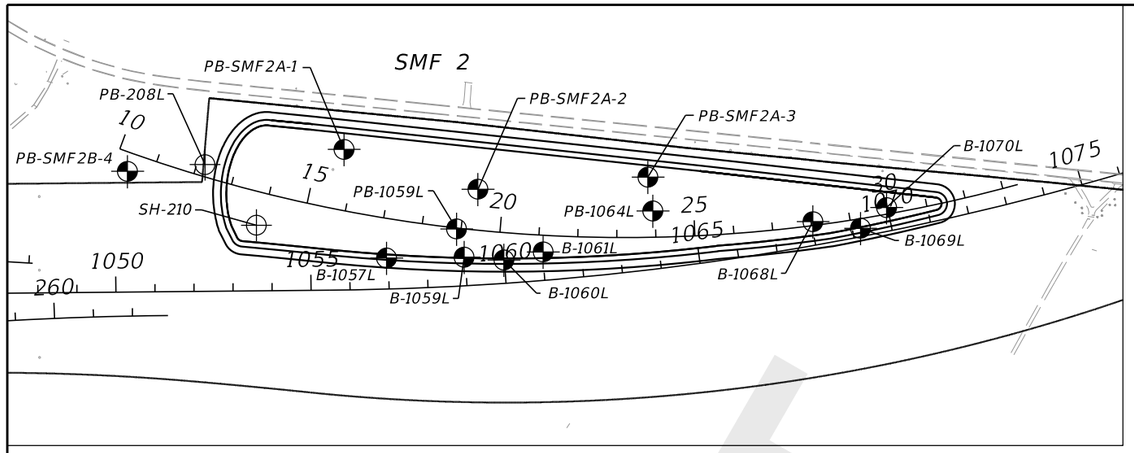
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

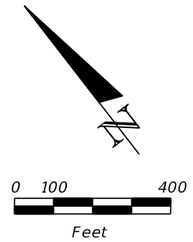
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (2)

SHEET NO.
C - 63





BORING LOCATION PLAN

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

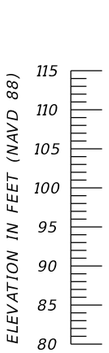
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

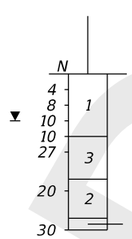
NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

SMF-2

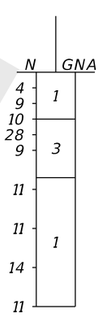
BOR # PB-1059L
STA. 18+88
REF. ℄ SMF2
OFF. 3' RT.
ELEV. 114.6
DATE 8/27/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25





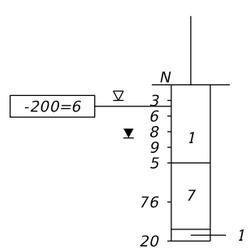
BORING TERMINATED AT ELEVATION 94.6 FT. (NAVD 88)

BOR # B-1059L
STA. 19+15
REF. ℄ SMF2
OFF. 72' RT.
ELEV. 114.8
DATE 5/22/2014
DRILLER J. SMITH
HAMMER AUTOMATIC
RIG D-25



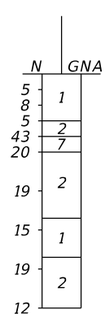
BORING TERMINATED AT ELEVATION 84.8 FT. (NAVD 88)

BOR # PB-SMF2A-2 (1)
STA. 19+33
REF. ℄ SMF2
OFF. 105' LT.
ELEV. 113.2
DATE 11/27/2018
DRILLER C. FLOREZ
HAMMER AUTOMATIC
RIG D-25



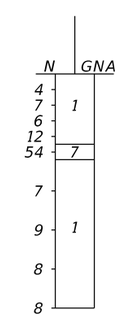
BORING TERMINATED AT ELEVATION 93.2 FT. (NAVD 88)

BOR # B-1060L
STA. 20+16
REF. ℄ SMF2
OFF. 70' RT.
ELEV. 114.6
DATE 6/12/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

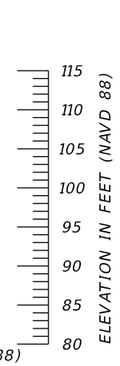


BORING TERMINATED AT ELEVATION 84.6 FT. (NAVD 88)

BOR # B-1061L
STA. 21+13
REF. ℄ SMF2
OFF. 42' RT.
ELEV. 114.6
DATE 6/12/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 84.6 FT. (NAVD 88)



DRAFT

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

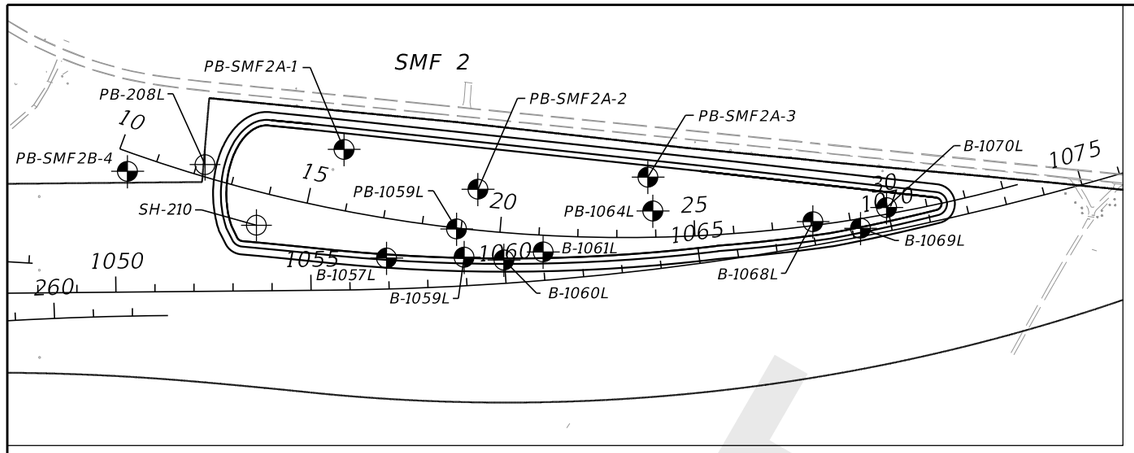
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (3)

SHEET NO.
C - 64



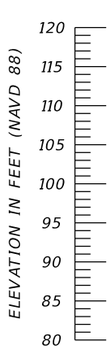
BORING LOCATION PLAN

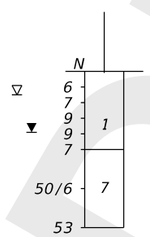
LEGEND

1.	LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2.	LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3.	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4.	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5.	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6.	DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7.	DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8.	WEATHERED LIMESTONE
9.	LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10.	LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11.	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12.	SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13.	DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14.	LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

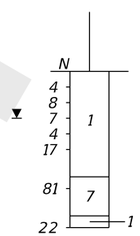
BOR # PB-SMF2A-3 (1)
STA. 23+82
REF. ℄ SMF2
OFF. 154' LT.
ELEV. 114.4
DATE 11/27/2018
DRILLER C. FLOREZ
HAMMER AUTOMATIC
RIG D-25





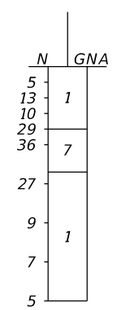
BORING TERMINATED AT ELEVATION 94.4 FT. (NAVD 88)

BOR # PB-1064L
STA. 23+94
REF. ℄ SMF2
OFF. 67' LT.
ELEV. 114.4
DATE 8/27/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



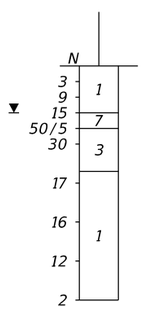
BORING TERMINATED AT ELEVATION 94.4 FT. (NAVD 88)

BOR # B-1068L
STA. 28+05
REF. ℄ SMF2
OFF. 10' LT.
ELEV. 115.0
DATE 6/11/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



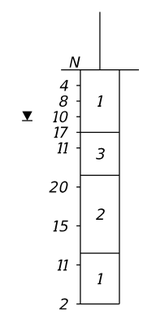
BORING TERMINATED AT ELEVATION 85.0 FT. (NAVD 88)

BOR # B-1069L
STA. 29+23
REF. ℄ SMF2
OFF. 24' RT.
ELEV. 115.1
DATE 6/11/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

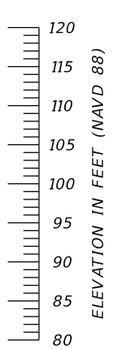


BORING TERMINATED AT ELEVATION 85.1 FT. (NAVD 88)

BOR # B-1070L
STA. 29+98
REF. B/L SMF 2
OFF. 17' LT.
ELEV. 114.6
DATE 6/11/2014
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 84.6 FT. (NAVD 88)



SMF-2

DRAFT

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

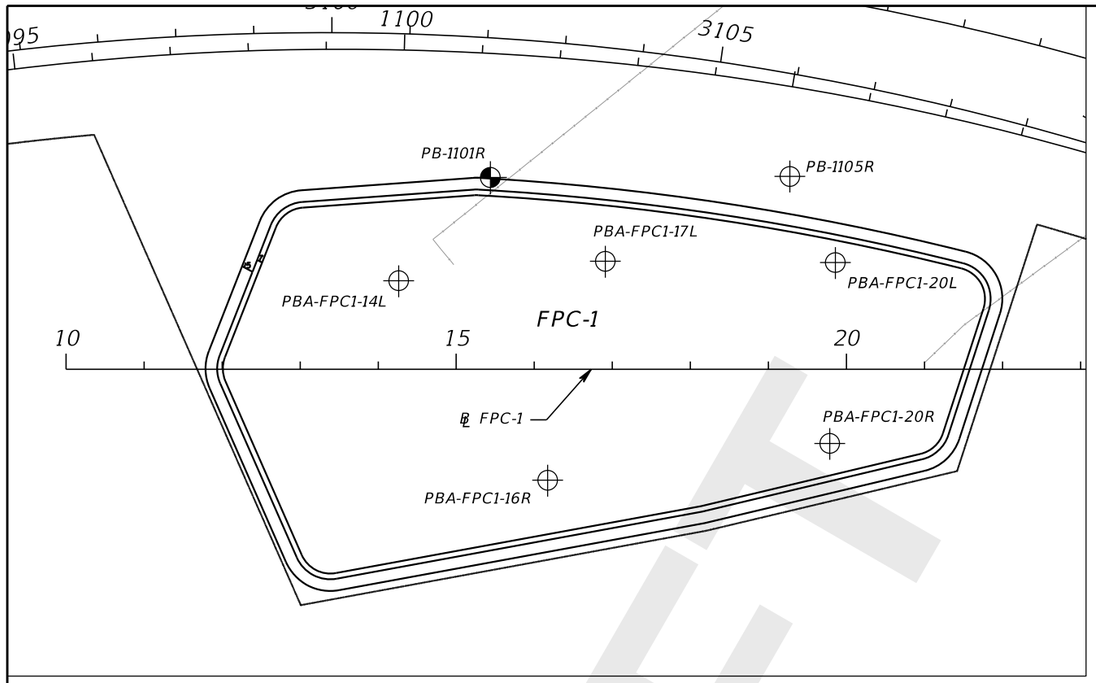
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

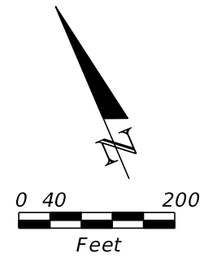
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (4)

SHEET NO.
C - 65



BORING LOCATION PLAN



LEGEND

1.	LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2.	LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3.	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4.	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5.	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6.	DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7.	DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8.	WEATHERED LIMESTONE
9.	LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10.	LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11.	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12.	SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13.	DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14.	LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

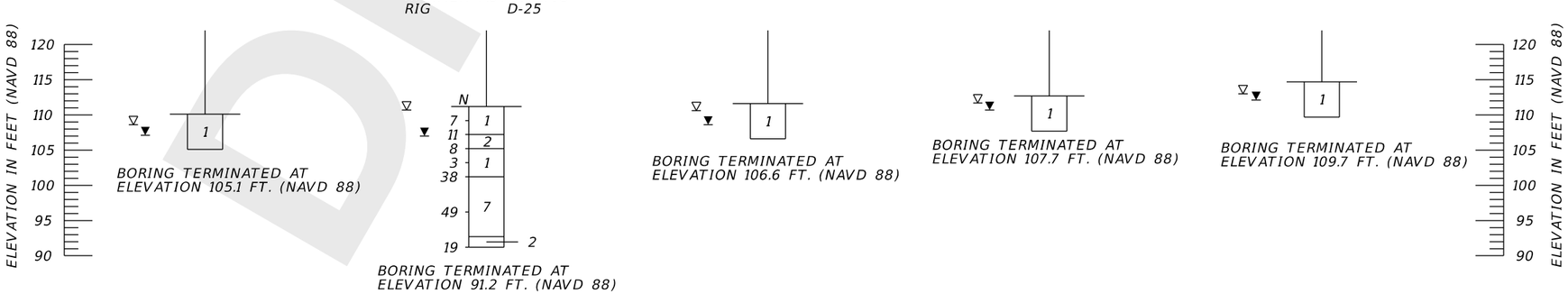
BOR #	PBA-FPC1-14L (1)
STA.	14+26
REF.	℄ FPC1
OFF.	114' LT.
ELEV.	110.1
DATE	6/17/2019

BOR #	PB-1101R (1)
STA.	15+44
REF.	℄ FPC1
OFF.	245' LT.
ELEV.	111.2
DATE	8/22/2014
DRILLER	R. SHUEY
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PBA-FPC1-16R (1)
STA.	16+17
REF.	℄ FPC1
OFF.	142' RT.
ELEV.	111.6
DATE	6/17/2019

BOR #	PBA-FPC1-17L (1)
STA.	16+91
REF.	℄ FPC1
OFF.	138' LT.
ELEV.	112.7
DATE	6/17/2019

BOR #	PB-1105R (1)
STA.	19+28
REF.	℄ FPC1
OFF.	247' LT.
ELEV.	114.7
DATE	8/22/2014



GRANULAR MATERIALS- RELATIVE DENSITY	SAFETY HAMMER SPT N-VALUE (BLOWS/FT.)	AUTOMATIC HAMMER SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	**SPT N-VALUE (BLOWS/FT.)**	**SPT N-VALUE (BLOWS/FT.)**
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FPC-1

DRAFT

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

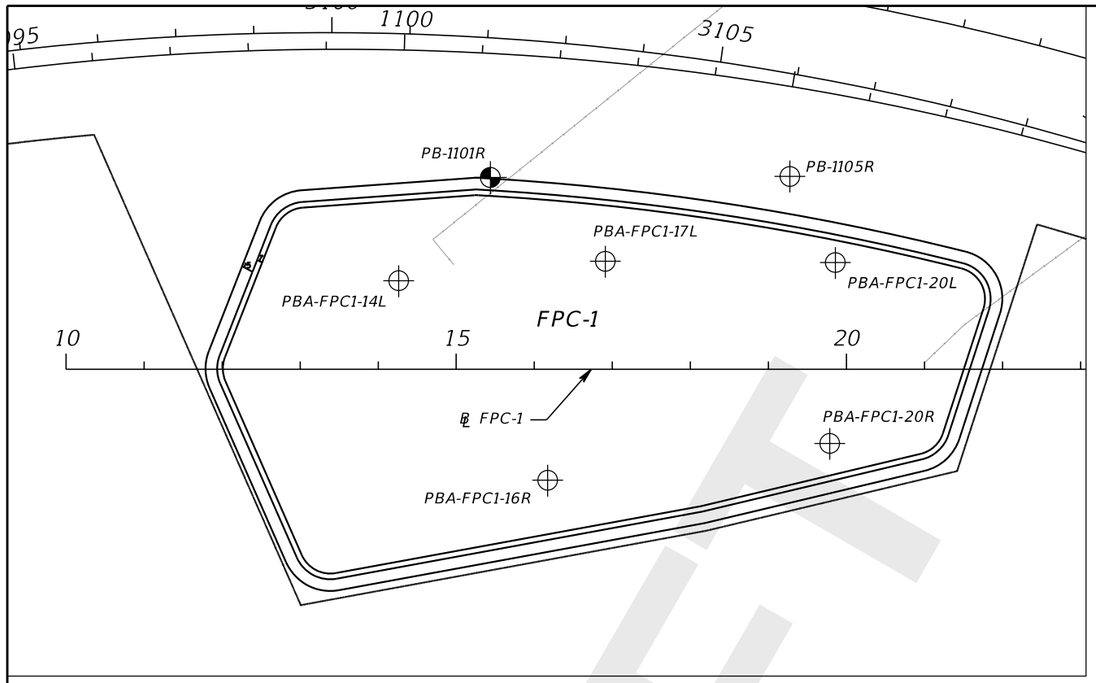
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

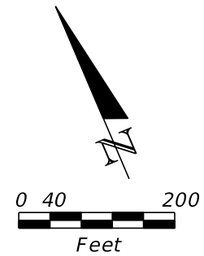
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (5)

SHEET NO.
C - 66



BORING LOCATION PLAN



LEGEND

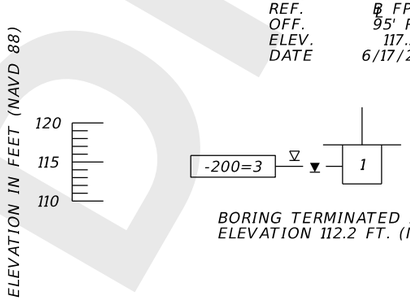
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

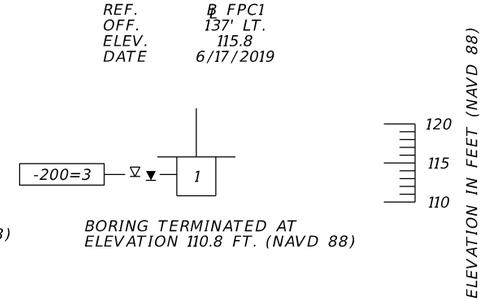
FPC-1

BOR # PBA-FPC1-20R (1)
STA. 19+79
REF. ℄ FPC1
OFF. 95' RT.
ELEV. 117.2
DATE 6/17/2019



BORING TERMINATED AT ELEVATION 112.2 FT. (NAVD 88)

BOR # PBA-FPC1-20L (1)
STA. 19+86
REF. ℄ FPC1
OFF. 137' LT.
ELEV. 115.8
DATE 6/17/2019



BORING TERMINATED AT ELEVATION 110.8 FT. (NAVD 88)

DRAFT

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

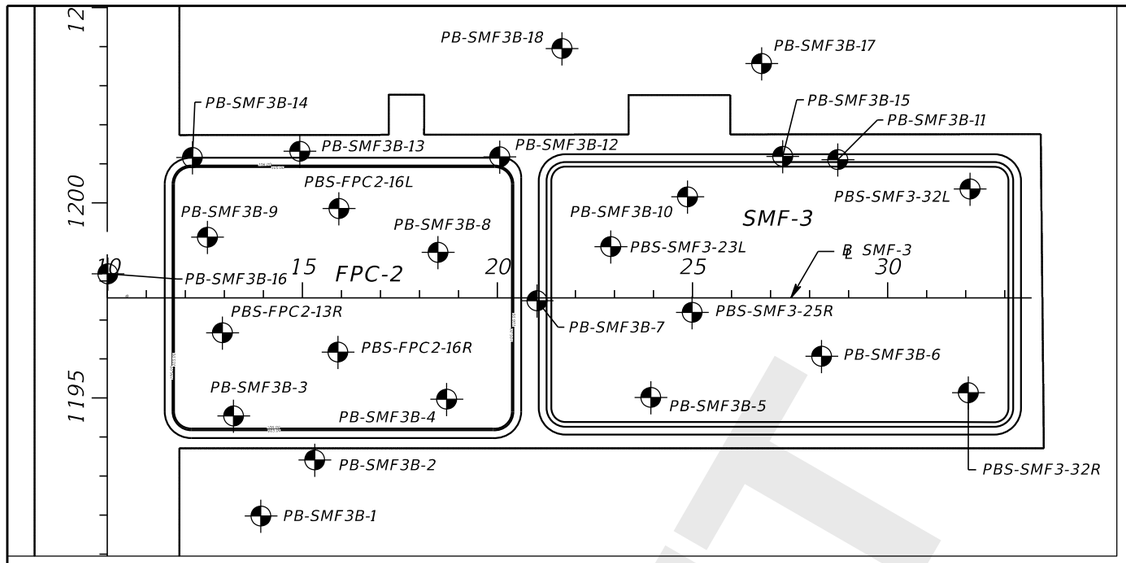
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

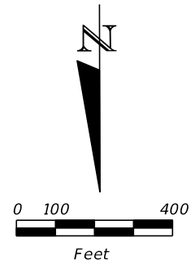
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (6)

SHEET NO.
C - 67



BORING LOCATION PLAN



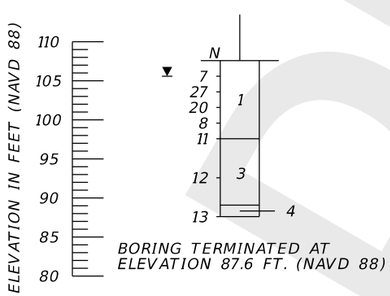
LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

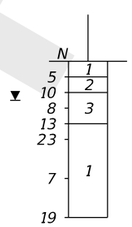
	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR # PB-SMF3B-16
STA. 10+01
REF. ℄ SMF3
OFF. 62' LT.
ELEV. 107.6
DATE 1/23/2019
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



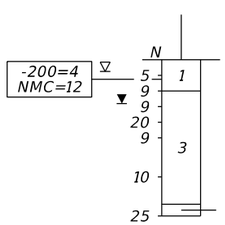
BORING TERMINATED AT ELEVATION 87.6 FT. (NAVD 88)

BOR # PB-SMF3B-14
STA. 12+18
REF. ℄ SMF3
OFF. 359' LT.
ELEV. 107.5
DATE 1/17/2019
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



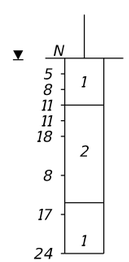
BORING TERMINATED AT ELEVATION 87.5 FT. (NAVD 88)

BOR # PB-SMF3B-9 (1)
STA. 12+57
REF. ℄ SMF3
OFF. 155' LT.
ELEV. 107.7
DATE 11/27/2018
DRILLER J. SHUEY
HAMMER AUTOMATIC
RIG D-25



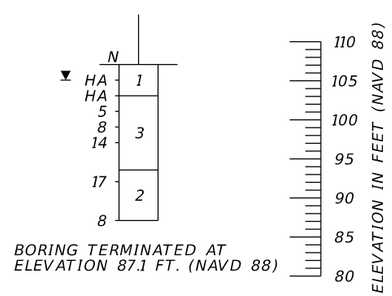
BORING TERMINATED AT ELEVATION 87.7 FT. (NAVD 88)

BOR # PBS-FPC2-13R
STA. 12+95
REF. ℄ SMF 3
OFF. 90' RT.
ELEV. 107.9
DATE 8/14/2019
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 82.9 FT. (NAVD 88)

BOR # PB-SMF3B-3
STA. 13+24
REF. ℄ SMF3
OFF. 303' RT.
ELEV. 107.1
DATE 1/11/2019
DRILLER I. POORAN
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 87.1 FT. (NAVD 88)

FPC 2 & SMF 3

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

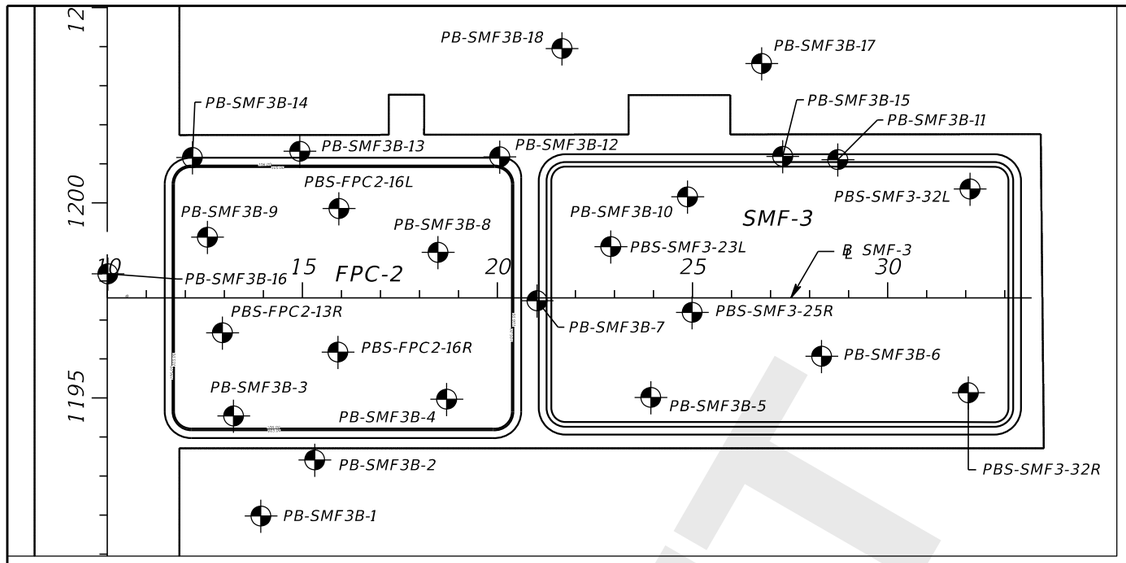
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (7)

SHEET NO.
C - 68

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



BORING LOCATION PLAN

LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
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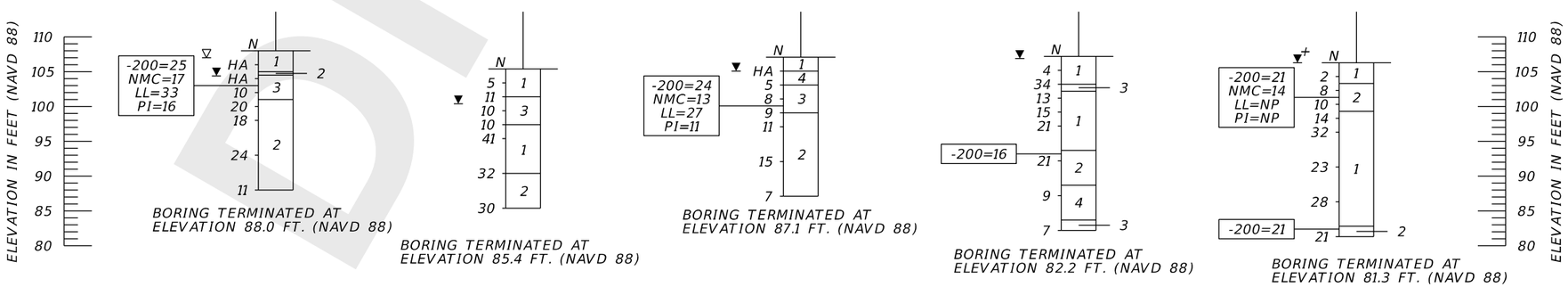
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

BOR #	PB-SMF3B-1 (1)	PB-SMF3B-13	PB-SMF3B-2	PCS-FPC2-16R	PCS-FPC2-16L
STA.	13+92	14+94	15+32	15+91	15+94
REF.	℄ SMF3	℄ SMF3	℄ SMF3	℄ SMF 3	℄ SMF 3
OFF.	559' RT.	375' LT.	415' RT.	139' RT.	229' LT.
ELEV.	108.0	105.4	107.1	107.2	106.3
DATE	11/26/2018	1/17/2019	1/11/2019	8/15/2019	8/15/2019
DRILLER	I. POORAN	J. SHAW	I. POORAN	R. SHUEY	R. SHUEY
HAMMER	AUTOMATIC	AUTOMATIC	AUTOMATIC	AUTOMATIC	AUTOMATIC
RIG	D-25	D-25	D-25	D-25	D-25



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FPC 2 & SMF 3

DRAFT

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

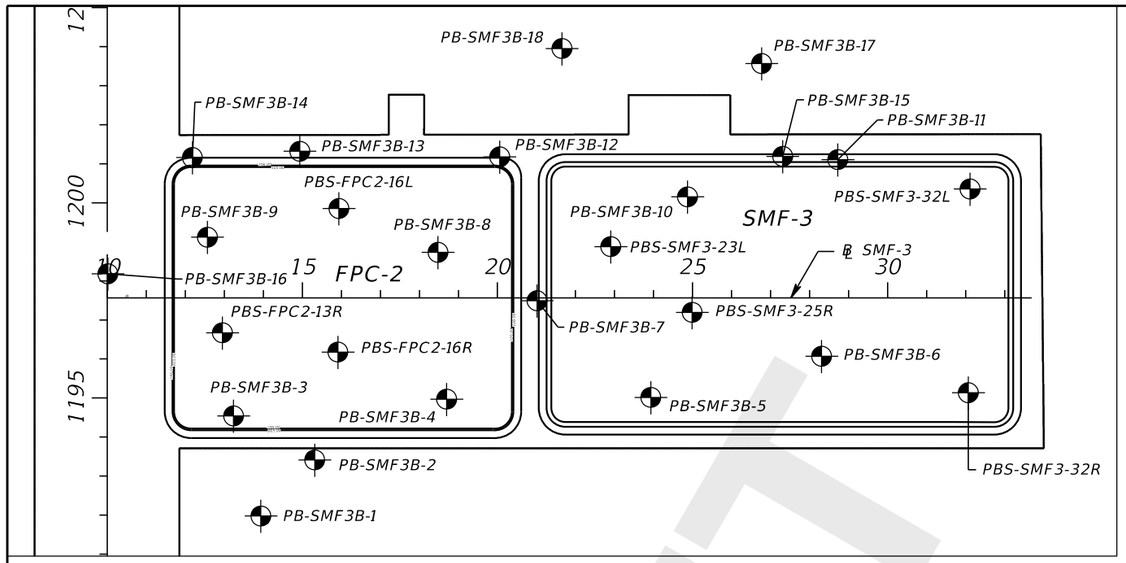
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

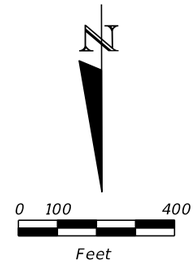
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (8)

SHEET NO.
C - 69



BORING LOCATION PLAN



LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

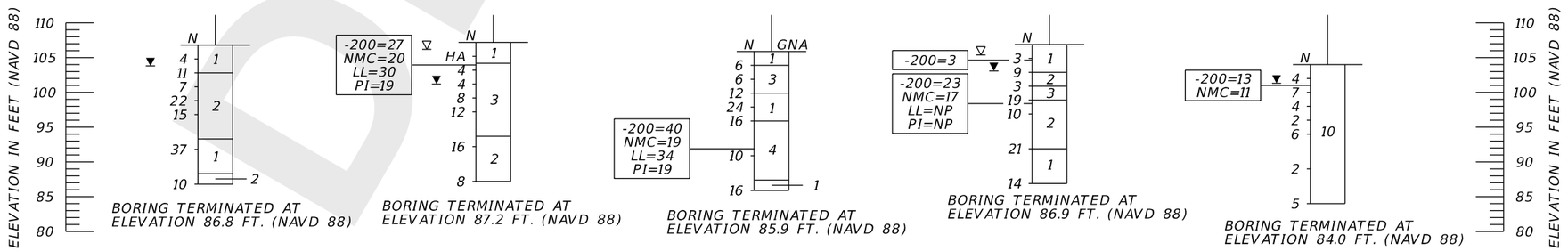
BOR #	PB-SMF3B-8
STA.	18+48
REF.	℄ SMF3
OFF.	117' LT.
ELEV.	106.8
DATE	1/18/2019
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PB-SMF3B-4 (1)
STA.	18+70
REF.	℄ SMF3
OFF.	260' RT.
ELEV.	107.2
DATE	11/26/2018
DRILLER	I. POORAN
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PB-SMF3B-12
STA.	20+06
REF.	℄ SMF3
OFF.	361' LT.
ELEV.	105.9
DATE	1/17/2019
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PB-SMF3B-7 (1)
STA.	21+01
REF.	℄ SMF3
OFF.	7' RT.
ELEV.	106.9
DATE	11/26/2018
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PB-SMF3B-18
STA.	21+64
REF.	℄ SMF3
OFF.	638' LT.
ELEV.	104.0
DATE	11/26/2018
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25



BORING TERMINATED AT ELEVATION 86.8 FT. (NAVD 88)

BORING TERMINATED AT ELEVATION 87.2 FT. (NAVD 88)

BORING TERMINATED AT ELEVATION 85.9 FT. (NAVD 88)

BORING TERMINATED AT ELEVATION 86.9 FT. (NAVD 88)

BORING TERMINATED AT ELEVATION 84.0 FT. (NAVD 88)

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FPC 2 & SMF 3

DRAFT

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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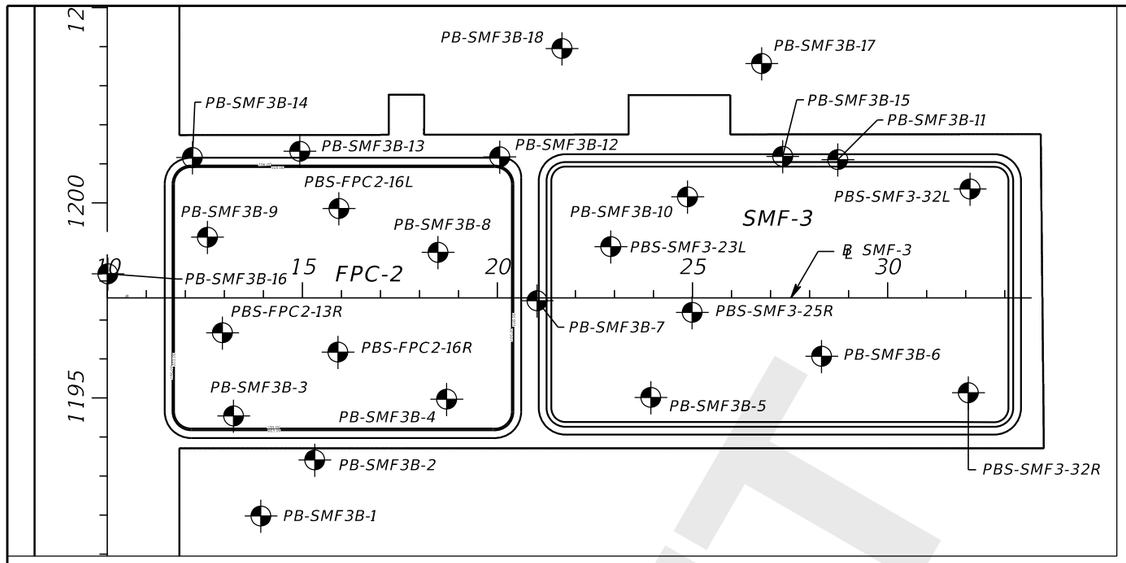
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

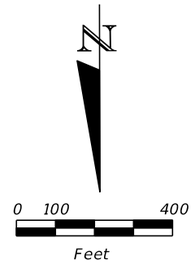
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (9)

SHEET NO.
C - 70



BORING LOCATION PLAN



LEGEND

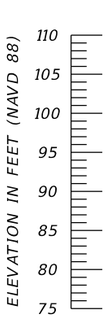
1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

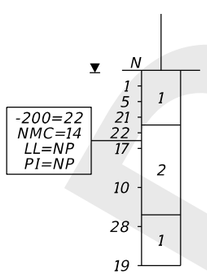
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

NOTE: STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

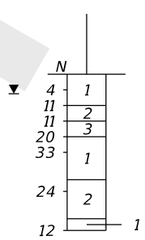
BOR # PBS-SMF3-23L
STA. 22+90
REF. ℄ SMF 3
OFF. 131' LT.
ELEV. 105.5
DATE 8/15/2019
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25





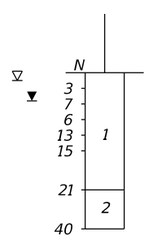
BORING TERMINATED AT ELEVATION 80.5 FT. (NAVD 88)

BOR # PB-SMF3B-5
STA. 23+93
REF. ℄ SMF3
OFF. 255' RT.
ELEV. 105.0
DATE 1/18/2019
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



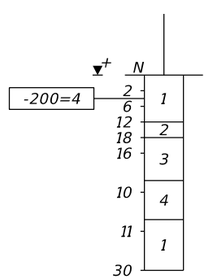
BORING TERMINATED AT ELEVATION 85.0 FT. (NAVD 88)

BOR # PB-SMF3B-10 (1)
STA. 24+87
REF. ℄ SMF3
OFF. 259' LT.
ELEV. 105.2
DATE 11/27/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



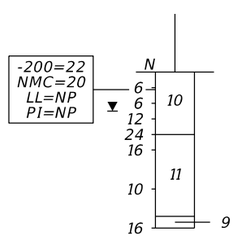
BORING TERMINATED AT ELEVATION 85.2 FT. (NAVD 88)

BOR # PBS-SMF3-25R
STA. 24+99
REF. ℄ SMF 3
OFF. 37' RT.
ELEV. 104.9
DATE 8/15/2019
DRILLER R. SHUEY
HAMMER AUTOMATIC
RIG D-25

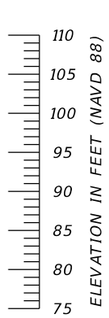


BORING TERMINATED AT ELEVATION 79.5 FT. (NAVD 88)

BOR # PB-SMF3B-17
STA. 26+78
REF. ℄ SMF3
OFF. 600' LT.
ELEV. 105.3
DATE 11/26/2018
DRILLER J. SHAW
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED AT ELEVATION 85.3 FT. (NAVD 88)



FPC 2 & SMF 3

DRAFT

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

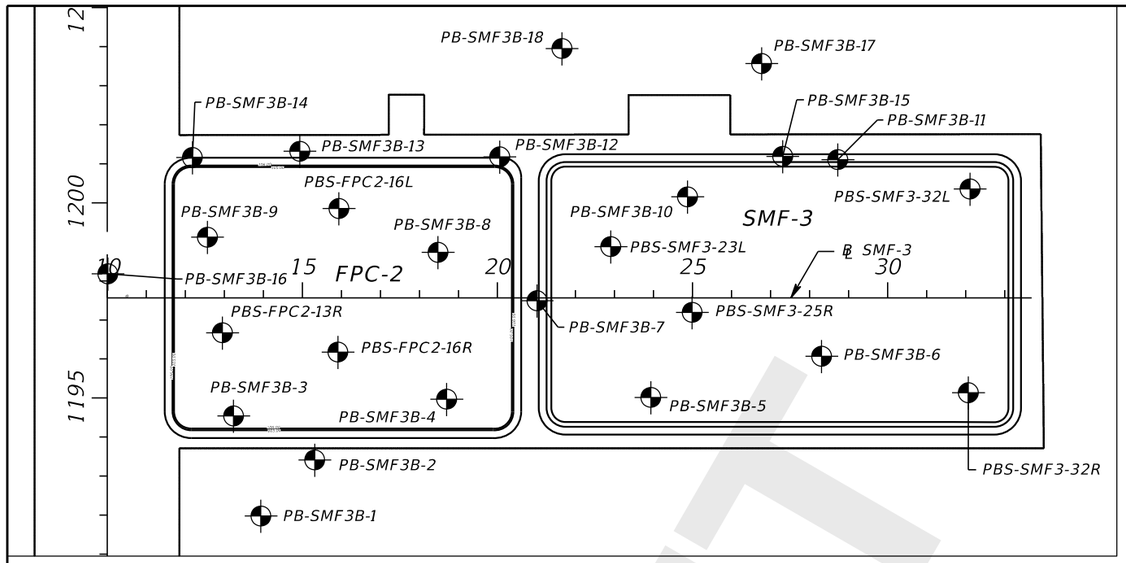
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

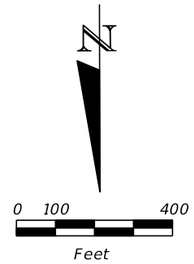
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (10)

SHEET NO.
C - 71



BORING LOCATION PLAN



LEGEND

1. LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2. LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5. LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6. DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7. DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8. WEATHERED LIMESTONE
9. LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10. LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11. GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12. SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13. DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14. LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)

A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
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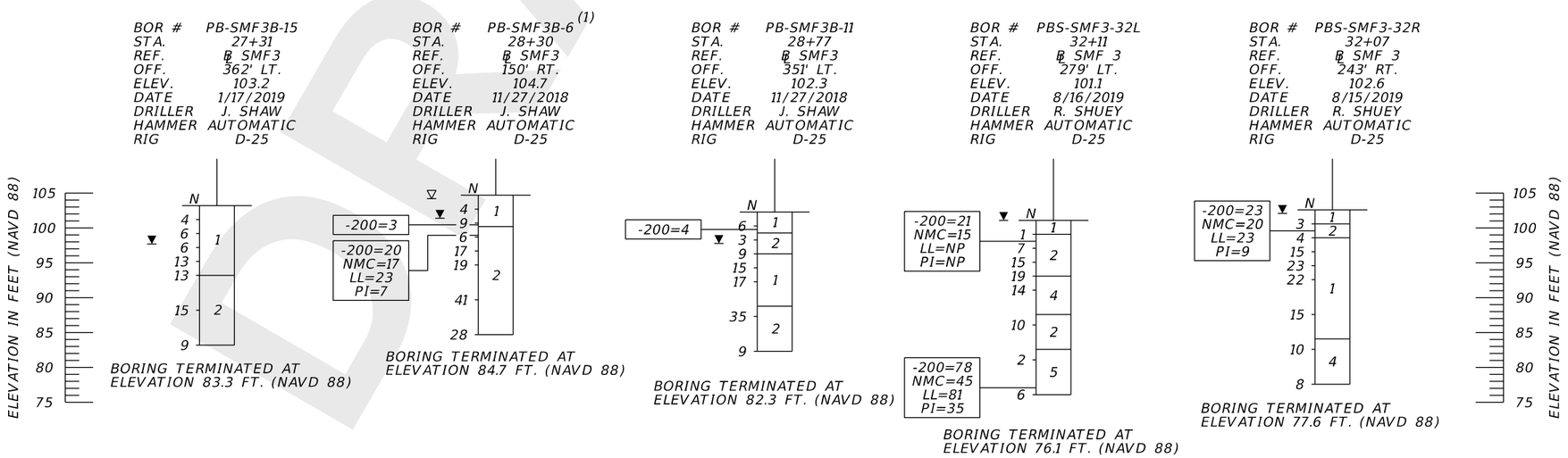
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



FPC 2 & SMF 3

DRAFT

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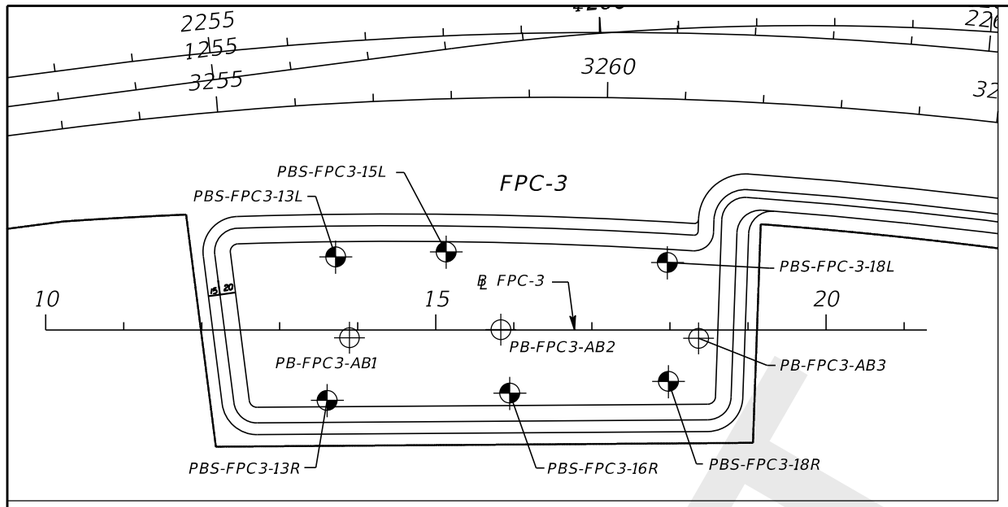
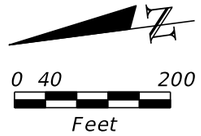
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (11)

SHEET NO.
C - 72





BORING LOCATION PLAN

LEGEND

1.	LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2.	LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3.	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4.	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5.	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6.	DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7.	DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8.	WEATHERED LIMESTONE
9.	LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10.	LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11.	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12.	SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13.	DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14.	LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

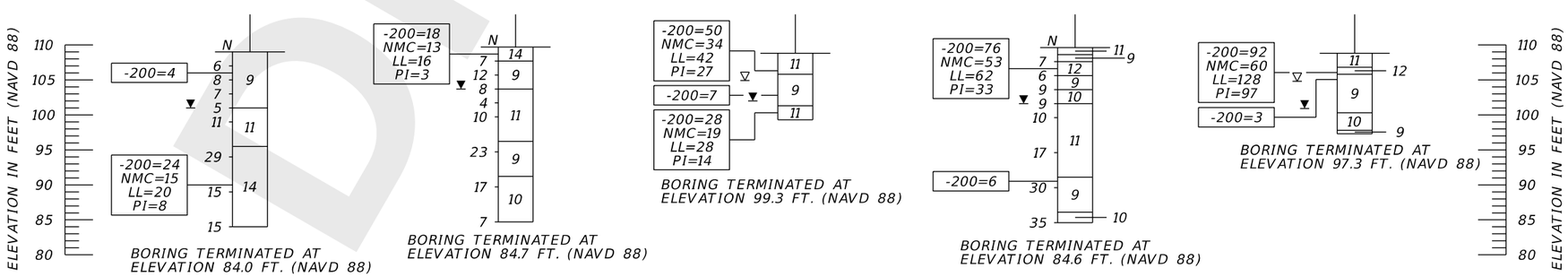
BOR #	PBS-FPC3-13R
STA.	13+61
REF.	℄ FPC3
OFF.	90' RT.
ELEV.	109.0
DATE	7/24/2019
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PBS-FPC3-13L
STA.	13+72
REF.	℄ FPC3
OFF.	94' LT.
ELEV.	109.7
DATE	7/23/2019
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PB-FPC3-AB1(1)
STA.	13+86
REF.	℄ FPC3
OFF.	11' RT.
ELEV.	108.8
DATE	4/29/2019

BOR #	PBS-FPC3-15L
STA.	15+13
REF.	℄ FPC3
OFF.	100' LT.
ELEV.	109.6
DATE	7/23/2019
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PB-FPC3-AB2(1)
STA.	15+82
REF.	℄ FPC3
OFF.	1' LT.
ELEV.	108.8
DATE	4/29/2019



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FPC 3

DRAFT

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

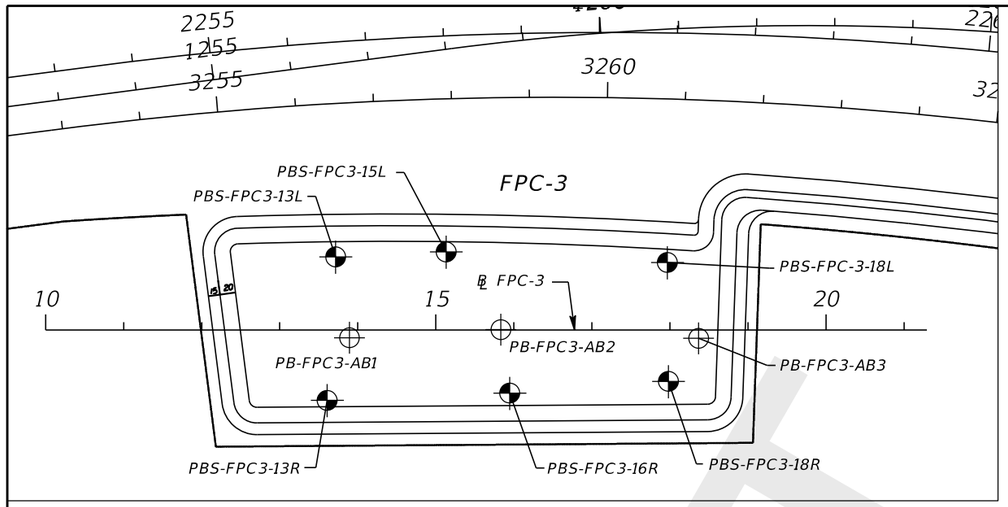
MARC E. NOVAK, Ph.D., P.E.
P.E. LICENSE NUMBER 67431
TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

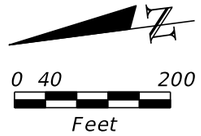
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (12)

SHEET NO.
C - 73





BORING LOCATION PLAN

LEGEND

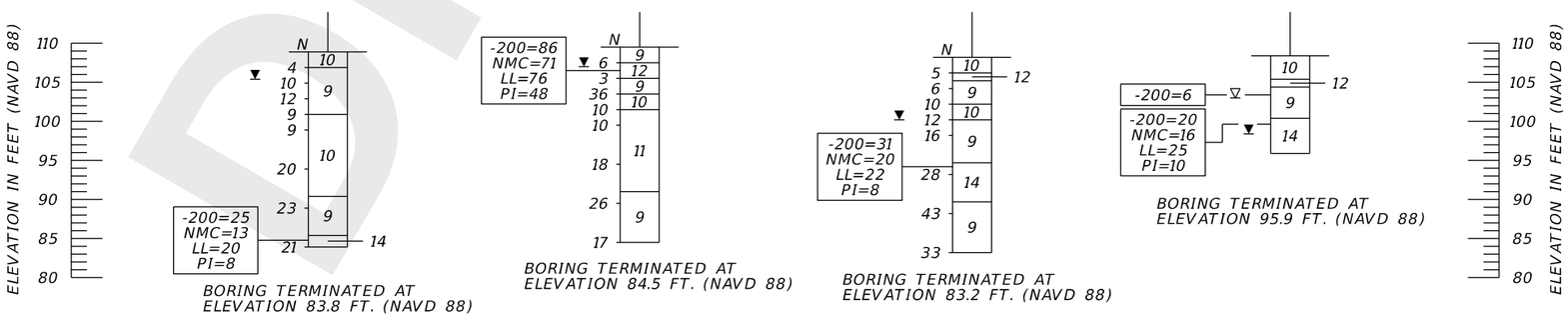
1.	LIGHT GRAY TO GRAY TO PALE BROWN TO DARK BROWN SAND TO SAND WITH SILT (A-3/A-2-4)
2.	LIGHT GRAY TO GRAY TO BROWN SILTY SAND (A-2-4)
3.	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND (A-2-6/A-2-7)
4.	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-4/A-6/A-7-5/A-7-6)
5.	LIGHT GRAY TO GRAY TO BROWN CLAYEY SAND TO SANDY CLAY TO SILT TO CLAY (A-7-5/A-7-6/A-2-7)
6.	DARK GRAY TO DARK GRAYISH BROWN ORGANIC SOILS TO MUCK (A-8)
7.	DARK REDDISH BROWN TO BROWN CEMENTED SAND TO SILTY SAND (HARDPAN) (A-3/A-2-4)
8.	WEATHERED LIMESTONE
9.	LIGHT GRAY TO PALE BROWN SAND TO SAND WITH SILT, TRACE PHOSPHATE (SAND AND TAILING SAND) (A-3)
10.	LIGHT GRAY TO DARK BROWN SAND WITH SILT TO SILTY SAND (DISTURBED) (A-2-4)
11.	GRAY TO BROWN SILTY-CLAYEY SAND TO CLAYEY SAND TO SILT TO CLAY (DISTURBED) (A-2-6/A-4/A-6/A-7-5/A-7-6/A-2-7)
12.	SANDY CLAY INCLUDING WASTE PHOSPHATIC CLAY (SLIME) (A-7-5/A-7-6)
13.	DARK BROWN TO BLACK ORGANIC SOILS TO MUCK/PEAT (DISTURBED) ORGANIC SOILS (A-8)
14.	LIGHT GRAY TO DARK BROWN SILTY SAND TO SILTY-CLAYEY SAND (DISTURBED) (A-2-4)
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
N	NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED).
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCE
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
OC	ORGANIC CONTENT (%)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
▼+	GROUNDWATER LEVEL ENCOUNTERED ABOVE EXISTING GRADE
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GNA	GROUNDWATER NOT APPARENT DUE TO THE INTRODUCTION OF DRILLING FLUID.
⊕	APPROXIMATE SPT BORING LOCATION
⊕	APPROXIMATE AUGER BORING LOCATION
CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER
NOTE:	STATION, OFFSET, AND ELEVATION OF BORINGS DENOTED WITH A "(1)" WERE PROVIDED BY THE PROJECT SURVEYOR. THE REMAINING BORING LOCATIONS WERE ESTIMATED USING HAND-HELD, NON-SURVEY GRADE GPS DEVICES WITH A MANUFACTURER'S REPORTED ACCURACY OF +/- 10 FEET.

BOR #	PBS-FPC3-16R
STA.	15+95
REF.	℄ FPC3
OFF.	81' RT.
ELEV.	108.9
DATE	7/24/2019
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PBS-FPC3-18L
STA.	17+97
REF.	℄ FPC3
OFF.	87' LT.
ELEV.	109.5
DATE	7/23/2019
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PBS-FPC3-18R
STA.	17+98
REF.	℄ FPC3
OFF.	66' RT.
ELEV.	108.2
DATE	7/23/2019
DRILLER	J. SHAW
HAMMER	AUTOMATIC
RIG	D-25

BOR #	PB-FPC3-AB3(1)
STA.	18+39
REF.	℄ FPC3
OFF.	10' RT.
ELEV.	108.4
DATE	4/29/2019



	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
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FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

FPC 3

DRAFT

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REVISIONS			
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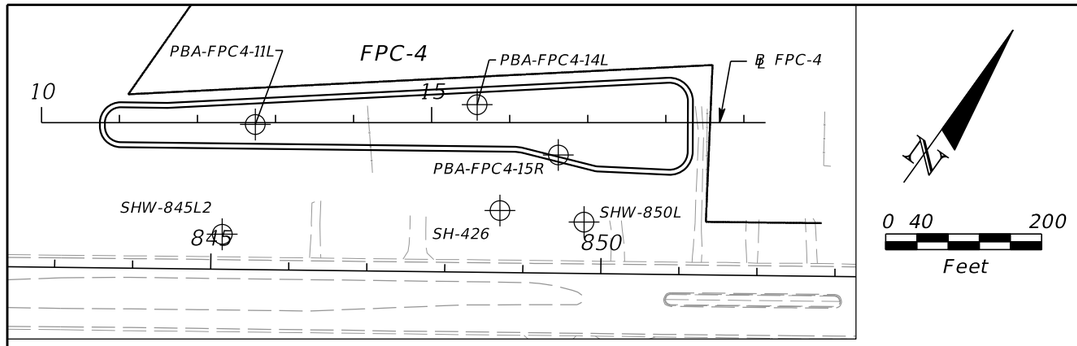
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (13)

SHEET NO.
C - 74



BORING LOCATION PLAN

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CAVE-IN	BORING TERMINATED DUE TO CAVE-IN OF SOILS FROM SHALLOW GROUNDWATER

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	SAFETY HAMMER	AUTOMATIC HAMMER
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LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
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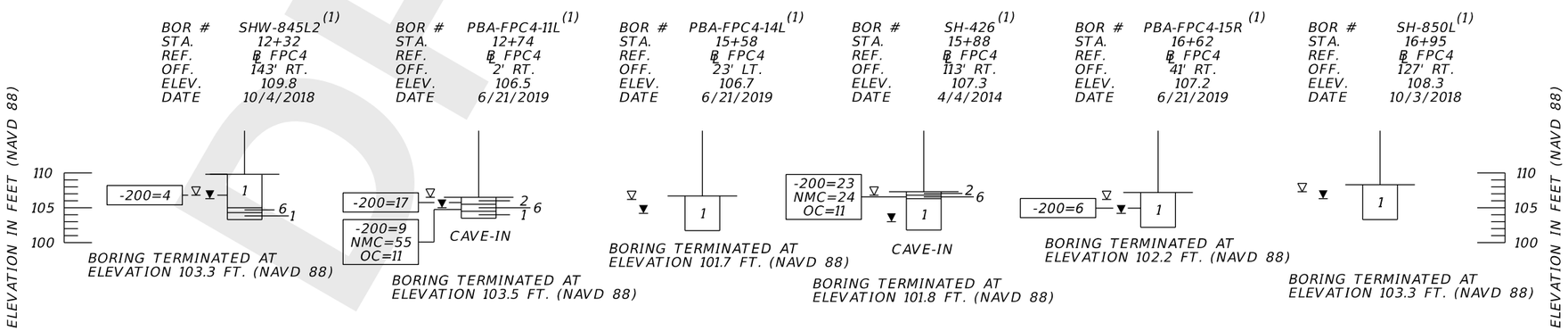
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	16 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24



FPC 4

DRAFT

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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P.E. LICENSE NUMBER 67431
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7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION NO. 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

POND SOIL SURVEY (14)

SHEET NO.
C - 75

TABLE 1
SUMMARY OF USDA SOIL SURVEY
POLK COUNTY, FLORIDA

USDA Map Symbol and Soil Name	Soil Classification				pH	Seasonal High Water Table	
	Depth (in)	USCS	AASHTO	Permeability (in/hr)		Depth (feet)	Months
(6) Eaton, depressional	0-6	SP-SM	A-2-4, A-3	6.0-20.0	4.5-6.0	+2.0 - 0.0	Jan-Feb, June-Dec
	6-29	SM, SP-SM	A-2-4, A-3	6.0-20.0	4.5-6.0		
	29-33	SC	A-4, A-6, A-7	0.06-0.2	4.5-6.0		
	33-80	CH, CL, SC	A-7	0.06-0.2	4.5-6.0		
(7) Pomona, non-hydric- Pomona, hydric	0-6	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.5 - 1.5	June-Oct
	6-21	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	21-26	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	26-48	SP, SP-SM	A-2-4, A-3	2.0-20.0	3.5-6.0		
	48-73	SC, SP-SM, SM	A-2, A-4, A-6	0.2-2.0	3.5-5.5		
	73-80	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	0-6	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.0 - 1.0	June-Oct
	6-21	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	21-26	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
	26-48	SP, SP-SM	A-2-4, A-3	2.0-20.0	3.5-6.0		
	48-73	SC, SC-SM, SM	A-2, A-4, A-6	0.2-2.0	3.5-5.5		
	73-80	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-5.5		
(8) hydraquents, clayey	0-80	CH	A-7	0.001-0.06	7.9-8.4	+2.0 - 0.0	Jan-Dec
(11) Arents- Water	0-80	SP, SP-SM	A-3	20.0-50.0	3.5-6.5	---	Jan-Dec
	---	---	---	---	---		
(12) Neilhurst	0-3	SP, SP-SM	A-2-4, A-3	20.0-50.0	5.1-6.5	> 6.0	Jan-Dec
	3-80	SP, SP-SM	A-2-4, A-3	20.0-50.0	5.1-6.5		
(13) Samsula	0-31	PT	A-8	6.0-20.0	3.5-4.4	+2.0 - 0.0	Jan-Dec
	31-80	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
(17) Myakka- Smyrna, non-hydric- Smyrna, hydric	0-7	SP, SP-SM	A-3	6.0-20.0	3.5-6.5	0.5 - 1.5	June-Oct
	7-25	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
	25-36	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-6.5		
	36-80	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
	0-4	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3	0.5 - 1.5	June-Oct
	4-12	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
	12-25	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-7.3		
	25-42	SP, SP-SM	A-3	6.0-20.0	4.5-7.3		
	42-48	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-7.3		
	48-80	SM, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
	0-4	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3	0.0 - 1.0	June-Oct
	4-12	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
	12-25	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-7.3		
	25-42	SP, SP-SM	A-3	6.0-20.0	4.5-7.3		
	42-48	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-7.3		
	48-80	SM, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
(21) Immokalee, non-hydric- Immokalee, hydric	0-7	SP, SP-SM	A-3	6.0-20.0	3.5-6.0	0.5 - 1.5	June-Oct
	7-39	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	39-58	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	58-66	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	66-80	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	0-7	SP, SP-SM	A-3	6.0-20.0	3.5-6.0	0.0 - 1.0	June-Oct
	7-39	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	39-58	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	58-66	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	66-80	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		

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TABLE 1
SUMMARY OF USDA SOIL SURVEY
POLK COUNTY, FLORIDA

USDA Map Symbol and Soil Name	Soil Classification				pH	Seasonal High Water Table	
	Depth (in)	USCS	AASHTO	Permeability (in/hr)		Depth (feet)	Months
(23) Ona, non-hydric-Ona, hydric	0-10	SP, SP-SM	A-3	6.0-20.0	3.5-6.0	0.5 - 1.5	June-Oct
	10-19	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	19-50	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	50-80	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	0-10	SP, SP-SM	A-3	6.0-20.0	3.5-6.0	0.0 - 1.0	June-Oct
	10-19	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
	19-50	SP, SP-SM	A-3	6.0-20.0	3.5-6.0		
	50-80	SM, SP-SM	A-2-4, A-3	0.6-2.0	3.5-6.0		
(25) Placid, depressional-Myakka, depressional	0-18	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	+2.0 - 0.0	Jan-Dec
	18-80	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
	0-3	SP, SP-SM	A-3	6.0-20.0	3.5-6.5	+2.0 - 0.0	Jan-Dec
	3-25	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
	25-35	SM, SP-SM	A-2-4, A-3	0.6-6.0	3.5-6.5		
	35-80	SP, SP-SM	A-3	6.0-20.0	3.5-6.5		
(29) St. Lucie	0-3	SP	A-3	20.0-50.0	3.5-7.3	> 6.0	Jan-Dec
	3-80	SP	A-3	20.0-50.0	3.5-7.3		
(31) Adamsville	0-6	SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.8	2.0 - 3.5	June-Nov
	6-80	SP, SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.8		
(32) Kaliga	0-30	PT	A-8	6.0-20.0	3.1-4.4	+1.0 - 0.0	Jan-Dec
	30-75	SC, SC-SM, SM	A-2-4, A-2-6	0.06-0.2	4.5-8.4		
	75-80	SP, SP-SM	A-2-4, A-3	6.0-20.0	4.5-8.4		
(35) Hontoon	0-75	PT	A-8	6.0-20.0	2.0-4.4	+2.0 - 0.0	Jan-Dec
	75-80	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.3-5.5		
(36) Basinger, depressional	0-7	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3	+2.0 - 0.0	Jan-Feb, June-Dec
	7-35	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.3		
	35-45	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.6		
	45-80	SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-7.6		
(37) Placid	0-18	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5	0.0 - 1.0	Jan-Feb, June-Dec
	18-80	SM, SP, SP-SM	A-2-4, A-3	6.0-20.0	3.5-5.5		
(47) Zolfo	0-7	SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.3	2.0 - 3.5	June-Nov
	7-71	SM, SP-SM	A-2-4, A-3	6.0-20.0	4.5-7.3		
	71-80	SM, SP-SM	A-2-4, A-3	0.2-6.0	3.5-6.5		
(68) Arents	0-80	SP, SP-SM	A-3	20.0-50.0	3.5-6.5	2.0 - 4.0	Jan, June-Dec
(77) Satellite	0-6	SP	A-3	20.0-50.0	4.5-7.8	1.0 - 3.5	June-Nov
	6-80	SP	A-3	20.0-50.0	4.5-7.8		
(99) Water	---	---	---	---	---	---	Jan-Dec

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TABLE 2
SUMMARY OF SEASONAL HIGH GROUNDWATER TABLE ESTIMATES WITHIN SMF AND FPC AREAS
SR 570B (CENTRAL POLK PARKWAY) FROM SR 570 (POLK PARKWAY) TO SR 35 (US 17)
POLK COUNTY, FLORIDA
FPN: 440897-2-52-01
TIERRA PROJECT NO: 6511-17-181-001

Boring Name	Boring Location[1]		Reference	Boring Depth (feet)	Ground Elevation[1] (feet, NAVD 88)	Measured Groundwater Table			USDA Soil Survey		Estimated SHGWT[4]	
	Station (feet)	Offset (feet)				Date Recorded	Depth[2] (feet)	Elevation (feet, NAVD88)	Map Symbol	Estimated SHGWT[3] Depth (feet)	Depth (feet)	Elevation (feet, NAVD88)
SMF 1												
PB-SMF-1-1	14+17	19' RT.	BL SMF1	11.5	105.0	11/26/2018	8.0	97.0	44	1.0-1.5; 0.0-1.0	1.5	103.5
PB-SMF-1-2	18+03	61' LT.	BL SMF1	8.0	103.3	11/26/2018	3.0	100.3	44	1.0-1.5; 0.0-1.0	0.5	102.8
PB-SMF-1-3	32+05	396' RT.	BL SMF1	7.5	102.3	11/26/2018	4.5	97.8	42	0.0-1.0	1.5	100.8
SMF 2												
PB-SMF2B-4	10+37	47' RT.	BL SMF2	8.0	116.3	11/26/2018	6.0	110.3	17	0.5-1.5; 0.0-1.0	3.0	113.3
PB-208L	12+20	30' LT.	BL SMF2	7.0	114.9	10/27/2014	5.7	109.2	21, 17	0.0-1.0, 0.5-1.5	2.0	112.9
SH-210	13+87	85' RT.	BL SMF2	6.5	116.4	10/13/2013	5.6	110.8	47, 21	2.0-3.5, 0.0-1.0	3.0	113.4
PB-SMF2A-1	15+65	154' LT.	BL SMF2	8.5	114.0	11/26/2018	4.5	109.5	21	0.5-1.5; 0.0-1.0	2.5	111.5
PB-SMF2A-2	19+33	105' LT.	BL SMF2	9.0	113.2	11/27/2018	6.8	106.4	21	0.5-1.5; 0.0-1.0	2.0	111.2
PB-SMF2A-3	23+82	154' LT.	BL SMF2	9.5	114.4	11/27/2018	7.8	106.6	21	0.5-1.5; 0.0-1.0	3.0	111.4
FPC-1												
PBA-FPC1-14L	14+26	114' LT.	BL FPC1	5.0	110.1	6/17/2019	3.0	107.1	31	2.0-3.5	1.5	108.6
PB-1101R	15+44	245' LT.	BL FPC1	5.0	111.2	8/22/2014	4.2	107.0	17,31	0.0-1.0; 2.0-3.5	0.5	110.7
PBA-FPC1-16R	16+17	142' RT.	BL FPC1	5.0	111.6	6/17/2019	3.0	108.6	31	2.0-3.5	1.0	110.6
PBA-FPC1-17L	16+91	138' LT.	BL FPC1	5.0	112.7	6/17/2019	2.0	110.7	17	0.5-1.5; 0.0-1.0	1.0	111.7
PB-1105R	19+28	247' LT.	BL FPC1	5.0	114.7	8/22/2014	2.6	112.1	17	0.5-1.5; 0.0-1.0	1.7	113.0
PBA-FPC1-20R	19+79	95' RT.	BL FPC1	5.0	117.2	6/17/2019	3.5	113.7	31	2.0-3.5	2.0	115.2
PBA-FPC1-20L	19+86	137' LT.	BL FPC1	5.0	115.8	6/17/2019	3.0	112.8	17	0.5-1.5; 0.0-1.0	2.5	113.3
FPC-2 & SMF-3												
PB-SMF-3B-9	12+57	155' LT.	BL SMF3	7.5	107.7	11/27/2018	5.6	102.1	25	+2.0-0.0	1.5	106.2
PB-SMF-3B-1	13+92	559' RT.	BL SMF3	10.0	108.0	11/26/2018	3.6	104.4	21	0.5-1.5; 0.0-1.0	1.0	107.0
PB-SMF-3B-4	18+70	260' RT.	BL SMF3	10.5	107.2	11/26/2018	6.0	101.2	7	0.5-1.5; 0.0-1.0	1.0	106.2
PB-SMF-3B-7	21+01	7' RT.	BL SMF3	10.5	106.9	11/26/2018	3.8	103.1	7	0.5-1.5; 0.0-1.0	1.5	105.4
PB-SMF-3B-10	24+87	259' LT.	BL SMF3	5.5	105.2	11/27/2018	3.6	101.6	7	0.5-1.5; 0.0-1.0	1.0	104.2
PB-SMF-3B-6	28+30	150' RT.	BL SMF3	6.0	104.7	11/27/2018	3.3	101.4	7	0.5-1.5; 0.0-1.0	0.5	104.2
FPC-3												
PB-FPC3-AB1	13+86	11' RT.	BL FPC3	9.5	108.8	9/19/2019	3.9	104.9	68	2.0-4.0	3.9	104.9
PB-FPC3-AB2	15+82	1' LT.	BL FPC3	5.5	108.8	4/29/2019	7.9	100.9	68	2.0-4.0	4.0	104.8
PB-FPC3-AB3	18+39	10' RT.	BL FPC3	11.5	108.4	9/19/2019	5.8	102.6	68	2.0-4.0	5.4	103.0
FPC-4												
SHW-845L2	12+32	143' RT.	BL FPC4	6.5	109.8	10/4/2018	3.5	106.3	13	+2.0 - 0.0	3.0	106.8
PBA-FPC4-11L	12+74	2' RT.	BL FPC4	3.0	106.5	6/21/2019	1.5	105.0	25	+2.0-0.0	0.0	106.5
PBA-FPC4-14L	15+58	23' LT.	BL FPC4	5.0	106.7	6/21/2019	2.5	104.2	7	0.5-1.5; 0.0-1.0	0.5	106.2
SH-426	15+88	113' RT.	BL FPC4	5.5	107.3	4/4/2014	4.3	103.0	51, 7	0.5-1.5; 0.5-1.5; 0.0-1.0	0.5	106.8
PBA-FPC4-15R	16+62	41' RT.	BL FPC4	5.0	107.2	6/21/2019	3.0	104.2	51	0.5-1.5	1.0	106.2
SHW-850L	16+95	127' RT.	BL FPC4	5.0	108.3	10/3/2018	2.0	106.3	51	0.5-1.5	0.8	107.5

(1) The boring locations and ground elevations were provided by the project surveyor.
(2) Depth below existing grades at time of augering.
(3) Seasonal high groundwater table depth based on the Polk County, Florida USDA Soil Survey information.
(4) Seasonal high groundwater table depth estimated based on soil stratigraphy, measured groundwater levels from the borings, the Polk County, Florida USDA Soil Survey information and past experience with similar soil conditions.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Polk County, Florida

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May 29, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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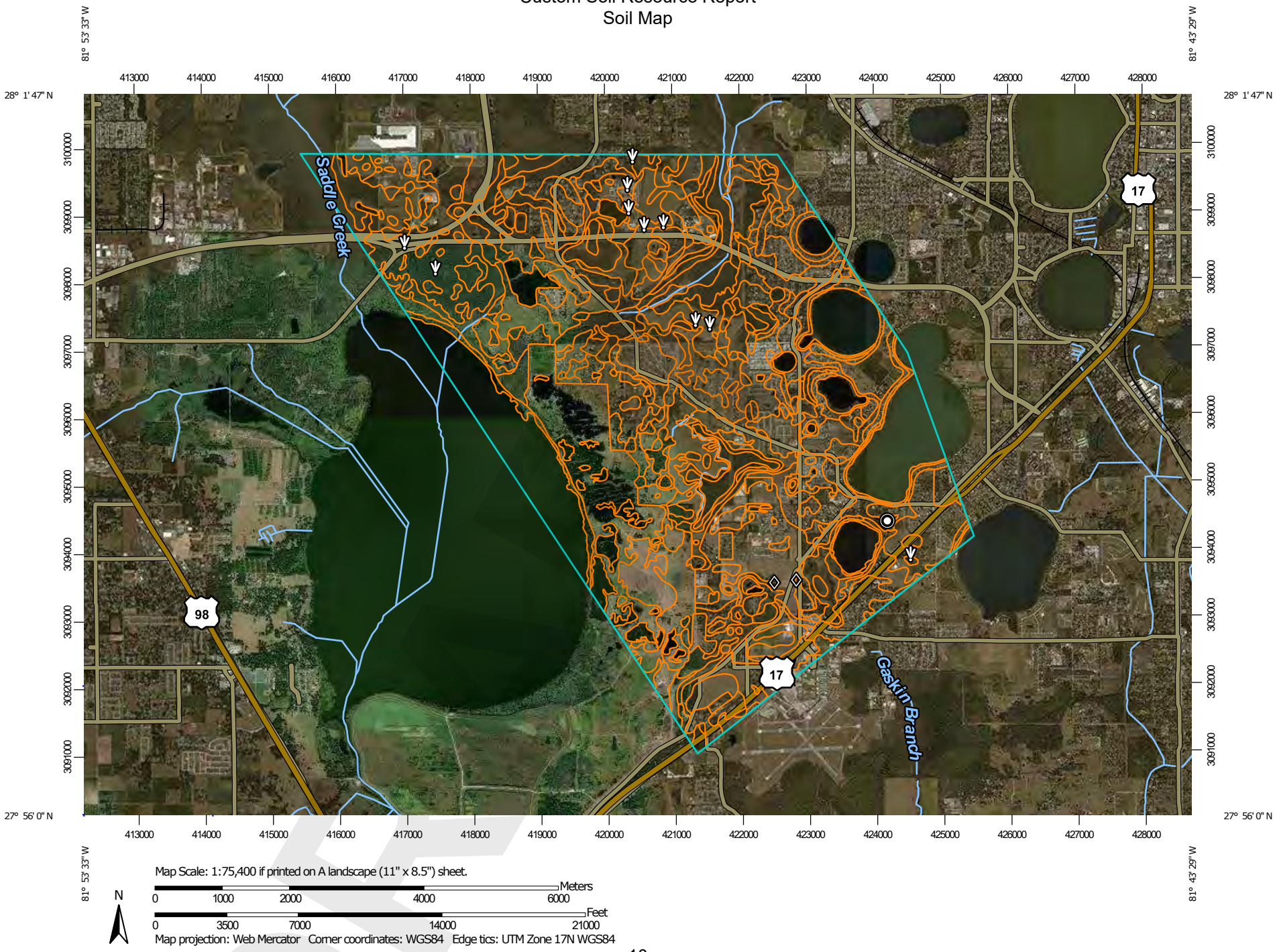
Custom Soil Resource Report
Soil Map



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 1:20,000.

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: Polk County, Florida
Survey Area Data: Version 15, Oct 6, 2017

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

Date(s) aerial images were photographed: Dec 21, 2010—Nov 26, 2017

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.

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Apopka fine sand, 0 to 5 percent slopes	153.1	1.3%
3	Candler sand, 0 to 5 percent slopes	641.6	5.3%
4	Candler sand, 5 to 8 percent slopes	5.8	0.0%
6	Eaton mucky fine sand, depressional	141.6	1.2%
7	Pomona fine sand	315.8	2.6%
8	Hydraquents, clayey	10.3	0.1%
9	Lynne sand	24.6	0.2%
11	Arents-Water complex	755.3	6.2%
12	Neilhurst sand, 1 to 5 percent slopes	221.4	1.8%
13	Samsula muck, frequently ponded, 0 to 1 percent slopes	464.9	3.8%
14	Sparr sand, 0 to 5 percent slopes	96.0	0.8%
15	Tavares fine sand, 0 to 5 percent slopes	1,307.8	10.8%
16	Urban land	17.8	0.1%
17	Smyrna and Myakka fine sands	1,330.1	10.9%
19	Floridana mucky fine sand, frequently ponded, 0 to 1 percent slopes	182.2	1.5%
21	Immokalee sand	492.9	4.1%
22	Pomello fine sand	348.8	2.9%
23	Ona-Ona, wet, fine sand, 0 to 2 percent slopes	22.7	0.2%
24	Nittaw sandy clay loam, frequently flooded	125.5	1.0%
25	Placid and Myakka fine sands, depressional	170.3	1.4%
26	Lochloosa fine sand	19.3	0.2%
29	St. Lucie fine sand, 0 to 5 percent slopes	447.7	3.7%
30	Pompano fine sand	45.4	0.4%
31	Adamsville fine sand, 0 to 2 percent slopes	344.3	2.8%
32	Kaliga muck, frequently ponded, 0 to 1 percent slopes	401.3	3.3%

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
34	Anclote mucky fine sand, frequently ponded, 0 to 1 percent slopes	7.8	0.1%
35	Hontoon muck, frequently ponded, 0 to 1 percent slopes	315.6	2.6%
36	Basinger mucky fine sand, depressional	35.1	0.3%
37	Placid fine sand, frequently flooded	70.8	0.6%
40	Wauchula fine sand	53.1	0.4%
41	St. Johns sand	13.7	0.1%
42	Felda fine sand	285.5	2.3%
44	Paisley fine sand, 0 to 1 percent slopes	529.8	4.4%
47	Zolfo fine sand, 0 to 2 percent slopes	54.2	0.4%
48	Chobee fine sandy loam, frequently ponded, 0 to 1 percent slopes	128.4	1.1%
50	Candler-Urban land complex, 0 to 5 percent slopes	129.3	1.1%
51	Pomona-Urban land complex	12.3	0.1%
53	Myakka-Immokolee-Urban land complex	4.3	0.0%
54	Pomello-Urban land complex	115.7	1.0%
58	Udorthents, excavated	38.2	0.3%
59	Arents-Urban land complex, 0 to 5 percent slopes	16.1	0.1%
62	Wabasso fine sand	177.0	1.5%
63	Tavares-Urban land complex	62.3	0.5%
67	Bradenton fine sand	22.2	0.2%
68	Arents, 0 to 5 percent slopes	183.5	1.5%
77	Satellite sand, 0 to 2 percent slopes	32.9	0.3%
99	Water	1,788.1	14.7%
Totals for Area of Interest		**12,162.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named

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according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

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Polk County, Florida

2—Apopka fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2shkg
Elevation: 10 to 260 feet
Mean annual precipitation: 45 to 56 inches
Mean annual air temperature: 66 to 75 degrees F
Frost-free period: 287 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Apopka and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Apopka

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Shoulder, summit, footslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits over loamy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
E - 7 to 50 inches: fine sand
Bt1 - 50 to 67 inches: fine sandy loam
Bt2 - 67 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 12.0
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)

Hydric soil rating: No

Minor Components

Tavares

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Sparr

Percent of map unit: 5 percent
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Candler

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear, concave
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

3—Candler sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2t3z1
Elevation: 10 to 260 feet
Mean annual precipitation: 47 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 280 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Candler and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Knolls on marine terraces, ridges on marine terraces

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, interfluve, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 63 inches: sand
E and Bt - 63 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL), Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

Minor Components

Tavares

Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave, convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Millhopper

Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)

Hydric soil rating: No

4—Candler sand, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1jttm
Elevation: 20 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Candler and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Knolls on marine terraces, hillslopes on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 7 inches: sand
E - 7 to 63 inches: sand
E and Bt - 63 to 80 inches: sand

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Astatula

Percent of map unit: 4 percent
Landform: Ridges on marine terraces, hills on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Millhopper

Percent of map unit: 4 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Apopka

Percent of map unit: 4 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Tavares

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

6—Eaton mucky fine sand, depressional

Map Unit Setting

National map unit symbol: 1jttp
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Eaton, depressional, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eaton, Depressional

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Interfluve, dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Loamy and clayey marine deposits

Typical profile

A - 0 to 6 inches: mucky fine sand
Eg - 6 to 29 inches: fine sand
Btg1 - 29 to 33 inches: sandy clay loam
Btg2 - 33 to 80 inches: sandy clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Forage suitability group: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G154XB345FL)
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Minor Components

Felda, depressional

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Chobee, depressional

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Holopaw, depressional

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Winder, depressional

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Floridana, depressional

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Kaliga

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

7—Pomona fine sand

Map Unit Setting

National map unit symbol: 1jttq
Elevation: 20 to 120 feet

Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pomona, non-hydric, and similar soils: 70 percent
Pomona, hydric, and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pomona, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 21 inches: sand
Bh - 21 to 26 inches: fine sand
E' - 26 to 48 inches: fine sand
Btg - 48 to 73 inches: fine sandy loam
Cg - 73 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Pomona, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 21 inches: sand
Bh - 21 to 26 inches: fine sand
E' - 26 to 48 inches: fine sand
Btg - 48 to 73 inches: fine sandy loam
Cg - 73 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Myakka

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Smyrna, non-hydric

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Wauchula, non-hydric

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

8—Hydraquents, clayey

Map Unit Setting

National map unit symbol: 1jttr
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Hydraquents, clayey and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hydraquents, Clayey

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Altered marine deposits

Typical profile

Cg - 0 to 80 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0

Available water storage in profile: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: Yes

Minor Components

Neilhurst

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, side slope, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

9—Lynne sand

Map Unit Setting

National map unit symbol: 1jtts
Elevation: 20 to 120 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Lynne, non-hydric, and similar soils: 65 percent
Lynne, hydric, and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lynne, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 21 inches: fine sand
Bh - 21 to 28 inches: fine sand
BE - 28 to 33 inches: fine sand
Btg - 33 to 80 inches: sandy clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G154XB241FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Lynne, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 21 inches: fine sand
Bh - 21 to 28 inches: fine sand
BE - 28 to 33 inches: fine sand
Btg - 33 to 80 inches: sandy clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.9 inches)

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Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G154XB241FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Immokalee, non-hydric

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Wauchula, non-hydric

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Myakka

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Pomona, non-hydric

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Felda

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

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11—Arents-Water complex

Map Unit Setting

National map unit symbol: 1jttv
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 50 percent
Water: 45 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Ridges on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

AC - 0 to 80 inches: sand

Properties and qualities

Slope: 35 to 65 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Minor Components

Aquents

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

12—Neilhurst sand, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1jttw
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Neilhurst and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Neilhurst

Setting

Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, side slope, rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy mine spoil or earthy fill

Typical profile

A - 0 to 3 inches: sand
C - 3 to 80 inches: sand

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

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Minor Components

Haplaquents, clayey

Percent of map unit: 5 percent
Landform: Depressions, marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Arents

Percent of map unit: 5 percent
Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

13—Samsula muck, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tzw9
Elevation: 0 to 250 feet
Mean annual precipitation: 44 to 63 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 335 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Samsula and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Samsula

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oa1 - 0 to 24 inches: muck
Oa2 - 24 to 32 inches: muck
Cg1 - 32 to 35 inches: sand
Cg2 - 35 to 44 inches: sand
Cg3 - 44 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very high (about 13.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Kaliga

Percent of map unit: 3 percent
Landform: Depressions on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Myakka

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Sanibel

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Anclote

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Floridana

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

14—Sparr sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2w0q9
Elevation: 40 to 150 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 290 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Sparr and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sparr

Setting

Landform: Knolls on marine terraces, rises on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, tread, rise
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Sandy marine deposits and/or loamy marine deposits

Typical profile

A - 0 to 8 inches: sand
E - 8 to 57 inches: sand
Bt - 57 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G154XB131FL)
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Minor Components

Candler

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, interfluve, tread
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Apopka

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, interfluve, tread
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL), Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Tavares

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces, flats on marine terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)

Hydric soil rating: No

15—Tavares fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2w0pz
Elevation: 30 to 160 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 290 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Tavares and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tavares

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, side slope, tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
C - 5 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A

Forage suitability group: Sandy soils on rises, knolls, and ridges of mesic uplands (G154XB121FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Candler

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear, concave
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Apopka

Percent of map unit: 4 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Shoulder, summit, footslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Narcoossee

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Zolfo

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: North Florida Flatwoods (R154XY004FL)
Hydric soil rating: No

16—Urban land

Map Unit Setting

National map unit symbol: 1jtv0
Elevation: 10 to 150 feet
Mean annual precipitation: 46 to 54 inches

Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting
Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Minor Components

Millhopper
Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Apopka
Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Adamsville
Percent of map unit: 5 percent
Landform: Ridges on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

17—Smyrna and Myakka fine sands

Map Unit Setting
National map unit symbol: 1jtv1

Elevation: 20 to 120 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Smyrna, non-hydric, and similar soils: 40 percent
Myakka and similar soils: 40 percent
Smyrna, hydric, and similar soils: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Smyrna, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 12 inches: fine sand
Bh - 12 to 25 inches: fine sand
E' - 25 to 42 inches: fine sand
B'h - 42 to 48 inches: fine sand
C - 48 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

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Description of Myakka

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
E - 7 to 25 inches: fine sand
Bh - 25 to 36 inches: fine sand
C - 36 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Smyrna, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 12 inches: fine sand
Bh - 12 to 25 inches: fine sand
E' - 25 to 42 inches: fine sand
B'h - 42 to 48 inches: fine sand
C - 48 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Ona, non-hydric

Percent of map unit: 1 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Immokalee, non-hydric

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Pomona, non-hydric

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces

Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

19—Floridana mucky fine sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2sm4y
Elevation: 0 to 90 feet
Mean annual precipitation: 45 to 63 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 335 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Floridana and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Floridana

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A1 - 0 to 4 inches: mucky fine sand
A2 - 4 to 15 inches: fine sand
Eg - 15 to 32 inches: fine sand
Btg - 32 to 44 inches: sandy clay loam
BCg - 44 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent

Calcium carbonate, maximum in profile: 4 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Holopaw

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Felda

Percent of map unit: 4 percent
Landform: Depressions on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: Slough (R155XY011FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Placid

Percent of map unit: 2 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

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21—Immokalee sand

Map Unit Setting

National map unit symbol: 1jtv4
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Immokalee, non-hydric, and similar soils: 75 percent
Immokalee, hydric, and similar soils: 10 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Immokalee, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: sand
E - 7 to 39 inches: sand
Bh - 39 to 58 inches: sand
E' - 58 to 66 inches: sand
B'h - 66 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D

DRAFT

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Immokalee, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: sand
E - 7 to 39 inches: sand
Bh - 39 to 58 inches: sand
E' - 58 to 66 inches: sand
B'h - 66 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Myakka

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Smyrna, non-hydric

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Basinger

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

22—Pomello fine sand

Map Unit Setting

National map unit symbol: 1jtv5
Elevation: 10 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pomello and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pomello

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 48 inches: fine sand
Bh - 48 to 63 inches: fine sand
BC - 63 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G154XB131FL)
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

Minor Components

Satellite

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

Immokalee, non-hydric

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Archbold

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

Duette

Percent of map unit: 5 percent
Landform: Rises on marine terraces

Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R154XY001FL), Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

23—Ona-Ona, wet, fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w4gx
Elevation: 10 to 130 feet
Mean annual precipitation: 46 to 56 inches
Mean annual air temperature: 66 to 77 degrees F
Frost-free period: 325 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Ona and similar soils: 75 percent
Ona, wet, and similar soils: 12 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ona

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 9 inches: fine sand
Bh - 9 to 16 inches: fine sand
C - 16 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0

Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Description of Ona, Wet

Setting

Landform: Sloughs on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 9 inches: fine sand
Bh - 9 to 16 inches: fine sand
C - 16 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Myakka

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Basinger, hydric

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

24—Nittaw sandy clay loam, frequently flooded

Map Unit Setting

National map unit symbol: 1jtv7
Elevation: 10 to 80 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Nittaw and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nittaw

Setting

Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey marine deposits

Typical profile

A - 0 to 6 inches: sandy clay loam
Btg - 6 to 75 inches: clay
Cg - 75 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Forage suitability group: Organic soils in depressions and on flood plains (G154XB645FL)
Hydric soil rating: Yes

Minor Components

Chobee

Percent of map unit: 5 percent
Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Kaliga

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Floridana, depressional

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

DRAFT

25—Placid and Myakka fine sands, depressional

Map Unit Setting

National map unit symbol: 1jtv8
Elevation: 20 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Placid, depressional, and similar soils: 60 percent
Myakka, depressional, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placid, Depressional

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 18 inches: fine sand
Cg - 18 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)

Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Description of Myakka, Depressional

Setting
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile
A - 0 to 3 inches: fine sand
E - 3 to 25 inches: fine sand
Bh - 25 to 35 inches: fine sand
Cg - 35 to 80 inches: fine sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Minor Components

Ona, hydric
Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Basinger, depressional
Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip

Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Pomona, hydric
Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

St. johns, hydric
Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Cutthroat Seeps (R154XY007FL)
Hydric soil rating: Yes

26—Lochloosa fine sand

Map Unit Setting
National map unit symbol: 1jtv9
Elevation: 10 to 160 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Lochloosa and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lochloosa

Setting
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile
A - 0 to 6 inches: fine sand
E - 6 to 36 inches: fine sand

Btg - 36 to 65 inches: sandy clay loam
BCg - 65 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 30 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Forage suitability group: Sandy over loamy soils on rises and knolls of mesic uplands (G154XB231FL)
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Minor Components

Kendrick

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Adamsville

Percent of map unit: 3 percent
Landform: Ridges on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Millhopper

Percent of map unit: 2 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Sparr

Percent of map unit: 2 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

29—St. Lucie fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2v17s
Elevation: 80 to 160 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

St. lucie and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Lucie

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
C - 4 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

Minor Components

Archbold
Percent of map unit: 4 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

Cassia
Percent of map unit: 3 percent
Landform: Rises on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Myakka
Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve, tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

30—Pompano fine sand

Map Unit Setting
National map unit symbol: 1jtvd
Elevation: 10 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Pompano and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pompano

Setting

Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 15 inches: fine sand
C - 15 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Anclote, depressional

Percent of map unit: 5 percent

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Placid, depressional

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

31—Adamsville fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2r8h8
Elevation: 10 to 100 feet
Mean annual precipitation: 47 to 56 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 290 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Adamsville and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adamsville

Setting

Landform: Flats on marine terraces, rises on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

Ap - 0 to 7 inches: fine sand
C1 - 7 to 20 inches: fine sand
C2 - 20 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G154XB131FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL), Upland Hardwood Hammock (R155XY008FL)
Hydric soil rating: No

Minor Components

Myakka
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Basinger
Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, convex
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

32—Kaliga muck, frequently ponded, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2tzx5
Elevation: 0 to 130 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Kaliga and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kaliga

Setting

Landform: Depressions on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Herbaceous organic material over loamy marine deposits

Typical profile

Oa - 0 to 25 inches: muck
C1 - 25 to 35 inches: fine sandy loam
C2 - 35 to 60 inches: sandy clay loam
C3 - 60 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very high (about 15.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Samsula

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Tequesta

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

Chobee

Percent of map unit: 4 percent
Landform: Depressions on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Felda

Percent of map unit: 4 percent
Landform: Depressions on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: Slough (R155XY011FL)
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Placid

Percent of map unit: 3 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

34—Anclote mucky fine sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2svzk
Elevation: 0 to 130 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Anclote and similar soils: 85 percent
Minor components: 15 percent

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Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Anclote

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Parent material: Sandy marine deposits

Typical profile

A1 - 0 to 10 inches: mucky fine sand
A2 - 10 to 14 inches: fine sand
Ckg1 - 14 to 35 inches: fine sand
Ckg2 - 35 to 65 inches: fine sand
Ckg3 - 65 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 4 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Floridana

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear

Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Samsula

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Valkaria

Percent of map unit: 2 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

35—Hontoon muck, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2vbpg
Elevation: 0 to 250 feet
Mean annual precipitation: 43 to 63 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Hontoon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hontoon

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material

Typical profile

Oa - 0 to 75 inches: muck
AC - 75 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G154XB645FL)
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Minor Components

Samsula

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Hontoon, drained

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Placid

Percent of map unit: 3 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 2 percent
Landform: Depressions on marine terraces

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Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

36—Basinger mucky fine sand, depressional

Map Unit Setting

National map unit symbol: 1jtvl
Elevation: 10 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Basinger, depressional, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Basinger, Depressional

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: mucky fine sand
E - 7 to 35 inches: fine sand
E/Bh - 35 to 45 inches: fine sand
C - 45 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 6.0 inches)

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Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Minor Components

Pompano

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Placid, depressional

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Samsula

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

St. johns, hydric

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Cutthroat Seeps (R154XY007FL)
Hydric soil rating: Yes

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37—Placid fine sand, frequently flooded

Map Unit Setting

National map unit symbol: 1jtvm
Elevation: 10 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Placid and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placid

Setting

Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 18 inches: fine sand
Cg - 18 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)
Hydric soil rating: Yes

Minor Components

Adamsville

Percent of map unit: 3 percent
Landform: Ridges on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Basinger

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Holopaw, depressional

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Pompano

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Anclote, depressional

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

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40—Wauchula fine sand

Map Unit Setting

National map unit symbol: 1jtvq
Elevation: 10 to 120 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Wauchula, non-hydric, and similar soils: 65 percent
Wauchula, hydric, and similar soils: 15 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wauchula, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
E - 7 to 18 inches: fine sand
Bh - 18 to 26 inches: fine sand
E' - 26 to 33 inches: fine sand
Btg - 33 to 70 inches: sandy clay loam
Cg - 70 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G154XB241FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Wauchula, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
E - 7 to 18 inches: fine sand
Bh - 18 to 26 inches: fine sand
E' - 26 to 33 inches: fine sand
Btg - 33 to 70 inches: sandy clay loam
Cg - 70 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G154XB241FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Lynne, non-hydric

Percent of map unit: 7 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)

Hydric soil rating: No

Pompano

Percent of map unit: 7 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Myakka, non-hydric

Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

41—St. Johns sand

Map Unit Setting

National map unit symbol: 1jtvr
Elevation: 30 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

St. johns, non-hydric, and similar soils: 40 percent
St. johns, hydric, and similar soils: 20 percent
Minor components: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Johns, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: sand
E - 12 to 22 inches: sand
Bh - 22 to 65 inches: sand
C - 65 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: Cutthroat Seeps (R154XY007FL)
Hydric soil rating: No

Description of St. Johns, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: sand
E - 12 to 22 inches: sand
Bh - 22 to 65 inches: sand
C - 65 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: Cutthroat Seeps (R154XY007FL)
Hydric soil rating: Yes

Minor Components

Samsula
Percent of map unit: 10 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Placid, depressional
Percent of map unit: 10 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Basinger
Percent of map unit: 10 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Ona, non-hydric
Percent of map unit: 10 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

42—Felda fine sand

Map Unit Setting
National map unit symbol: 1jtvs
Elevation: 20 to 100 feet

Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Felda and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Felda

Setting

Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
Eg - 5 to 22 inches: fine sand
Btg - 22 to 50 inches: sandy clay loam
Cg - 50 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G154XB241FL)
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Minor Components

Floridana, depressional

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave

Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Malabar
Percent of map unit: 5 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Bradenton, hydric
Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: Yes

Oldsmar, non-hydric
Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

44—Paisley fine sand, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2w4gn
Elevation: 30 to 100 feet
Mean annual precipitation: 46 to 56 inches
Mean annual air temperature: 66 to 77 degrees F
Frost-free period: 287 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Paisley, non-hydric, and similar soils: 60 percent
Paisley, hydric, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paisley, Non-hydric

Setting
Landform: Flats on marine terraces

Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 3 inches: fine sand
E - 3 to 14 inches: fine sand
Btg - 14 to 30 inches: sandy clay
BCg - 30 to 48 inches: sandy clay
Cg - 48 to 80 inches: sandy clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 10 to 15 inches to abrupt textural change
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Loamy and clayey soils on flats of hydric or mesic lowlands (G154XB341FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Paisley, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 3 inches: fine sand
E - 3 to 14 inches: fine sand
Btg - 14 to 30 inches: sandy clay
BCg - 30 to 48 inches: sandy clay
Cg - 48 to 80 inches: sandy clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 10 to 15 inches to abrupt textural change
Natural drainage class: Poorly drained

Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Loamy and clayey soils on flats of hydric or mesic lowlands (G154XB341FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Wabasso, non-hydric

Percent of map unit: 10 percent
Landform: Flatwoods on flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Bradenton, non-hydric

Percent of map unit: 3 percent
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Tread, talf, rise
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Wetland Hardwood Hammock (R155XY012FL)
Hydric soil rating: No

Felda

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: Slough (R155XY011FL)
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

DRAFT

47—Zolfo fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w0q1
Elevation: 30 to 160 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Zolfo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zolfo

Setting

Landform: Rises on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 59 inches: fine sand
Bh - 59 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A

Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Myakka
Percent of map unit: 5 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Millhopper
Percent of map unit: 4 percent
Landform: Rises on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise, talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tavares
Percent of map unit: 4 percent
Landform: Knolls on marine terraces, ridges on marine terraces, flats on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope, tread, rise
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

Malabar
Percent of map unit: 2 percent
Landform: — error in exists on —
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: Slough (R155XY011FL)
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

48—Chobee fine sandy loam, frequently ponded, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2tzvw

Elevation: 10 to 70 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Chobee and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chobee

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy marine deposits

Typical profile

A - 0 to 9 inches: fine sandy loam
Btg1 - 9 to 13 inches: fine sandy loam
Btg2 - 13 to 68 inches: sandy clay loam
Cg - 68 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 14 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: Freshwater Marshes and Ponds (R155XY010FL)
Forage suitability group: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Winder

Percent of map unit: 3 percent
Landform: Depressions on marine terraces

Landform position (three-dimensional): Tread, dip
Down-slope shape: Convex, linear
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Tequesta

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

Placid

Percent of map unit: 3 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

50—Candler-Urban land complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1jtw0
Elevation: 50 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Candler and similar soils: 55 percent
Urban land: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 63 inches: sand
E and Bt - 63 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

51—Pomona-Urban land complex

Map Unit Setting

National map unit symbol: 1jtw1
Elevation: 20 to 120 feet

Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pomona, non-hydric, and similar soils: 45 percent
Urban land: 30 percent
Pomona, hydric, and similar soils: 10 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pomona, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 21 inches: sand
Bh - 21 to 26 inches: loamy fine sand
E' - 26 to 48 inches: fine sand
Btg - 48 to 73 inches: fine sandy loam
Cg - 73 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: No parent material

Description of Pomona, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 21 inches: sand
Bh - 21 to 26 inches: loamy fine sand
E' - 26 to 48 inches: fine sand
Btg - 48 to 73 inches: fine sandy loam
Cg - 73 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: Yes

Minor Components

Wauchula, non-hydric

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Myakka

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

53—Myakka-Immokolee-Urban land complex

Map Unit Setting

National map unit symbol: 1jtw2
Elevation: 20 to 120 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Myakka, non-hydric, and similar soils: 30 percent
Immokalee and similar soils: 25 percent
Urban land: 25 percent
Myakka, hydric, and similar soils: 10 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myakka, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
E - 7 to 25 inches: fine sand
Bh - 25 to 36 inches: fine sand
C - 36 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

Description of Immokalee

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: sand
E - 7 to 39 inches: sand
Bh - 39 to 58 inches: sand
E' - 58 to 66 inches: sand
B'h - 66 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Description of Myakka, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
E - 7 to 25 inches: fine sand
Bh - 25 to 36 inches: fine sand
C - 36 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: Yes

Minor Components

Ona, non-hydric

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Basinger

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Pomello

Percent of map unit: 2 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

Pomona, non-hydric

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

54—Pomello-Urban land complex

Map Unit Setting

National map unit symbol: 1jtw3
Elevation: 10 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pomello and similar soils: 55 percent
Urban land: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pomello

Setting

Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 48 inches: fine sand
Bh - 48 to 63 inches: fine sand
BC - 63 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Minor Components

Satellite

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

Immokalee, non-hydric

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

St. johns, hydric

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Cutthroat Seeps (R154XY007FL)
Hydric soil rating: Yes

58—Udorthents, excavated

Map Unit Setting

National map unit symbol: 1jtw6
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, excavated, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Excavated

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

59—Arents-Urban land complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1jtw7
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 55 percent
Urban land: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

C - 0 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

62—Wabasso fine sand

Map Unit Setting

National map unit symbol: 1jtwb
Elevation: 20 to 120 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Wabasso, non-hydric, and similar soils: 70 percent
Wabasso, hydric, and similar soils: 10 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wabasso, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
E - 7 to 22 inches: fine sand
Bh - 22 to 30 inches: fine sand
BE - 30 to 35 inches: fine sand
Btg - 35 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None

Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Wabasso, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
E - 7 to 22 inches: fine sand
Bh - 22 to 30 inches: fine sand
BE - 30 to 35 inches: fine sand
Btg - 35 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Felda

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Eaugallie, non-hydric

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Pomona, non-hydric

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Malabar

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Holopaw, depressional

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Floridana, depressional

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

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63—Tavares-Urban land complex

Map Unit Setting

National map unit symbol: 1jtwc
Elevation: 20 to 120 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Tavares and similar soils: 75 percent
Urban land: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tavares

Setting

Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 8 inches: fine sand
C - 8 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 50.02 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

67—Bradenton fine sand

Map Unit Setting

National map unit symbol: 1jtwg
Elevation: 20 to 40 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Bradenton, non-hydric, and similar soils: 60 percent
Bradenton, hydric, and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bradenton, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 12 inches: fine sand
Bt - 12 to 22 inches: sandy loam
Ck - 22 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Loamy and clayey soils on flats of hydric or mesic lowlands (G154XB341FL)
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Description of Bradenton, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 12 inches: fine sand
Bt - 12 to 22 inches: sandy loam
Ck - 22 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Loamy and clayey soils on flats of hydric or mesic lowlands (G154XB341FL)
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: Yes

Minor Components

Chobee, depressional

Percent of map unit: 7 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Felda

Percent of map unit: 7 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Wabasso, non-hydric

Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

68—Arents, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1jtwh
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear

Parent material: Altered marine deposits

Typical profile

C - 0 to 80 inches: sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

77—Satellite sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2svzc
Elevation: 0 to 70 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Satellite and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Satellite

Setting

Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
C1 - 6 to 13 inches: sand
C2 - 13 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained

Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very high (20.00 to 50.02 in/hr)
Depth to water table: About 12 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Minor Components

Myakka

Percent of map unit: 6 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Basinger

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Pompano

Percent of map unit: 1 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

99—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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APPENDIX E
POND CALCULATIONS

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SMF 1

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 1	

R/W Basin Area = 148.00 ac

BASIN RUNOFF CURVE NUMBER WORKSHEET

PRE DEVELOPED CONDITION

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Open space (poor condition)	D	87	107.60	9361.20
Impervious		98	26.60	2606.80
SMF Site (Water)		100	13.80	1380.00
		TOTALS	148.00	13348.00

COMPOSITE CN =	90.2

*The CN of 87 is a weighted average of wood and pasture land types

R/W Basin Area = 150.37 ac

POST DEVELOPED CONDITION

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Open space (poor condition)	D	89	92.02	8189.78
Impervious (Asphalt)		98	42.08	4123.84
SMF Site (Water)		100	16.27	1627.00
		TOTALS	150.37	13940.62

COMPOSITE CN =	92.7

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 1	

Water Quantity Calculations

Pre Developed Condition

Basin	CN	Area (ac)	Product	Notes
1	90.2	148.00	13349.60	Direct Discharge
Total		**148.00**	**13349.60**	
	Composite CN =		**90.2**	

ESTIMATE OF RUNOFF VOLUME - 25YR/24HR

1)	**DETERMINE SOIL STORAGE - S**			
	S= (1000/CN) - 10	**SOIL STORAGE (inches)**	**S**	**1.09**
2)	**DETERMINE RUNOFF - R**			
	R= $(7.0-0.2*S)^2$ / (7.0+0.8*S)	**RUNOFF (inches)**	**R**	**5.85**
3)	**DETERMINE RUNOFF VOLUME- V(R)**			
	V(R)= R/12*AREA	**RUNOFF (Ac-ft.)**	**V(R)**	**72.10**

Post Developed Condition

Basin	CN	Area (ac)	Product	Notes
1	92.7	150.37	13939.30	
Total		**150.37**	**13939.30**	
	Composite CN =		**92.7**	

ESTIMATE OF RUNOFF VOLUME - 25YR/24HR

1)	**DETERMINE SOIL STORAGE - S**			
	S= (1000/CN) - 10	**SOIL STORAGE (inches)**	**S**	**0.79**
2)	**DETERMINE RUNOFF - R**			
	R= $(7.0-0.2*S)^2$ / (7.0+0.8*S)	**RUNOFF (inches)**	**R**	**6.14**
3)	**DETERMINE RUNOFF VOLUME- V(R)**			
	V(R)= R/12*AREA	**RUNOFF (Ac-ft.)**	**V(R)**	**76.89**

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 1	

Water Quantity Calculations

Attenuation Volume Required = 76.89 Ac-Ft - 72.10 Ac-Ft **= 4.79 Ac-Ft**

Attenuation Volume Summary

Basin	SMF	* Volume (ac-ft)
1	1	19.99

Attenuation Volume Provided = **19.99 Ac-Ft**

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 1	
SMF TYPE:	Wet-Detention	

Water Quality Calculations

Contributing Area 150.37 ac

Treatment Volume Required = 1.0" Runoff Over Contributing = **12.53 Ac-Ft**

TREATMENT PROVIDED = 13.15 Ac-Ft ✓

STAGE STORAGE CALCULATIONS - SMF 1

	ELEV.	AREA (AC)	AVG AREA (AC)	DELTA (FT)	DELTA STORAGE (AC-FT)	SUM STORAGE (AC-FT)
INSIDE BERM	104.80	17.81				64.76
			17.61	1.00	17.61	
DHW	103.80	17.40				47.15
			17.00	2.00	34.00	
WEIR	101.80	16.59				13.15
			16.43	0.80	13.15	
CONTROL	101.00	16.27				0.00
			14.99	11.00	164.84	
POND BOTTOM	90.00	13.70				0.00

SHW = 100.80 SHW
Source: PB-SMF-1-3 Boring
Tailwater = 100.80 ft

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SMF 2

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 2	

R/W Basin Area = 50.34 ac

BASIN RUNOFF CURVE NUMBER WORKSHEET

PRE DEVELOPED CONDITION 2A

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Pasture (Good condition)	A/D	80	8.52	681.60
Forest Land (Good Cover)	A	25	0.42	10.50
Forest Land (Good Cover)	D	77	11.58	891.66
		TOTALS	20.52	1583.76

COMPOSITE CN =	77.2

Note: Basin outfalls to the lake to the west

PRE DEVELOPED CONDITION 2B

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Pasture (Good condition)	A	39	9.09	354.51
Pasture (Good condition)	D	80	20.73	1658.40
		TOTALS	29.82	2012.91

COMPOSITE CN =	67.5

Note: Basin outfalls to the wetland to the East

R/W Basin Area = 79.13 ac

POST DEVELOPED CONDITION

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Open land (Good Condition)	A	68	24.75	1683.00
Open land (Good Condition)	A/D	80	30.58	2446.40
Impervious	-	98	16.40	1607.20
Wet	-	100	7.40	740.00
		TOTALS	79.13	6476.60

COMPOSITE CN =	81.8

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 2	
SMF TYPE:	Wet-Detention Pond	

Water Quality Calculations

Total Contributing Area 79.13 ac

Treatment Volume Required = 1.0" Runoff Over Contributing Area = **6.59 Ac-Ft**

TREATMENT PROVIDED = 7.59 Ac-Ft ✓

STAGE STORAGE CALCULATIONS - SMF 2

	ELEV.	AREA (AC)	AVG AREA (AC)	DELTA (FT)	DELTA STORAGE (AC-FT)	SUM STORAGE (AC-FT)
INSIDE BERM	115.00	8.70				28.18
			8.51	1.04	8.85	
DHW	113.96	8.31				19.33
			8.04	1.46	11.74	
WEIR	112.50	7.77				7.59
			7.59	1.00	7.59	
ORIFICE	111.50	7.40				0.00

SHW = 111.5
Source: PB-SMF-2A-1 Boring
Tailwater = 111.00 ft Control elevation to the east

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SMF 3 / Regional stormwater management option 1

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Regional Pond SMF 3 (Option 1)	

R/W Basin Area = 321.30 ac (240 AC from this project plus 40 AC from Basin 1 of the CPP Segment 2 project)
FROM STA.= 1078+00
TO STA.= 1330+00

PRE BASIN AREA SUMMARY

LAND-USE DESCRIPTION	HSG	CN	AREA (ac)
Open space (poor condition)	A	61	222.50
Forest (good cover)	D	77	52.00
Pond ROW	D	77	41.30
Impervious (Asphalt)	A	98	5.50
TOTAL		**56**	321.30

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Regional Pond SMF 3 (Option 1)	

R/W Basin Area = 321.30 ac (240 AC from this project plus 40 AC from Basin 1 of the CPP Segment 2 project)
FROM STA.= 1078+00
TO STA.= 1330+00

POST BASIN AREA SUMMARY

LAND-USE DESCRIPTION	HSG	CN	AREA (ac)
Open space (poor condition)	A	61	183.00
Forest (good cover)	D	77	52.00
Pond Water Area	D	100	33.26
Impervious (Asphalt)	A	98	86.30
TOTAL		**74**	321.30

Note: Impervious is pre condition plus post from Basin 10 and 11

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PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	SMF-3 / Regional stormwater management option 1	
SMF TYPE:	Wet-Detention	

Water Quality Calculations

R/W Basin Area =	240.0	ac	
R/W Segment 2 Basin 1 Area=	40.0	ac	
R/W SMF 3 Area=	41.3	ac	
Contributing Area =	321.3	ac	Inludes All Impervious for Entire Project Corridor
Treatment Volume Required =	1.0"		Runoff Over Contributing Area = **26.78 Ac-Ft**

TREATMENT PROVIDED = 35.89 Ac-Ft ✓

STAGE STORAGE CALCULATIONS - SMF 3

	ELEV.	AREA (AC)	AVG AREA (AC)	DELTA (FT)	DELTA STORAGE (AC-FT)	SUM STORAGE (AC-FT)
INSIDE BERM	105.00	36.00				119.00
			35.43	1.00	35.43	
DHW	104.00	34.86				83.57
			34.06	1.40	47.68	
WEIR	102.60	33.26				35.89
			32.63	1.10	35.89	
CONTROL	101.50	32.00				0.00
			30.75	6.50	199.88	
BOTTOM	95.00	29.50				0.00

SHW =	101.5	
Source:	2.4' above	Lake Hancock
Tailwater =	99.10 ft	Lake Hancock

DRAFT

SMF 3 / Regional stormwater management option 2

DRAFT

PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Regional Pond SMF 3 (Option 2)	

R/W Basin Area = 323.40 ac (240 AC from this project plus 40 AC from Basin 1 of the CPP Segment 2 project)
FROM STA.= 1078+00
TO STA.= 1330+00

PRE BASIN AREA SUMMARY

LAND-USE DESCRIPTION	HSG	CN	AREA (ac)
Open space (poor condition)	A	61	222.50
Forest (good cover)	D	77	52.00
Pond ROW	D	77	43.40
Impervious (Asphalt)	A	98	5.50
TOTAL		**66**	323.40

DRAFT

PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	Regional Pond SMF 3 (Option 2)	

R/W Basin Area = 323.40 ac (240 AC from this project plus 40 AC from Basin 1 of the CPP Segment 2 project)
FROM STA.= 1078+00
TO STA.= 1330+00

POST BASIN AREA SUMMARY

LAND-USE DESCRIPTION	HSG	CN	AREA (ac)
Open space (poor condition)	A	61	185.10
Forest (good cover)	D	77	52.00
Pond water area	D	100	28.40
Impervious (Asphalt)	A	98	86.30
TOTAL		**73**	323.40

Note: Impervious is pre condition plus post from Basin 10 and 11

DRAFT

PROJECT NAME:	CPP	Kisinger Campo & Associates
BASIN DESIGNATION:	SMF-3 / Regional stormwater management option 2	
SMF TYPE:	Wet-Detention	

Water Quality Calculations

R/W Segment 1 Basins 3-18 Area =	240.0	ac	
R/W Segment 2 Basin 1 Area=	40.0	ac	
R/W SMF 3 Area=	43.4	ac	
Contributing Area =	323.4	ac	Inludes All Impervious for Entire Project Corridor
Treatment Volume Required =	1.0"		Runoff Over Contributing Area = **26.95 Ac-Ft**

TREATMENT PROVIDED = 30.82 Ac-Ft ✓

STAGE STORAGE CALCULATIONS - SMF 3

	ELEV.	AREA (AC)	AVG AREA (AC)	DELTA (FT)	DELTA STORAGE (AC-FT)	SUM STORAGE (AC-FT)
INSIDE BERM	105.00	30.24				101.22
			29.86	1.00	29.86	
DHW	104.00	29.49				71.36
			28.96	1.40	40.54	
WEIR	102.60	28.43				30.82
			28.01	1.10	30.82	
CONTROL	101.50	27.60				0.00
			26.14	6.50	169.91	
BOTTOM	95.00	24.68				0.00

SHW =	101.5	
Source:	2.4' above	Lake Hancock
Tailwater =	99.10 ft	Lake Hancock

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SMF 3 / Regional stormwater management option 3

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Regional stormwater management option 3

TOTAL CONTRIBUTING AREA CPP1 (BASINS 3-18) = 240 AC

TOTAL CONTRIBUTING AREA CPP2 (BASIN 1) = 40 AC

GRAND TOTAL = 280 AC

PRE-DEVELOPED DCIA = 1.9%

POST-DEVELOPED DCIA = 32% (BASED ON FUTURE 6-LANE CONDITION)

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Complete Report (not including cost) Ver 4.1.0

Project: CPP
Date: 10/14/2020 4:55:09 PM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	CPP	Regional Pond
Rainfall Zone	Florida Zone 2	Florida Zone 2
Annual Mean Rainfall	50.00	50.00

Pre-Condition Landuse Information

Landuse	Agricultural - Pasture: TN=3.510TP=0.686	Agricultural - Pasture: TN=3.510TP=0.686
Area (acres)	280.00	300.00
Rational Coefficient (0-1)	0.06	0.04
Non DCIA Curve Number	65.00	65.00
DCIA Percent (0-100)	1.90	0.00
Nitrogen EMC (mg/l)	3.510	3.510
Phosphorus EMC (mg/l)	0.686	0.686
Runoff Volume (ac-ft/yr)	65.847	52.500
Nitrogen Loading (kg/yr)	284.973	227.211
Phosphorus Loading (kg/yr)	55.696	44.406

Post-Condition Landuse Information

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Landuse	User Defined Values	Undeveloped - Marl Prairie: TN=0.684 TP=0.012
Area (acres)	280.00	300.00
Rational Coefficient (0-1)	0.29	0.04
Non DCIA Curve Number	65.00	65.00
DCIA Percent (0-100)	32.00	0.00
Wet Pond Area (ac)	0.00	0.00
Nitrogen EMC (mg/l)	1.119	0.684
Phosphorus EMC (mg/l)	0.155	0.012
Runoff Volume (ac-ft/yr)	335.533	52.500
Nitrogen Loading (kg/yr)	462.944	44.277
Phosphorus Loading (kg/yr)	64.125	0.777

Catchment Number: 1 Name: CPP

Project: CPP
Date: 10/14/2020

None Design

Watershed Characteristics

Catchment Area (acres)	280.00
Contributing Area (acres)	280.000
Non-DCIA Curve Number	65.00
DCIA Percent	32.00
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	38
Provided TN Treatment Efficiency (%)	
Required TP Treatment Efficiency (%)	13

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Provided TP Treatment Efficiency (%)

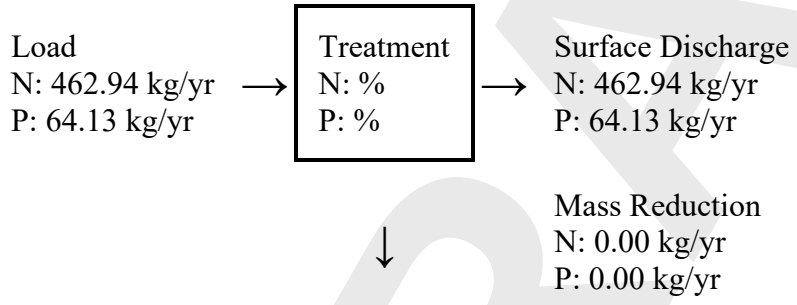
Media Mix Information

Type of Media Mix
Media N Reduction (%) 0.000
Media P Reduction (%) 0.000

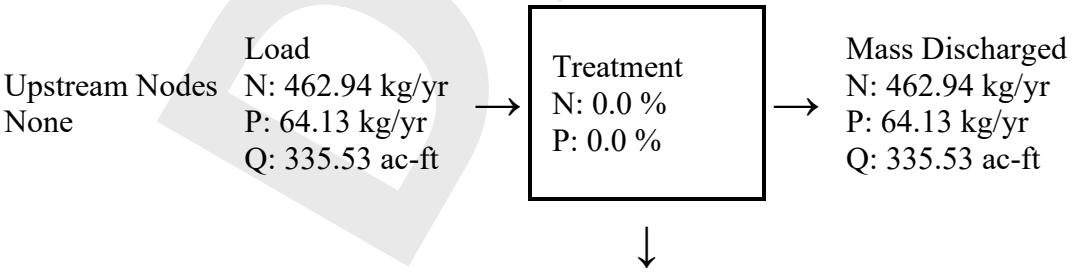
Groundwater Discharge (Stand-Alone)

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

Load Diagram for None (stand-alone)



Load Diagram for (As Used In Routing)



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Mass Removed
N: 0.00 kg/yr
P: 0.00 kg/yr

Catchment Number: 2 Name: Regional Pond

Project: CPP
Date: 10/14/2020

None Design

Watershed Characteristics

Catchment Area (acres)	300.00
Contributing Area (acres)	300.000
Non-DCIA Curve Number	65.00
DCIA Percent	0.00
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

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

Media Mix Information

Type of Media Mix
Media N Reduction (%) 0.000
Media P Reduction (%) 0.000

Groundwater Discharge (Stand-Alone)

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

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Load Diagram for None (stand-alone)

Load
N: 44.28 kg/yr
P: 0.78 kg/yr

→

Treatment
N: %
P: %

→

Surface Discharge
N: 44.28 kg/yr
P: 0.78 kg/yr

↓

Mass Reduction
N: 0.00 kg/yr
P: 0.00 kg/yr

Load Diagram for (As Used In Routing)

Upstream Nodes
None

Load
N: 44.28 kg/yr
P: 0.78 kg/yr
Q: 52.50 ac-ft

→

Treatment
N: 0.0 %
P: 0.0 %

→

Mass Discharged
N: 44.28 kg/yr
P: 0.78 kg/yr
Q: 52.50 ac-ft

↓

Mass Removed
N: 0.00 kg/yr
P: 0.00 kg/yr

Summary Treatment Report Version: 4.1.0

Project: CPP

Analysis Type: Net Improvement

Date:10/14/2020

BMP Types:

Catchment 1 - (CPP) None

Catchment 2 - (Regional Pond) None

Based on % removal values to the nearest percent

Routing Summary

Catchment 1 Routed to Outlet

Catchment 2 Routed to Outlet

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Total nitrogen target removal met? **Yes**
Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	512.18 kg/yr	
Total N post load	507.22 kg/yr	
Target N load reduction	%	
Target N discharge load	512.18 kg/yr	
Percent N load reduction	%	
Provided N discharge load	507.22 kg/yr	1118.42 lb/yr
Provided N load removed	kg/yr	lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	100.102 kg/yr	
Total P post load	64.902 kg/yr	
Target P load reduction	%	
Target P discharge load	100.102 kg/yr	
Percent P load reduction	%	
Provided P discharge load	64.902 kg/yr	143.11 lb/yr
Provided P load removed	kg/yr	lb/yr

From Pre-Condition Loads

Existing N Discharge	512.18 (kg/yr)
Existing P Discharge	100.102 (kg/yr)

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APPENDIX F

FLOODPLAIN CALCULATIONS

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SMF 1 FLOODPLAIN COMPENSATION AND ENCROACHMENT

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Ramp A	**Area #**	**SHW EL. (ft.)**	**FEMA Floodplain EL. (ft.)**	**Encroachment STA. Range**	**Encroachment (ac-ft)**	**Compensation (ac-ft)**	**Compensation Location**
	1	**105.19 (WL30 SHW)**	**105.75**	**105+00 to 122+00**	**1.97**	**1.97**	**SMF 1**
Ramp B	**Area #**	**SHW EL. (ft.)**	**FEMA Floodplain EL. (ft.)**	**Encroachment STA. Range**	**Encroachment (ac-ft)**	**Compensation (ac-ft)**	**Compensation Location**
	2	**104.4 (WL32 SHW 1,2,3)**	**106.69**	**205+00 to 218+00**	**5.67**	**5.67**	**SMF 1**
Ramp B	**Area #**	**SHW EL. (ft.)**	**FEMA Floodplain EL. (ft.)**	**Encroachment STA. Range**	**Encroachment (ac-ft)**	**Compensation (ac-ft)**	**Compensation Location**
	3	**104.4 (PB-SNF-1-3)**	**103.55**	**218+00 to 232+00**	**1.62**	**1.68**	**Ditch**
Ramp C	**Area #**	**SHW EL. (ft.)**	**FEMA Floodplain EL. (ft.)**	**Encroachment STA. Range**	**Encroachment (ac-ft)**	**Compensation (ac-ft)**	**Compensation Location**
	3A	**105.19 (WL30 SHW)**	**107**	**300+00 to 330+00**	**9.30**	**9.30**	**SMF 1**
				Grand Total (ac-ft)	**18.6**	**19.3**	

Area 1 FEMA Zone AE Floodplain EL.= 105.75
Area 2 FEMA Zone AE Floodplain EL.= 106.69
Area 3 FEMA Zone AE Floodplain EL.= 103.55
Area 3A FEMA Zone A Floodplain EL.= 107.00 (See following pages)

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Area #3A- 540 Interchange Ramp C (SMF 1)

Zone A

Existing Ground Elevation Range: 112’ to 104’ (From Survey)

Edge of Shading: 107’ (From Lidar)

FEMA Floodplain Elevation: 107’

Model 100yr: 105.75’ (N1500)

SHW: 105.19’ (WL30 SHW)

Average Length: 1,500 ft

Average Width: 150 ft

Average Depth of Impact: 1.8 ft

Area of Impact: 5.17 ac

Encroachment: 9.3 ac-ft

Compensation

<u>SMF 1</u>

Storage between Inside Berm & DHW= 17.61 ac-ft (See Appendix E Page 5)

<u>Ramp B Ditch</u>

Storage between 103.55’ and 100.8’= 1.68 ac-ft

Total Compensation= 19.29 ac-ft

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FPC 1 FLOODPLAIN COMPENSATION AND ENCROACHMENT

DRAFT

	Area #	SHW EL. (ft.)	Floodplain EL. (ft.)	Encroachment STA. Range	Encroachment (ac-ft)	Compensation (ac-ft)	Compensation Location
CPP	4	108.33 (SHW1-wl H)	110.00	3087+00 to 3102+00	13.03	13.36	FPC 1
				Grand Total (ac-ft)	13.03	13.36	

***USGS Gage data at a downstream bridge at Thornhill Road was used to estimate 100-yr elevation at the project location. The 100-yr floodplain elevation of 110.0 was estimated by extrapolating the gage data.**

USGS Gage Peak Flow Summary

Year	Date	Gage Height (ft.)	Flow (CFS)	Elev. NAVD88 (ft.)
2009	Aug. 24, 2009	11.13	49	105.6
2010	Mar. 29, 2010	11.34	130	105.8
2011	Aug. 27, 2011	12.87	342	107.4
2012	Oct. 09, 2011	12.1	212	106.6
2013	Jul. 20, 2013	11.5	94	106.0
2014	Sep. 08, 2014	12.34	251	106.8
2015	Jul. 26, 2015	12.35	253	106.9
2016	Sep. 01, 2016	11.89	182	106.4
2017	Sep. 11, 2017	13.98	489	108.5

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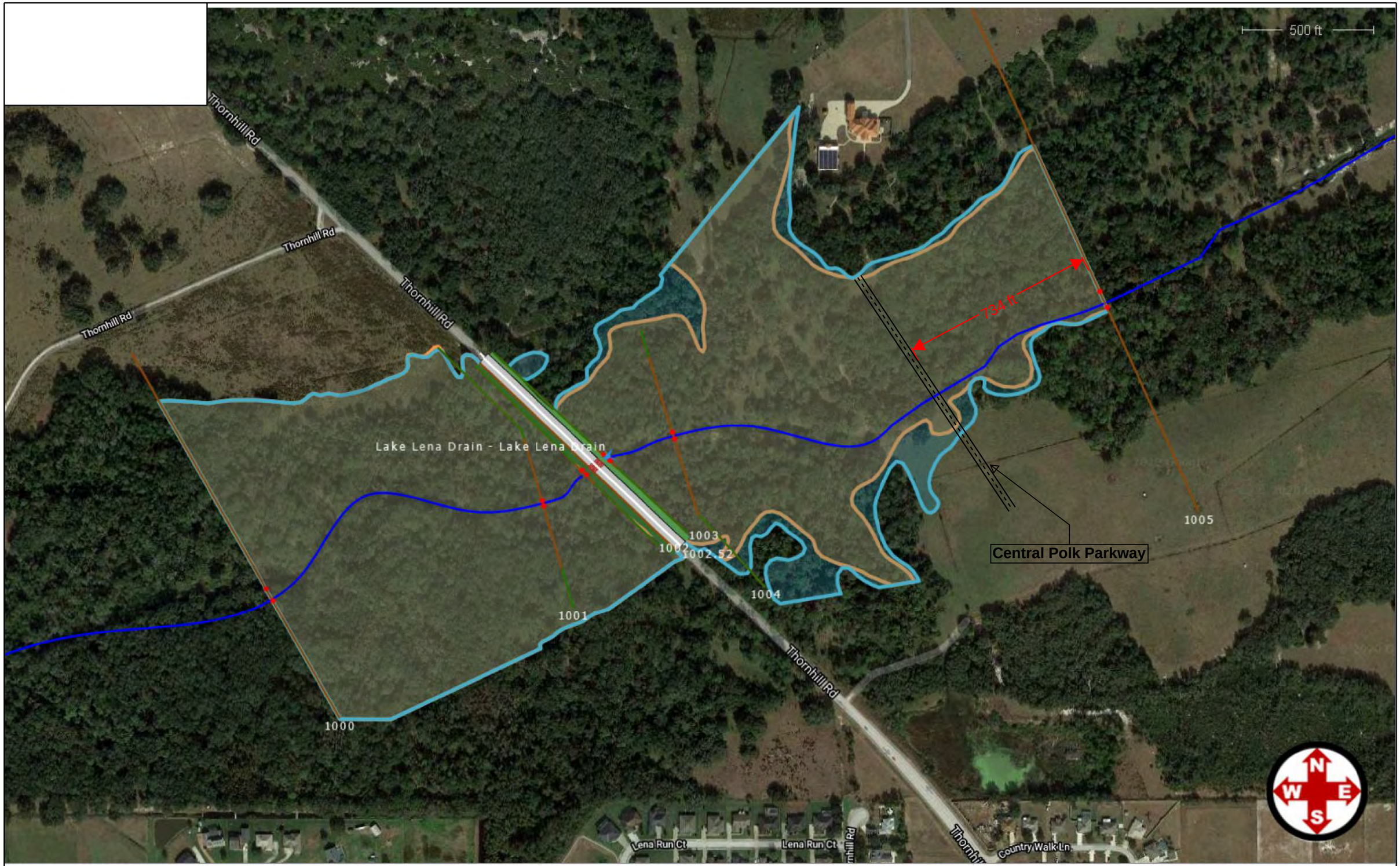

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

F - 6

FLOODPLAIN MAP WITH CROSS-SECTIONS

SHEET NO.

A-6

nking 10/9/2020 2:09:11 PM REVISED \\hofs\production\1201720 Polk Prof Eng Svcs\WO 4 Thornhill Road BHR_BDR\Hydraulics\Impact_Map.DGN

USGS Home
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National Water Information System: Web Interface

USGS Water Resources

Data Category: Surface Water
Geographic Area: Florida
GO

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- **NOTICE 09-08-2020: The NWIS Mapper is experiencing intermittent issues. Developers are looking into the problem. Thank you for your patience.**
- Full News

Peak Streamflow for Florida

Click to hide state-specific text

USGS 02294330 LAKE LENA RUN NEAR AUBURNDALE FL

Available data for this site Surface-water: Peak streamflow GO

Polk County, Florida
Hydrologic Unit Code 03100101
Latitude 27°59'59", Longitude 81°48'44" NAD27
Drainage area 21.40 square miles
Gage datum 95.38 feet above NGVD29

Output formats

Table
Graph
Tab-separated file
peakfq (watstore) format
Reselect output format

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
2009	Aug. 24, 2009	11.13	49.0

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Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
2010	Mar. 29, 2010	11.34	130
2011	Aug. 27, 2011	12.87	342
2012	Oct. 09, 2011	12.10	212
2013	Jul. 20, 2013	11.50	94.0
2014	Sep. 08, 2014	12.34	251
2015	Jul. 26, 2015	12.35	253
2016	Sep. 01, 2016	11.89	182
2017	Sep. 11, 2017	13.98	489[9]
2019	Dec. 21, 2018		182

?
Peak Streamflow Qualification Codes.

- 9 -- Discharge due to Snowmelt, Hurricane, Ice-Jam or Debris Dam breakup

---

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey
Title: Surface Water for Florida: Peak Streamflow
URL: https://nwis.waterdata.usgs.gov/fl/nwis/peak?

Page Contact Information: Florida Water Data Maintainer
Page Last Modified: 2020-10-01 12:33:31 EDT
0.2 0.2 nadww01

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Area #4- CPP

Floodplain Elevation: 110.00’

Average Depth of Impact: 1.7 ft

Area of Impact: 7.66 ac

Encroachment: 13.03 ac-ft

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	Stage (ft)	Area (ac)	Avg. Area (ac)	Delta (ft)	Delta Storage (ac-ft)	Sum Storage (ac-ft)
100YR	110.03	8.11				13.36
			8.08	0.03	0.24	
	110.00	8.04				13.12
			7.99	0.50	3.99	
	109.50	7.93				9.13
			7.88	0.50	3.94	
	109.00	7.82				5.19
			7.77	0.50	3.88	
	108.50	7.71				1.31
			7.69	0.17	1.31	
SHW	108.33	7.67				

Total Compensation= 13.36 ac-ft

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FPC 2-3 FLOODPLAIN COMPENSATION AND ENCROACHMENT

DRAFT

	Area #	SHW EL. (ft.)	FEMA Floodplain EL. (ft.)	Encroachment STA. Range	Encroachment (ac-ft)	Compensation (ac-ft)	Compensation Location
CPP	5	>110.9 (AB-1160R)	112.70	1157+69 to 1162+22	6.43	6.43	FPC 2-3
	5A	111.2 (AB-1166L)	111.80	1162+16 to 1165+22	0.37	0.37	
	5B	110.0 (AB-1171R1)	111.40	1167+42 to 1170+70	4.00	4.00	
	5C	108.2 (AB-1179R1)	110.00	1175+84 to 1179+82	5.17	5.17	
	5D	>107.3 (AB-1185L)	108.90	1182+49 to 1192+66	14.83	14.83	
	5E	108.4 (AB-1195R)	109.20	1195+38 to 1199+35	2.94	2.94	
	5F	108.8 (AB-1200L)	109.50	1200+89 to 1201+76	0.53	0.53	
	6	104.70 (SHW wl 12-1)	106.40	1204+76 to 1208+49	3.10	3.10	
	7	107.80 (wl 13 SH-1,2)	109.38	4236+22 to 4238+82	1.00	1.00	
				Grand Total (ac-ft)	38.4	42.1	

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Encroachment Calculation For Floodplain (STA. 1157+69 to STA. 1208+49)

Area 5

STA. 1157+69 to STA. 1162+22

Area of FEMA floodplain within R/W= 3.57 ac

SHGWT: 110.9’ (AB-1160R)

Avg. FEMA floodplain EL.= 112.7’

Avg. Depth= 112.7’–110.9’= 1.8 ft

Encroachment= 3.57 ac x 1.8 ft= 6.43 ac*ft

Area 5A

STA. 1162+16 to STA. 1165+22

Area of FEMA floodplain within R/W= 0.62 ac

SHGWT: 111.2’ (AB-1166L)

Avg. FEMA floodplain EL.= 111.8’

Avg. Depth= 111.8’-111.2’= 0.6 ft

Encroachment= 0.62 ac x 0.6 ft= 0.37 ac*ft

Area 5B

STA. 1167+42 to STA. 1170+70

Area of FEMA floodplain within R/W= 2.86 ac

SHGWT: 110.0’ (AB-1171R)

Avg. FEMA floodplain EL.= 111.4’

Avg. Depth= 111.4’-110.0’= 1.4 ft

Encroachment= 2.86 ac x 1.4 ft= 4.00 ac*ft

Area 5C

STA. 1175+84 to STA. 1179+82

Area of FEMA floodplain within R/W= 2.87 ac

SHGWT: 108.2’ (AB-1179R1)

Avg. FEMA floodplain EL.= 110.0’

Avg. Depth= 110.0’-108.2’= 1.8 ft

Encroachment= 2.87 ac x 1.8 ft= 5.17 ac*ft

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Area 5D

STA. 1182+49 to STA. 1192+66

Area of FEMA floodplain within R/W= 9.27 ac

SHGWT: 107.3’ (AB-1185L)

Avg. FEMA floodplain EL.= 108.9’

Avg. Depth= 108.9’-107.3’= 1.6 ft

Encroachment= 9.27 ac x 1.6 ft= 14.83 ac*ft

Area 5E

STA. 1195+38 to STA. 1199+35

Area of FEMA floodplain within R/W= 3.68 ac

SHGWT: 108.4’ (AB-1195R)

Avg. FEMA floodplain EL.= 109.2’

Avg. Depth= 109.2’-108.4’= 0.8 ft

Encroachment= 3.68 ac x 0.8 ft= 2.94 ac*ft

Area 5F

STA. 1200+89 to STA. 1201+76

Area of FEMA floodplain within R/W= 0.75 ac

SHGWT: 108.8’ (AB-1200L)

Avg. FEMA floodplain EL.= 109.5’

Avg. Depth= 109.5’-108.8’= 0.7 ft

Encroachment= 0.75 ac x 0.7 ft= 0.53 ac*ft

Area 6

STA. 1204+76 to STA. 1208+49

Area of FEMA floodplain within R/W= 1.82 ac

SHGWT: 104.70’ (SHW wl 12-1)

Avg. FEMA floodplain EL.= 106.4’

Avg. Depth= 106.4’-104.7’= 1.7 ft

Encroachment= 1.82 ac x 1.7 ft= 3.10 ac*ft

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Compensation

<u>FPC 2-3</u>

Pond Bottom Area= 9.8 ac

Inside Berm Elevation= 109.0’

Pond Bottom Elevation= 104.70’

Depth= 4.3 ft

Total Compensation= 42.1 ac-ft

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FPC 4 FLOODPLAIN COMPENSATION AND ENCROACHMENT

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	Area #	SHW EL. (ft.)	FEMA Floodplain EL. (ft.)	Encroachment STA. Range	Encroachment (ac-ft)	Compensation (ac-ft)	Compensation Location
US 17	9	106.80 (SH-426)	108.80	843+00 to 851+00	0.64	1.64	FPC 4/ Ditch
	8	106.80 (SH-426)	108.90	833+09 to 833+95	0.00	0.00	
				Grand Total (ac-ft)	0.64	1.64	

Area 9 FEMA Zone A (See following pages)

Area 8 FEMA Zone A (See following pages)

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Area #9- US 17 East

Zone A

Existing Ground Elevation Range: 110.5’ to 104.6’ (From Survey)

Edge of Shading East Side of Channel: 110’ to 109’ (From Survey)

Edge of Shading West Side of Channel: 108’ to 107.6’ (From Survey)

FEMA Floodplain Elevation: 108.8’

Model 100yr: 108.38’ (N7190)

SHW: 106.80’ (SH-426)

Average Depth of Impact: 2.0 ft

Area of Impact: 0.32 ac

Encroachment: 0.64 ac-ft

Area #8- US 17 West

Zone A

Existing Ground Elevation Range: 109’ (From Survey and Lidar) to 104’ (From Lidar)

Edge of Shading North Side of Channel: 109’ (From Survey)

Edge of Shading South Side of Channel: 109’ (From Survey)

Floodplain Elevation: 108.90’ (From Survey)

Model 100yr: 108.38’ (N7190)

SHW: 106.80’ (SH-426)

Encroachment= 0 ac-ft (Floodplain is only being cut into by proposed ditch therefore there is no encroachment)

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	Stage (ft)	Area (ac)	Avg. Area (ac)	Delta (ft)	Delta Storage (ac-ft)	Sum Storage (ac-ft)
BERM	108.40	0.36				1.56
			0.46	0.10	0.05	
	108.30	0.56				1.51
			0.71	0.50	0.36	
	107.80	0.86				1.16
			1.06	0.50	0.53	
	107.30	1.25				0.63
			1.25	0.50	0.63	
SHW	106.80	1.25				

US 17 (Ditch)

Storage between 108.4' and 106.8'= 0.08 ac-ft

Total Compensation= 1.56 ac-ft + 0.08 ac-ft= 1.64 ac-ft

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APPENDIX G

WETLANDS AND PROTECTED SPECIES

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FINAL POND SITING REPORT
WETLANDS AND PROTECTED SPECIES EVALUATION

CENTRAL POLK PARKWAY
FROM POLK PARKWAY TO US 17
FINANCIAL PROJECT ID: 440897-2-52-01

Polk County, Florida

Prepared for:

Florida's Turnpike Enterprise
Turkey Lake Service Plaza
Mile Post 263, Building # 5315
P.O. Box 613069
Ocoee, Florida 34761

October 2020

DRAFT

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List of Attachments

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Attachment B Protected Species Map
Attachment C Pond Site Datasheets and Photographs

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1.0 Introduction

Florida's Turnpike Enterprise is developing design plans for the proposed Central Polk Parkway (SR 570B) from the Polk Parkway (SR 570) to US 17 (SR 35) in Polk County, a distance of 6.25 miles (see **Project Location Map, Figure 1-1**). As part of this new four-lane roadway, a stormwater management system consisting of two (2) stormwater management facilities (SMF) and three (3) floodplain compensation (FPC) sites is proposed (**Figure 1-1**). Additionally, three (3) Regional Pond Alternative (RPA) sites are being considered. Each of these SMF, FPC, and RPA sites was assessed for potential impacts to wetlands and protected species. The purpose of this memorandum is to present the findings of this assessment.

For the purpose of this document, wetlands are defined per Chapter 62-340, Florida Administrative Code (F.A.C), Section 373.019 (27), Florida Statutes, Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-01), and the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (ERD/EL TR-10-20).

The assessment areas were also evaluated for potential occurrences of federal and state listed protected animal species as defined by the Endangered Species Act of 1973, as amended, and 68A-27, F.A.C.

2.0 Methodology

To determine the approximate locations and boundaries of existing upland and wetland communities within each of the proposed pond sites and potential utilization of these sites by protected species, available site-specific data was collected and reviewed.

The literature and databases reviewed as part of this evaluation included:

- True color aerial imagery of the assessment area, (1" = 200'), ESRI 2018;
- Natural Resource Conservation Service (NRCS), United States Department of Agriculture (USDA), Soil Survey of Polk County, Florida, 1990;
- NRCS, USDA, Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx), October 2020;
- Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook, 4th ed., (Hurt et. al. 2007);
- Florida Department of Transportation (FDOT), Florida Land Use, Cover, and Forms Classification System (FLUCFCS), 3rd ed., January 1999;
- FDOT, ETDM Screening Summary Report, Project #8487 – Central Polk Parkway, 2010;
- Florida Fish and Wildlife Conservation Commission (FWC), Florida's Endangered and Threatened Species, December 2018;
- FWC. 2012. Florida Black Bear Management Plan. Tallahassee, FL. (http://myfwc.com/media/2612908/bear-management-plan.pdf), October 2020;

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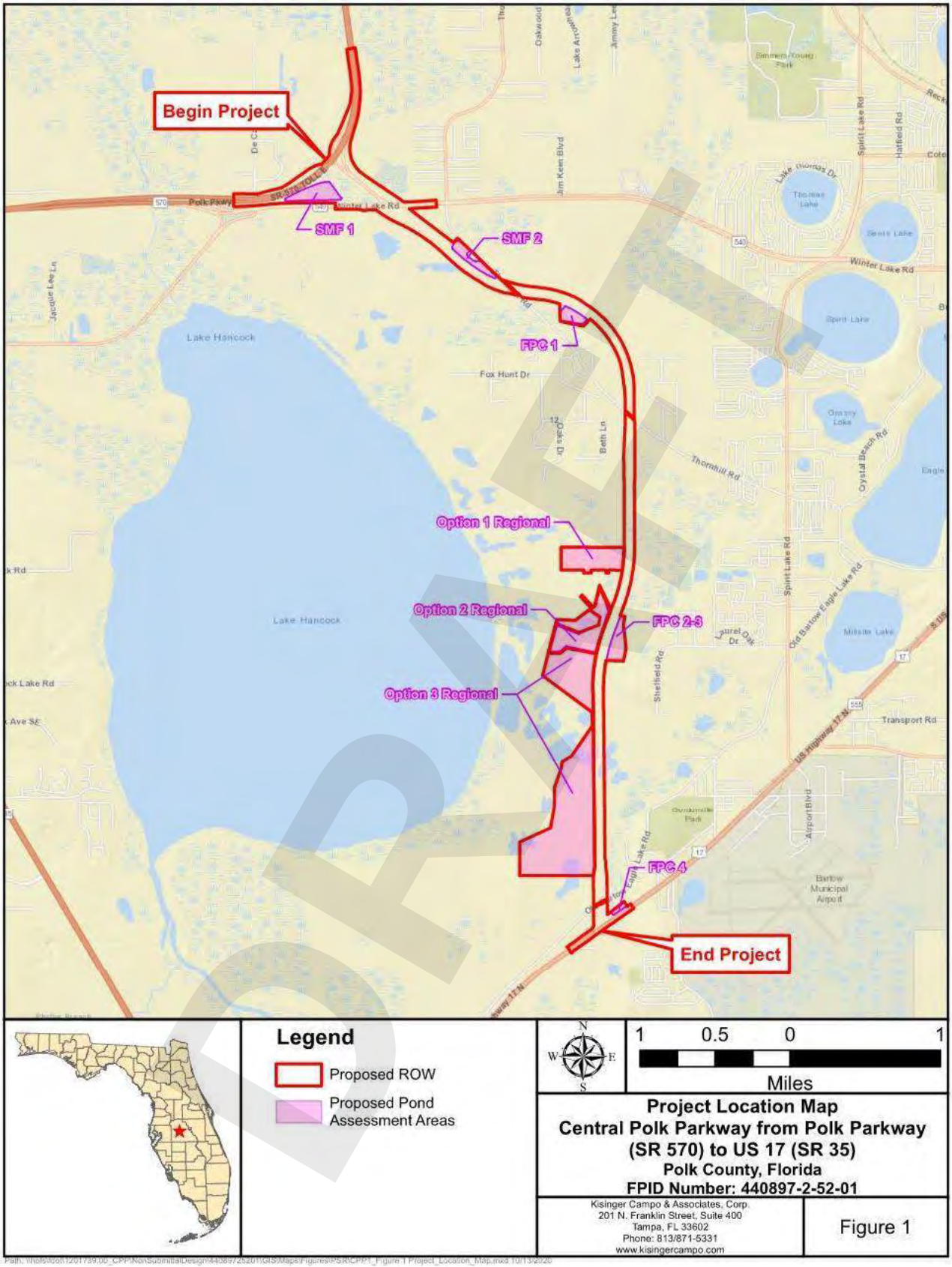
Figure 1-1 Central Polk Parkway Project Location Map



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- FWC, Eagle Nest Locator Website (https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx), October 2020;
- FWC, Fish and Wildlife Research Institute. Wading Bird Colonies Florida database (http://ocean.floridamarine.org/TRGIS/Description_Layers_Terrestrial.htm), October 2020;
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix Map Server (http://www.fnai.org/biointro.cfm), October 2020;
- Southwest Florida Water Management District (SWFWMD), FLUCFCS maps, 2011;
- United States Fish and Wildlife Service (USFWS), Critical Habitat Portal website (https://ecos.fws.gov/ecp/report/table/critical-habitat.html), October 2020;
- USFWS, National Wetlands Inventory (NWI), Wetlands online Mapper (https://www.fws.gov/wetlands/data/mapper.html), October 2020;
- USFWS, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, June 2007, as amended;
- USFWS, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin *et al.* 1979);
- USFWS, Wood Stork database (https://www.fws.gov/northflorida/woodstorks/wood-storks.htm), October 2020; and
- USFWS, Information for Planning and Consultation (https://ecos.fws.gov/ipac/), October 2020.

KCA environmental scientists familiar with Florida natural communities conducted pedestrian surveys of the two (2) SMF sites, three (3) FPC sites, and three (3) RPA sites in February 2019 and September 2020. The purpose of these field reviews was to assess existing ecological conditions at each site. The vegetative communities within each of the pond sites were mapped and their species composition determined. Each site was also evaluated to determine its potential to support protected wildlife species.

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3.0 Results

3.1 Existing Land Use

The assessment areas consist of two (2) SMF sites, three (3) FPC sites, and three (3) RPA sites. Existing land use and habitats within the assessment areas were classified using the FLUCFCS (FDOT 1999). Wetlands were also classified using USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al. 1979). The assessment areas consist primarily of previously mined reclaimed land (FLUCFCS 165), cropland and pastureland (FLUCFCS 210), and reservoirs (FLUCFCS 530). Overall dominant vegetation within all assessment areas consists primarily of cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), red maple (*Acer rubrum*), slash pine (*Pinus elliottii*), sweetbay (*Magnolia virginiana*), Carolina willow (*Salix caroliniana*), Brazilian pepper (*Schinus terebinthifolius*), wax myrtle (*Morella cerifera*), saw palmetto (*Serenoa repens*), bahiagrass (*Paspalum notatum*), cogongrass (*Imperata cylindrica*), smutgrass (*Sporobolus indicus*), and dog fennel (*Eupatorium capillifolium*). Existing land uses found within each pond site is shown in **Table 3-1**. A map of existing land uses found within the assessment areas is provided in **Attachment A**.

<u>Stormwater Management Facility Sites</u>

SMF 1 is located north of SR 540, approximately 0.70 miles west of Thornhill Road (**Figure 1-1**; **Attachment A**). This proposed SMF site includes a previously permitted system that was constructed for the Polk County Parkway (SR 570) Eastern Segment (ERP Permit No. 11879.002). SMF 1 consists of live oak (FLUCFCS 427), hardwood conifer mixed (FLUCFCS 434), reservoirs (FLUCFCS 530; PUB1Hx – Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded, Excavated), exotic wetland hardwoods (FLUCFCS 619; PFO1/2C – Palustrine, Forested, Broad-Leaved Deciduous/Needle-Leaved Deciduous, Seasonally Flooded), and transportation (FLUCFCS 810) (**Table 3-1**).

SMF 2 is located south of Thornhill Road, approximately 0.2 miles south of SR 540 (**Figure 1-1**; **Attachment A**). This proposed SMF site consists entirely of cropland and pastureland (FLUCFCS 210) (**Table 3-1**).

<u>Floodplain Compensation Sites</u>

FPC 1 is located east of Thornhill Road approximately 0.73 miles south of the Jim Keen Boulevard and SR 540 intersection (**Figure 1-1**; **Attachment A**). This proposed FPC site consists of cropland and pastureland (FLUCFCS 210), hardwood conifer mixed forest (FLUCFCS 434), and stream and lake swamps (bottomland) (FLUCFCS 615; PFO1C – Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded) (**Table 3-1**).

FPC 2-3 is located approximately 1.11 miles west of the Sheffield Road and Spirit Lake Road intersection (**Figure 1-1**; **Attachment A**). This proposed FPC site consists of reclaimed land (FLUCFCS 165) and freshwater marshes (FLUCFCS 641; PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded) (**Table 3-1**). Reclaimed land within FPC 2-3 is currently being used as unimproved pasture.

FPC 4 is located between Old Bartow Eagle Lake Road and US 17, at the project's southern terminus (**Figure 1-1**; **Attachment A**). This proposed FPC site consists of medium density residential development (FLUCFCS 120), streams and waterways (FLUCFCS 510; PUB3Cx –

Palustrine, Unconsolidated Bottom, Mud, Seasonally Flooded, Excavated) and wet prairies (FLUCFCS 643; PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded) (**Table 3-1**).

Table 3-1 Existing Land Uses within the Assessment Areas

Pond Site ID	FLUCFCS Code[1]	FLUCFCS Description	USFWS Classification[2]	Acreage
SMF Site				
SMF 1	427	Live Oak	N/A	2.74
	434	Hardwood Conifer Mixed	N/A	1.54
	530	Reservoirs	PUB3Hx	12.44
	619	Exotic Wetland Hardwoods	PFO1/2C	0.96
	810	Transportation	N/A	0.47
			SMF 1 Total Area	**18.15**
SMF 2	210	Cropland and Pastureland	N/A	10.67
			SMF 2 Total Area	**10.67**
FPC Sites				
FPC 1	210	Cropland and Pastureland	N/A	5.65
	434	Hardwood Conifer Mixed	N/A	1.90
	615	Stream and Lake Swamps (Bottomland)	PFO1C	0.56
			FPC 1 Total Area	**8.11**
FPC 2-3	165	Reclaimed Land	N/A	14.11
	641	Freshwater Marshes	PEM1C	0.50
			FPC 2-3 Total Area	**14.61**
FPC 4	120	Residential Medium Density	N/A	1.69
	510	Streams and Waterways	PUB3Cx	0.12
	643	Wet Prairies	PEM1C	0.10
			FPC 4 Total	**1.91**
RPTA Sites				
Option 1	165	Reclaimed Land	N/A	0.06
	210	Cropland and Pastureland	N/A	36.86
	510	Streams and Waterways	PEM1Cx	0.36
	615	Stream and Lake Swamps (Bottomland)	PFO1C	0.01
	617	Mixed Wetland Hardwoods	PFO1C	0.17
	641	Freshwater Marshes	PEM1C	1.60
			Option 1 Regional Site Total Area	**39.06**
Option 2	165	Reclaimed Land	N/A	33.97
			Option 2 Regional Site Total Area	**33.97**
Option 3	165	Reclaimed Land	N/A	274.40
	438	Mixed Hardwoods	N/A	0.03
	530	Reservoirs	PUB3Hx	11.80
	621	Cypress	PFO2C	0.26
	641	Freshwater Marshes	PEM1C	14.34
			Option 3 Regional Site Total Area	**300.83**

[1]FDOT, 1999
[2]Cowardin, *et al*., 1979.
PEM1C - Palustrine, Emergent, Persistent, Seasonally Flooded
PEM1Cx - Palustrine, Emergent, Seasonally Flooded, Excavated
PFO1C - Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
PFO1/2C - Palustrine, Forested, Broad-Leaved Deciduous/Needle-Leaved Deciduous, Seasonally Flooded
PFO2C - Palustrine, Forested, Needle-Leaved Deciduous, Seasonally Flooded
PUB3Cx - Palustrine, Unconsolidated Bottom, Mud, Seasonally Flooded, Excavated
PUB3Hx - Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded, Excavated

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Regional Pond Alternative Sites

Three options are being considered for regional pond treatment. RPA Option 3 is the preferred alternative. Descriptions of each RPA Option are provided below.

RPA Option 1 is located approximately 1.1 miles southwest of the Thornhill Road and Spirit Lake Road intersection (**Figure 1-1**; **Attachment A**). This proposed RPA site consists of reclaimed land (FLUCFCS 165), cropland and pastureland (FLUCFCS 210), streams and waterways (FLUCFCS 510; PEM1Cx – Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated), stream and lake swamps (FLUCFCS 615; PFO1C – Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded), mixed wetland hardwoods (FLUCFCS 617; PFO1C – Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded), and freshwater marshes (FLUCFCS 641; PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded) (**Table 3-1**). Reclaimed land within RPA Option 1 is currently being used as unimproved pasture.

RPA Option 2 is located approximately 1.28 miles west of the Sheffield Road and Spirit Lake Road intersection (**Figure 1-1**; **Attachment A**). This proposed RPA site consists entirely of reclaimed land (FLUCFCS 165) that is currently being used as unimproved pasture (**Table 3-1**).

RPA Option 3 is a large land parcel that is proposed to undergo a land use conversion by removing cattle. The removal of cattle will remove enough nutrients from the system to accommodate for the added nutrients from the proposed roadway. RPA Option 3 is located approximately 1.28 miles west of the Sheffield Road and Spirit Lake Road intersection (**Figure 1-1**; **Attachment A**). This proposed RPA site consists of reclaimed land (FLUCFCS 165), mixed hardwoods (FLUCFCS 438), reservoirs (FLUCFS 530; PUB3Hx – Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded, Excavated), cypress (FLUCFCS 621; PFO2C – Palustrine, Forested, Needle-Leaved Deciduous, Seasonally Flooded), and freshwater marshes (FLUCFCS 641; PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded) (**Table 3-1**). Reclaimed land within RPA Option 3 is currently being used as unimproved pasture.

3.2 Threatened and Endangered Species

Based upon in house assessments, site reviews, and species specific surveys, several federal and state listed protected species were identified as occurring or having the potential to occur within the assessment areas. These species include: American alligator (*Alligator mississippiensis*), Eastern indigo snake (*Drymarchon couperi*), gopher tortoise (*Gopherus polyphemus*), short-tailed snake (*Lampropeltis extenuata*), Florida pine snake (*Pituophis melanoleucus mugitus*), blue-tailed mole skink (*Plestiodon egregius lividus*), sand skink (*Plestiodon reynoldsi*), Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), Florida sandhill crane (*Antigone canadensis pratensis*), Florida scrub-jay (*Aphelocoma coerulescens*), Florida burrowing owl (*Athene cunicularia floridana*), crested caracara (*Caracara cheriway*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), Southeastern American kestrel (*Falco sparverius paulus*), bald eagle (*Haliaeetus leucocehalus*), osprey (*Pandion haliaetus*), roseate spoonbill (*Platalea ajaja*), wood stork (*Mycteria americana*), Everglade snail kite (*Rostrhamus sociabilis*), and Florida panther (*Puma concolor couguar*). A protected species map is provided in **Attachment B**.

These species, their state and/or federal designation, preferred habitat, and potential for occurrence are shown in **Table 3-2**. The potential for occurrence for each species is designated as None, Low, Moderate, or High based on the habitat requirements for each species, the presence of the habitat within the assessment areas and documented occurrences of the species within one (1) mile of the

assessment areas. A ***None*** rating indicates that suitable habitat does not exist within the assessment areas. A ***Low*** rating indicates that low suitability habitat for that species is present within the assessment areas and the species has not been documented within the vicinity of the assessment areas. A ***Moderate*** rating indicates that suitable habitat exists and it is reasonable to assume the species is present. A ***High*** rating indicates that suitable habitat exists and the species was observed during field reviews.

Table 3-2 Federal and State Protected Species Potential for Occurrence

Species	Designated Status		Habitat Preference	Potential for Occurrence
	Federal	State		
Reptiles				
American Alligator *Alligator mississippiensis*	SAT	-	Freshwater and brackish marshes, ponds, lakes, rivers, swamps, bayous, canals, and large spring runs	High (Observed 2019)
Eastern Indigo Snake *Drymarchon couperi*	T	-	Mesic flatwoods, upland pine forests, swamps, wet prairies, xeric pinelands, and scrub habitats	Moderate
Gopher Tortoise *Gopherus polyphemus*	C	T	Dry upland habitats including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; also commonly uses disturbed habitats such as pastures, old fields, and road shoulders	High (Observed 2020)
Short-tailed Snake *Lampropeltis extenuata*	-	T	Dry upland habitats with open canopies and dry sandy soils including sandhill, rosemary-sand pine scrub and adjacent xeric oak hammocks	Moderate
Florida Pine Snake *Pituophis melanoleucus mugitus*	-	T	Dry sandy soils with open canopies. Sandhill, sand pine scrub, and scrubby flatwoods	Moderate
Blue-tailed Mole Skink *Plestiodon egregius lividus*	T	-	Central Florida in habitat with loose sandy areas, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens	Moderate
Sand Skink *Plestiodon reynoldsi*	T	-	Central Florida in habitat with loose sandy areas, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens	Moderate
Birds				
Florida Grasshopper Sparrow *Ammodramus savannarum floridanus*	E	-	Large areas of frequently burned dry prairie habitat with patchy open areas sufficient for foraging	None
Florida Sandhill Crane *Antigone canadensis pratensis*	-	T	Wet and dry prairies, marshes, and marshy lake edges	High (Observed 2019)
Florida Scrub-jay *Aphelocoma coerulescens*	T	-	Early successional stages of fire-dominated xeric oak communities located on well-drained, sandy soils; preferred habitat consists of scrub oaks between 3 and 10 feet tall, with open sand and scattered clumps of herbaceous vegetation	Low
Florida Burrowing Owl *Athene cunicularia floridana*	-	T	Areas of short, herbaceous groundcover; including prairies, sandhills, and farmland	Moderate

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Species	Designated Status		Habitat Preference	Potential for Occurrence
	Federal	State		
Crested Caracara *Caracara cheriway*	T	-	Open country such as dry prairie and pasture lands with scattered cabbage palm, cabbage palm/live oak hammocks, and shallow ponds and sloughs. Cabbage palms or live oaks with low-growing surrounding vegetation are required for nesting	Moderate
Little Blue Heron *Egretta caerulea*	-	T	Freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps	High (Observed 2020)
Tricolored Heron *Egretta tricolor*	-	T	Freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps	High (Observed 2020)
Southeastern American Kestrel *Falco sparverius paulus*	-	T	Pine scrub, dry prairies, mixed pine hardwood forests, and pine flatwoods	High (Observed 2019)
Bald Eagle *Haliaeetus leucocephalus*	NL[1]	NL[2]	Large open water bodies, saltwater marshes, dry prairies, mixed pine, hardwood forests, wet prairies, marshes, pine flatwoods, and sandhills	High (Observed 2019)
Osprey *Pandion haliaetus*	NL[3]	NL[3]	Near still or slow flowing, including both fresh and salt water such as lakes, rivers, wooded swamps, and shorelines.	High (Observed 2019)
Roseate Spoonbill *Platalea ajaja*	-	T	Freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps	High (Observed 2019)
Wood Stork *Mycteria americana*	T	-	Fresh and saltwater habitats such as fresh and saltwater marshes, tidal flats, wet prairies, cypress swamps, and agricultural environments	High (Observed 2020)
Everglade Snail Kite *Rostrhamus sociabilis*	E	-	Large open freshwater marshes and lakes with shallow water and a low density of emergent vegetation	Low
Mammals				
Florida Panther *Puma concolor couguar*	E	-	A variety of habitats including upland forests, prairies, wetlands, stands of saw palmetto, and swamps	Low

Notes:
None = No habitat for potentially occurring protected species
Low = Minimal/suboptimal habitat for potentially occurring protected species
Moderate = Conditions favorable for protected species
High = Protected species confirmed or highly likely
E = endangered, T = threatened, SSC = species of special concern, NL = not listed, C = candidate species for listing
[1] While not listed under the ESA, the Bald Eagle is federally protected under the Bald and Golden Eagle Protection Act.
[2] While not listed under Chapter 68A-27 FAC, the Bald Eagle is state protected under the FWC Bald Eagle Management Plan (2008).
[3] The Osprey is federally protected by the U.S. Migratory Bird Treaty Act (16 USC 703-702).

The project limits are within the consultation areas for the crested caracara, Everglade snail kite, Florida grasshopper sparrow, Florida scrub-jay, sand skink, and blue-tailed mole skink. Habitat for the Florida grasshopper sparrow does not exist within the assessment areas; therefore, it is anticipated that the proposed pond sites will have no involvement with this species.

Descriptions of protected species and their habitats potentially affected by the project are included below. The potential for protected species involvement in each individual SMF, FPC, and RPA site is rated and summarized in **Section 3.4** (see **Table 3-3**).

Table 3-3 Level of Potential Protected Species Involvement

Pond Site ID	None	Low	Moderate	High	Potential Suitable Habitat	Observed
Stormwater Management Facility Sites						
SMF 1			X		AA, EIS, GT, STS, FPS, SHC, LBH, TCH, BE, O, RS, WS, ESK, FP	None
SMF 2			X		EIS, GT, STS, FPS, SHC, FBO, CC, SAK, BE, O, FP	None
Floodplain Compensation Sites						
FPC 1				X	AA, EIS, GT, STS, FPS, BS, SS, SHC, FSJ, FBO, CC, LBH, TCH, SAK, BE, O, RS, WS, FP	O
FPC 2-3				X	AA, EIS, GT, STS, FPS, SHC, FBO, CC, LBH, TCH, SAK, BE, O, RS, WS, FP	LBH; site is located within the secondary zone of BE Nest 1
FPC 4		X			AA, EIS, SHC, LBH, TCH, RS, WS	None
Regional Pond Alternative Sites						
Option 1				X	AA, EIS, GT, STS, FPS, SHC, FBO, CC, LBH, TCH, SAK, BE, O, RS, WS, FP	Site is located within the secondary zone of BE Nest PO037a, O
Option 2				X	EIS, GT, STS, FPS, SHC, FBO, CC, SAK, BE, O, FP	GT
Option 3*				X	AA, EIS, GT, STS, FPS, SHC, FBO, CC, LBH, TCH, SAK, BE, O, RS, WS, FP	AA, GT, TCH, SAK, BE Nest 3, RS, WS

Legend:

None = No habitat for potentially occurring protected species

Low = Minimal/suboptimal habitat for potentially occurring protected species

Moderate = Conditions favorable for protected species

High = Protected species confirmed or highly likely

*No adverse environmental impacts are proposed by RPA Option 3, which involves a reduction in land use intensity by removing cattle ranching operations from this site.

Species

AA = American alligator
EIS = Eastern indigo snake
GT = gopher tortoise
STS = short-tailed snake
FPS = Florida pine snake
BS = blue-tailed mole skink
SS = sand skink
SHC = Florida sandhill crane
FSJ = Florida scrub-jay
FBO = Florida burrowing owl
CC = crested caracara
LBH = little blue heron
TCH = tricolored heron
SAK = Southeastern American kestrel
BE = bald eagle
O = osprey
RS = roseate spoonbill
WS = wood stork
ESK = Everglade snail kite
FP = Florida panther

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The **American alligator** is listed as threatened by the USFWS due to its similarity of appearance to the American crocodile and has a **high** potential for occurrence within the assessment areas (**Table 3-2**). The American alligator is known to utilize swamps, lakes, marshes and canals. This species has the potential to use the wetlands and surface waters within the assessment areas and the species was observed during field reviews. The sites with potential habitat to support this species are identified in **Table 3-3** and include SMF 1, FPC 1, FPC 2-3, FPC 4, and RPA Options 1 and 3.

The **Eastern indigo snake** is listed as threatened by the USFWS and has a **moderate** potential for occurrence within the assessment areas (**Table 3-2**). This large black snake can be found in a variety of habitats including pine flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats. It may utilize gopher tortoise burrows for shelter to escape hot or cold ambient temperatures. Although there is suitable habitat for the Eastern indigo snake within the assessment areas, there have been no nearby documented occurrences and the species was not observed during field reviews. All sites have potential habitat to support this species as identified in **Table 3-3**.

The **gopher tortoise** is listed as threatened by the FWC and a candidate species by the USFWS. This species has a **high** potential for occurrence within the assessment areas (**Table 3-2**). The gopher tortoise requires well-drained, loose sandy soils for burrowing, and low-growing herbs and grasses for food. These conditions can be found in a number of habitats including xeric oak, sandhills, dry pine flatwoods, scrub habitats, as well as old fields, pastures and roadsides. Six gopher tortoise burrows were observed along the proposed Central Polk Parkway right-of-way (ROW), and one (1) additional burrow was observed within RPA Options 2 and 3. The locations of observed gopher tortoise burrows are provided in **Figure 3-1**. All sites except FPC 4 have potential habitat to support this species as shown in **Table 3-3**.

The **short-tailed snake** is listed as threatened by the FWC and has a **moderate** potential for occurrence within the assessment areas (**Table 3-2**). This species requires dry upland habitats with open canopies and dry sandy soils including sandhill, rosemary-sand pine scrub, and adjacent xeric oak hammocks. Short-tailed snakes may be considered commensal species of gopher tortoise burrows. Although this species was not observed during field reviews of the project study area, six (6) gopher tortoise burrows were observed along the proposed Central Polk Parkway ROW, and one (1) additional burrow was observed within RPA Options 2 and 3. The locations of observed gopher tortoise burrows are provided in **Figure 3-1**. All sites except FPC 4 have potential habitat to support this species as shown in **Table 3-3**.

The **Florida pine snake** is listed as threatened by the FWC and has a **moderate** potential for occurrence within the assessment areas (**Table 3-2**). The Florida pine snake prefers open-canopied xeric habitats with dry sandy soils. These snakes can be found in sandhills, pastures, sand pine scrub, longleaf pine and turkey oak forests. The pine snake is also known to utilize tunnel systems of pocket gophers and burrows of gopher tortoises. Although there is available suitable habitat for the Florida pine snake within the assessment areas, there have been no nearby documented occurrences and the species was not observed during field reviews. All sites except FPC 4 have potential habitat to support this species as shown in **Table 3-3**.

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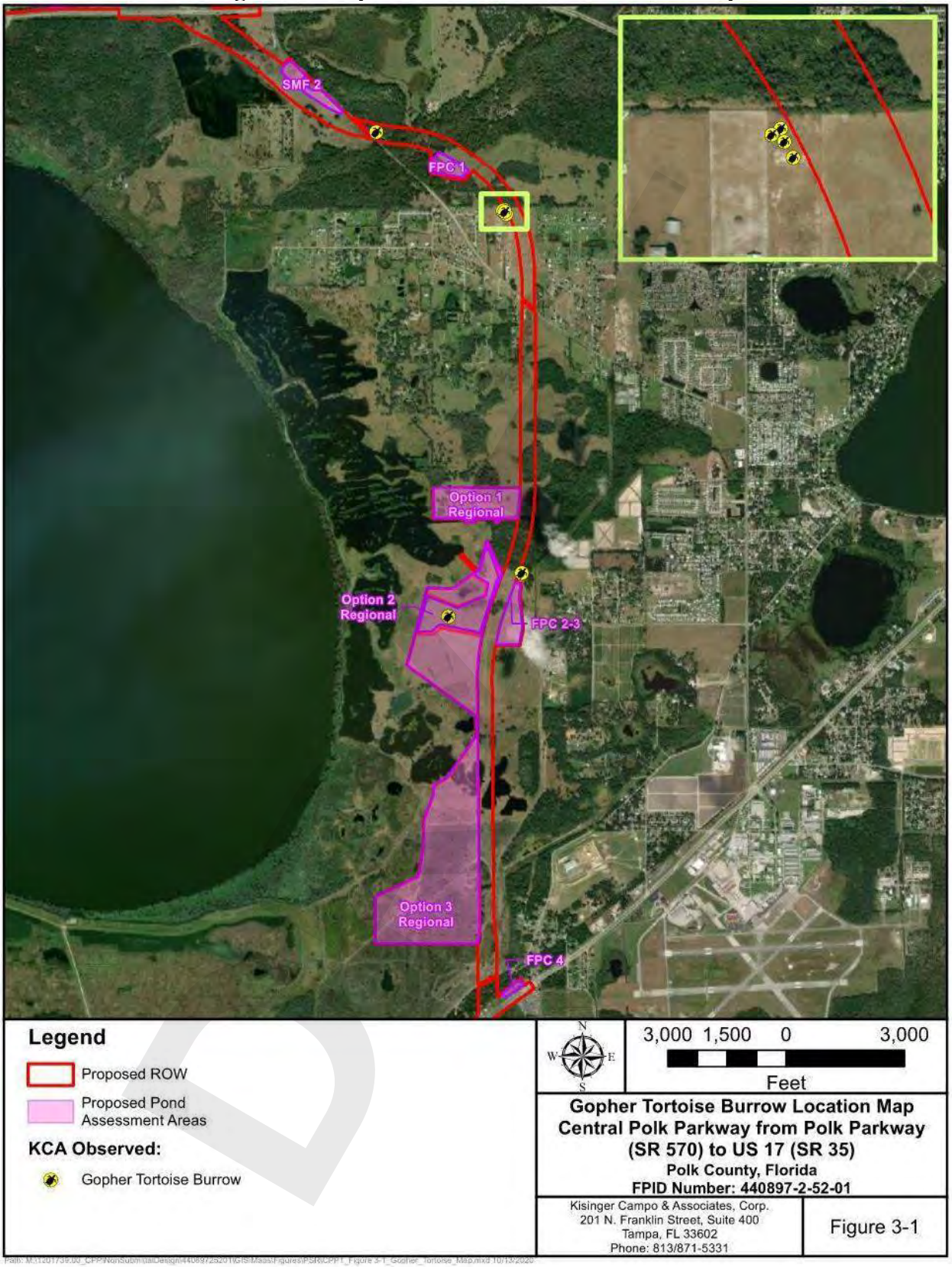
Figure 3-1 Gopher Tortoise Burrow Location Map



The **blue-tailed mole skink** and **sand skink** are small lizards that are listed as threatened by the USFWS and have a **moderate** potential for occurrence within the assessment areas (**Table 3-2**). Blue-tailed mole skinks are expected to occur with sand skinks where the two species overlap in distribution. These species are found in central Florida in habitat with loose sandy soils, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens. They are also known to utilize disturbed habitats with suitable soils, such as pine plantations, citrus groves, open fields, and pastures. Florida's Natural Areas Inventory (FNAI) data has documented the sand skink within one (1) mile of the assessment areas; additionally, suitable sand skink soils have been identified within the assessment areas. A map of suitable sand skink soils is shown in **Figure 3-2**. FPC 1 is the only site with potential habitat for these species as identified in **Table 3-3**.

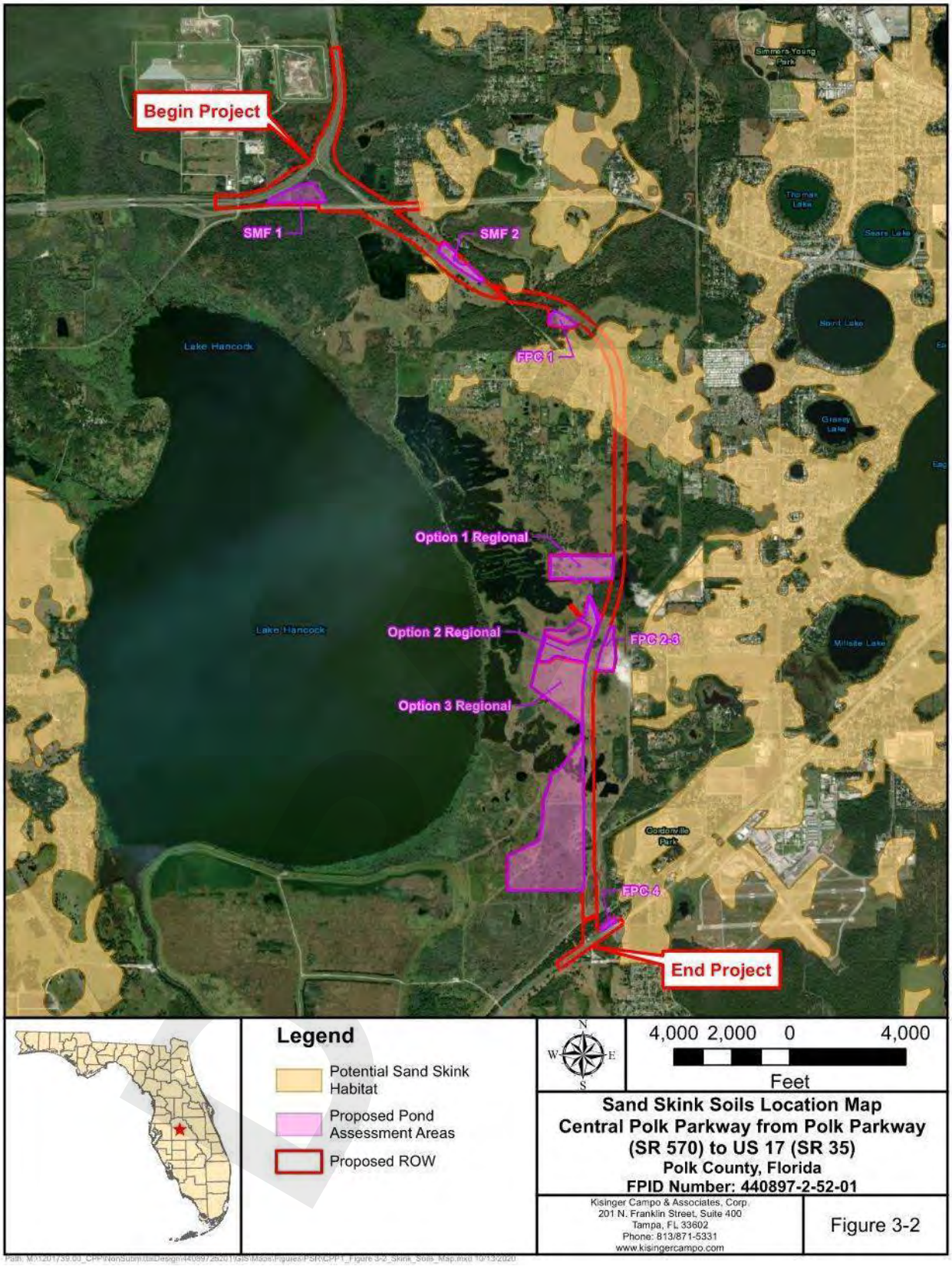
The **Florida grasshopper sparrow** is listed as endangered by the USFWS due to its small population and restricted distribution and has no (**none**) potential for occurrence within the assessment areas. This species requires large areas of frequently burned dry prairie habitat, with patchy open areas sufficient for foraging. Grasshopper sparrows also may persist in pasture lands that have not been intensively managed so as to remove all vegetation clumps. While the project study area lies within the USFWS Florida Grasshopper Sparrow Consultation Area (**Attachment B**), suitable habitat is not subject to routine fire management and only meets minimal habitat requirements for this species. Additionally, the closest Florida grasshopper sparrow population documented by USFWS is at Salt Lake Wildlife Management Area, which is located more than 39 miles from the project area. None of the assessment areas provide potential habitat for this species.

The **Florida sandhill crane** is listed as threatened by the FWC and has a **high** potential for occurrence within the assessment areas (**Table 3-2**). The sandhill crane is associated with shallow freshwater areas, pasture and open woods habitats. Potential nesting and foraging habitat for the Florida sandhill crane exists within the assessment areas. Although the species was observed during field reviews, it was not observed within the assessment areas (see **Attachment B**). All sites have potential habitat to support this species as identified in **Table 3-3**.

The **Florida scrub-jay** is listed as threatened by the USFWS and has a **low** potential for occurrence within the assessment areas (**Table 3-2**). Optimal scrub-jay habitat consists of low growing, scattered scrub species with patches of bare sandy soil such as those found in sand pine scrub and scrubby flatwoods habitats that are occasionally burned. In areas where these types of habitats are unavailable, Florida scrub-jays may be found in less optimal habitats such as pine flatwoods with scattered oaks. Although the project study area is located within the USFWS Florida Scrub-jay Consultation area (**Attachment B**), suitable habitat for the Florida scrub-jay within the assessment areas only meets minimal species requirements. Additionally, there have been no nearby documented occurrences and the species was not observed during field reviews. FPC 1 is the only site with potential habitat for these species as identified in **Table 3-3**.

The **Florida burrowing owl** is listed as threatened by the FWC and has a **moderate** potential for occurrence within the assessment areas (**Table 3-2**). This species requires areas of short, herbaceous groundcover such as prairies, pastures, sandhills, and farmland. Although suitable habitat is available for the Florida burrowing owl within the assessment areas, there have been no

Figure 3-2 Sand Skink Soils Location Map



nearby documented occurrences and the species was not observed during field reviews. The sites with potential habitat to support this species are identified in **Table 3-3**, and include SMF 2, FPC 1, FPC 2-3, and RPA Options 1, 2, and 3.

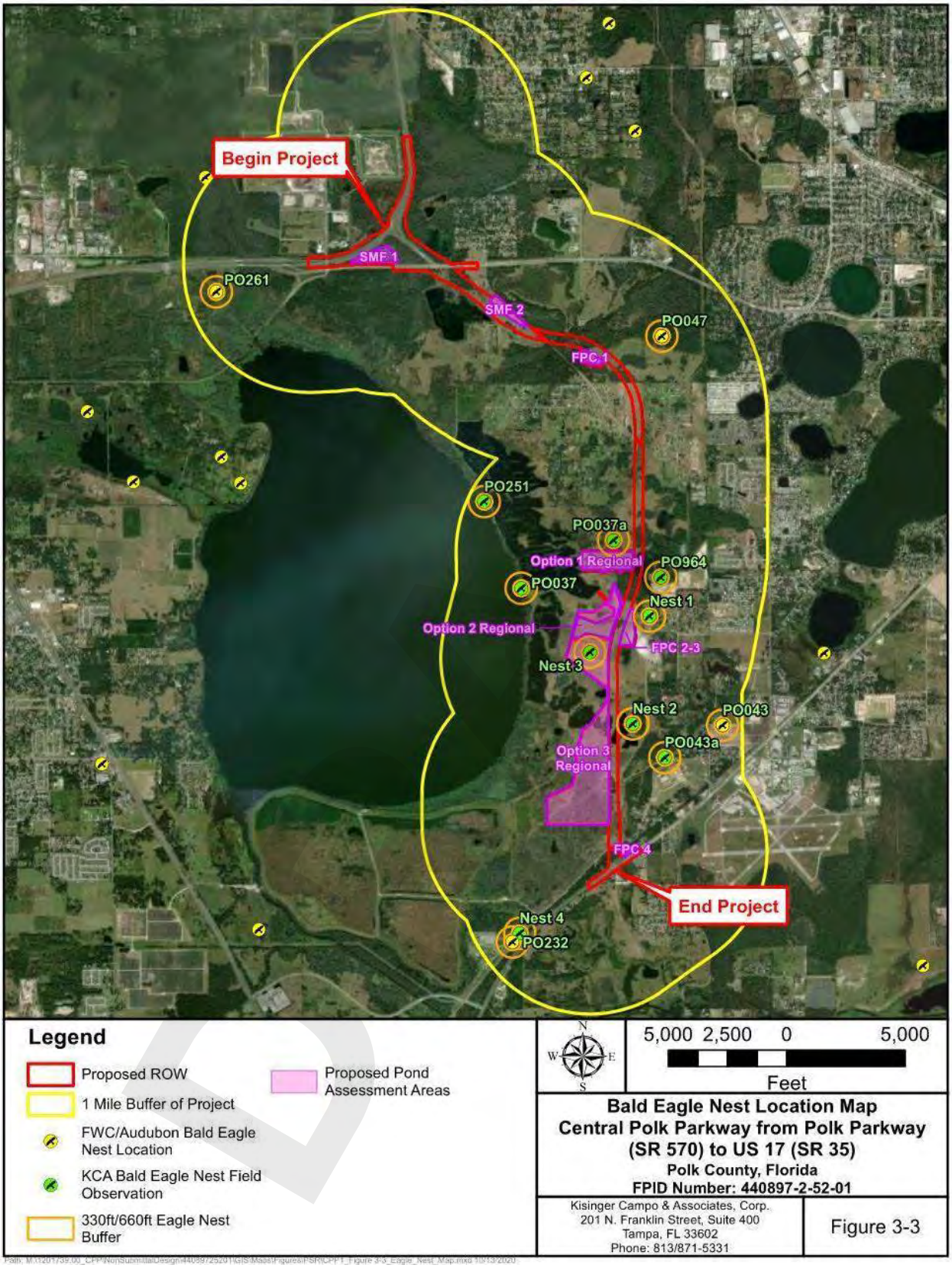
The **crested caracara** is listed as threatened by the USFWS and has a **moderate** potential for occurrence within the assessment areas (**Table 3-2**). This species often inhabits open country, such as dry prairie and pasture lands. It also requires cabbage palms or live oaks with low-growing surrounding vegetation for nesting. Although suitable habitat for the crested caracara is available within the assessment areas, there have been no nearby documented occurrences and the species was not observed during field reviews. The sites with potential habitat to support this species are identified in **Table 3-3**, and include SMF 2, FPC 1, FPC 2-3, and RPA Options 1, 2, and 3.

The **little blue heron, tricolored heron, and roseate spoonbill** are listed as threatened by the FWC and have a **high** potential for occurrence within the assessment areas (**Table 3-2**). These species utilize a wide variety of wetland habitats including canals, ditches, forested wetlands and marshes. Suitable habitat for these species exists within wetlands and surface waters of the assessment areas and these species were observed during field reviews. The sites with potential habitat to support these species are identified in **Table 3-3**, and include SMF 1, FPC 1, FPC 2-3, FPC 4, and RPA Options 1 and 3.

The **Southeastern American kestrel** is listed as threatened by the FWC and has a **high** potential for occurrence within the assessment areas (**Table 3-2**). This species utilizes pine scrub habitat, dry prairies, pastures, mixed pine hardwood forests, and pine flatwoods. Nests are typically built in tall dead trees or utility poles with an unobstructed view of surroundings. The assessment areas contain available suitable habitat for the Southeastern American kestrel within their pasturelands and several individuals were observed during field reviews (see **Attachment B**). The sites with potential habitat to support this species are identified in **Table 3-3**, and include SMF 2, FPC 1, FPC 2-3, and RPA Options 1, 2, and 3.

The **bald eagle** has been de-listed by both FWC and USFWS. However, it is still federally protected under the Bald and Golden Eagle Protection Act in accordance with 16 United States Code 668, and the Migratory Bird Treaty Act of 1918. In addition, the FWC has implemented a bald eagle management plan. This species has a **high** potential for occurrence within the assessment areas (**Table 3-2**). The bald eagle utilizes riparian habitats associated with coastal areas, lake shorelines, and riverbanks. Their nests are typically located near water bodies that provide a dependable food source. According to the FWC bald eagle nest database/Audubon EagleWatch Program, there are nine (9) documented bald eagle nests located within one (1) mile of the SMF, FPC, and RPA sites and several of these were recorded as active in 2020. Additionally, four (4) more undocumented bald eagle nests were observed during field reviews. The locations of these nests are provided in **Figure 3-3**. Due to the numerous nests nearby the assessment areas, it is reasonable to assume bald eagles fly over the assessment areas frequently. All sites except FPC 4 have potential habitat to support this species as shown in **Table 3-3**.

Figure 3-3 Bald Eagle Nest Location Map



The **osprey** is a large, black and white, raptor that is federally protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712) and state protected under Chapter 68A of the F.A.C. This species has a **high** potential for occurrence within the assessment areas (**Table 3-2**). The osprey utilizes riparian habitat associated with coastal areas, lake shorelines, and riverbanks. Nests are generally located near water bodies that provide a dependable food source. Several active osprey nests were observed during field reviews of the assessment areas (**Attachment B**). All sites except FPC 4 have potential habitat to support this species as shown in **Table 3-3**.

The **wood stork** is listed as threatened by the USFWS and has a **high** potential for occurrence within the assessment areas (**Table 3-2**). This wading bird species is opportunistic and utilizes various habitat types, including forested wetlands, freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures, and ditches for feeding. The project study area is located within the 18.6-mile core foraging area of three (3) active wood stork nesting colonies. The locations of these colonies are provided in **Figure 3-4**. Potential foraging habitat for this species exists within wetlands and surface waters of the assessment areas and the species was observed during field reviews. The sites with potential habitat to support this species are identified in **Table 3-3**, and include SMF 1, FPC 1, FPC 2-3, FPC 4, and RPA Options 1 and 3.

The **Everglade snail kite** is listed as endangered by the USFWS and has a **low** potential for occurrence within the assessment areas (**Table 3-2**). The Everglade snail kite is found primarily in large open freshwater marshes and lakes with shallow water and a low density of emergent vegetation. Nesting almost always occurs over water, which deters predation. Although there is suitable foraging habitat for the Everglade snail kite within the assessment areas and potential nesting habitat exists within one (1) mile, there have been no nearby documented occurrences and the species was not observed during field reviews. SMF 1 is the only site with potential habitat to support this species as identified in **Table 3-3**.

The **Florida panther** is listed as endangered by the USFWS and has a **low** potential for occurrence within the assessment areas (**Table 3-2**). This species requires extensive blocks of mostly forested communities and large wetlands that are generally inaccessible to humans that are important for diurnal refuge. The project is not within the USFWS Consultation Area or the "Primary," "Secondary," or "Dispersal" zones for the Florida panther; however, the USFWS Species Profile for the Florida panther and FNAI data both show that the Florida panther has the potential to occur in Polk County. Although the assessment areas contain available suitable habitat for the Florida panther within its undeveloped communities, there have been no nearby documented occurrences and the species was not observed during field reviews. All sites except FPC 4 have potential habitat to support this species as shown in **Table 3-3**.

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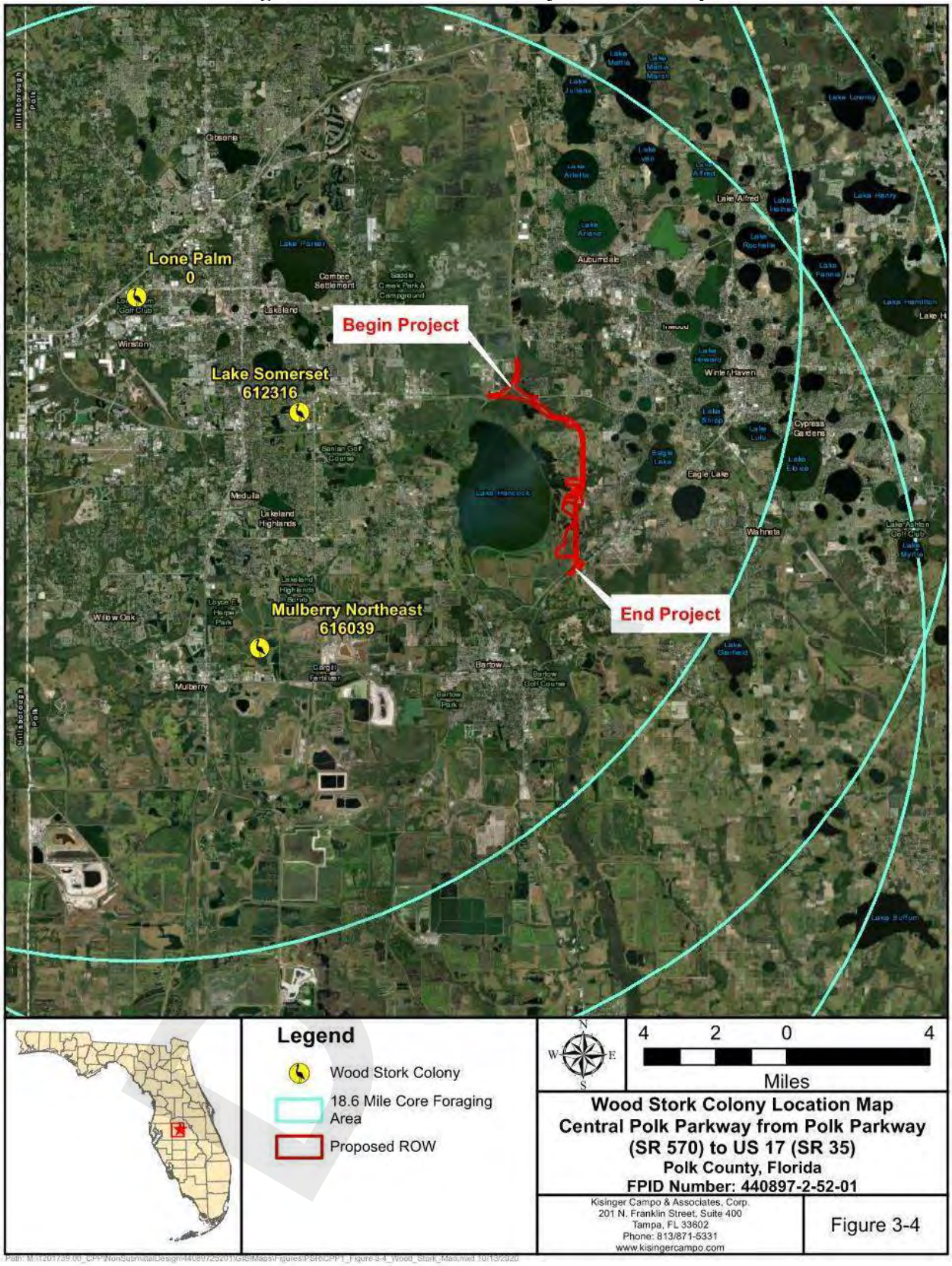
Figure 3-4 Wood Stork Colony Location Map



3.3 Wetlands and Surface Waters

Of the two (2) SMF sites, three (3) FPC sites, and three (3) RPA sites proposed, a total of six (6) sites include wetlands or surface waters (SMF 1, FPC 1, FPC 2-3, FPC 4, and RPA Options 1 and 3) (**Table 3-1**). The wetland and surface water systems found within these SMF, FPC, and RPA sites are streams and waterways (FLUCFCS 510), reservoirs (FLUCFCS 530), stream and lake swamps (bottomland) (FLUCFCS 615), mixed wetland hardwoods (FLUCFCS 617), exotic wetland hardwoods (FLUCFCS 619), cypress (FLUCFCS 621), freshwater marshes (FLUCFCS 641), and wet prairies (FLUCFCS 643).

Table 3-4 provides the level of potential wetland involvement for each SMF, FPC, and RPA site. Ranking of wetland involvement was based on acreage of wetlands found on-site. A ***None*** potential for involvement indicates that there are no wetland/surface waters found on site. A ***Low*** potential for involvement indicates that there is less than 0.5 acres of wetlands/surface waters on site. A ***Moderate*** potential for involvement indicates that there is 0.5 to 1.0 acre of wetlands/surface waters on site. A ***High*** potential for involvement indicates that there is over 1.0 acre of wetlands/surface waters on site. The following is a description of the wetlands and surface waters found within each of these pond sites.

Table 3-4 Level of Potential Wetland Involvement

Pond Site ID	Pond Site Area (Acres)	None	Low	Moderate	High	Comments
Stormwater Management Facility Sites						
SMF 1	18.15				X	12.44 Acres Reservoirs and 0.96 Acres Exotic Wetland Hardwoods
SMF 2	10.67	X				No wetland or surface water
Floodplain Compensation Sites						
FPC 1	8.11			X		0.56 Acres Stream and Lake Swamps
FPC 2-3	14.61			X		0.50 Acres Freshwater Marshes
FPC 4	1.91		X			0.12 Acres Streams and Waterways and 0.10 Acres Wet Prairies
Regional Pond Alternative Sites						
Option 1	39.06				X	0.36 Acres Streams and Waterways, 0.01 Acres Stream and Lake Swamps, 0.17 Acres Mixed Wetland Hardwoods, and 1.60 Acres Freshwater Marshes
Option 2	33.97	X				No wetland or surface water
Option 3*	300.83				X	11.8 Acres Reservoirs, 0.26 Acres Cypress, and 14.34 Acres Freshwater Marshes

Legend:

None = No wetland involvement

Low = Minimal wetland involvement (<0.5 ac)

Moderate = Some wetland involvement (0.5-1.0 ac)

High = Substantial wetland involvement (> 1.0 ac)

*No adverse environmental impacts are proposed by RPA Option 3, which involves a reduction in land use intensity by removing cattle ranching operations from this site.

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The surface water found within SMF 1 is a reservoir (FLUCFCS 530) dominated by Brazilian pepper, cattail (*Typha* spp.), Carolina willow, wax myrtle, and Peruvian primrose willow (*Ludwigia peruviana*). The wetland found within SMF 1 is an exotic wetland hardwood (FLUCFCS 619) dominated by Brazilian pepper. The system also includes slash pine, red maple, dahoon holly (*Ilex cassine*), groundsel tree (*Baccharis halmifolia*), wax myrtle, Peruvian primrose willow, alligator flag (*Thalia geniculata*), and cogongrass. The wetlands and surface waters within SMF 1 are comprised of approximately 50-70% nuisance and exotic species.

The wetland found within FPC 1 is a stream and lake swamp (bottomland) (FLUCFCS 615) dominated by red maple, sweet bay (*Magnolia virginiana*), and dahoon holly. The system also includes cabbage palm, slash pine, silktree (*Albizia julibrissin*), saw palmetto (*Serenoa repens*), beautyberry (*Callicarpa americana*), sawtooth blackberry (*Rubus pensilvanicus*), caesarsweed (*Urena lobata*), lizard's tail (*Saururus cernuus*), soft rush (*Juncus effusus*), and paragrass (*Urochloa mutica*). The wetland found within FPC 1 is comprised of approximately 20-30% nuisance and exotic species.

The three (3) wetlands found within FPC 2-3 are freshwater marshes (FLUCFCS 641) that are dominated by West Indian marsh grass (*Hymenachne amplexicaulis*), swamp smartweed (*Persicaria hydropiperoides*), torpedograss (*Panicum repens*), bahiagrass (*Paspalum notatum*), Valdivia duckweed (*Lemna valdiviana*), various sedges (*Cyperus* spp.), and open water. The wetlands found within FPC 2-3 are comprised of approximately 30-40% nuisance and exotic species.

The surface water found within FPC 4 is a stream and waterway (FLUCFCS 510) dominated by Brazilian pepper, Peruvian primrose willow, Carolina willow, paragrass, smartweed, soft rush, and various sedges. The wetland found in FPC 4 is a small wet prairie (FLUCFCS 643) dominated by Peruvian primrose willow, paragrass, swamp smartweed, soft rush, beggarticks (*Bidens alba*), turkey tangle frogfruit (*Phyla nodiflora*), and various sedges. The wetlands and surface waters within FPC 4 are comprised of approximately 50-70% nuisance and exotic species.

The surface water found within RPA Option 1 is a stream and waterway (FLUCFCS 510) dominated by Mexican primrose willow (*Ludwigia octovalvis*), Peruvian primrose willow, cinnamon fern (*Osmundastrum cinnamomeum*), pickerelweed (*Pontederia cordata*), alligator flag, and water hyacinth (*Eichhornia crassipes*). The wetlands found within the RPA Option 1 consist of one (1) stream and lake swamp (bottomland) (FLUCFCS 615), one (1) mixed wetland hardwood (FLUCFCS 617), and three (3) freshwater marshes (FLUCFCS 641). The stream and lake swamp (bottomland) within RPA Option 1 is dominated by slash pine, red maple, sweetbay, caesarsweed, beautyberry, and torpedograss. The mixed wetland hardwood within RPA Option 1 is dominated by laurel oak, slash pine, sweetbay, brazilian pepper, and caesarsweed. The freshwater marshes within RPA Option 1 are dominated by softrush, bahiagrass, and open water. The wetlands and surface waters within RPA Option 1 are comprised of approximately 20-60% nuisance and exotic species.

The two (2) surface waters found within RPA Option 3 are reservoirs (FLUCFCS 530) that are characterized by open water with grassed banks. The wetlands found within RPA Option 3 consist of one (1) cypress (FLUCFCS 621) and three (3) freshwater marshes (FLUCFCS 641). Cypress within RPA Option 3 is dominated by pond cypress (*Taxodium ascendens*), softrush, bulltongue arrowhead (*Sagittaria lancifolia*), and water spangles (*Salvinia minima*). Freshwater marshes within the RPA Option 3 are dominated by silktree, cattail, softrush, Mexican primrose willow,

paragrass, and beggarticks. The wetlands and surface waters within RPA Option 3 are comprised of 30-45% nuisance and exotic species.

3.4 Summary

For comparison purposes, a None, Low, Medium or High rating scale was used to evaluate the potential for wetlands and protected species involvement at each SMF, FPC, and RPA site reviewed.

Table 3-2 identifies the potential of each pond site to provide habitat for each protected animal species. Rating of protected species involvement was based on the types of habitat found in each SMF, FPC, and RPA site and the relative condition of the habitat to support protected species, and if protected species were observed in the project vicinity. A ***None*** rating indicates that suitable habitat does not exist within the assessment areas. A ***Low*** rating indicates that low suitability habitat for that species is present within the assessment areas and the species has not been documented within the vicinity of the assessment areas. A ***Moderate*** rating indicates that suitable habitat exists and it is reasonable to assume the species is present. A ***High*** rating indicates that suitable habitat exists and the species was observed during field reviews. Overall potential for occurrence ratings for each assessment area are provided in **Table 3-3**.

Table 3-4 provides the level of potential wetland involvement for each SMF, FPC, and RPA site. Ranking of wetland involvement was based on acreage of wetlands found on-site. A ***None*** potential for involvement indicates that there are no wetland/surface waters found on site. A ***Low*** potential for involvement indicates that there is less than 0.5 acres of wetlands/surface waters on site. A ***Moderate*** potential for involvement indicates that there is 0.5 to 1.0 acre of wetlands/surface waters on site. A ***High*** potential for involvement indicates that there is over 1.0 acre of wetlands/surface waters on site. The following is a description of the wetlands and surface waters found within each of these pond sites.

A summary of protected species potential for occurrences and potential wetland involvement for each of the assessment areas is provided in **Table 3-5**. Detailed data sheets and photographs of each SMF, FPC, and RPA site are provided in **Attachment C.**

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Table 3-5 Summary of Findings

Pond Site ID	Size	Potential Wetland Involvement	Potential Protected Species Involvement
Stormwater Management Facility Sites			
SMF 1	18.15	High	Moderate
SMF 2	10.67	None	Moderate
Floodplain Compensation Sites			
FPC 1	8.11	Moderate	High
FPC 2 -3	14.61	Moderate	High
FPC 4	1.91	Low	Low
Regional Pond Alternative Sites			
Option 1	39.06	High	High
Option 2	33.97	None	High
Option 3*	300.83	High	High

Legend:

Potential Wetland Involvement

None = No wetland involvement

Low = Minimal wetland involvement (<0.5 ac)

Moderate = Some wetland involvement (0.5-1.0 ac)

High = Substantial wetland involvement (> 1.0 ac)

Potential Protected Species Involvement

None = No habitat for potentially occurring protected species

Low = Minimal/suboptimal habitat for potentially occurring protected species

Moderate = Conditions favorable for protected species

High = Protected species confirmed or highly likely

*No adverse environmental impacts are proposed by RPA Option 3, which involves a reduction in land use intensity by removing cattle ranching operations from this site.

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4.0 Conclusions

As part of the stormwater treatment design for the proposed four-lane Central Polk Parkway improvements, eight (8) assessment areas were evaluated for potential protected species and wetlands involvement. The land use and habitat types found within the pond sites are dominated by the following land uses: reclaimed land, cropland and pastureland, and reservoirs; with reclaimed land being the most prevalent.

Protected Species

Based upon in house assessments and field reviews, a total of 21 federal or state protected animal species were evaluated for potential occurrence within the assessment areas. Five sites – FPC 1, FPC 2-3, and RPA Options 1, 2, and 3 – were given a high potential for protected species involvement due to the confirmed observations of the American alligator, gopher tortoise, little blue heron, tricolored heron, Southeastern American kestrel, bald eagle, osprey, roseate spoonbill, and wood stork. Two sites – SMF 1 and SMF 2 – were given a moderate potential for protected species involvement due to the available favorable habitat conditions. One site – FPC 4 – was given a low potential for protected species involvement due to minimal/suboptimal habitat present for protected species (**Table 3-3**).

Wetlands

Of the two (2) SMF sites, three (3) FPC sites, and three (3) RPA sites associated with the proposed four-lane Central Polk Parkway improvements, six (6) sites include wetlands or surface waters. Two sites – FPC 1 and FPC 2-3 – contain only wetlands and four (4) sites – SMF 1, FPC 4, and RPA Options 1 and 3 – contain both wetlands and surface waters.

Two pond sites – SMF 2 and RPA Option 2 – have no potential for wetland involvement due to the absence of wetlands and surface waters on-site. One pond site – FPC 4 – was given a low potential for wetland involvement due to the on-site wetlands and surface waters occupying less than 0.5 acres. Two pond sites – FPC 1 and FPC 2-3 – were given a moderate potential for wetland involvement due to on-site wetlands and surface waters occupying between 0.50 and 1.0 acres. Three pond sites – SMF 1 and RPA Options 1 and 3– were given a high potential for wetland involvement due to on-site wetlands and surface waters occupying more than 1.0 acre (**Table 3-4**).

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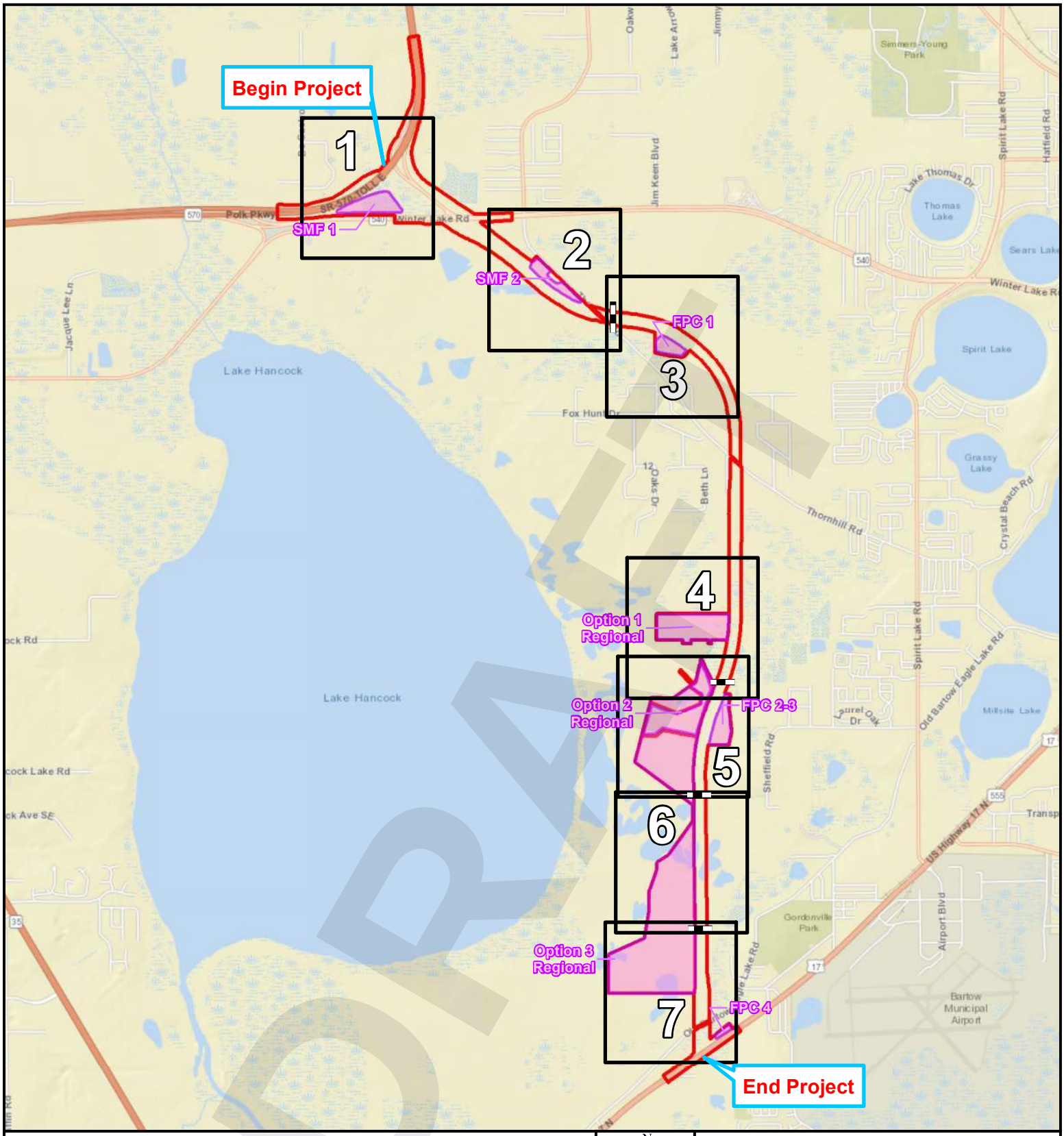
ATTACHMENT A

Land Use Map



Legend

- Proposed ROW
- Proposed Pond Assessment Areas

N
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4,000 2,000 0 4,000

Feet

Land Use Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
FPID Number: 440897-2-52-01

Kisinger Campo & Associates, Corp.
201 N. Franklin Street, Suite 400
Tampa, FL 33602
Phone: 813/871-5331

Attachment A
Key Sheet

Path: M:\1201739.00_CPP\NonSubmittalDesign\440897252011\GIS\Maps\Figures\PSR\CPP1_Attachment A_Land_Use_Map.mxd 10/12/2020

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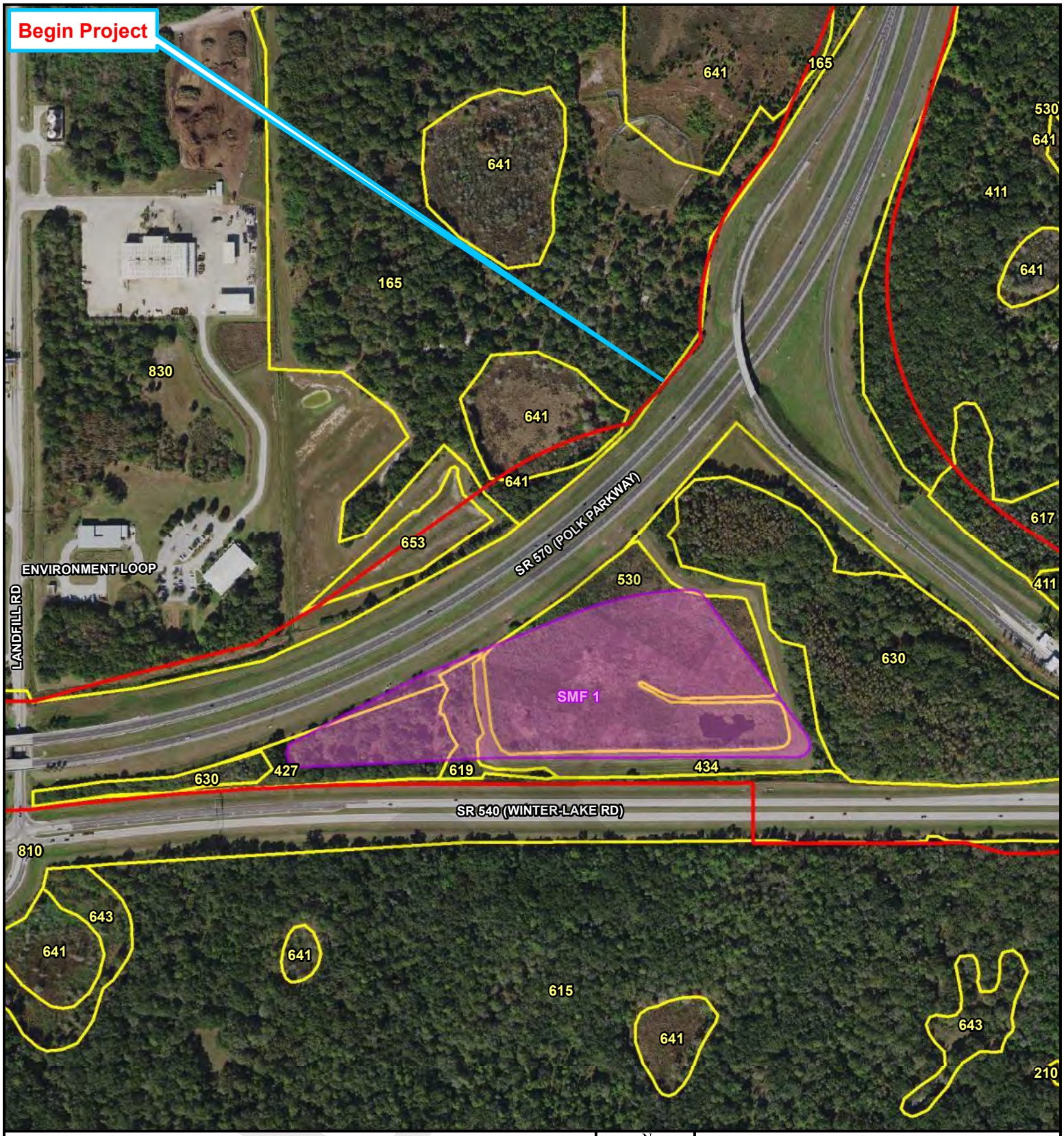

Legend

- Proposed ROW
- Proposed Pond Assessment Area
- Matchline

120: RESIDENTIAL MED DENSITY 2->5 DWELLING UNIT
140: COMMERCIAL AND SERVICES
165: RECLAIMED LAND
190: OPEN LAND
210: CROPLAND AND PASTURELAND
230: FEEDING OPERATIONS
320: SHRUB AND BRUSHLAND
411: PINE FLATWOODS
427: LIVE OAK
434: HARDWOOD CONIFER MIXED
438: MIXED HARDWOODS
510: STREAMS AND WATERWAYS
530: RESERVOIRS
615: STREAM AND LAKE SWAMPS (BOTTOMLAND)
617: MIXED WETLAND HARDWOODS
619: EXOTIC WETLAND HARDWOODS
624: CYPRESS - PINE - CABBAGE PALM
630: WETLAND FORESTED MIXED
631: WETLAND SCRUB
641: FRESHWATER MARSHES
653: INTERMITTENT PONDS
810: TRANSPORTATION
830: UTILITIES

N W E S

500 250 0 500
Feet

Land Use Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
FPID Number: 440897-2-52-01

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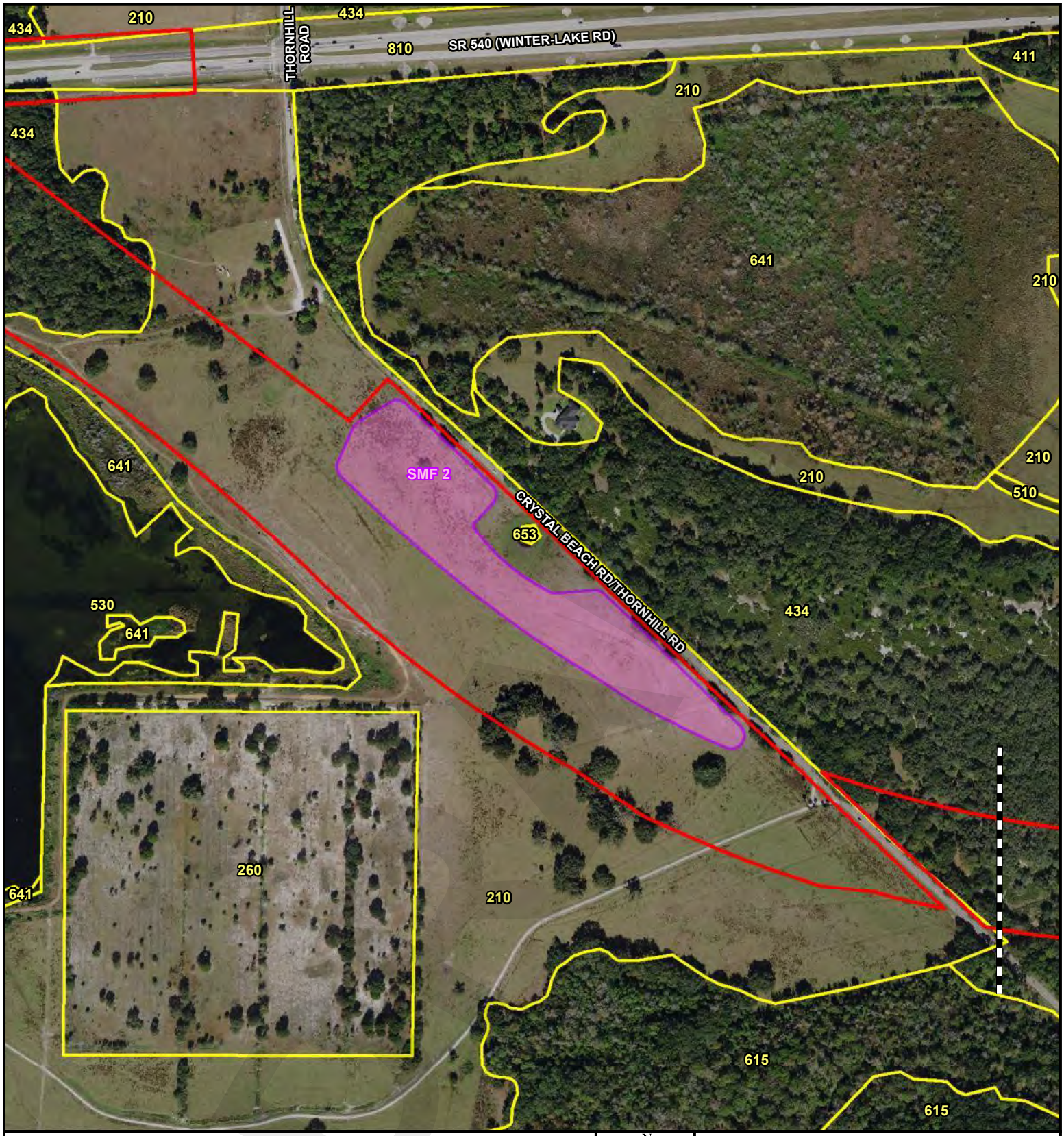
Attachment A
Page 1 of 7



Legend

- Proposed ROW
- Proposed Pond Assessment Area
- Matchline

120: RESIDENTIAL MED DENSITY 2->5 DWELLING UNIT
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653: INTERMITTENT PONDS
810: TRANSPORTATION
830: UTILITIES

N W E S

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Feet

Land Use Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
FPID Number: 440897-2-52-01

Kisinger Campo & Associates, Corp.
201 N. Franklin Street, Suite 400
Tampa, FL 33602
Phone: 813/871-5331

Attachment A

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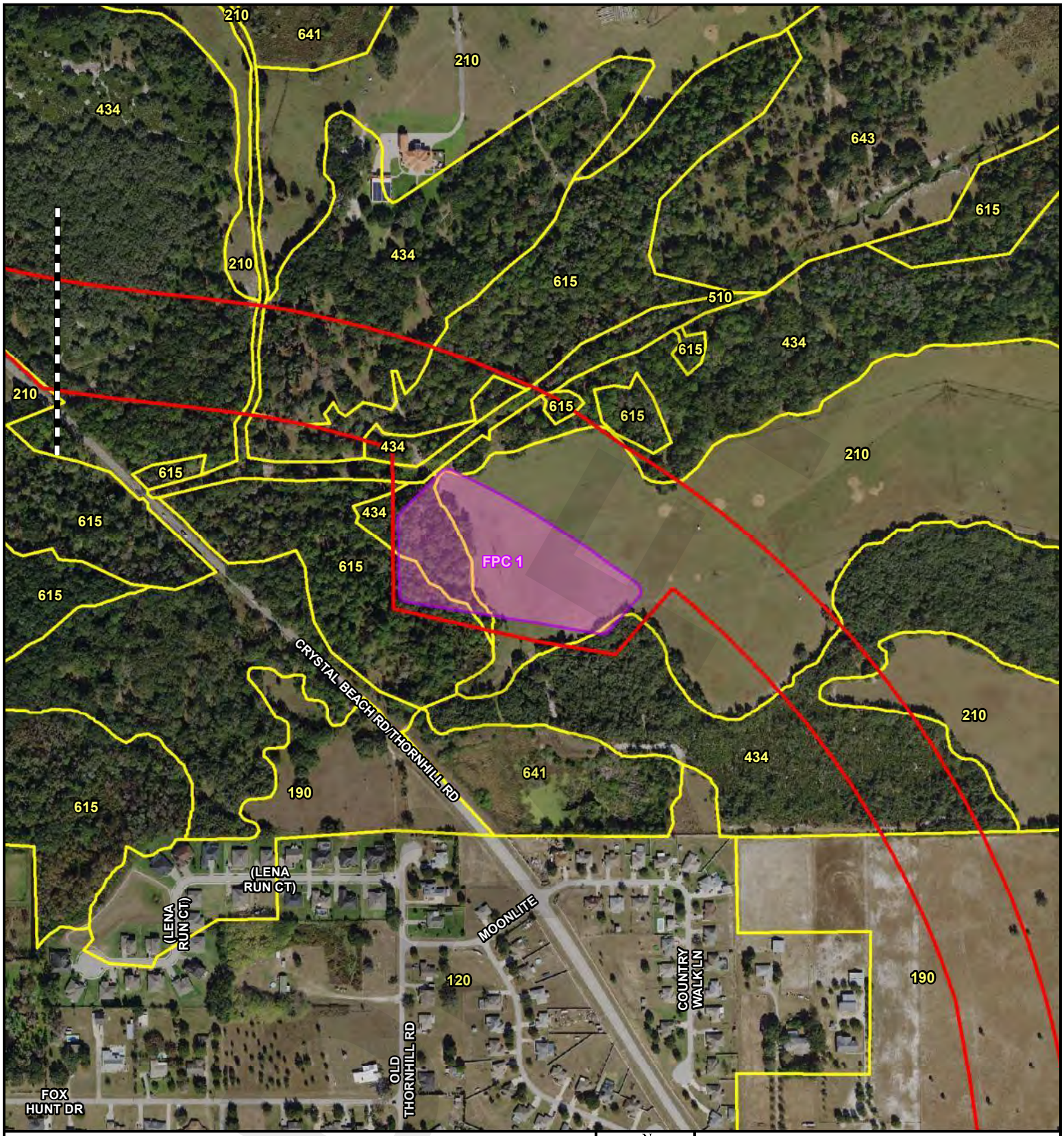

Legend

- Proposed ROW
- Proposed Pond Assessment Area
- Matchline

120: RESIDENTIAL MED DENSITY 2->5 DWELLING UNIT
140: COMMERCIAL AND SERVICES
165: RECLAIMED LAND
190: OPEN LAND
210: CROPLAND AND PASTURELAND
230: FEEDING OPERATIONS
320: SHRUB AND BRUSHLAND
411: PINE FLATWOODS
427: LIVE OAK
434: HARDWOOD CONIFER MIXED
438: MIXED HARDWOODS
510: STREAMS AND WATERWAYS
530: RESERVOIRS
615: STREAM AND LAKE SWAMPS (BOTTOMLAND)
617: MIXED WETLAND HARDWOODS
619: EXOTIC WETLAND HARDWOODS
624: CYPRESS - PINE - CABBAGE PALM
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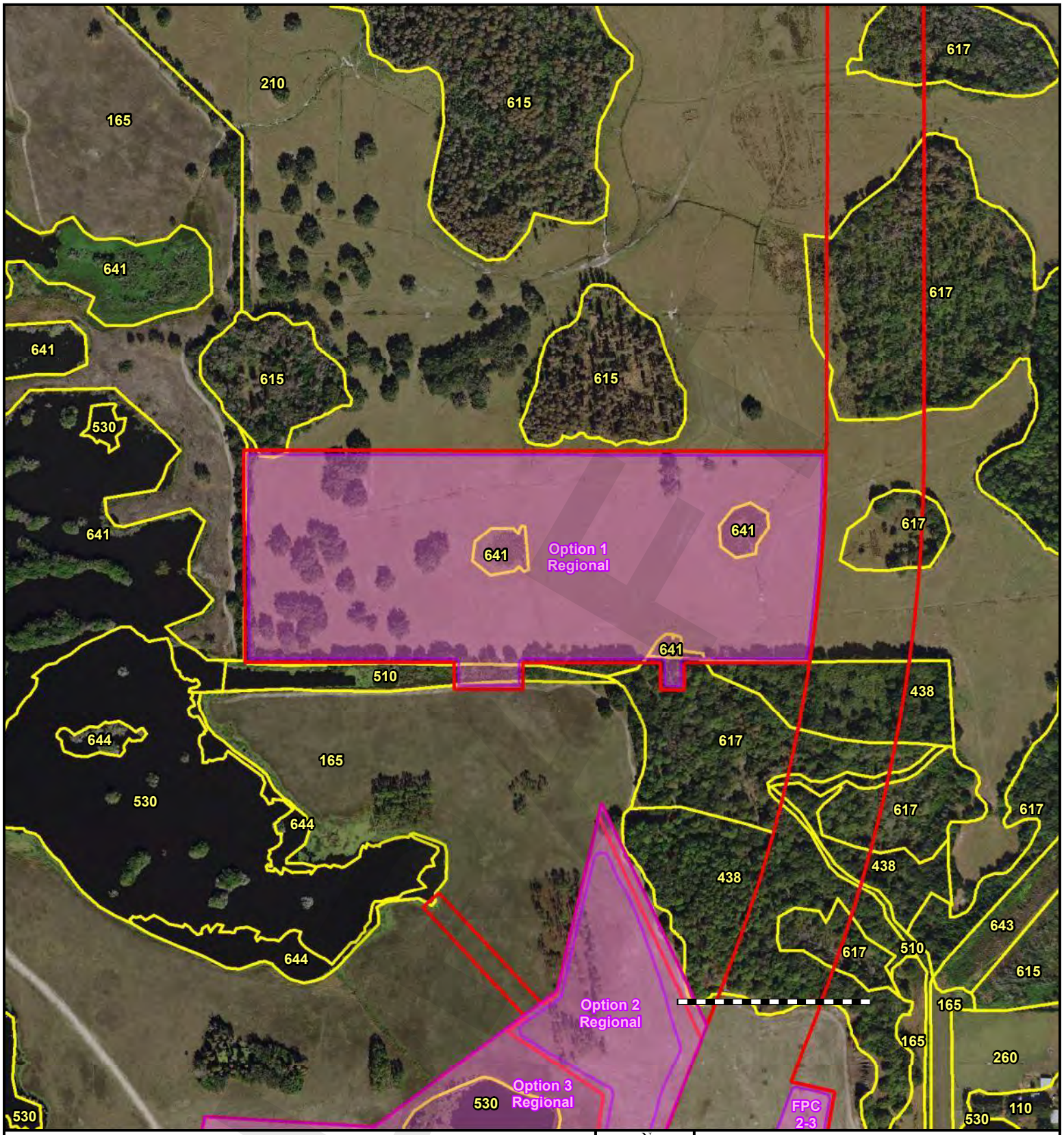

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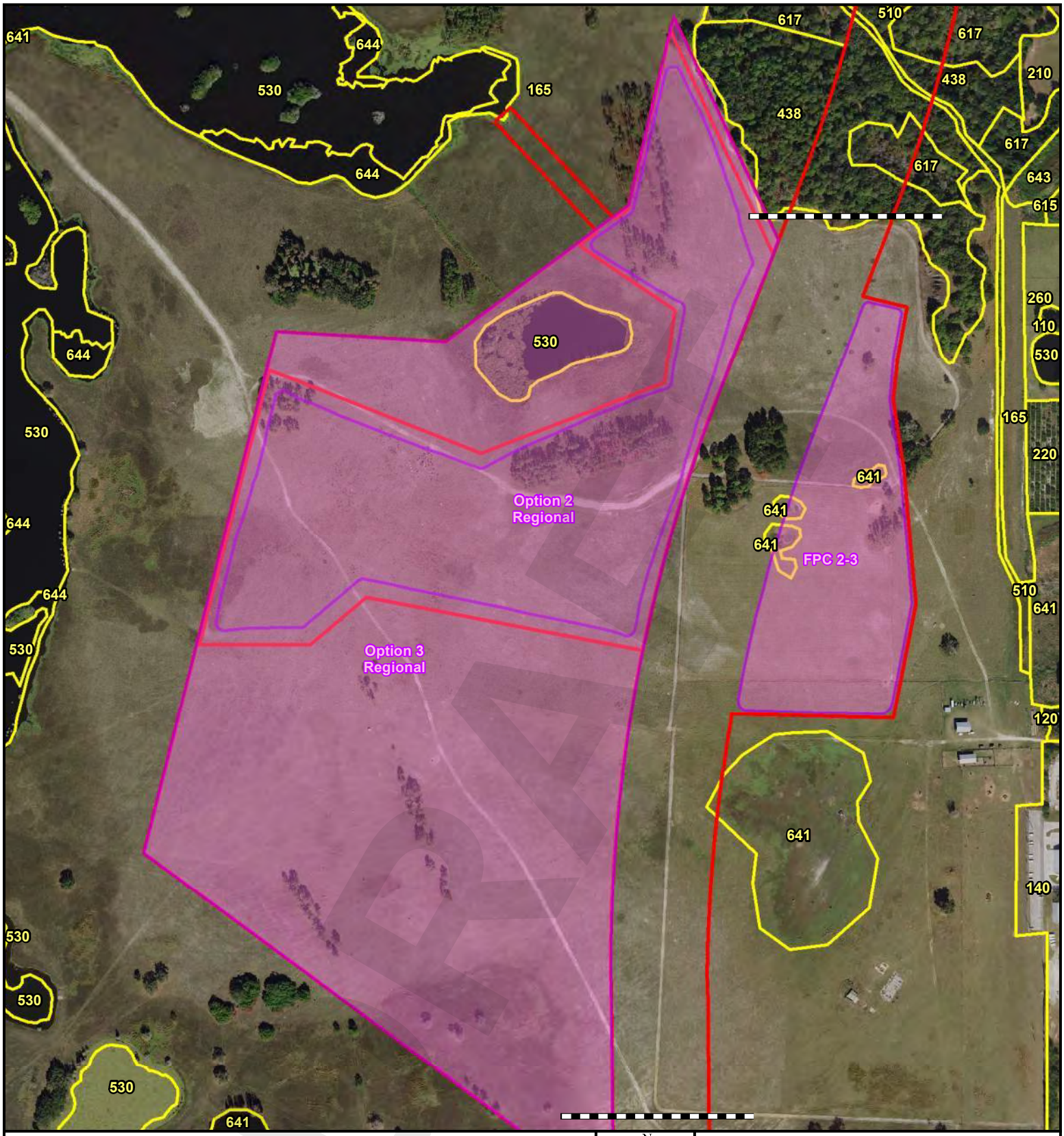

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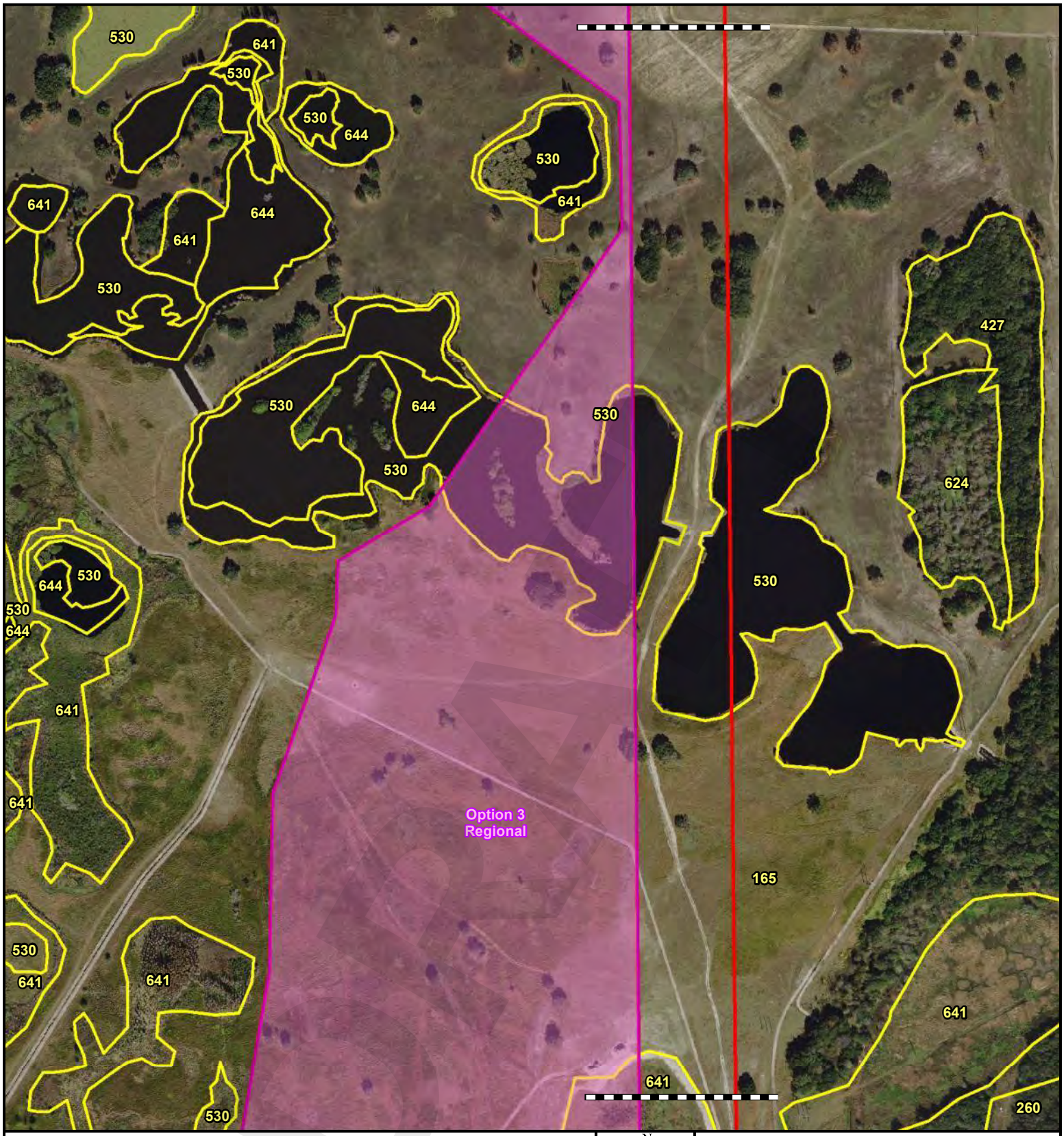

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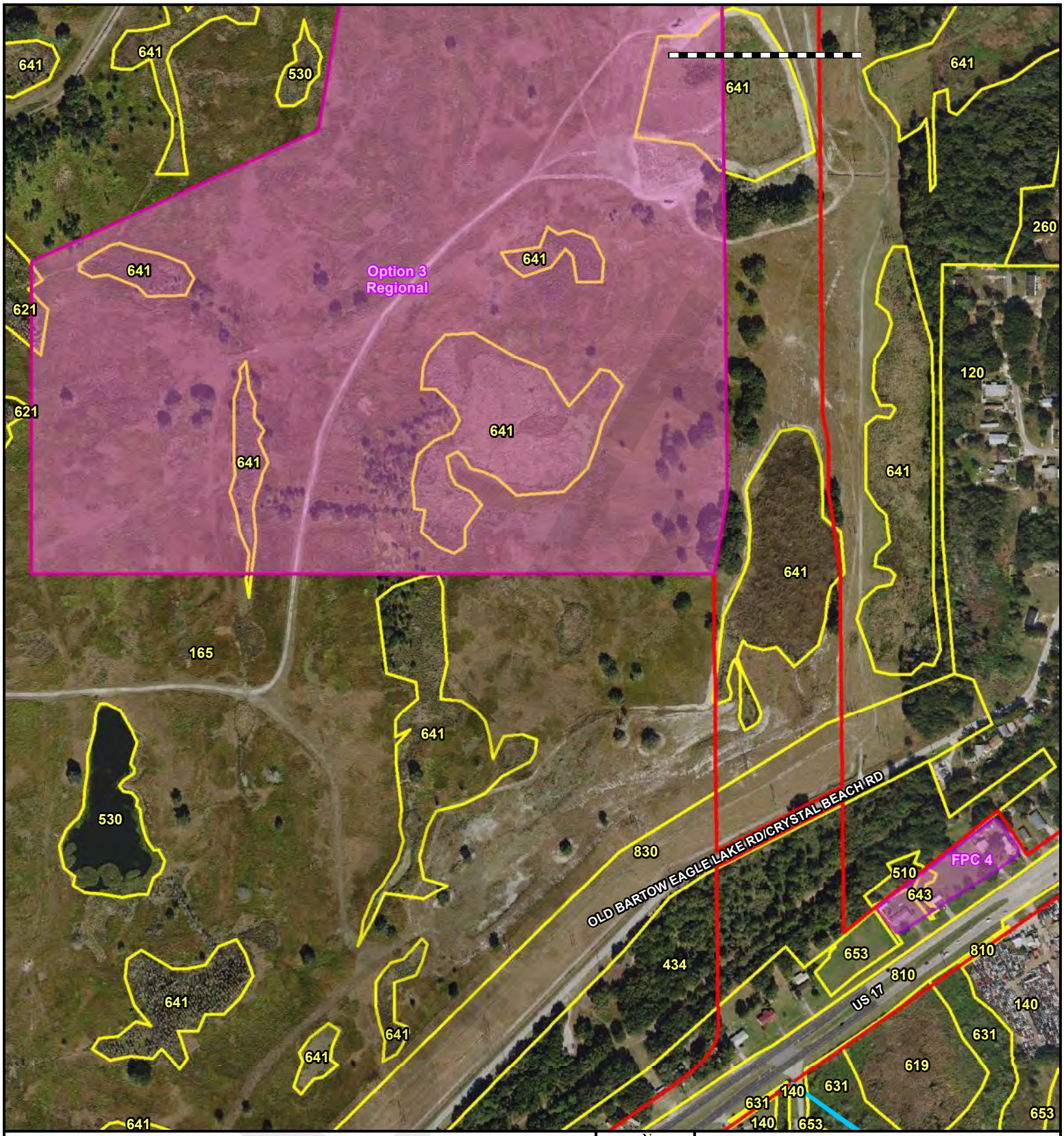

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Land Use Map
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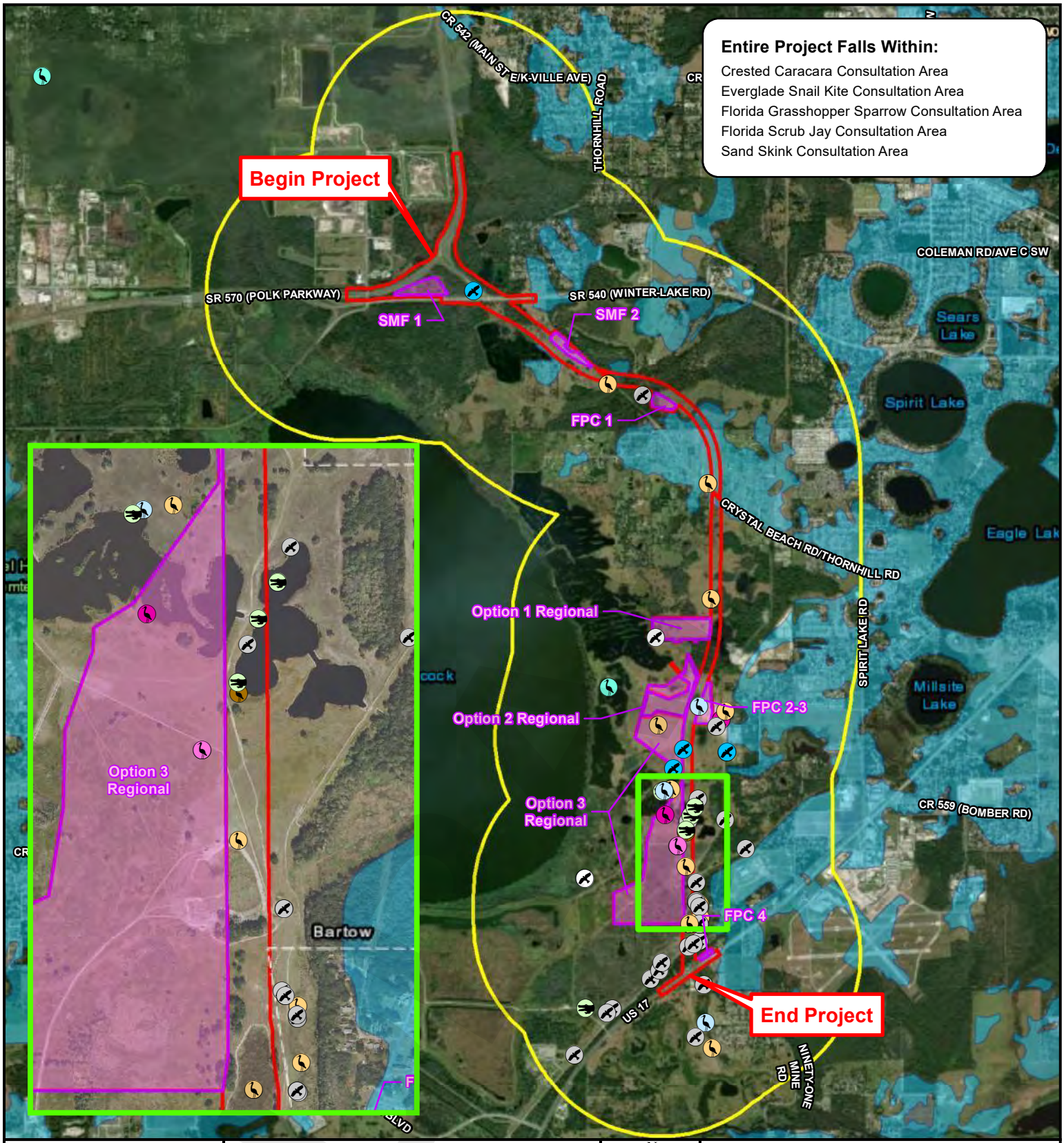
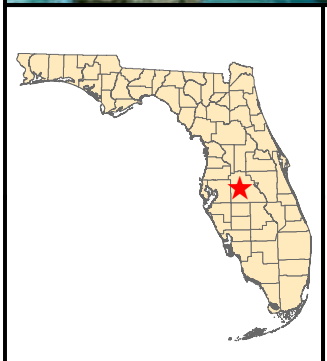
ATTACHMENT B

Protected Species Map





Proposed ROW
1 Mile Buffer of Study Area
Proposed Pond Assessment Areas
Sand Skink Potential Habitat
Osprey (Documented)
Wading Bird Rookeries 1999

KCA Field Observation

American

Florida Sandhill Crane Nest
Least tern
Little Blue Heron
Osprey Nest
Roseate Spoonbill
Southeastern American Kestrel
Tricolor Heron
Wood Stork

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Miles

Protected Species Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
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Attachment B

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ATTACHMENT C

Pond Site Datasheets and Photographs

Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: SMF 1

Date Evaluated: February 2019

Land Covers: 427 – Live Oak, 434 – Hardwood Conifer Mixed, 530 – Reservoirs, 619 – Exotic Wetland Hardwoods, 810 – Transportation

USFWS Classification: PUB3Hx – Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded, Excavated; PFO1/2C – Palustrine, Forested, Broad-Leaved Deciduous/Needle-Leaved Deciduous, Seasonally Flooded

Threatened and Endangered Species:

Observed: None on Site

Potential Involvement: Moderate

Wetlands:

On Site: 12.44 Acres Reservoirs and 0.96 Acres Exotic Wetland Hardwoods

Potential Involvement: High

Notes: This site is on the north side of SR 540, approximately 0.70 miles west of Thornhill Road. This SMF site consists of live oak (FLUCFCS 427), hardwood conifer mixed (FLUCFCS 434), reservoirs (FLUCFCS 530), exotic wetland hardwoods (FLUCFCS 619), and transportation (FLUCFCS 810). This site may provide suitable habitat for the American alligator, Eastern indigo snake, gopher tortoise, short-tailed snake, Florida pine snake, Florida sandhill crane, little blue heron, tricolored heron, bald eagle, osprey, roseate spoonbill, wood stork, Everglade snail kite, and Florida panther.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: SMF 2

Date Evaluated: February 2019

Land Cover: 210 – Cropland and Pastureland

Threatened and Endangered Species:

Observed: None on Site

Potential Involvement: Moderate

Wetlands:

On Site: None on site

Potential Involvement: None

Notes: This site is south of Thornhill Road, approximately 0.2 miles south of SR 540. This proposed SMF site consists entirely of cropland and pastureland (FLUCFCS 210). This site may provide suitable habitat for the Eastern indigo snake, gopher tortoise, short-tailed snake, Florida pine snake, Florida sandhill crane, Florida burrowing owl, crested caracara, Southeastern American kestrel, bald eagle, osprey, and Florida panther.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: FPC 1

Date Evaluated: February 2019

Land Covers: 210 – Cropland and Pastureland, 434 – Hardwood Conifer Mixed, 615 – Stream and Lake Swamps (Bottomland)

USFWS Classification: PFO1C – Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded

Threatened and Endangered Species:

Observed: Osprey

Potential Involvement: High

Wetlands:

On Site: 0.56 Acres Stream and Lake Swamps

Potential Involvement: Moderate

Notes: This site is on the east side of Thornhill Road, approximately 0.73 miles south of the Jim Keen Boulevard and SR 540 intersection. This proposed FPC site consists of cropland and pastureland (FLUCFCS 210), hardwood conifer mixed forest (FLUCFCS 434), and stream and lake swamps (bottomland) (FLUCFCS 615). This site may provide suitable habitat for the American alligator, Eastern indigo snake, gopher tortoise, short-tailed snake, Florida pine snake, blue-tailed mole skink, sand skink, Florida sandhill crane, Florida scrub-jay, Florida burrowing owl, crested caracara, little blue heron, tricolored heron, Southeastern American kestrel, bald eagle, osprey, roseate spoonbill, wood stork, and Florida panther.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: FPC 2-3

Date Evaluated: September 2020

Land Covers: 165 – Reclaimed Land, 641 – Freshwater Marshes

USFWS Classification: PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded

Threatened and Endangered Species:

Observed: Little blue heron, within the secondary buffer zone of bald eagle Nest 1

Potential Involvement: High

Wetlands:

On Site: 0.50 Acres Freshwater Marshes

Potential Involvement: Moderate

Notes: This site is located approximately 1.11 miles west of the Sheffield Road and Spirit Lake Road intersection. This proposed FPC site consists of reclaimed land (FLUCFCS 165) and freshwater marshes (FLUCFCS 641). Reclaimed land within this site is currently being used as unimproved pasture. This site may provide suitable habitat for the American alligator, Eastern indigo snake, gopher tortoise, short-tailed snake, Florida pine snake, Florida sandhill crane, Florida burrowing owl, crested caracara, little blue heron, tricolored heron, Southeastern American kestrel, bald eagle, osprey, roseate spoonbill, wood stork, and Florida panther.

Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: FPC 4

Date Evaluated: February 2019

Land Covers: 120 – Residential Medium Density, 510 – Streams and Waterways, 643 – Wet Prairies

USFWS Classification: PUB3Cx – Palustrine, Unconsolidated Bottom, Mud, Seasonally Flooded, Excavated; PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded

Threatened and Endangered Species:

Observed: None on site

Potential Involvement: Low

Wetlands:

On Site: 0.12 Acres Streams and Waterways and 0.10 Acres Wet Prairies

Potential Involvement: Low

Notes: This site is between Old Bartow Eagle Lake Road and US 17 at the project's southern terminus. This proposed FPC site consists of medium density residential development (FLUCFCS 120), streams and waterways (FLUCFCS 510), and wet prairies (FLUCFCS 643). This site may provide suitable habitat for the American alligator, eastern indigo snake, Florida sandhill crane, little blue heron, tricolored heron, roseate spoonbill, and wood stork.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: RPA Option 1

Date Evaluated: February 2019

Land Covers: 165 – Reclaimed Land, 210 – Cropland and Pastureland, 510 – Streams and Waterways, 615 – Stream and Lake Swamps (Bottomland), 617 – Mixed Wetland Hardwoods, 641 – Freshwater Marshes

USFWS Classification: PEM1Cx – Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated; PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded

PFO1C – Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded

Threatened and Endangered Species:

Observed: Site is located within bald eagle Nest PO037a's secondary buffer zone, osprey

Potential Involvement: High

Wetlands:

On Site: 0.36 Acres Streams and Waterways, 0.01 Acres Stream and Lake Swamps, 0.17 Acres Mixed Wetland Hardwoods, and 1.60 Acres Freshwater Marshes

Potential Involvement: High

Notes: This site is approximately 1.1 miles southwest of the Thornhill Road and Spirit Lake intersection. This proposed RPA site consists of reclaimed land (FLUCFCS 165), cropland and pastureland (FLUCFCS 210), streams and waterways (FLUCFCS 510), stream and lake swamps (FLUCFCS 615), mixed wetland hardwoods (FLUCFCS 617), and freshwater marshes (FLUCFCS 641). This site may provide suitable habitat for the American alligator, Eastern indigo snake, gopher tortoise, short-tailed snake, Florida pine snake, Florida sandhill crane, Florida burrowing owl, crested caracara, little blue heron, tricolored heron, Southeastern American kestrel, bald eagle, osprey, roseate spoonbill, wood stork, and Florida panther.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: RPA Option 2

Date Evaluated: September 2020

Land Cover: 165 – Reclaimed Land

Threatened and Endangered Species:

Observed: Gopher tortoise

Potential Involvement: High

Wetlands:

On Site: None on site

Potential Involvement: None

Notes: This site is approximately 1.28 miles west of the Sheffield Road and Spirit Lake Road intersection. This proposed RPA site consists of entirely of reclaimed land (FLUCFCS 165) that is currently being used as unimproved pasture. This site may provide suitable habitat for the Eastern indigo snake, gopher tortoise, short-tailed snake, Florida pine snake, Florida sandhill crane, Florida burrowing owl, crested caracara, Southeastern American kestrel, bald eagle, osprey and Florida Panther.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: RPA Option 3

Date Evaluated: September 2020

Land Covers: 165 – Reclaimed Land, 438 – Mixed Hardwoods, 530 – Reservoirs, 621 – Cypress, 641 – Freshwater Marshes

USFWS Classification: PUB3Hx – Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded, Excavated; PFO2C – Palustrine, Forested, Needle-Leaved Deciduous, Seasonally Flooded; PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded

Threatened and Endangered Species:

> **Observed:** American alligator, gopher tortoise, tricolored heron, Southeastern American kestrel, within the primary and secondary zones of bald eagle Nest 3, roseate spoonbill, and wood stork
>
> **Potential Involvement:** High

Wetlands:

> **On Site:** 11.8 Acres Reservoirs, 0.26 Acres Cypress, and 14.34 Acres Freshwater Marshes
>
> **Potential Involvement:** High

Notes: This site is approximately 1.28 miles west of the Sheffield Road and Spirit Lake Road intersection. This proposed RPA site consists of reclaimed land (FLUCFCS 165), mixed hardwoods (FLUCFCS 438), reservoirs (FLUCFCS 530), cypress (FLUCFCS 621), and freshwater marshes (FLUCFCS 641). This site may provide suitable habitat for the American alligator, Eastern indigo snake, gopher tortoise, short-tailed snake, Florida pine snake, Florida sandhill crane, Florida burrowing owl, crested caracara, little blue heron, tricolored heron, Southeastern American kestrel, bald eagle, osprey, roseate spoonbill, wood stork and Florida panther. No adverse environmental impacts are proposed by RPA Option 3, which involves a reduction in land use intensity by removing cattle ranching operations from this site.

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FINAL POND SITING REPORT

WETLANDS AND PROTECTED SPECIES EVALUATION

CENTRAL POLK PARKWAY
FROM POLK PARKWAY TO US 17
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
FINANCIAL PROJECT ID: 440897-2-52-01

Polk County, Florida

Prepared for:

Florida's Turnpike Enterprise
Turkey Lake Service Plaza
Mile Post 263, Building # 5315
P.O. Box 613069
Ocoee, Florida 34761

November 2019

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2.0 METHODOLOGY 1
3.0 RESULTS 4
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Attachment B Land Use Map
Attachment C Listed Species Map
Attachment D Pond Site Datasheets and Photographs

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1.0 INTRODUCTION

Florida's Turnpike Enterprise is developing design plans for the proposed Central Polk Parkway (SR 570B) from the Polk Parkway (SR 570) to US 17 (SR 35) in Polk County, a distance of 6.25 miles (see **Project Location Map, Figure 1-1**). As part of this new four-lane roadway, a stormwater management system consisting of three (3) stormwater management facilities (SMF) and three (3) floodplain compensation (FPC) sites is proposed (see **Pond Site Location Map, Attachment A**). Each of these stormwater management facilities were assessed for potential impacts to wetlands and protected species. The purpose of this memorandum is to present the findings of this assessment.

For the purpose of this document, wetlands are defined per Chapter 62-340, Florida Administrative Code (F.A.C), Section 373.019 (27), Florida Statutes, Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-01), and the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (ERD/EL TR-10-20).

The assessment areas were also evaluated for potential occurrences of federal and state listed protected animal species as defined by the Endangered Species Act of 1973, as amended, and 68A-27, F.A.C.

2.0 METHODOLOGY

To determine the approximate locations and boundaries of existing upland and wetland communities within each SMF and FPC site and potential utilization of these sites by protected species, available site-specific data was collected and reviewed.

The literature and databases reviewed as part of this evaluation included:

- True color aerial imagery of the assessment area, (1" = 200'), ESRI 2018;
- Natural Resource Conservation Service (NRCS), United States Department of Agriculture (USDA), Soil Survey of Polk County, Florida, 1990;
- NRCS, USDA, Web Soil Survey, March 2019;
- Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook, 4th ed., (Hurt et. al. 2007);
- Florida Department of Transportation (FDOT), Florida Land Use, Cover, and Forms Classification System (FLUCFCS), 3rd ed., January 1999;
- FDOT, ETDM Screening Summary Report, Project #8487 – Central Polk Parkway, 2010;
- Florida Fish and Wildlife Conservation Commission (FWC), Florida's Endangered and Threatened Species, December 2018;

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- Florida Fish and Wildlife Conservation Commission (FWC). 2012. Florida Black Bear Management Plan. Tallahassee, FL. (http://myfwc.com/media/2612908/bear-management-plan.pdf), March 2019;
- FWC, Eagle Nest Locator Website (https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx), February 2019;
- FWC, Fish and Wildlife Research Institute. Wading Bird Colonies Florida database (http://ocean.floridamarine.org/TRGIS/Description_Layers_Terrestrial.htm); March 2019;
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix Map Server (http://www.fnai.org/biointro.cfm), March 2019;
- Southwest Florida Water Management District (SWFWMD), FLUCFCS maps, 2011;
- United States Fish and Wildlife Service (USFWS), Critical Habitat Portal website (https://ecos.fws.gov/ecp/report/table/critical-habitat.html), March 2019;
- USFWS, National Wetlands Inventory (NWI), Wetlands online Mapper, March 2019;
- USFWS, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, June 2007, as amended;
- USFWS, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et. al. 1979);
- USFWS, Wood Stork database (https://www.fws.gov/northflorida/woodstorks/wood-storks.htm), March 2019; and
- USFWS, Information for Planning and Consultation (https://ecos.fws.gov/ipac/), March 2019.

KCA environmental scientists familiar with Florida natural communities conducted pedestrian surveys of the three (3) SMF sites and three (3) FPC sites in February 2019. The purpose of these field reviews was to assess existing ecological conditions at each site. The vegetative communities within each of the SMF/FPC sites were mapped and their species composition determined. Each site was also evaluated to determine its potential to support protected wildlife species.

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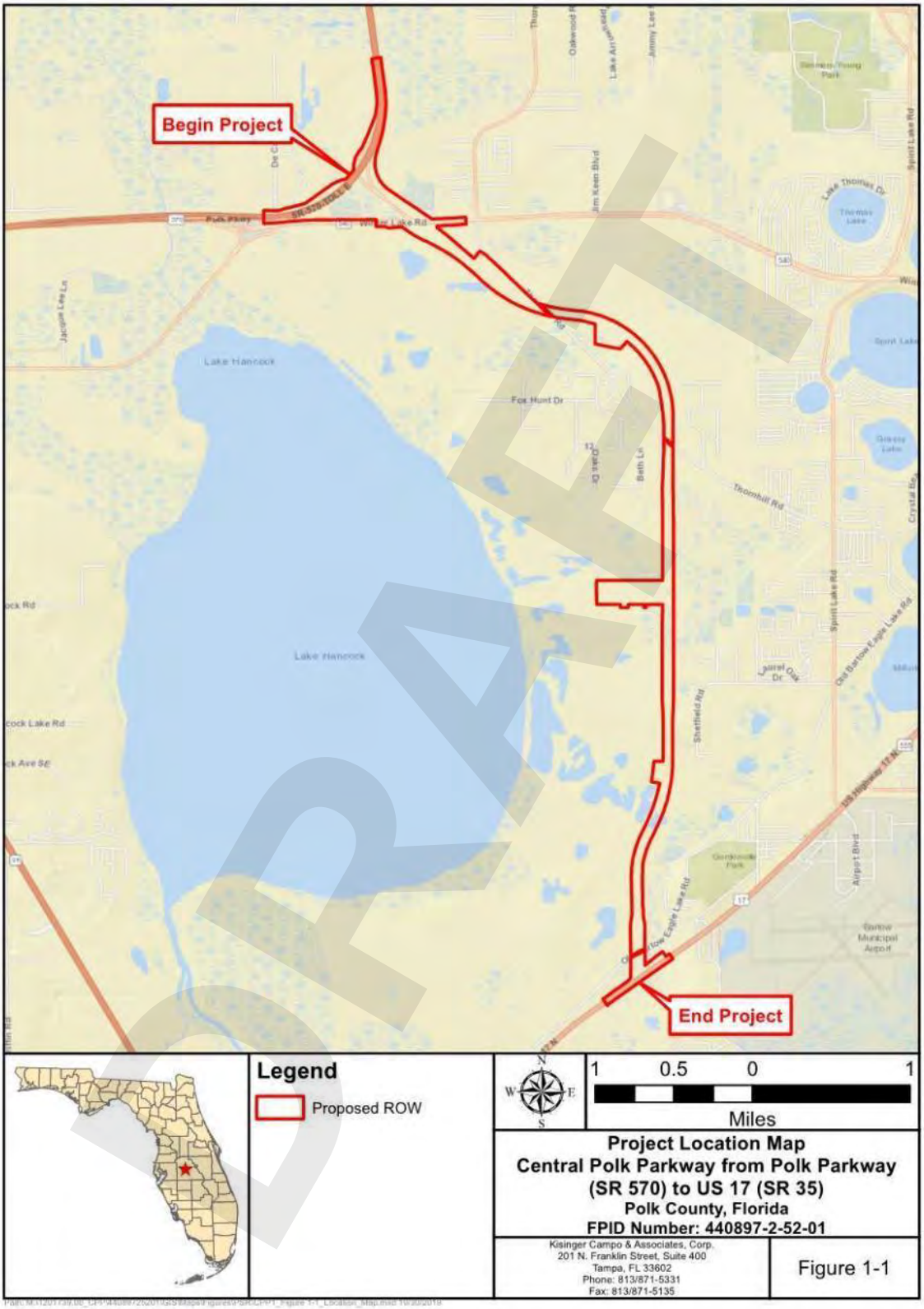
FIGURE 1-1
CENTRAL POLK PARKWAY PROJECT LOCATION MAP



3.0 RESULTS

3.1 EXISTING LAND USES

The assessment areas consist of three (3) SMF sites and three (3) FPC sites. Existing land use and habitats within the assessment areas were classified using the FLUCFCS (FDOT 1999). Wetlands were also classified using USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al. 1979). The assessment areas consist primarily of cropland and pastureland (FLUCFCS 210), hardwood conifer mixed (FLUCFCS 434), and reclaimed land (FLUCFCS 165). A map of existing land uses found within the assessment areas is provided in **Attachment B**.

Stormwater Management Facility Sites

SMF 1 is located north of SR 540, approximately 0.1 miles east of Landfill Road and is part of an already permitted SMF. This proposed SMF site consists of live oak (FLUCFCS 427), hardwood conifer mixed (FLUCFCS 434), reservoirs (FLUCFCS 530; PEM1Fx – Palustrine, Emergent, Persistent, Semipermanently Flooded, Excavated), exotic wetland hardwoods (FLUCFCS 619; PSS7F – Palustrine, Scrub-Shrub, Evergreen, Semipermanently Flooded), and transportation (FLUCFCS 810).

SMF 2 is located south of Thornhill Road, approximately 0.2 miles south of SR 540. This proposed SMF site consists entirely of cropland and pastureland (FLUCFCS 210) and is currently being used for cattle production.

SMF 3 is located approximately 0.6 miles northwest of the Spurlin Court and Dunaway Road intersection. This proposed SMF site consists of cropland and pastureland (FLUCFCS 210) and two (2) small freshwater marshes (FLUCFCS 641; PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded).

Floodplain Compensation Sites

FPC 1 is located east of Thornhill Road approximately 0.15 miles north of the Country Walk Lane and Thornhill Road intersection. This proposed FPC site consists of cropland and pastureland (FLUCFCS 210) and hardwood conifer mixed forest (FLUCFCS 434).

FPC 3 is located approximately 0.9 miles northwest of the Old Bartow Eagle Lake Road and Griffin Road intersection. This proposed FPC site consists entirely of reclaimed land (FLUCFCS 165) which is presently being used as improved pasture.

FPC 4 is located between Old Bartow Eagle Lake Road and US 17, at the project's southern terminus. This proposed FPC site consists of medium density residential development (FLUCFCS 120) and one (1) intermittent pond (FLUCFCS 653; PEM1J – Palustrine, Emergent, Persistent, Intermittently Flooded, PSS7J – Palustrine, Scrub-Shrub, Evergreen, Intermittently Flooded).

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3.2 THREATENED AND ENDANGERED SPECIES

Based upon in house assessments, site reviews, and species specific surveys, several federal and state listed protected species were identified as occurring or having the potential to occur within the assessment areas. These species include: American alligator (*Alligator mississippiensis*), Eastern indigo snake (*Drymarchon couperi*), gopher tortoise (*Gopherus polyphemus*), Florida pine snake (*Pituophis melanoleucus*), blue-tailed mole skink (*Plestiodon egregius lividus*), sand skink (*Plestiodon reynoldsi*), Florida burrowing owl (*Athene cunicularia floridana*), crested caracara (*Caracara cheriway*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), Southeastern American kestrel (*Falco sparverius paulus*), Florida sandhill crane (*Antigone canadensis pratensis*), bald eagle (*Haliaeetus leucocehalus*), wood stork (*Mycteria americana*), and Everglade snail kite (*Rostrhamus sociabilis).* A listed species map is provided in **Attachment C**.

These species, their state and/or federal designation, preferred habitat, and potential for occurrence are shown in **Table 3-1**. The potential for occurrence for each species was designated as None, Low, Moderate, or High based on the type of habitat present within the assessment areas, its relative condition, if the species has been previous documented within one (1) mile of the assessment areas, or if the species was observed in the assessment areas. A ***None*** rating indicates that suitable habitat does not exist within the assessment areas. Species with a ***None*** rating are excluded from **Table 3-1** and the discussion below. A ***Low*** rating indicates that suitable habitat for that species was found within the assessment areas, but the species has not been documented within one (1) mile of the project assessment areas. A ***Moderate*** rating indicates that suitable habitat exists and the species has been documented within one (1) mile of the assessment areas. A ***High*** rating indicates that suitable habitat exists and the species was observed during field reviews.

TABLE 3-1
FEDERAL AND STATE PROTECTED SPECIES POTENTIAL FOR OCCURRENCE

Species	Designated Status			Habitat Preference	Potential for Occurrence
	Federal	State	FDACS		
Reptilian					
American Alligator *Alligator mississippiensis*	SAT	-	-	Freshwater and brackish marshes, ponds, lakes, rivers, swamps, bayous, canals, and large spring runs.	Low
Eastern Indigo Snake *Drymarchon couperi*	T	-	-	Mesic flatwoods, upland pine forests, swamps, wet prairies, xeric pinelands, and scrub habitats.	Low
Gopher Tortoise *Gopherus polyphemus*	-	T	-	Dry upland habitats including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; also commonly uses disturbed habitats such as pastures, old fields, and road shoulders	High
Florida Pine Snake *Pituophis melanoleucus*	-	T	-	Dry sandy soils with open canopies. Sandhill, sand pine scrub, and scrubby flatwoods	Low

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Species	Designated Status			Habitat Preference	Potential for Occurrence
	Federal	State	FDACS		
Blue-Tailed Mole Skink *Plestiodon egregius lividus*	T	-	-	loose sandy areas, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens	Moderate
Sand Skink (*Plestiodon reynoldsi*)	T	-	-	loose sandy areas, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens	Moderate
Avian					
Florida Burrowing Owl *Athene cunicularia floridana*	-	T	-	Areas of short, herbaceous groundcover; including prairies, sandhills, and farmland.	Low
Crested Caracara *Caracara cheriway*	T	-	-	Open country such as dry prairie and pasture lands with scattered cabbage palm, cabbage palm/live oak hammocks, and shallow ponds and sloughs. Cabbage palms or live oaks with low-growing surrounding vegetation are required for nesting.	Low
Little Blue Heron *Egretta caerulea*	-	T	-	Freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps.	Low
Tricolored Heron *Egretta tricolor*	-	T	-	Freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps.	Low
Southeastern American Kestrel *Falco sparverius paulus*	-	T	-	Pine scrub, dry prairies, mixed pine hardwood forests, and pine flatwoods.	High
Florida Sandhill Crane *Antigone canadensis pratensis*	-	T	-	Wet and dry prairies, marshes, and marshy lake edges.	High
Bald Eagle *Haliaeetus leucocephalus*	NL[1]	NL[2]	-	Large open water bodies, saltwater marshes, dry prairies, mixed pine, hardwood forests, wet prairies, marshes, pine flatwoods, and sandhills.	High
Wood Stork *Mycteria americana*	T	-	-	Fresh and saltwater habitats such as fresh and saltwater marshes, tidal flats, wet prairies, cypress swamps, and agricultural environments.	Moderate
Everglade Snail Kite *Rostrhamus sociabilis*	E	-	-	Large open freshwater marshes and lakes with shallow water and a low density of emergent vegetation	Low

Notes:
E = endangered, T = threatened, SAT = Federal Threatened due to similarity of appearance, NL = not listed
NL[1] While not listed under the ESA, the Bald Eagle is federally protected under the Bald and Golden Eagle Protection Act.
NL[2] While not listed under Chapter 68A-27 FAC, the Bald Eagle is state protected under the FWC Bald Eagle Management Plan (2008).

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The project limits are within the consultation area for the crested caracara, Everglade snail kite, Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), Florida scrub-jay (*Aphelocoma coerulescens*), sand skink, and blue-tailed mole skink. Habitat for the Florida grasshopper sparrow and the Florida scrub-jay does not exist within the assessment areas; therefore, it is anticipated that the proposed pond sites will have no involvement with these species.

Descriptions of protected species and their habitats potentially affected by the project are included below. The potential for protected species involvement in each individual SMF or FPC site is rated and summarized in Section 3.4 (see **Table 3-2**).

The **American alligator** is listed as threatened by the USFWS due to its similarity of appearance to the American crocodile and has a **low** potential for occurrence within the assessment areas (**Table 3-1**). The American alligator is known to utilize swamps, lakes, marshes and canals. Although there is available suitable habitat for the American alligator within the assessment areas, there have been no documented occurrences of this species and it was not observed during field reviews. The sites with potential habitat to support this species are identified in **Table 3-2** and include SMF 1 and FPC 4.

The **Eastern indigo snake** is listed as threatened by the USFWS and has a **low** potential for occurrence within the assessment areas (**Table 3-1**). This large black snake can be found in a variety of habitats including pine flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats. It may utilize gopher tortoise burrows for shelter to escape hot or cold ambient temperatures. Although there is suitable habitat for the Eastern indigo snake within the assessment areas, there have been no documented occurrences of the species and it was not observed during field reviews. All sites have potential habitat to support this species as identified in **Table 3-2**.

The **gopher tortoise** is listed as threatened by the FWC and has a **high** potential for occurrence within the assessment areas (**Table 3-1**). This species requires well-drained, loose sandy soils for burrowing, and low-growing herbs and grasses for food. These conditions can be found in a number of habitats including xeric oak, sandhills, dry pine flatwoods, scrub habitats, as well as old fields, pastures and roadsides. Several gopher tortoise burrows were observed along the proposed Central Polk Parkway proposed right-of-way (ROW), near FPC 1. The locations of observed gopher tortoise burrows are provided in **Figure 3-1**. The sites with potential habitat to support this species are identified in **Table 3-2**, and include SMF 2, SMF 3, FPC 1, and FPC 3.

The **Florida pine snake** is listed as threatened by the FWC and has a **low** potential for occurrence within the assessment areas (**Table 3-1**). The Florida pine snake prefers open-canopied xeric habitats with dry sandy soils. These snakes can be found in sandhills, pastures, sand pine scrub, longleaf pine and turkey oak forests. The pine snake is also known to utilize tunnel systems of pocket gophers and burrows of gopher tortoises. Although there is available suitable habitat for the Florida pine snake within the project study area, there have been no documented occurrences and it was not observed during field reviews. The sites with potential habitat to support this species are identified in **Table 3-2**, and include SMF 2, SMF 3, FPC 1, and FPC 3.

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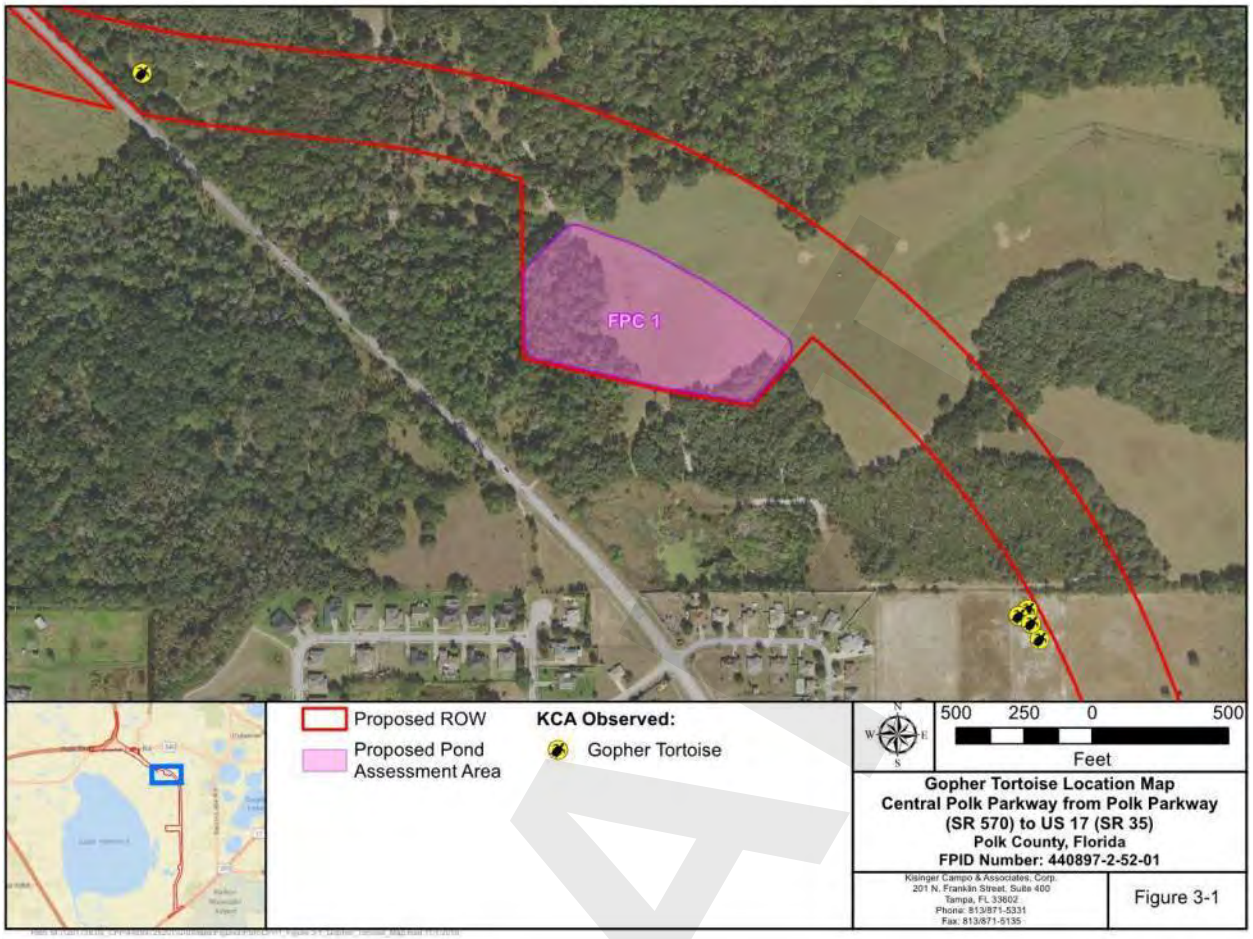
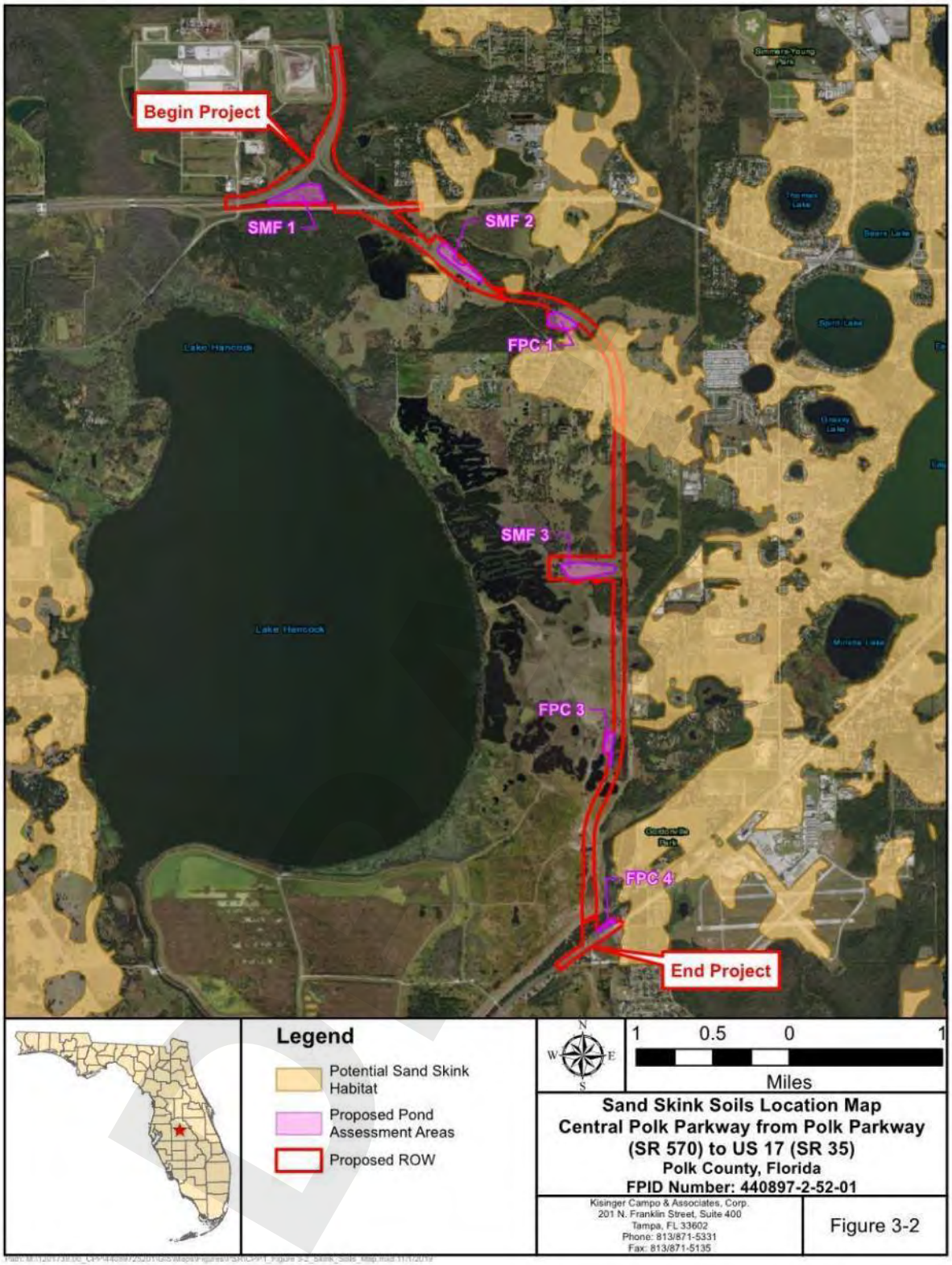
FIGURE 3-1
GOPHER TORTOISE LOCATION MAP



The **blue-tailed mole skink** and **sand skink** are small lizards that are listed as threatened by the USFWS and have a **moderate** potential for occurrence within the assessment areas (**Table 3-1**). Blue-tailed mole skinks are expected to occur with sand skinks where the two species overlap in distribution. These species are found in central Florida in habitat with loose sandy areas, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens. They are also known to utilize disturbed habitats with suitable soils, such as pine plantations, citrus groves, open fields, and pastures. There is suitable habitat available for these species within the assessment areas, and the sand skink has been documented within one mile. A map of suitable sand skink soils is shown in **Figure 3-2**. FPC 1 is the only site with potential habitat for these species as identified in **Table 3-2**.

The **Florida burrowing owl** is listed as threatened by the FWC and has a **low** potential for occurrence within the assessment areas (**Table 3-1**). This species requires areas of short, herbaceous groundcover such as prairies, pastures, sandhills, and farmland. Although suitable habitat is available for the Florida burrowing owl within the assessment areas, there have been no documented occurrences and it was not observed during field reviews. The sites with potential habitat to support this species are identified in **Table 3-2**, and include SMF 2, SMF 3, FPC 1, and FPC 3.

FIGURE 3-2
SAND SKINK SOILS LOCATION MAP



The **crested caracara** is listed as threatened by the USFWS and has a **low** potential for occurrence within the assessment areas (**Table 3-1**). This species often inhabits open country, such as dry prairie and pasture lands. It also requires cabbage palms or live oaks with low-growing surrounding vegetation for nesting. Although suitable habitat for the crested caracara is available within the assessment areas, there have been no documented occurrences it was not observed during field reviews. The sites with potential habitat to support this species are identified in **Table 3-2**, and include SMF 2, SMF 3, FPC 1, and FPC 3.

The **little blue heron and tricolored heron** are listed as threatened by the FWC and have a **low** potential for occurrence within the assessment areas (**Table 3-1**). These species utilize a wide variety of wetland habitats including canals, ditches, forested wetlands and marshes. While none of these species were observed during field reviews, they may be expected to occur in the wetland habitats found in the assessment areas. The sites with potential habitat to support this species are identified in **Table 3-2**, and include SMF 1, SMF 2, SMF 3, and FPC 4.

The **Southeastern American kestrel** is listed as threatened by the FWC and has a **high** potential for occurrence within the assessment areas (**Table 3-1**). This species utilizes pine scrub habitat, dry prairies, pastures, mixed pine hardwood forests, and pine flatwoods. Nests are typically built in tall dead trees or utility poles with an unobstructed view of surroundings. Suitable habitat is present within the assessment areas and one (1) American kestrel was observed during field reviews (see **Attachment C**). The sites with potential habitat to support this species are identified in **Table 3-2**, and include SMF 2, SMF 3, FPC 1, and FPC 3.

The **Florida sandhill crane** is listed as threatened by the FWC and has a **high** potential for occurrence within the assessment areas (**Table 3-1**). The sandhill crane is associated with shallow freshwater areas, pasture and open woods habitats. There is potential nesting and foraging habitat for the Florida sandhill crane within the assessment areas and the species was observed during field reviews (see **Attachment C**). All sites have potential habitat to support this species as identified in **Table 3-2**.

The **bald eagle** has been de-listed by both FWC and USFWS. However, it is still federally protected under the Bald and Golden Eagle Protection Act in accordance with 16 United States Code 668, and the Migratory Bird Treaty Act of 1918. In addition, the FWC has implemented a bald eagle management plan. This species has a **high** potential for occurrence within the assessment areas (**Table 3-1**). The bald eagle utilizes riparian habitats associated with coastal areas, lake shorelines, and riverbanks. Their nests are typically located near water bodies that provide a dependable food source. According to FWC bald eagle nest database, there are 10 bald eagle nests located within one (1) mile of the SMF and FPC sites (**Attachment C**), of which only three (3) were recorded as active in 2017. During field reviews, two (2) additional active nests were observed near proposed pond assessment areas. The locations of all these nests are provided in **Figure 3-3** and **Attachment C**. All sites except FPC 4 have potential habitat to support this species as shown in **Table 3-2**.

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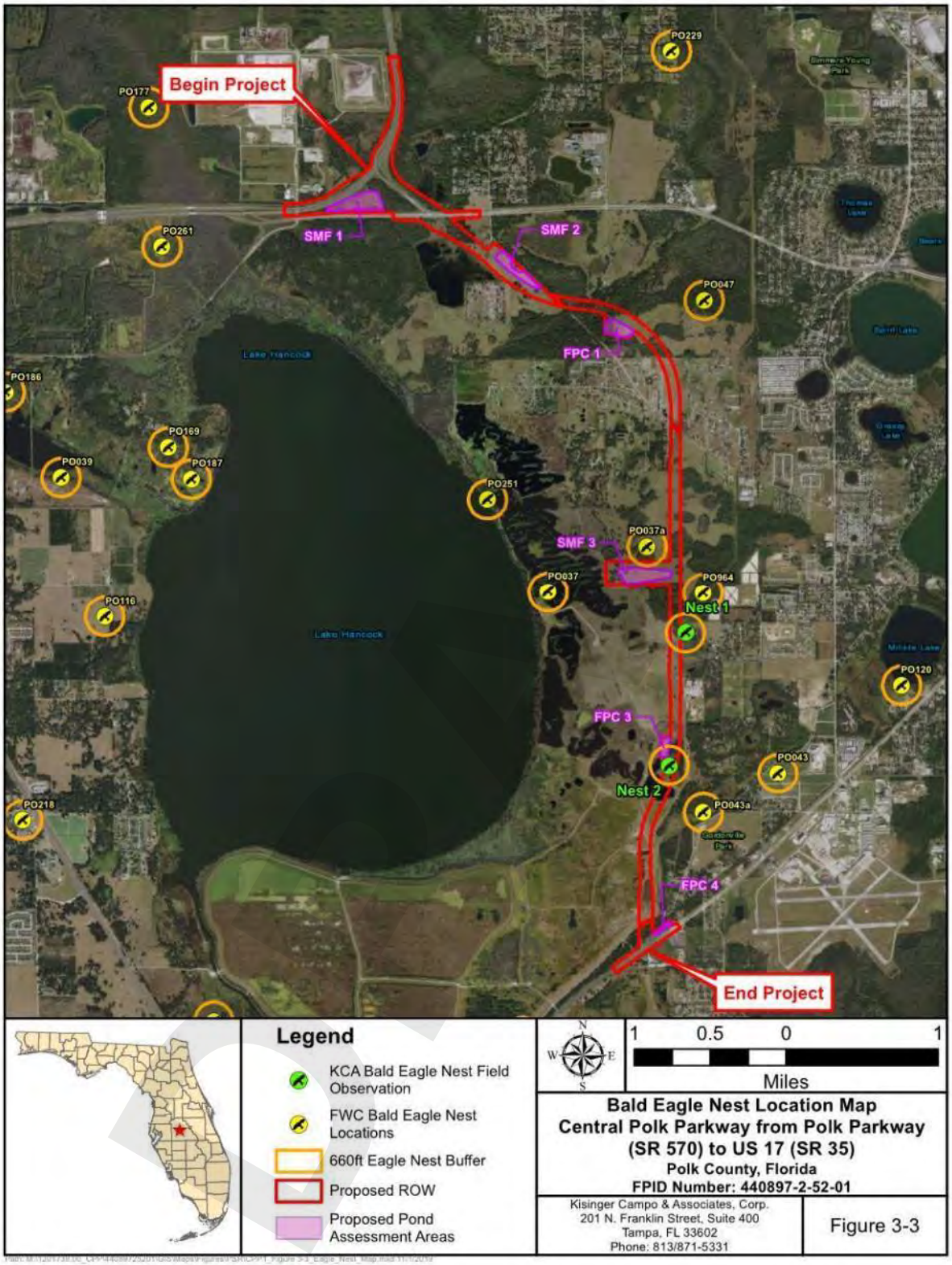
FIGURE 3-3
BALD EAGLE NEST LOCATION MAP



The **wood stork** is listed as threatened by the USFWS and has a **moderate** potential for occurrence within the assessment areas (**Table 3-1**). This wading bird species is opportunistic and utilizes various habitat types, including forested wetlands, freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures, and ditches for feeding. The project study area is located within the 18.6-mile core foraging area of three (3) active wood stork nesting colonies. The locations of these colonies are provided in **Figure 3-4**. While this species was not observed during field reviews, there is potential foraging habitat for this species within the assessment areas. The sites with potential habitat to support this species are identified in **Table 3-2**, and include SMF 1, SMF 2, SMF 3, and FPC 4.

The **Everglade snail kite** is listed as endangered by the USFWS and has a **low** potential for occurrence within the assessment areas (**Table 3-1**). The Everglade snail kite is found primarily in large open freshwater marshes and lakes with shallow water and a low density of emergent vegetation. Nesting almost always occurs over water, which deters predation. Although there is suitable foraging habitat for the Everglade snail kite within the assessment areas and potential nesting habitat exists within one (1) mile, there have been no documented occurrences and the species was not observed during field reviews. SMF 1 is the only site with potential habitat to support this species as identified in **Table 3-2**.

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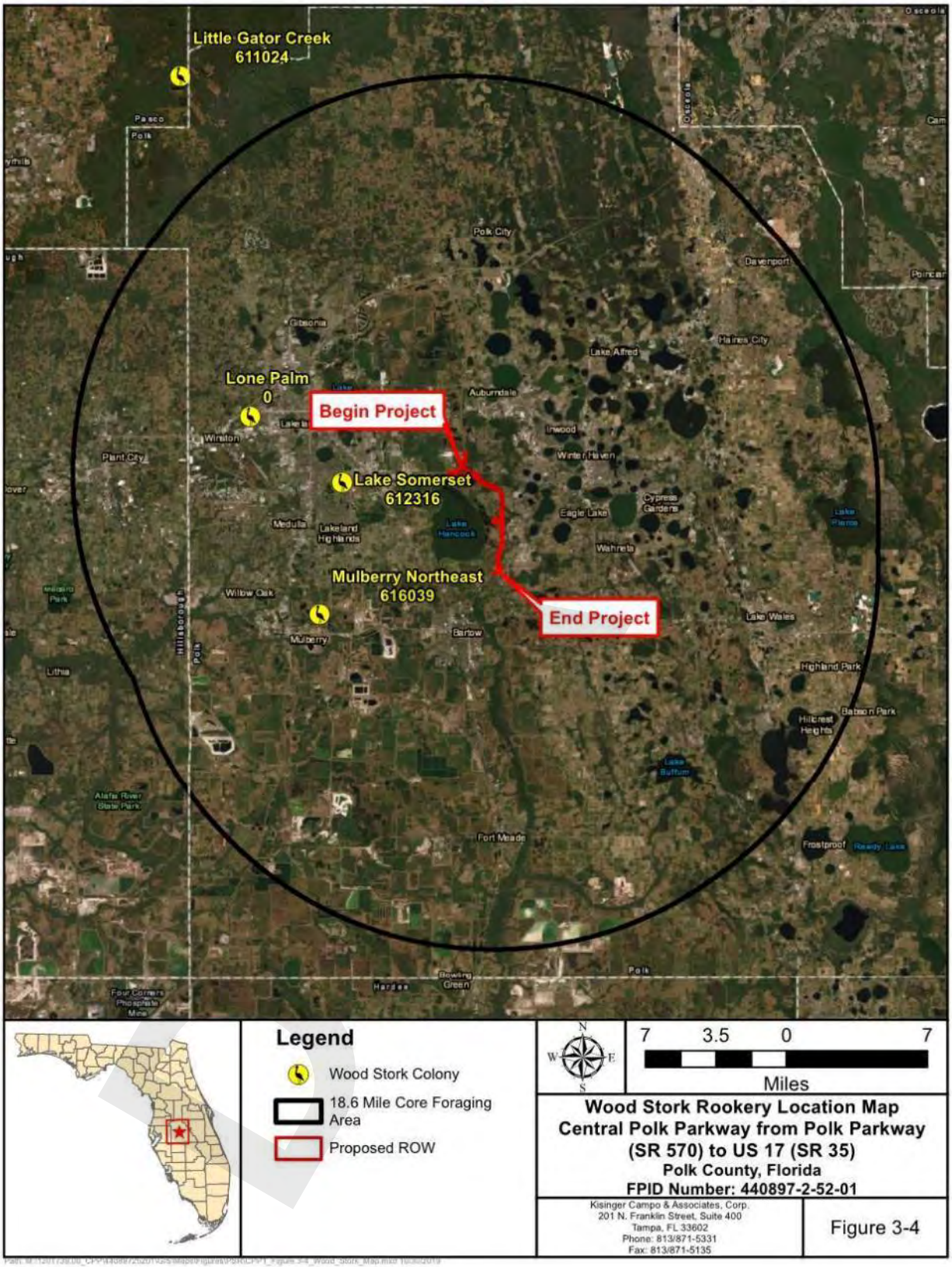
FIGURE 3-4
WOOD STORK ROOKERY LOCATION MAP



3.3 WETLANDS

Of the three (3) SMF sites and three (3) FPC sites proposed, a total of three (3) sites include wetlands or surface waters (SMF 1, SMF 3, and FPC 4). The wetland and surface water systems found within these SMF and FPC sites are reservoirs (FLUCFCS 530), exotic wetland hardwoods (FLUCFCS 619), freshwater marshes (FLUCFCS 641) and intermittent ponds (FLUCFCS 653). The following is a description of the wetlands and surface waters found within each of these pond sites.

The surface water found in SMF 1 is a reservoir (FLUCFCS 530) dominated by Brazilian pepper (*Schinus terebinthifolius*), cattail (*Typha latifolia*), Carolina willow (*Salix caroliniana*), wax myrtle (*Morella cerifera*), and Peruvian primrose willow (*Ludwigia peruviana*). The wetland found in SMF 1 is exotic wetland hardwoods (FLUCFCS 619) dominated by Brazilian pepper cattail, Peruvian primrose willow and cogongrass (*Imperata cylindrica*). The wetlands and surface waters within SMF 1 are comprised of approximately 50-70% nuisance and exotic species.

The wetlands found in SMF 3 are freshwater marshes (FLUCFCS 641) dominated by soft rush (*Juncus effusus*) with a small open water core.

The wetland found in FPC 4 is classified as an intermittent pond (FLUCFCS 653) that only holds water for a portion of the year. The herbaceous area is dominated by various sedge species (*Cyperus* spp.) and the forested area is dominated by Brazilian pepper, Peruvian primrose willow, and smartweed (*Persicaria hydropiperoides*). The wetland within FPC 4 is comprised of approximately 15-25% nuisance and exotic species.

3.4 SUMMARY

For comparison purposes, a None, Low, Medium or High rating scale was used to evaluate the potential for wetlands and protected species involvement at each SMF/FPC alternative reviewed.

Table 3-2 identifies the potential of each pond site to provide habitat for each protected animal species. Scoring for protected species involvement was based on the types of habitat found in each SMF/FPC site and the relative condition of the habitat to support protected species, and if protected species were observed in the project vicinity. A ***None*** potential for involvement indicates that no suitable habitat for protected species exists within the assessment area. A ***Low*** potential for involvement indicates that minimal/suboptimal habitat exists within the assessment area for protected species. A ***Medium*** potential for involvement indicates that suitable habitat exists and conditions are favorable for protected species. A ***High*** potential for involvement indicates protected species have been confirmed or are highly likely to occur within the pond site.

Table 3-3 provides the level of potential wetland involvement for each SMF/FPC site. Scoring for wetland involvement was based on acreage of wetlands found on-site. A ***None*** potential for involvement indicates that there are no wetland/surface waters found on site. A ***Low*** potential for involvement indicates that there is less than 0.5 acres of wetlands/surface waters on site. A ***Medium*** potential for involvement indicates that there is 0.5 to 1.0 acre of wetlands/surface waters on site. A ***High*** potential for involvement indicates that there is over 1.0 acre of wetlands/surface waters on site.

Detailed data sheets and photographs of each SMF and FPC site are provided in **Attachment D.**

TABLE 3-2
LEVEL OF POTENTIAL PROTECTED SPECIES INVOLVEMENT

Pond Site	None	Low	Medium	High	Potential Suitable Habitat	Observed
SMF Sites						
SMF 1			X		AA, EIS, LBH, TCH, SHC, BE, WS, ESK	
SMF 2			X		EIS, GT, FPS, FBO, CC, LBH, TCH, SAK, SHC, BE, WS	
SMF 3				X	EIS, GT, FPS, FBO, CC, LBH, TCH, SAK, SHC, BE, WS	BE, SHC
FPC Sites						
FPC 1				X	EIS, GT, FPS, BS, SS, FBO, CC, SAK, SHC, BE	BE
FPC 3				X	EIS, GT, FPS, FBO, CC, SAK, SHC, BE	BE, SAK
FPC 4		X			AA, LBH, TCH, SHC, WS, EIS	

Legend:

None = No habitat for protected species
Low = Minimal / suboptimal habitat for protected species
Medium = Suitable habitat exists and conditions are favorable for protected species
High = Protected species confirmed or highly likely to occur within the pond site

Species

AA = American alligator
EIS = Eastern indigo snake
GT = gopher tortoise
FPS = Florida pine snake
BS = blue-tailed mole skink
SS = sand skink
FBO = Florida burrowing owl
CC = crested caracara
LBH = little blue heron
TCH = tricolored heron
SAK = Southeastern American kestrel
SHC = Florida sandhill crane
BE = bald eagle
WS = wood stork
ESK = Everglade snail kite

TABLE 3-3
LEVEL OF POTENTIAL WETLAND INVOLVEMENT

Pond Site	Pond Site Area (Acres)	None	Low	Medium	High	Comments
SMF Sites						
SMF 1	19.25				X	13.10 Acres Reservoirs and 0.95 Acres Exotic Hardwood Wetlands
SMF 2	10.67	X				
SMF 3	17.31				X	1.14 Acres Freshwater Marshes
FPC Sites						
FPC 1	9.29	X				
FPC 3	4.29	X				
FPC 4	1.41		X			0.41 Acres Intermittent Ponds

Legend:

None = No wetland involvement
Low = Minimal wetland involvement (< 0.5 ac)
Medium = Some wetland involvement (0.5 – 1.0 ac)
High = Substantial wetland involvement (> 1.0 ac)

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4.0 CONCLUSIONS

As part of the roadway design for the proposed four-lane Central Polk Parkway improvements, six (6) pond sites were evaluated for potential protected species and wetlands involvement. The land use and habitat types found within the pond sites are dominated by the following land uses: cropland and pastureland, hardwood conifer mixed, and reclaimed land; with cropland and pastureland being the most prevalent. The vegetation within the pond sites consist primarily of bahiagrass, cogongrass, smutgrass (*Sporobolus indicus*), dog fennel, cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), red maple (*Acer rubrum*), slash pine (*Pinus elliottii*), Carolina willow, Brazilian pepper, wax myrtle, and saw palmetto (*Serenoa repens*).

Protected Species

Based upon in house assessments and field reviews, it was determined that a total of 15 federal or state protected animal species have the potential to utilize the habitats found within the assessment areas.

Three (3) sites, SMF 3, FPC 1, and FPC 3 were given a high potential for protected species involvement due to the confirmed observations of the bald eagle, Florida sandhill crane, and Southeastern American Kestrel. Two (2) sites, SMF 1 and SMF 2, were given a medium potential for protected species involvement due to the favorable habitat conditions available. One (1) site, FPC 4, was given a low potential for protected species involvement due to minimal/suboptimal habitat present for protected species.

Wetlands

Of the three (3) SMF and three (3) FPC sites associated with the proposed four-lane Central Polk Parkway improvements, three (3) sites include wetlands or surface waters. Two (2) sites, SMF 3 and FPC 4, contain wetlands and one (1) site, SMF 1, contains both wetlands and surface waters.

Three (3) pond sites, SMF 2, FPC 1 and FPC 3 have no potential for wetland involvement due to the absence of wetlands and surface waters on-site. One pond site, FPC 4, was given a low potential for wetland involvement due to the on-site wetlands occupying less than 0.5 acres. Two pond sites, SMF 1 and SMF 3, were given a high potential for wetland involvement due to on-site wetlands occupying more than 1.0 acre.

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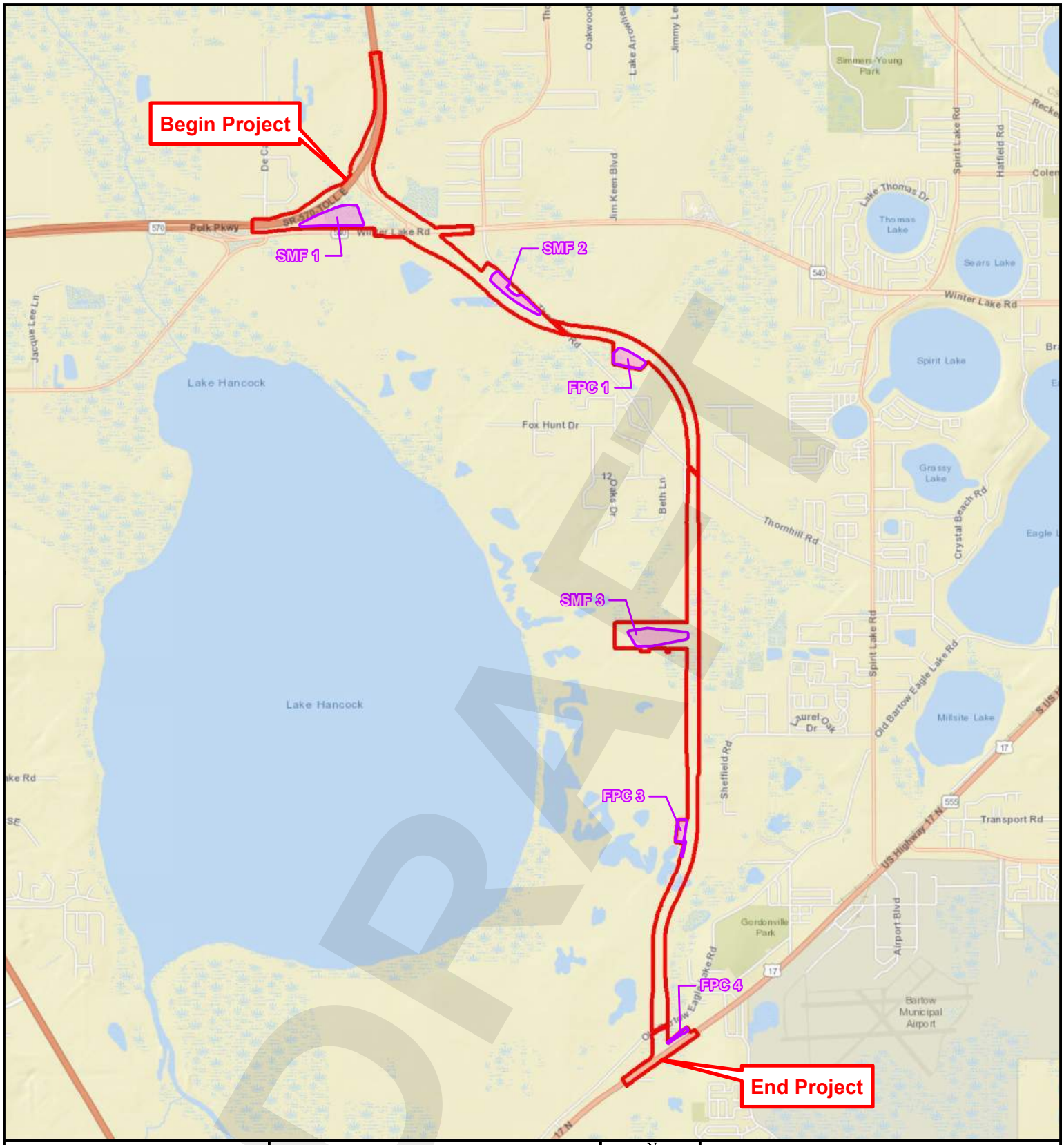
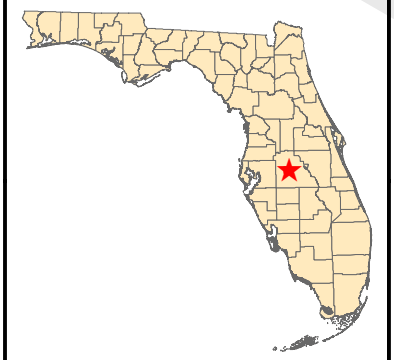
ATTACHMENT A

Pond Site Location Map





Legend

- Proposed Pond Assessment Areas
- Proposed ROW

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Pond Site Location Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
FPID Number: 440897-2-52-01

Kisinger Campo & Associates, Corp.
201 N. Franklin Street, Suite 400
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Phone: 813/871-5331
Fax: 813/871-5135

Attachment A

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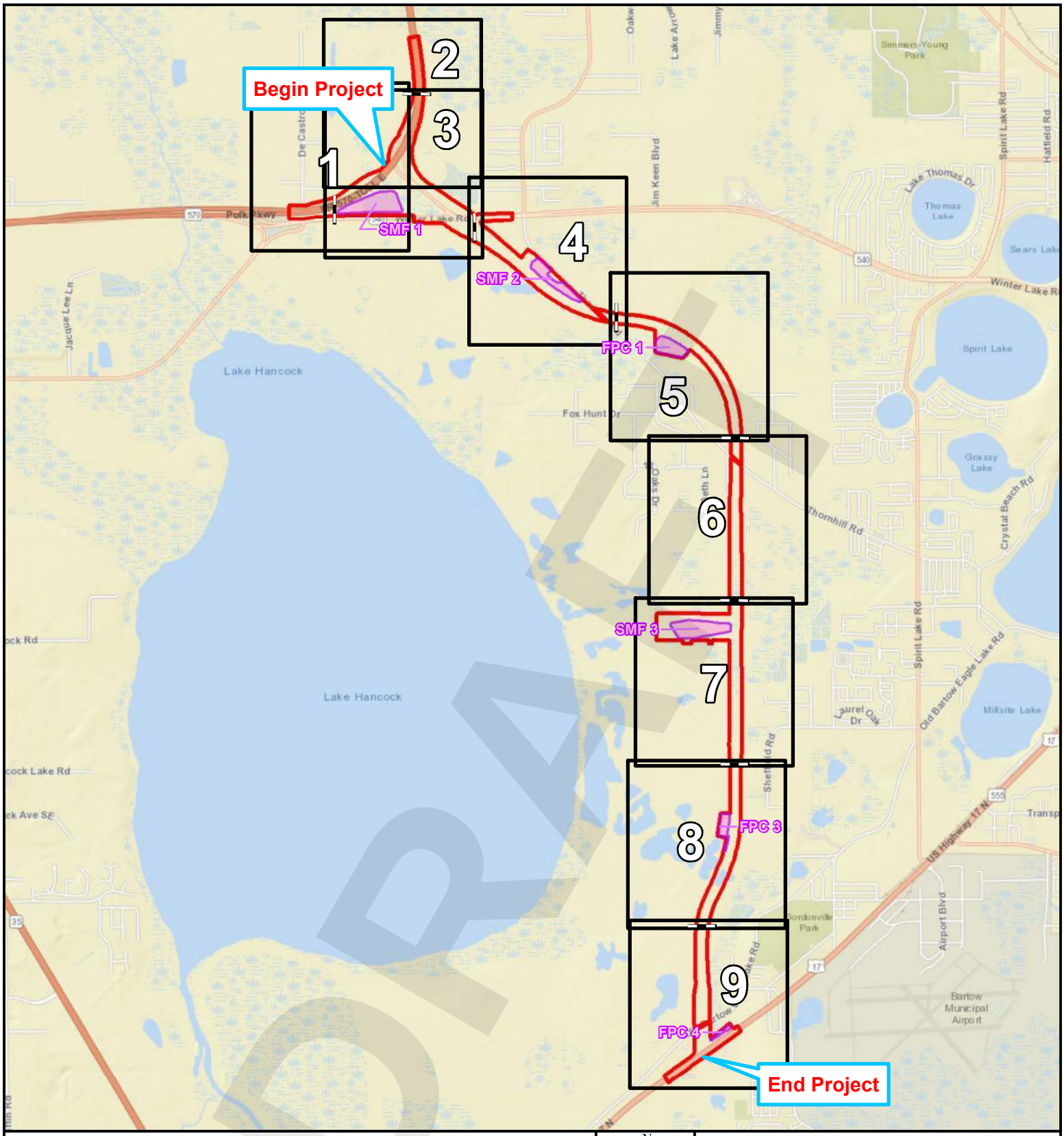
ATTACHMENT B

Land Use Map



Legend

- Proposed ROW
- Proposed Pond Assessment Areas

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Land Use Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
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Attachment B
Key Sheet

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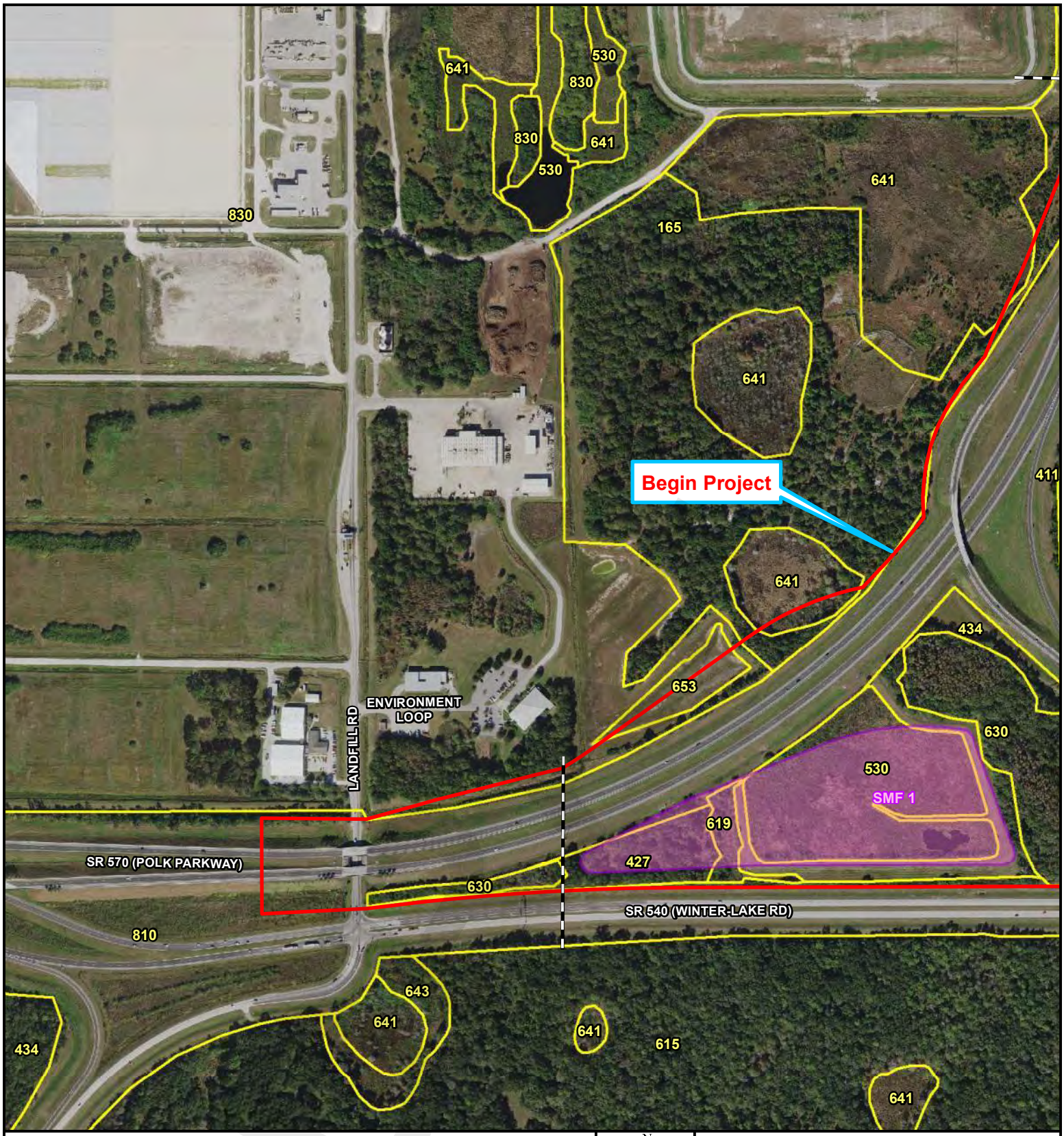

Legend

- Proposed ROW
- Proposed Pond Assessment Area
- Matchline

120: RESIDENTIAL MED DENSITY 2->5 DWELLING UNIT
140: COMMERCIAL AND SERVICES
165: RECLAIMED LAND
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653: INTERMITTENT PONDS
810: TRANSPORTATION
830: UTILITIES

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Feet

Land Use Map
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Polk County, Florida
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Page 1 of 9

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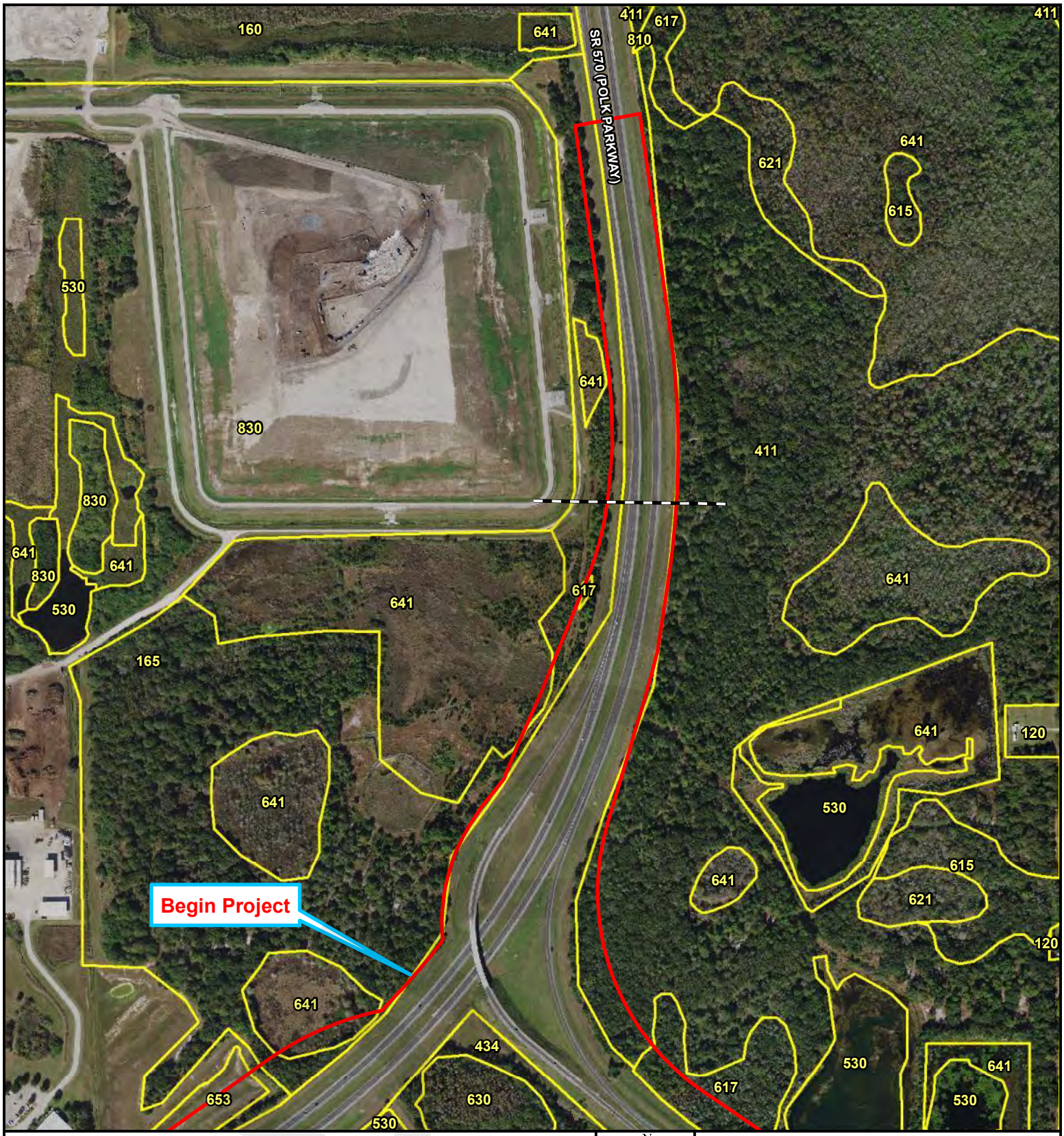

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Land Use Map
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Page 2 of 9

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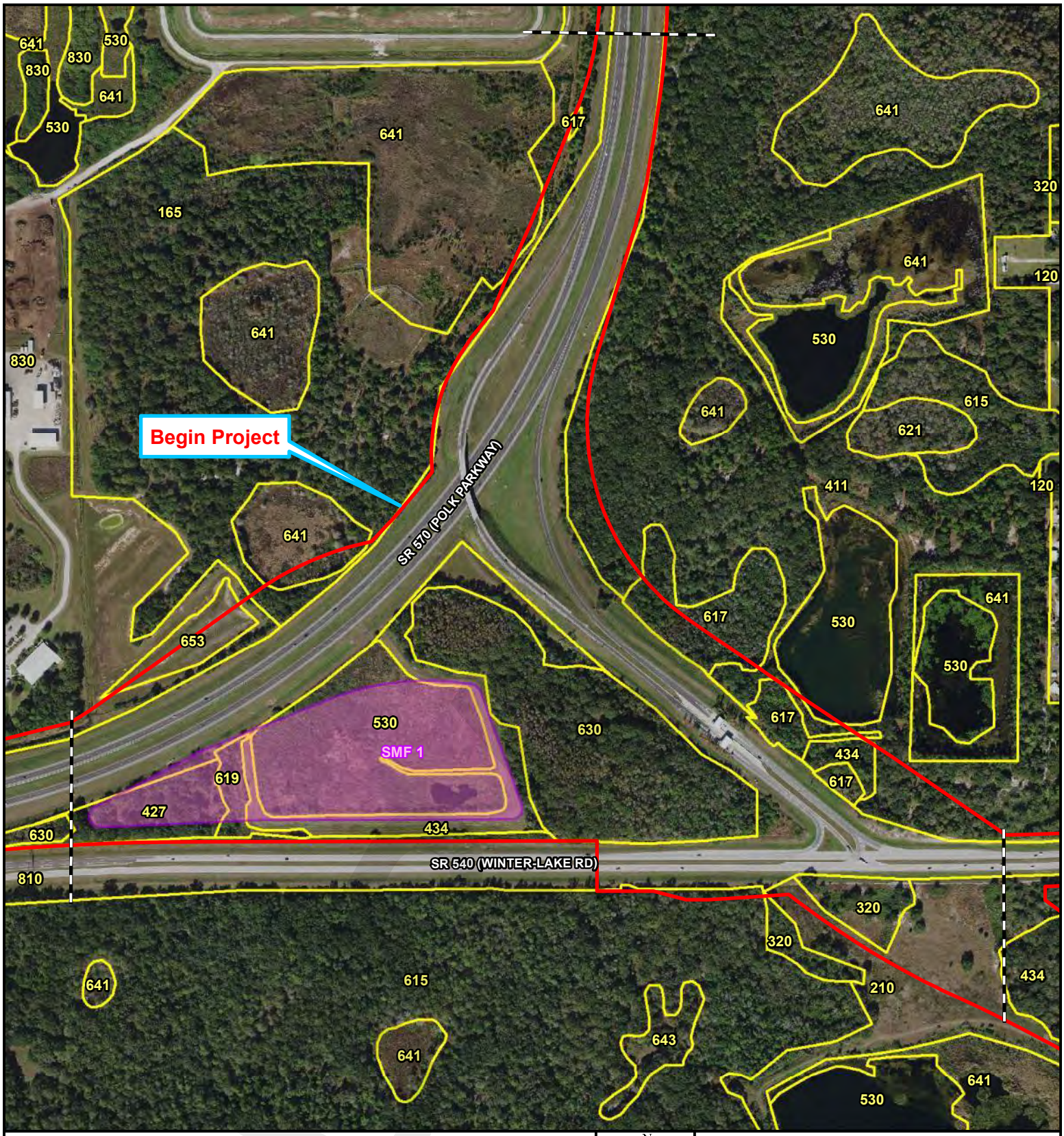

Legend

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N W E S

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Land Use Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
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Page 3 of 9

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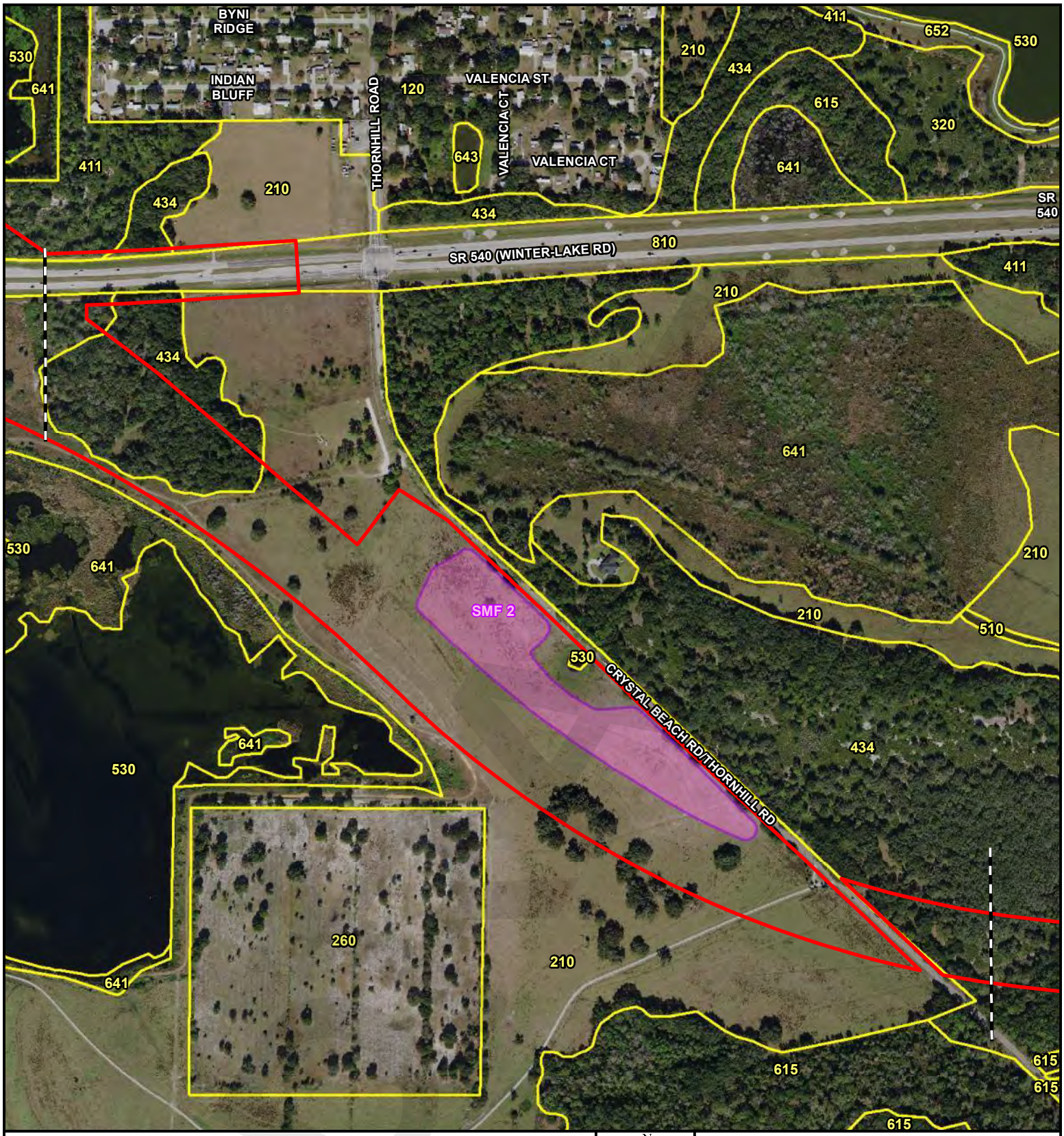

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Land Use Map
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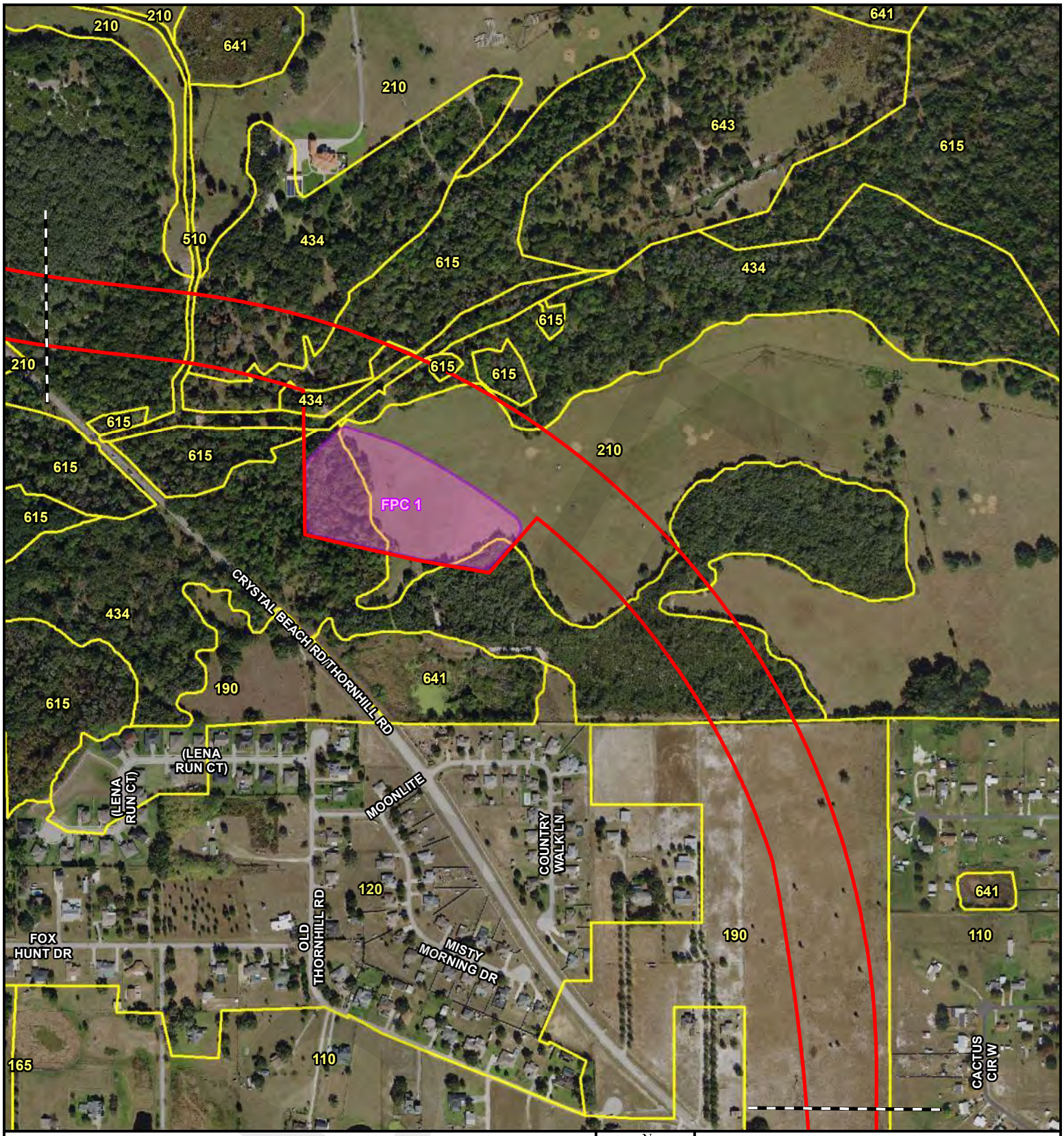
Page 4 of 9



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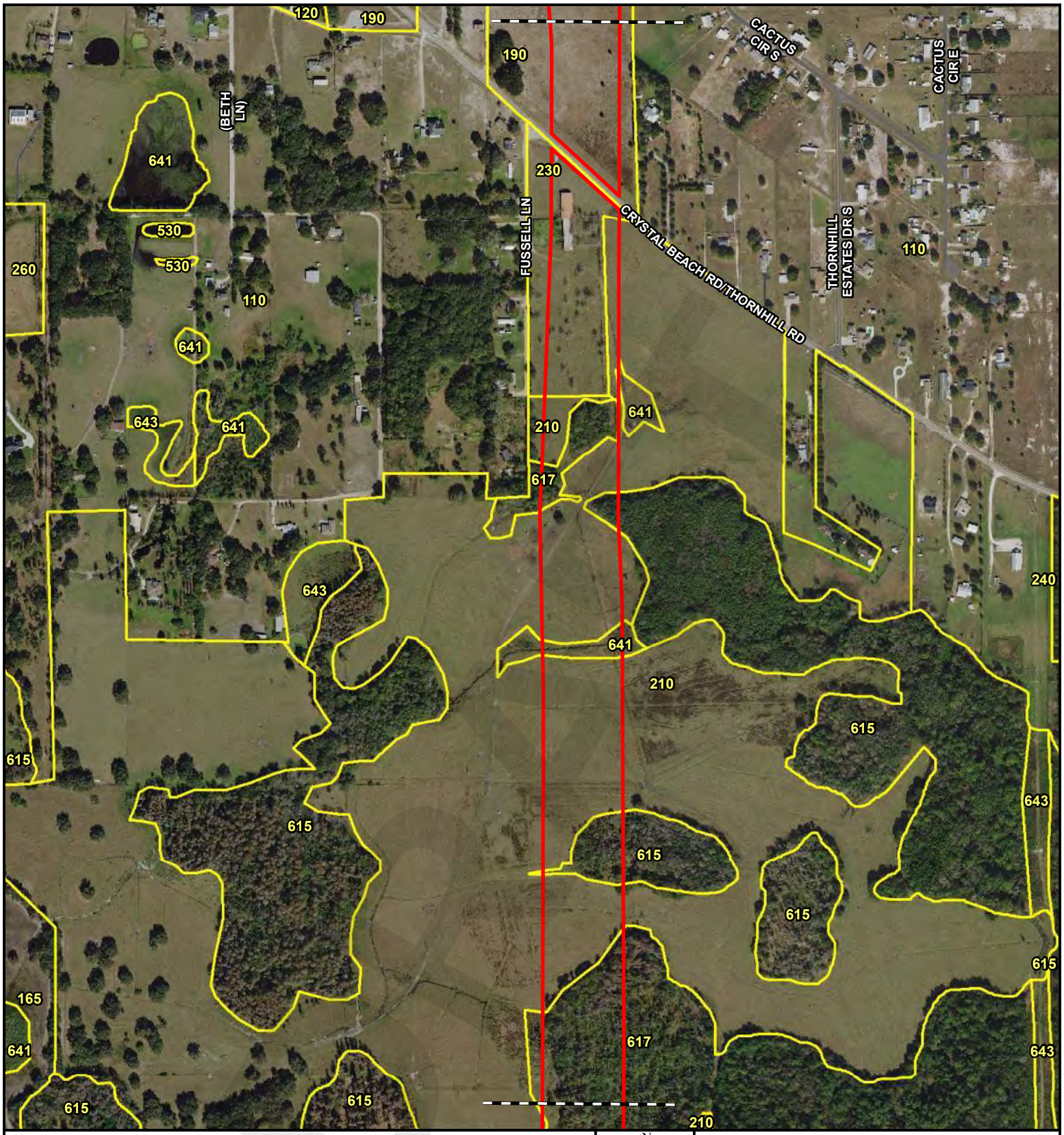

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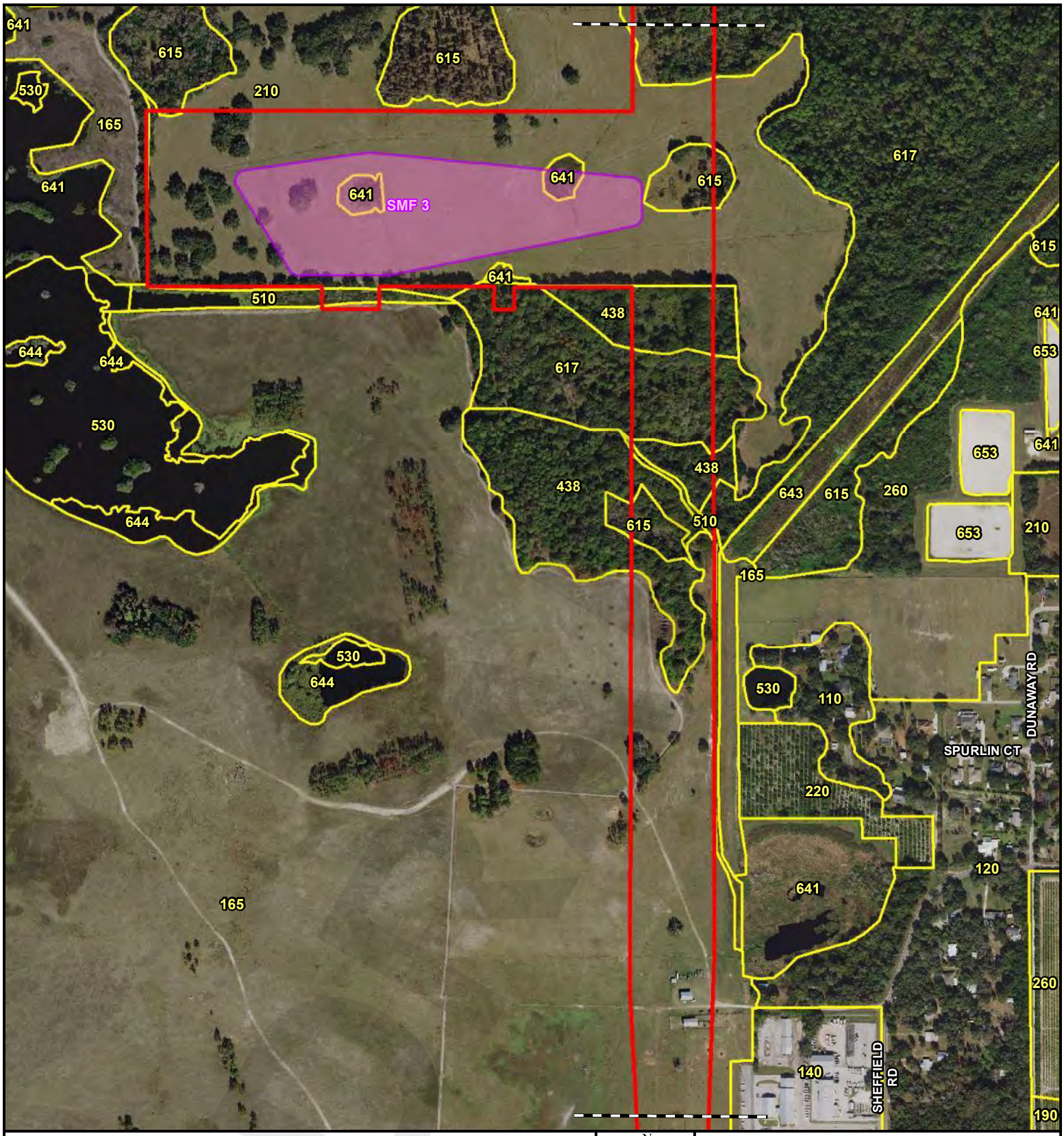

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Land Use Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
Polk County, Florida
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Attachment B
Page 7 of 9

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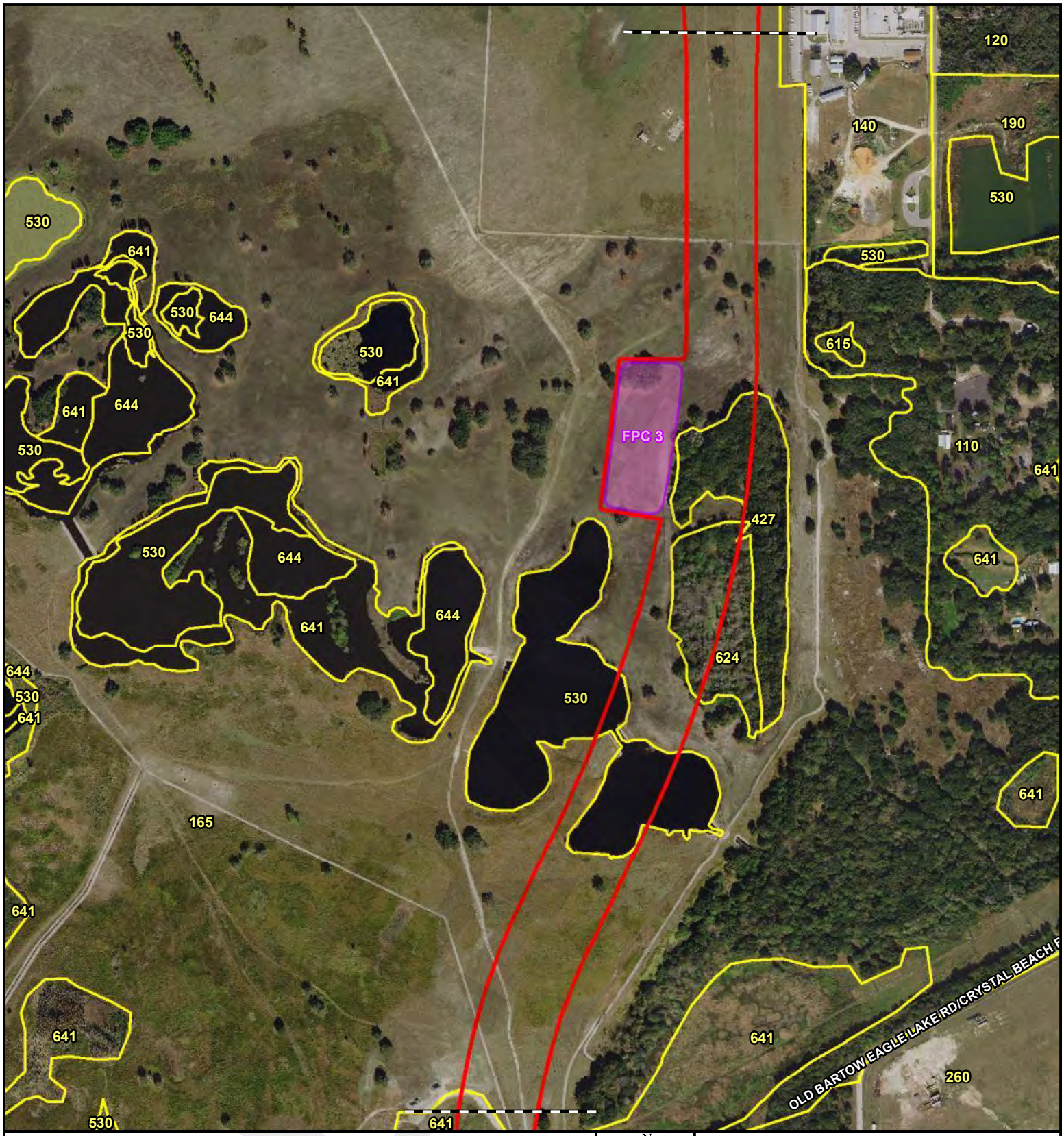

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Land Use Map
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Page 8 of 9

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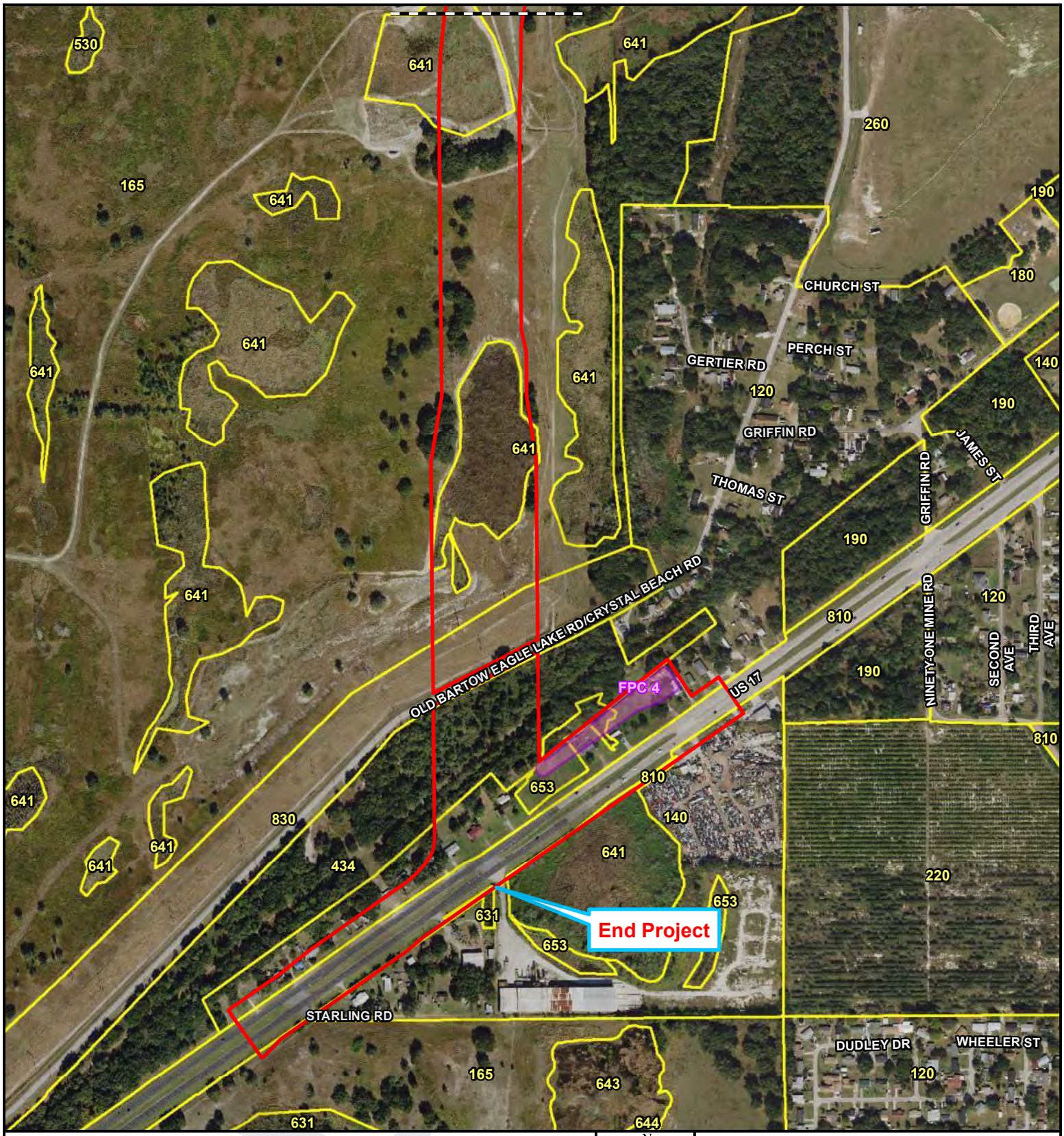

Legend

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Land Use Map
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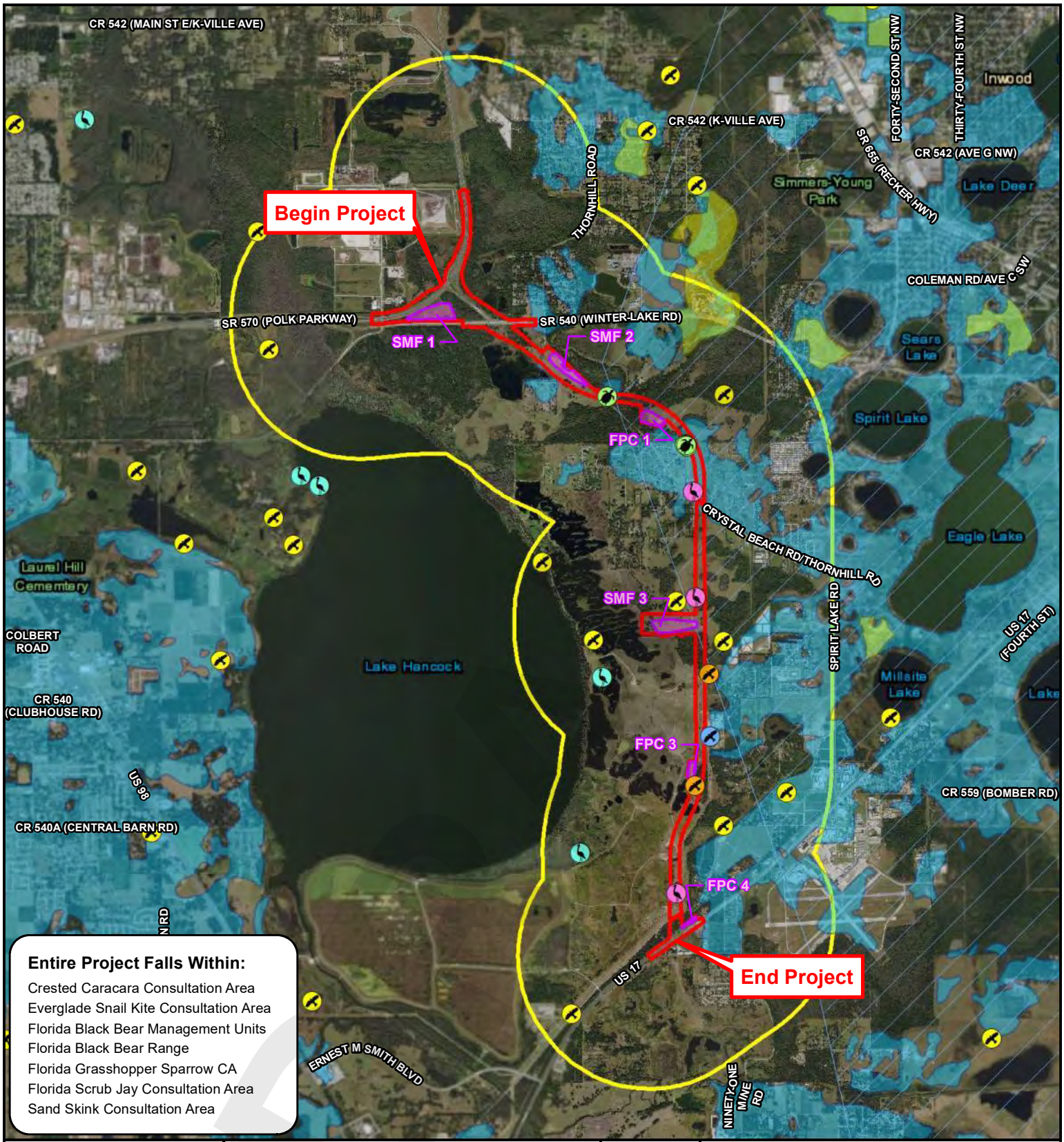
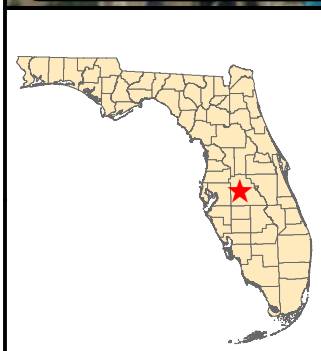
ATTACHMENT C

Listed Species Map



Entire Project Falls Within:

- Crested Caracara Consultation Area
- Everglade Snail Kite Consultation Area
- Florida Black Bear Management Units
- Florida Black Bear Range
- Florida Grasshopper Sparrow CA
- Florida Scrub Jay Consultation Area
- Sand Skink Consultation Area



- Proposed ROW
- 1 Mile Buffer of Study Area
- Proposed Pond Assessment Areas
- Florida Scrub Jay Service Area
- Florida Scrub Jay Statewide Habitat 1992-1993
- Sand Skink Potential Habitat
- FWC Bald Eagle Nest Location
- Wading Bird Rookeries 1999

KCA Observed:

- Bald Eagle Nest
- Gopher Tortoise Burrow
- Sand Hill Crane
- Southeastern American Kestrel

N W E S

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Miles

Listed Species Map
Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35)
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Attachment C

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ATTACHMENT D

Pond Site Datasheets and Photographs

Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: SMF 1

Date: February 2019

Land Covers: 427 – Live Oak, 434 – Hardwood Conifer Mixed, 530 – Reservoirs, 619 – Exotic Wetland Hardwoods

USFWS Classification: PEM1Fx – Palustrine, Emergent, Persistent, Semipermanently Flooded, Excavated and PSS7F – Palustrine, Scrub-Shrub, Evergreen, Semipermanently Flooded, Excavated

Threatened and Endangered Species:

Observed: None on Site

Potential Involvement: Medium

Wetlands:

On Site: 13.10 acres of reservoirs and 0.95 acres of exotic wetland hardwoods

Potential Involvement: High

Notes: This site is on the north side of SR 540, approximately 0.1 miles east of Landfill Road. This SMF site consists of live oak (FLUCFCS 427), hardwood conifer mixed (FLUCFCS 434), reservoirs (FLUCFCS 530), and exotic wetland hardwoods (FLUCFCS 619). This site may provide suitable habitat for the American alligator, Eastern indigo snake, little blue heron, tricolored heron, Florida sandhill crane, bald eagle, wood stork, and Everglade snail kite.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: SMF 2

Date: February 2019

Land Covers: 210 – Cropland and Pastureland

Threatened and Endangered Species:

Observed: None on Site

Potential Involvement: Medium

Wetlands:

On Site: None on site

Potential Involvement: None

Notes: This site is south of Thornhill Road, approximately 0.2 miles south of SR 540. This proposed SMF site consists entirely of cropland and pastureland (FLUCFCS 210). This site may provide suitable habitat for the Eastern indigo snake, gopher tortoise, Florida pine snake, Florida burrowing owl, crested caracara, little blue heron, tricolored heron, Southeastern American kestrel, Florida sandhill crane, bald eagle, and wood stork.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: SMF 3

Date: February 2019

Land Covers: 210 – Cropland and Pastureland, 641 – Freshwater Marshes

USFWS Classification: PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded

Threatened and Endangered Species:

Observed: Bald eagle and Florida sandhill crane

Potential Involvement: High

Wetlands:

On Site: 1.14 acres of freshwater marshes

Potential Involvement: High

Notes: This site is approximately 0.57 miles northwest of the Spurlin Court and Dunaway Road intersection. This proposed SMF site consists of cropland and pastureland (FLUCFCS 210) and two (2) freshwater marshes (FLUCFCS 641). This site may provide suitable habitat for the Eastern indigo snake, gopher tortoise, Florida pine snake, Florida burrowing owl, crested caracara, little blue heron, tricolored heron, Southeastern American kestrel, Florida sandhill crane, bald eagle, and wood stork.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: FPC 1

Date: February 2019

Land Covers: 210 – Cropland and Pastureland, 434 – Hardwood Conifer Mixed

Threatened and Endangered Species:

Observed: Bald eagle

Potential Involvement: High

Wetlands:

On Site: None on site

Potential Involvement: None

Notes: This site is on the east side of Thornhill Road, approximately 0.15 miles north of the Country Walk Lane and Thornhill Road intersection. This proposed FPC site consists of cropland and pastureland (FLUCFCS 210) and a hardwood conifer mixed forest (FLUCFCS 434). This site may provide suitable habitat for the Eastern indigo snake, gopher tortoise, Florida pine snake, blue-tailed mole skink, sand skink, Florida burrowing owl, crested caracara, Southeastern American kestrel, Florida sandhill crane, and bald eagle.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: FPC 3

Date: February 2019

Land Covers: 165 – Reclaimed Land

Threatened and Endangered Species:

Observed: Bald eagle and Southeastern American kestrel

Potential Involvement: High

Wetlands:

On Site: None on site

Potential Involvement: None

Notes: This site is approximately 0.9 miles northwest of the Old Bartow Eagle Lake Road and Griffin Road intersection. This proposed FPC site consists entirely of reclaimed land (FLUCFCS 165). This site may provide suitable habitat for the Eastern indigo snake, gopher tortoise, Florida pine snake, Florida burrowing owl, crested caracara, Southeastern American kestrel, Florida sandhill crane, and bald eagle.

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Central Polk Parkway from Polk Parkway to US 17 Pond Sites

Pond Site: FPC 4

Date: February 2019

Land Covers: 120 – Residential Medium Density, 653 – Intermittent Ponds

USFWS Classification: PEM1J – Palustrine, Emergent, Persistent, Intermittently Flooded and PSS7J – Palustrine, Scrub-Shrub, Evergreen, Intermittently Flooded

Threatened and Endangered Species:

Observed: None on site

Potential Involvement: Low

Wetlands:

On Site: 0.41 acres of intermittent ponds

Potential Involvement: Low

Notes: This site is between Old Bartow Eagle Lake Road and US 17 at the project's southern terminus. This proposed FPC site consists of medium density residential development (FLUCFCS 120), and intermittent ponds (FLUCFCS 653). This site may provide suitable habitat for the American alligator, eastern indigo snake, little blue heron, tricolored heron, Florida sandhill crane, and wood stork.

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APPENDIX H

CONTAMINATION SCREENING EVALUATION

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CONTAMINATION SCREENING EVALUATION REPORT

(Addendum to the Mainline and Ponds CSERs)

MARSHALL HAMPTON PRESERVE TRAILHEAD/ CARETAKER DRIVEWAY AND FPC 2-3

Florida Turnpike Enterprise

SR 570B (Central Polk Parkway) Segment 1
From SR 570 (Polk Parkway) to SR 35 (US 17)

Polk County, Florida

Financial Management Number: 440897-2-32-01

October 15, 2020

DRAFT

Introduction

The purpose of this Contamination Technical Memorandum (Tech Memo) is to present the findings of a contamination screening evaluation for the Marshall Hampton Reserve Trailhead, Caretaker Driveway, and FPC 2-3. See attached **Sheets A-1** and **Sheet A-2**.

Methodology

The methodology (based on negotiated scope) for this contamination evaluation includes:

- Desktop review of previous reports (Level I Contamination Screening Evaluation Report (mainline) dated July 29, 2020, Level I CSER Ponds dated July 30, 2020, and Contamination Tech Memo – Alt 6) dated August 5, 2020),
- Assign risk ratings for FPC 2-3, and contamination sites related to the Marshall Hampton Preserve Trailhead/Caretaker Driveway, and
- Provide a written Addendum to the Contamination Technical Memorandum.

Documentation reviewed for this Addendum to the Contamination Tech Memo, including historic aerial photographs, the USGS topographic map, regulatory database report, and other resources are included in the Level I Contamination Screening Evaluation Report (mainline), Level I Contamination Screening Evaluation Report (ponds), and the Contamination Tech Memo – Alt 6.

Findings

Based on Tierra's review of the Level I Contamination Screening Evaluation Report (mainline) dated July 29, 2020, Level I CSER Ponds dated July 30, 2020, and Contamination Tech Memo – Alt 6 dated August 5, 2020), no contamination concerns were noted within the PD&E Manual Chapter 20 recommended search distances for the Marshall Hampton Preserve Trailhead/Caretaker Driveway. However, for FPC 2-3, the following site was identified:

Site 11 - Former Old Florida Plantation Property (currently Southwest Florida Water Management District (SWFWMD) property) - this site was assigned a risk rating of Medium for historic use as phosphate mined land. FPC 2-3 is located within the limits of Site 11. A detailed discussion of Site 11 as it relates to FPC 2-3 is provided in **Table 1** and Site 11 is depicted on **Sheet No. A-1**.

One two-inch diameter piezometer (presumably) was noted during the site reconnaissance performed for the mainline in December 2018. It is located within the Marshall Hampton Trailhead ROW (see **Sheet No. A-2**). Information found on the Southwest Florida Water Management District (SWFWMD) database (Permit 596139) states the 2-inch diameter well is 12 feet deep, and was plugged in 1997. The owners were identified as Ethelyn Leigh and Lynn Hampton, 3125 Thornhill Road, Winter Haven 33880. No purpose of the piezometer/well (piezometer, monitor, etc.) was found. No contamination records were found. Therefore, this piezometer is not considered a contamination concern.

Table 1 – Potential Contamination Site

Site Number	Site Name & Address	Facility ID	Approximate Distance From Subject Sites	Contaminants of Concern	Risk Rating	Comments
11	**Former Old Florida Plantation Property (currently Southwest Florida Water Management District (SWFWMD) property)** North of Old Bartow Eagle Lake Road, Bartow	NA	Within FPC 2-3 4,200 feet southwest of Trailhead and Caretaker Driveway	Polycyclic Aromatic Hydrocarbons (PAHs), Volatile Organic Compounds (VOCs), Total Petroleum Hydrocarbons (TPH), Radium 226, and pH	**Medium**	This facility (PD&E Site W203-6) was identified as a former phosphate mine located within the right-of-way (ROW) in the original PD&E Contamination Screening Evaluation Report dated December 2010 (Revised March 2011), and assigned a risk rating of Medium. This site is illustrated on the attachment, **Sheet A**-1. PD&E recommendations included soil and groundwater sampling for pH, Radium 226, and polynuclear aromatic hydrocarbons (PAHs). During the site reconnaissance during the original PD&E, this site was observed as open pasture and ponds. During the review of historical aerial photography and topographic maps during the original PD&E, mining activities spanning approximately 2 miles of the southern portion of the project corridor were evident within and adjacent to proposed ROW at least since the 1960s. Contamination related regulatory files were not identified for this facility. According to the FDEP's "Phosphate" website, large draglines are used to conduct the mining. It scoops up the top 15 to 30 feet of earth, known as overburden, and dumps it in spoil piles to the side of the mine pit. The dragline then digs out the ore-bearing layer (known as the matrix), which consists of about equal parts phosphate rock, clay, and sand. Matrix material is then dumped in a pit where high-pressure water guns create a slurry that can then be pumped to the beneficiation plant, which can be several miles away. At the beneficiation plant, the phosphate is separated from the sand and clay. The phosphate is sent by rail to a separate chemical processing plant where it is processed for use in fertilizer and other products. The chemical processing is done at separate facilities that are not regulated by the FDEP Mining and Mitigation Program. After going through beneficiation, the clay is pumped through pipelines into large impoundment areas, known as clay settling areas, where they remain. The sand is pumped through pipelines back to the mined area and is used in reclamation. According to the Selected Study Area Existing Conditions Analysis Polk County Florida report dated May 2012 (by Florida Institute for Phosphate Research (FIPR)), waste disposal, radioactivity, air and water pollution are considered "special regulatory concerns" with regards to "impact to health." Since, based on review of historic aerial photographs, no phosphate plant is located within or adjacent to the ROW, plant emissions are not considered a contamination concern. Based on the 1941 aerial photograph, the processing plant was located approximately 0.7 miles south of US 17 and the project limits. Phosphogypsum stacks or process water ponds were not identified within or adjacent to the ROW. Currently, Florida Administrative Code requires radiation monitoring (soil radium) at phosphate mining areas both pre- and post-mining, and after reclamation. The FDEP was contacted on March 26, 2019 for contamination assessment/testing related files for this study area. A response provided on March 27, 2019 by Mrs. Marisa Rhian, FDEP Environmental Administrator, Bartow/Homeland Regional Field Office stated areas adjacent to the ROW "were mined for phosphate prior to June 1, 1975 and are considered nonmandatory. Reclamation standards for phosphate mines were established for lands mined after June 1, 1975 per Chapter 378, Florida Statutes." She further stated inquiries regarding radium/radon testing should be sent to the Florida Department of Health's (FDOH) Bureau of Radiation Control at 407-297-2096, RadiationControl@FLHealth.gov. In an email response (dated April 3, 2019) from the FDOH, Bureau of Radiation Control, Brenda Andrews stated "according to our Environmental Radiation Section, we have no data points for the mine referenced as it was closed long before pre and post mining began." See email in the Level I Contamination Screening Evaluation Report dated April 10, 2020. Based on Tierra's Preliminary Roadway Soil Survey Report dated October 23, 2018, a total of 7 piezometers were installed along the project limits in 2013. Depth to groundwater ranged from 4.5 feet below land surface (bls) to 12.5 feet bls in 2013. Mined soils, including Clay Settling Areas (CSAs) also known as waste phosphatic clay or waste slime, were identified from Station 1213 to Station 1333, located east of Alt 6 within Alt 4 at depths ranging from 15 to 80 feet bls. The Alt 4 ROW is located approximately 1,000 feet east of the Alt 6 ROW. Based on the USEPA Fact Sheet (no date), "phosphate rocks, which can contain relatively high levels of radium and uranium, are a potential source of exposure." Radium exposure can be from inhalation and ingestion. It can accumulate in bones and will remain there for a person's lifetime. In the environment the greatest risk associated with radium is actually posed by its direct decay product radon. No information was reviewed that would warrant a change to the risk rating assigned during the PD&E. Therefore, this area retains a risk rating of Medium.

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Conclusions and Recommendations

Based on this contamination screening, one potential contamination site was identified within the limits of FPC 2-3. No contamination sites were identified proximal to the Marshall Hampton Preserve Trailhead or the Caretaker Driveway. The following table presents a summary of the risk ratings assigned for each potential contamination site and FPC:

Site/Pond ID	Risk Rating	Contamination Concerns
Marshall Hampton Preserve Trailhead	No	None noted
Caretaker Driveway	No	None noted
FPC 2-3	Medium	Site 11 – Former Old Florida Plantation (currently Southwest Florida Water Management District (SWFWMD) property)

Based on the conclusions of the study and the risk ratings noted above, the following recommendations are made for this project:

- Additional information may become available or site-specific conditions may change from the time this report was prepared and should be considered prior to acquiring ROW and/or proceeding with roadway construction.

- FPC 2-3: Level II testing is recommended for Site 11 – Former Old Florida Plantation (currently Southwest Florida Water Management District (SWFWMD) property) which was assigned a risk rating of Medium for historical use as phosphate mined land. It has been determined that this site may have potential contaminants that could impact the proposed project. A soil and groundwater sampling plan should be developed. The sampling plan should provide sufficient detail as to the number of soil and groundwater samples to be obtained and the specific analytical tests to be performed. Laboratory analytical tests may include Radium 226 by EPA Method 903.1, Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8270, Total Petroleum Hydrocarbons (TPH) by FL PRO Method, TPH fractionation (if warranted), Volatile Organic Compounds (VOCs) by EPA Method 8260, and pH. A site location sketch showing all proposed boring locations and groundwater monitoring wells should be prepared. The FTE District Contamination Impact Coordinator (DCIC) should be consulted regarding the site-specific Level II field screening scope of work.

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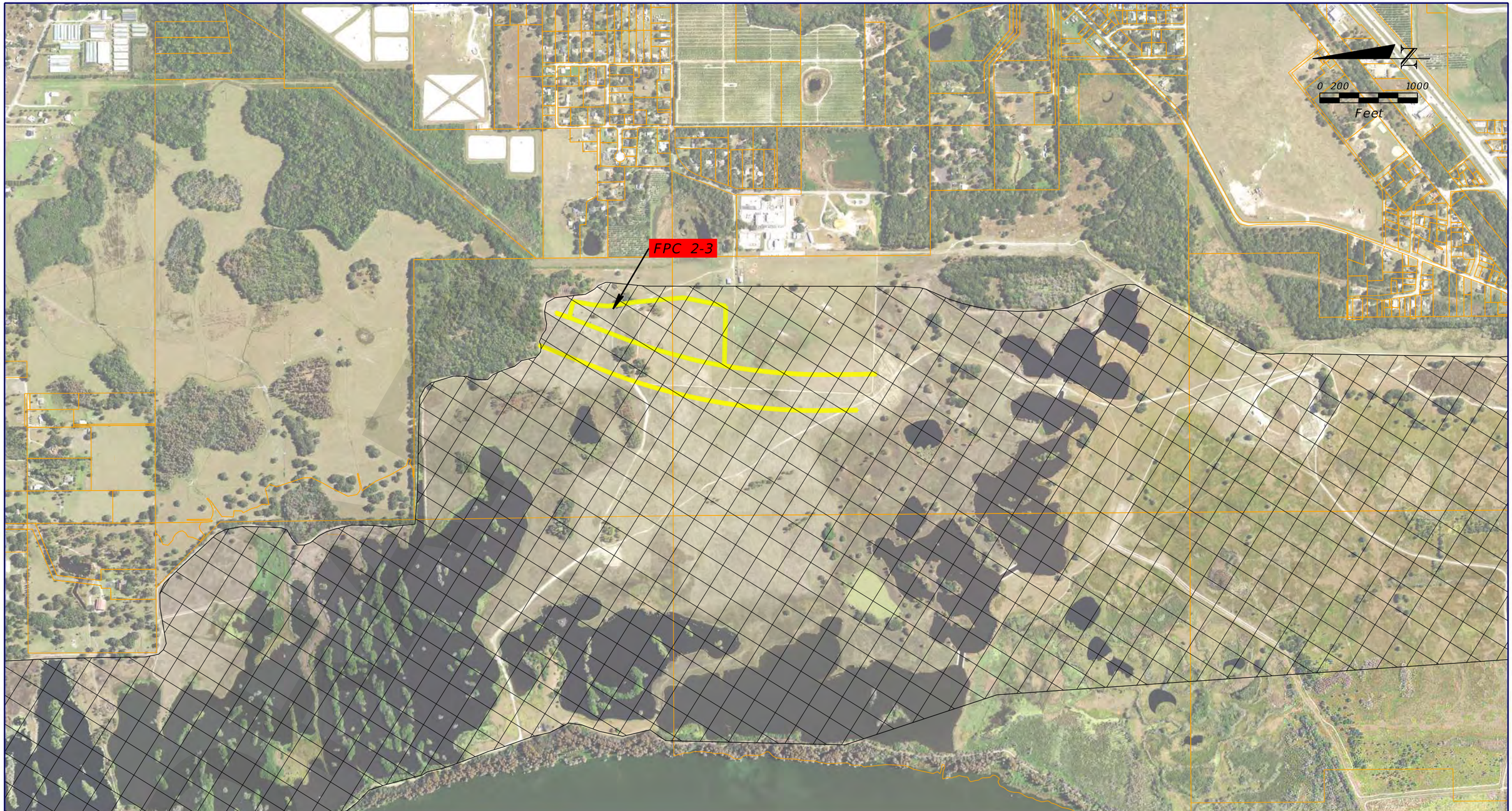

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

SITE 11 - FORMER OLD FLORIDA PLANTATION (PHOSPHATE MINE)

POND ALTERNATIVES LOCATION MAP

LIMITED ACCESS RIGHT OF WAY

POND NAME — RED = MEDIUM RISK RATING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO. A-1

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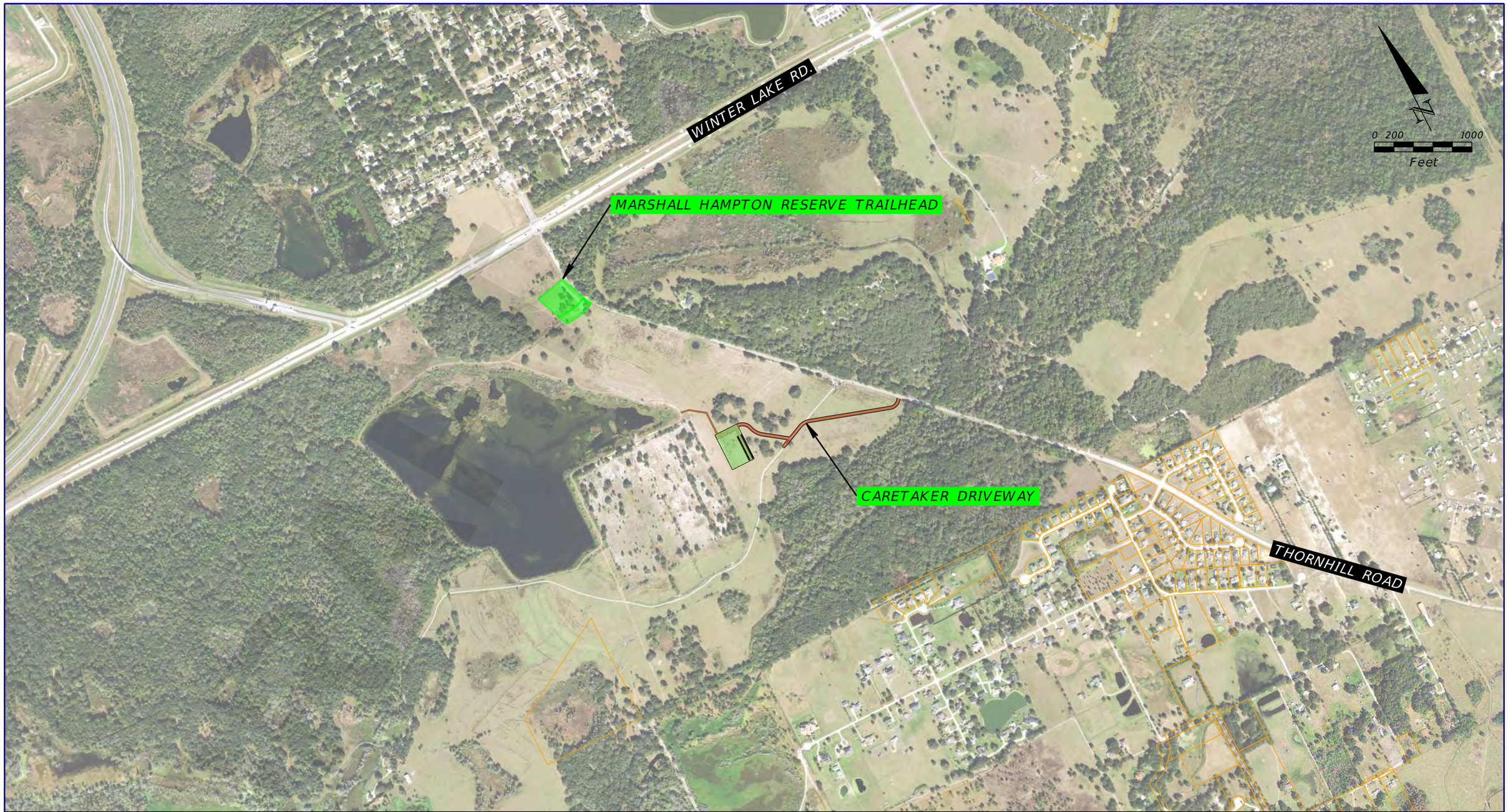

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

MARSHALL HAMPTON RESERVE TRAILHEAD
AND CARETAKER DRIVEWAY MAP

GREEN = NO/LOW RISK RATING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-2

LEVEL I

CONTAMINATION SCREENING EVALUATION REPORT

ADDENDUM

(PREFERRED POND SITES)

Florida Turnpike Enterprise

SR 570B (Central Polk Parkway) Segment 1
From SR 570 (Polk Parkway) to SR 35 (US 17)

Polk County, Florida

Financial Management Number: 440897-2-32-01

July 30, 2020

The analysis in this document has been supplemented by the CSER Addendum to Mainline and Pond CSER's.

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1.2 Project Description 1
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4.0 Summary 7

APPENDICES

CSER Appendix A: Project Location and Pond Alternative Location Maps
CSER Appendix B: Environmental Database Report

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1.0 Introduction

1.1 Purpose of Report

The purpose of this Level I Contamination Screening Evaluation Report (CSER) Addendum is to identify contamination sites within or adjacent to the six preferred Stormwater Management Facilities (SMFs) and Flood Plain Compensation (FPCs) areas, and provide risk ratings for each SMF/FPC. Although this document was negotiated and scoped as a Technical Memorandum, Contamination can have a significant negative impact on the project and therefore the early identification of any contamination involvement will provide valuable input during the evaluation process.

Previously for Part A, the Final Level I CSER (Mainline) was provided separately on July 29, 2020; and a Level I CSER for five preliminary pond alternatives was provided on December 19, 2018.

For Part B, a Contamination Tech Memo dated October 2, 2019 was submitted for seven preferred pond alternatives. Previously, this report was ***revised*** based on FTE comments provided by Mr. Eric Krebill (received on December 5, 2019 and December 9, 2019). Subsequently, the client provided a new pond file on March 4, 2020. This ***revision*** is based on FTE comments provided on May 28, 2020.

1.2 Project Description

The Central Polk Parkway (CPP/SR 570B) will be a new four-lane divided limited access facility in Polk County, Florida. Through coordination with Florida's Turnpike Enterprise it has been determined that this new corridor will be a Strategic Intermodal System (SIS) highway. This roadway network is a planned new alignment toll facility that will connect the Polk Parkway (SR 570) with SR 60 to the south. The project is located between the City of Lakeland to the north and the City of Bartow to the west and will be completed with three Financial Project Identification Numbers (FPID). Under FPID 440897-2-32-01 Part A and Part B for this project, the Central Polk Parkway Segment 1 project limits for the scope of work will extend from the SR 570 (Polk Parkway) at SR 540 (Winter Lake Road) to US 17 (SR 35). Segment 1 also represents the project limits of this contamination document. See Project Location Map in **Appendix A**. Part A, FPID 440897-2-32-01, will focus on development of an optimized alignment, identify right-of-way needs, and development of Phase 1 plans. Part B, FPID 440897-2-32-01, will focus on final right-of-way maps, permitting, and final construction plans. FPID 440987-4-22-01, will be to perform a Project Development and Environment (PD&E) Study from the termination of Part A at US 17 (SR 35) to SR 60. FPID 440897-3-32-01 will utilize the alignment recommendation from the FPID 440897-4-22-01 PD&E Study and will prepare final right-of-way maps, permitting, and develop final construction plans from US 17 (SR 35) to SR 60.

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2.0 Methodology

For this Level I CSER addendum, Tierra:

- Obtained and reviewed an updated EDM report on September 20, 2019 which reflects the updated pond ROW limits for this evaluation,
- Performed a site reconnaissance on September 9, 2019, and
- Documented reviews of historic aerial photographs and topographic maps for the three new ponds, FPC 1, FPC 3, and FPC 4.

Supporting documentation which includes historic aerial photographs and topographic maps are provided in the Level I CSER (ponds) dated December 2018 (CSER Appendix B and CSER Appendix C).

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3.0 Contamination Evaluation

3.1 Preferred Pond Sites Summary

A contamination evaluation for total of 6 preferred pond sites was performed for this project. Details for each potential contamination site and preferred pond site investigated are provided in the Preferred Pond Sites Summary table below. It is important to note, FPC 2 is omitted in Table 1 since it was merged with SMF 3. The location of each contamination site is illustrated in **CSER Appendix A**.

Table 1 – Preferred Pond Sites Summary

Pond ID	Comments	Risk Rating for Preferred Pond Sites
SMF 1	SMF 1 was previously evaluated twice. First, in the Level I CSER dated December 19, 2018 SMF 1 was assigned a risk rating of Low based on a distance of 900 feet to the nearest contamination concern (Hazardous Waste Collection Facility), regulatory status, and cross-gradient groundwater flow direction of the Polk County North Central Landfill. Second, in the Tech Memo dated October 2, 2019, since no new contamination concerns were identified, SMF 1 retained a risk rating of Low. During the September 19, 2019 site reconnaissance, SMF 1 was observed as an existing stormwater pond and woods. No new contamination concerns were identified. EDM's regulatory report identified 1 potential contamination site within the vicinity of SMF 1. None were located onsite. The following provides a discussion of the potential contamination site: North Central Landfill/Polk County Solid Waste 10 Environmental Loop (and SR 540) Solid Waste ID: 49722, 95745 Distance from ROW: Closed Class I landfill is 1,700 feet west Contaminants of Concern: Solid Waste, Hazardous Waste Specific Contaminants of Concern: Benzene and vinyl chloride (see Evaluation Monitoring Report 3rd Quarter 2019 dated October 21, 2019) This site was previously evaluated in the Level I CSER for preliminary ponds dated December 19, 2018. Based on a distance of 1,700 feet to the nearest contamination concern, regulatory status, and cross-gradient groundwater flow direction of the Polk County North Central Landfill, this facility was considered a low contamination concern to this pond site. For this addendum, Tierra reviewed the Evaluation Monitoring Report 3rd Quarter 2019 dated October 21, 2019. No new contamination concerns were identified. No new contamination concerns were identified during this contamination evaluation. Since no new contamination concerns were identified during this contamination evaluation, SMF 1 retains a risk rating of Low.	Low
SMF 2	SMF 2 was previously evaluated twice. First, in the level I CSER dated December 19, 2018, SMF 2 was assigned a risk rating of No based on a lack of contamination concerns. Second, in the Tech Memo dated October 2, 2019, since no new contamination concerns were identified, SMF 2 retained a risk rating of No. During the September 19, 2019 site reconnaissance, SMF 2 was observed as pasture. EDM's report identified no regulated facilities within or adjacent to SMF 2. No new regulatory files were identified or reviewed subsequent to the previous evaluation dated December 2018. Since no new contamination concerns were identified during this contamination evaluation, SMF 2 retains a risk rating of No.	No
SMF 3	SMF 3 was previously evaluated twice. First, in the Level I CSER dated December 19, 2018, SMF 3 was assigned a risk rating of Low based on the proximity to the former strip mine located adjacent south and west. Second, in Level I CSER dated October 2, 2019, SMF 3 was assigned a risk rating of Low based on the lack of new contamination concerns. During the September 19, 2019 site reconnaissance, SMF 3 was observed as pasture. No contamination concerns were noted. EDM's report identified no regulated facilities within or adjacent to SMF 3. No new regulatory files were identified or reviewed subsequent to the previous evaluation dated December 2018. Since no new contamination concerns were identified, SMF 3 retains a risk rating of Low.	Low

Table 1 – Preferred Pond Sites Summary		
Pond ID	**Comments**	**Risk Rating for Preferred Pond Sites**
FPC 1	FPC 1 was previously evaluated in the Level I CSER dated October 2, 2019 and was assigned a risk rating of Low based on the proximity to two petroleum Aboveground Storage Tanks (ASTs) located approximately 30 feet offsite. During the September 19, 2019 site reconnaissance, FPC 1 was observed as pasture and woods. A mobile pump with an empty 55-gallon drum (see photo below) was observed in the central area onsite. No stains or odors were noted at the pump. Offsite, two 1,000-gallon ASTs (not labeled, presumably diesel) were observed approximately 30 feet southwest of FPC 1 (see photo below). The ASTs were situated in concrete containment. No obvious stained soil or stressed vegetation was observed. Mobile pump with 55-gallon drum (empty), central area looking northeast Offsite, 2 ASTs located adjacent south EDM's report identified no regulated facilities within or adjacent to FPC 1. Tierra reviewed historic aerial photographs from 1941 to 2018. Based on Tierra's review, FPC 1 was depicted as pasture, woods and trails from 1941 to 2018. Offsite southwest, 2 ASTs were added in 2009. Tierra reviewed the "Bartow, Fla." topographic map dated 1949 and photorevised in 1987. The map depicts FPC 1 in white shading indicating pasture. Since no new contamination concerns were identified, FPC 1 retains a risk rating of Low.	Low

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Table 1 – Preferred Pond Sites Summary

Pond ID	Comments	Risk Rating for Preferred Pond Sites
FPC 3	FPC 3 was previously evaluated in the Level I CSER dated October 2, 2019 and was assigned a risk rating of Medium based on historic use as phosphate mined land. During the September 19, 2019 site reconnaissance, FPC 3 was observed as pasture. Two piezometers were observed onsite. The piezometers were installed by Tierra for geotechnical purposes (to measure depth to shallow groundwater). Offsite, a manmade pond is located adjacent south. Piezometer in north-central area looking southeast South-central area looking south EDM's regulatory report identified 1 potential contamination site within the vicinity of FPC 3. None were located onsite. The following provides a discussion of the potential contamination site: <u>Polk County Board of County Commissioners</u> <u>3000 Sheffield Road</u> <u>Solid Waste ID: 95912</u> <u>Distance from ROW: 800 feet northeast</u> <u>Contaminants of Concern: Solid Waste, Petroleum</u> During the site reconnaissance, this site was observed as Polk County Fleet Management facility. See location depicted on **CSER Appendix A**, **Sheet A-4**. For the Solid Waste database listing, EDM's report states this facility is a registered waste tire collector. Based on the April 25, 2019 FDEP inspection form, this facility has two 10,000-gallon petroleum ASTs. The ASTs are located approximately 1,300 feet northeast of FPC 3. Based on a distance of at least 800 feet to the property boundary, this facility is not considered a contamination concern to FPC 3. Tierra reviewed historic aerial photographs from 1941 to 2018. Based on Tierra's review, FPC 3 was depicted as pasture from 1941 to 1957. Earthwork (phosphate mining) was depicted in 1968 and 1971. A haul road was depicted along the east boundary in 1980. Possible earthwork (reclamation) was depicted in 1993. FPC 3 appears as pasture, similar to its current configuration since 1994. Tierra reviewed historic topographic map "Bartow, Fla." Dated 1949 and photorevised in 1987. The map depicts FPC 3 in white shading indicating pasture with purple shading labeled "Reclaimed Strip Mine." Since no new contamination concerns were identified, FPC 3 retains a risk rating of Medium. Contaminants of concern related to the former phosphate mining may include PAHs, Radium 226, and pH. Based on the distance to the fleet management facility, petroleum impacts are not anticipated. Therefore, contaminants of concern are not provided for the fleet facility.	Medium

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Table 1 – Preferred Pond Sites Summary

Pond ID	Comments	Risk Rating for Preferred Pond Sites
FPC 4	FPC 4 was previously evaluated in the Level I CSER dated October 2, 2019 and was assigned a risk rating of Low based on the proximity to Scrap It III automobile salvage yard. During the September 19, 2019 site reconnaissance, FPC 4 was observed as portions of 4 residential properties: 3423, 3427 (mobile home), 3447 and 3453 US Highway 17. Three single family homes and one mobile home were located onsite at 3423, 3447, 3453, and 3427 US Highway 17, respectively. Several paint and insect spray containers, each less than 2-gallons were observed inside detached sheds located at each of these 3 residences. Shed floors were concrete and wood. One 3-inch diameter metal pipe (presumably a former potable well) was observed approximately 10 feet north of the residence at 3423 US Highway 17. One septic tank/drainfield was noted near the south-central boundary onsite, on the east side of the mobile home (3427 US Highway 17). Houses (3447 & 3453 US 17) in east-central area Shed in east-central area House (3423 US 17) in east-central area onsite Shed in east-central area Offsite, an abandoned railroad corridor was observed approximately 170 feet north. The rails and lumber were removed. Additionally, a Tampa Electric Company (TECO) substation was observed approximately 220 feet north. EDM's regulatory report identified one potential contamination site within the vicinity of FPC 4. None were located onsite. This site was also identified in the Level I CSER for the mainline. The following provides a discussion of this potential contamination site: <u>Scrap It III / Bartow Auto Salvage</u> <u>3450 US 17, Bartow</u> <u>Hazardous Materials ID: FLR000177469</u> <u>Distance from ROW: 220 feet south</u> <u>Contaminants of Concern: Diesel, gasoline, chlorinated solvents, hydraulic fluids (PCBs), RCRA 4 metals (arsenic, cadmium, chromium, and lead)</u> During the site reconnaissance, this facility was observed as Scrap It III, an auto salvage yard. According to information found on FDEP's MapDirect database, this facility is a registered Conditionally Exempt Small Quantity Generator (CESQG) of hazardous wastes with no unresolved code violations, enforcements, or other contamination concerns reported. Given the lack of reported contamination concerns and significant distance, this facility is a low contamination concern to FPC 4. Tierra reviewed historic aerial photographs from 1941 to 2018. Based on Tierra's review, FPC 4 is depicted as woods and low, wet areas from 1941 to 1968. The properties were depicted similar to their current configurations with 3 structures (residences) onsite since 1971. Tierra reviewed historic topographic map "Bartow, Fla." Dated 1949 and photorevised in 1987. The map depicts 3 residential structures in purple shading indicating they were added between 1949 and 1987. The western area was depicted as swamp or marsh. Since no new contamination concerns were identified, FPC 4 retains a risk rating of Low.	Low

DRAFT

4.0 Summary

A total of six preferred pond sites were evaluated during this contamination evaluation. The following table presents a summary of the risk ratings assigned for these pond sites:

Table 2 – Risk Rating Matrix Preferred Pond Sites				
Risk Rating	High	Medium	Low	No
Pond ID	none	FPC 3	SMF 1, SMF 3 FPC 1, and FPC 4	SMF 2

Based on the conclusions of the study and the risk ratings noted above, the following recommendations are made for this project:

Additional information may become available or site-specific conditions may change from the time this report was prepared and should be considered prior to acquiring right-of-way and/or proceeding with roadway construction. Variables that may change the risk rating include a facility's non-compliance to environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessment of the facilities should be considered.

For the pond alternatives rated "No" for potential contamination, no further action is planned. The site has been evaluated and determined not to have potential contamination risk to the study area at this time.

For those pond alternatives rated "Low" for potential contamination, no further action is required at this time. These sites/facilities have the potential to impact the study area, but based on select variables have been determined to have low risk to the project at this time.

For risk ratings of "Medium," Level II field screening should be conducted. These sites have been determined to have potential contaminants, which may impact the project. A soil and groundwater sampling plan, as applicable, should be developed for each site. The sampling plan should provide sufficient detail as to the number of soil and groundwater samples to be obtained and the specific analytical test to be performed. For FPC 3, laboratory analysis of soil and groundwater samples, may include one or more of the following: Radium 226 by EPA Method 903.1, Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8270, and pH (in situ). A site location sketch for each facility/pond site showing all proposed boring locations and groundwater monitoring wells should be prepared. The District Contamination Impact Coordinator (DCIC) should be consulted regarding the site specific Level II field screening scope of work.

A NESHAP Asbestos survey may be warranted for structures (including buried cementitious pipe, if any) identified on FPC 4.

The septic system(s) located within the limits of FPC 4 should be properly abandoned in accordance with state and local guidelines.

CSER APPENDIX A

Project Location Map and
Pond Alternative Location Maps

DRAFT

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

PROJECT LOCATION MAP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-1

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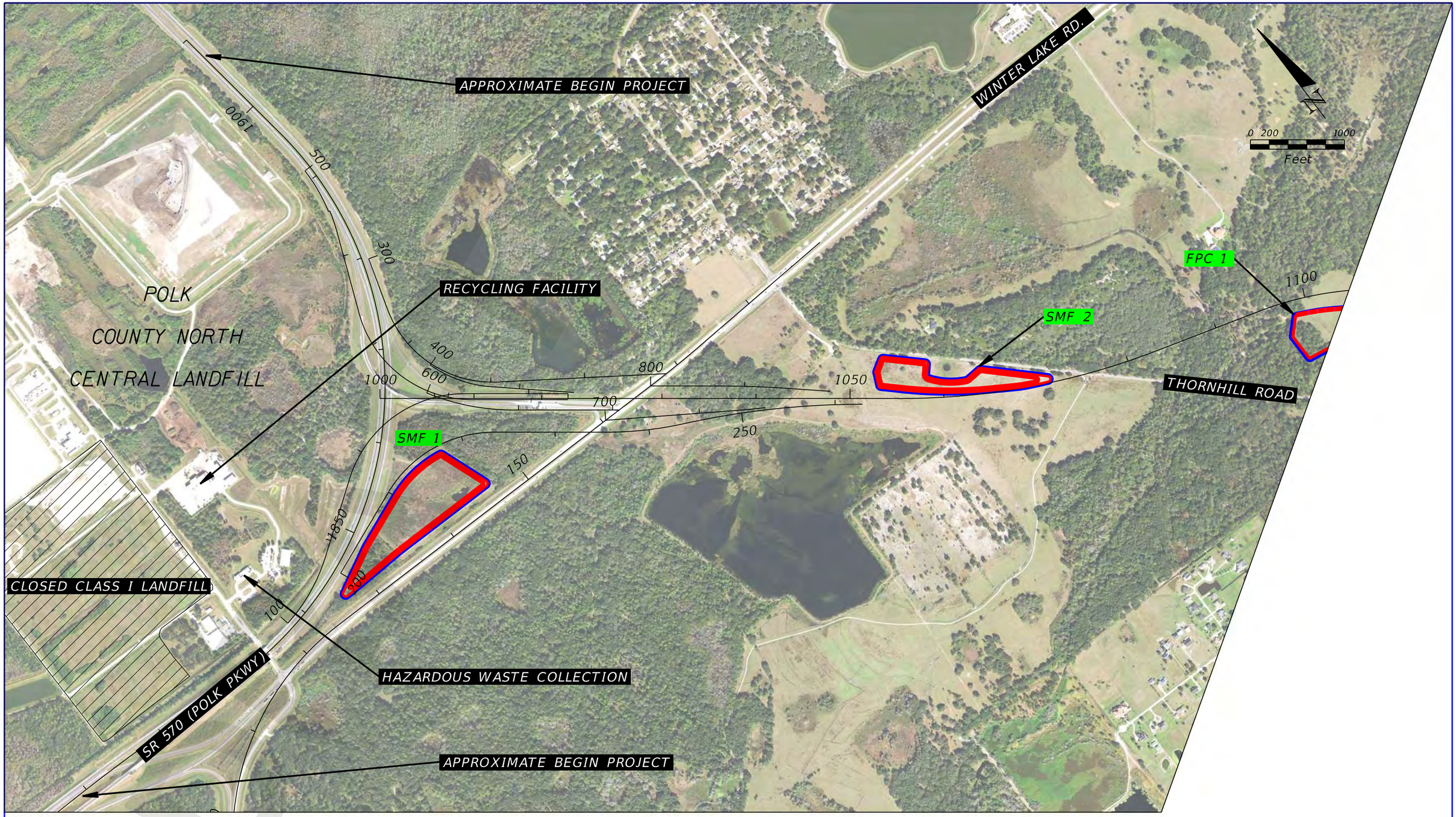

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME — GREEN = NO/LOW RISK SITES

POND NAME — RED = MEDIUM RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO. A-2

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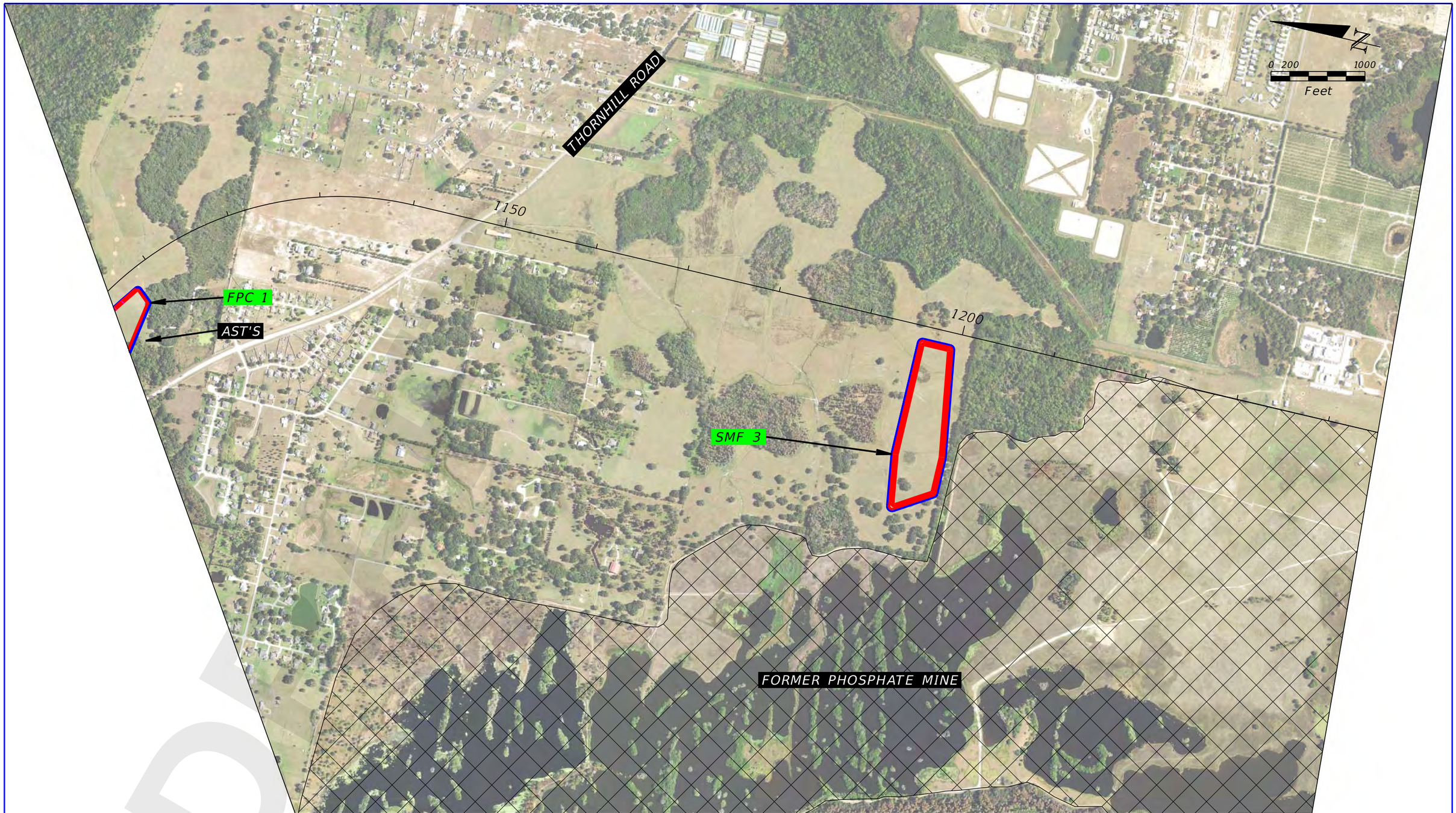


SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME — GREEN = NO/LOW RISK SITES

POND NAME — RED = MEDIUM RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

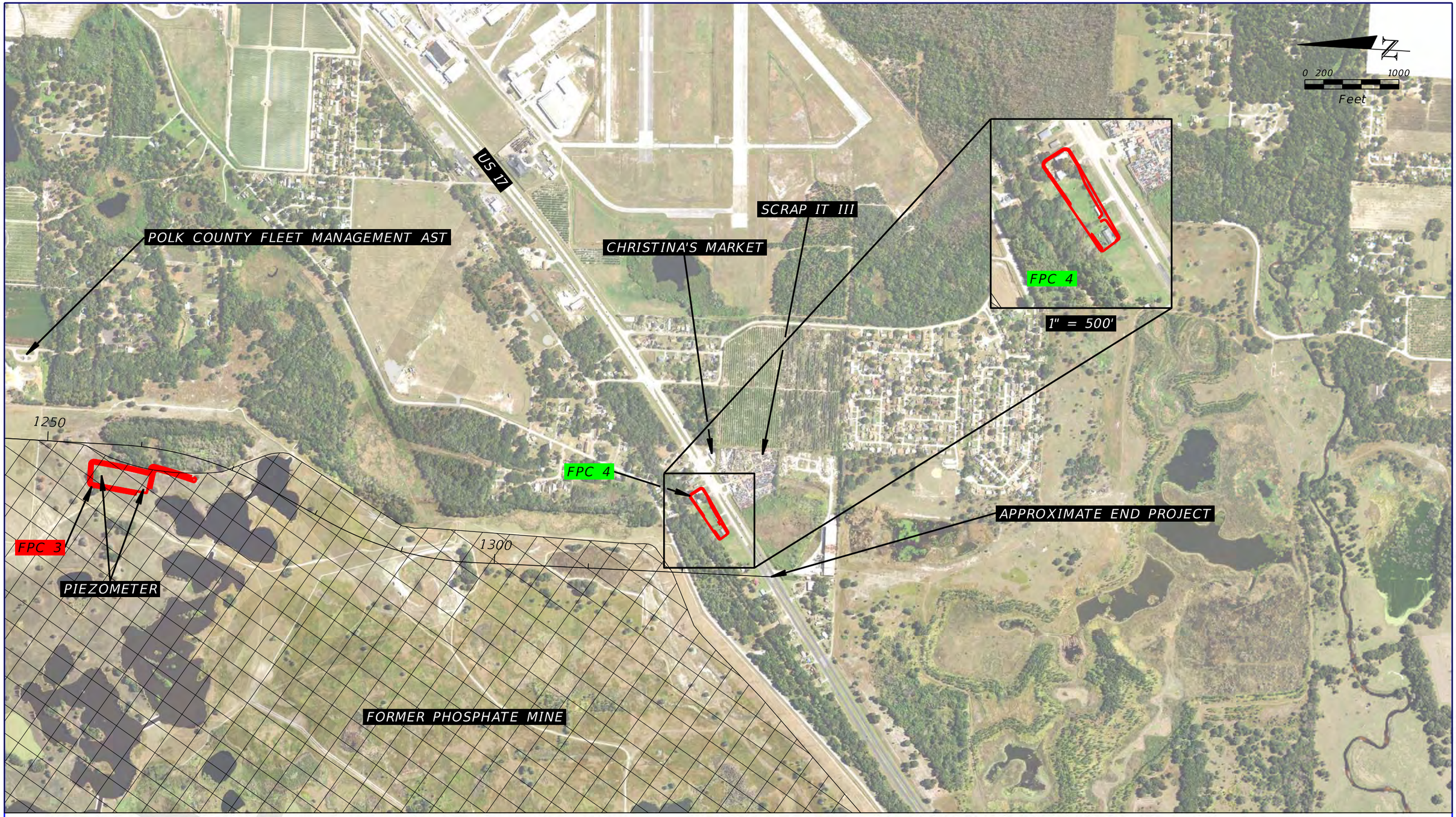
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-3

bgarcia 7/30/2020 8:28:33 AM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvAlts02.dgn



SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME — GREEN = NO/LOW RISK SITES

POND NAME — RED = MEDIUM RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO. A-4

bgarcia 7/30/2020 8:29:40 AM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvAlts03.dgn

CSER APPENDIX B

Environmental Database Report

DRAFT

Environmental Data Report

Custom Radius Research

CCP-1 PART B

Polk County, Florida

Prepared For:

Tierra Inc
7351 Temple Terrace Hwy
Tampa, FL 33637

Prepared By:

Environmental Data Management, Inc.
2840 West Bay Drive, Suite 208
Largo, Florida 33770

September 20, 2019

DRAFT

Environmental Data Management, Inc.
2840 West Bay Drive, Suite 208
Largo, Florida 33770
Tel. (727) 586-1700
http://www.edm-net.com

September 20, 2019

Chris Garth
Tierra Inc
7351 Temple Terrace Hwy
Tampa, FL 33637

Subject: **Custom Radius Research - EDM Project #24922**

Dear Mr. Garth

Thank you for choosing Environmental Data Management, Inc. The following report provides the results of our environmental data research that you requested for the following location:

CCP-1 PART B

Polk County, Florida

The following is a summary of the components contained within this report:

- **Executive Summary** –lists the databases that were searched for this report, the search distance criteria and the number of sites identified for each database.
- **Map of Study Area**– street map showing the location of the Subject Property and any regulatory listed sites identified within the search criteria.
- **Site Summary Table** –displays the Map ID number, Permit or Registration number, Name/Address and the Government Database(s) for the identified regulatory listed sites.
- **Detail Reports** – data detail for each database record identified.
- **Proximal Records Table** – a listing of potentially relevant sites identified just beyond the search criteria.
- **Non-Mapped Records Table** - lists those government records that do not contain sufficient address information to plot within our GIS system, but may still exist within your study area.
- **Addl Maps (where applicable)** – includes Recent Aerial Photo, USGS Topographic maps, FEMA Floodplain & NWI Wetland Map, map of statewide American Indian Lands and our Environmental Impact Areas map, showing the location of suspect sites such as NPL/STNPL, Brownfields, FUDS, etc.... Our Florida well data report is also include with the Standard and Comprehensive formats.
- **Agency List Descriptions –** defines the regulatory databases included in this report along with the dates that each database was last updated by the respective agency and EDM.

At EDM we take great pride in our work, and continually strive to provide you with the most accurate and thorough research service available. This report is only intended as a means to assist in identifying locations that may pose an environmental concern relative to the property under evaluation. Its use is not intended to replace the need for a complete environmental assessment or regulatory file review, but rather as a supplement to the overall evaluation.

Thank you again for selecting EDM as your data research provider. Should you have any questions regarding this report or our service, please feel free to contact us. We appreciate the opportunity to be of service to you and look forward to working with you in the future.

ENVIRONMENTAL DATA MANAGEMENT, INC.

DRAFT

Report Date: 9/20/2019

Executive Summary

Client Information	Project Information
Tierra Inc 7351 Temple Terrace Hwy Tampa FL 33637 Client Job No: Client P.O. No:	Custom Radius Research CCP-1 PART B Polk County, Florida EDM Job No# 24922

The following table displays the databases that were included in the research provided, the respective search distance for each database and the number of records identified for each database. The distance values indicated are measured from the centroid of the Subject Property. The absence of records in this table and the Site Summary Tables indicates that our research found no data for other sites located within the specified search distances.

	# Found
EPA DATABASES	
National Priorities List(NPL)	0
Superfund Enterprise Management System Active Site Inventory List(SEMSACTV)	0
Comprehensive Env Response, Compensation & Liability Information System List(CERCLIS)	0
Superfund Enterprise Management System Archived Site Inventory List(SEMSARCH)	0
Archived Cerclis Sites(NFRAP)	0
Emergency Response Notification System List(ERNS)	0
RCRIS Handlers with Corrective Action(CORRACTS)	0
RCRA-Treatment, Storage and/or Disposal Sites(TSD)	0
RCRA-LQG,SQG,CESQG and Transporters(NONTSD)	2
Tribal Tanks List(TRIBLTANKS)	0
Tribal Lust List(TRIBLLUST)	0
Brownfields Management System(USBRWNFLDS)	0
Institutional and/or Engineering Controls(USINSTENG)	0
NPL Liens List(NPLLIENS)	0
Enforcement and Compliance History(ECHO)	4
FDEP DATABASES	
State NPL Equivalent(STNPL)	0
State CERCLIS/SEMS Equivalent(STCERC)	0
Solid Waste Facilities List(SLDWST)	3
Leaking Underground Storage Tanks List(LUST)	1
Underground/Aboveground Storage Tanks(TANKS)	1
State Designated Brownfields(BRWNFLDS)	0
Voluntary Cleanup List(VOLCLNUP)	0
Institutional and/or Engineering Controls(INSTENG)	0
Dry Cleaners List(DRY)	0

DRAFT

***** Disclaimer *****

Please understand that the regulatory databases we utilize were not originally intended for our use, but rather for the source agency's internal tracking of sites for which they have jurisdiction or other interest. As a result of this difference in intended use, their data is frequently found to be incomplete or inaccurate, and is less than ideal for our use. Additionally, limitations exist in mapping data detail and accuracy. Our report is not to be relied upon for any purpose other than to "point" at approximate locations where further evaluation may be warranted. No conclusion can be based solely upon our report. Rather, our report should be used in conjunction with other relevant information to direct your attention at potential problem areas; which should be followed up by site inspections, interviews with relevant personnel and regulatory file review. Readers proceed at their own risk in relying upon this data, in whole or in part, for use within any evaluation. The EDM Service Request Form contains more detailed language with regard to such limitations, the terms of which the reader must accept in their entirety before utilizing this report. If the signed contract is not available to the reader, EDM will gladly furnish a copy upon request. Requests via email authorization are construed to be in accordance with these terms.

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Custom Radius Research Report
Street Map

Source: US Census Bureau TIGER Files

Map Scale and Property Boundaries are Approximate

Approximate Site Boundary

NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST sites - 1/2 Mile

NPLLIENS. CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, ERNS, NONTSD, ECHO, TANKS, & INSTENG sites - 1/8 Mile

Subject Property

CCP-1 PART B
Polk County, Florida

EDM Job No: 24922
September 20, 2019

Custom Radius Research Report
2017 Aerial Photo

Source: Florida Department of Transportation

Map Scale and Property Boundaries are Approximate

Approximate Site Boundary

NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST sites - 1/2 Mile

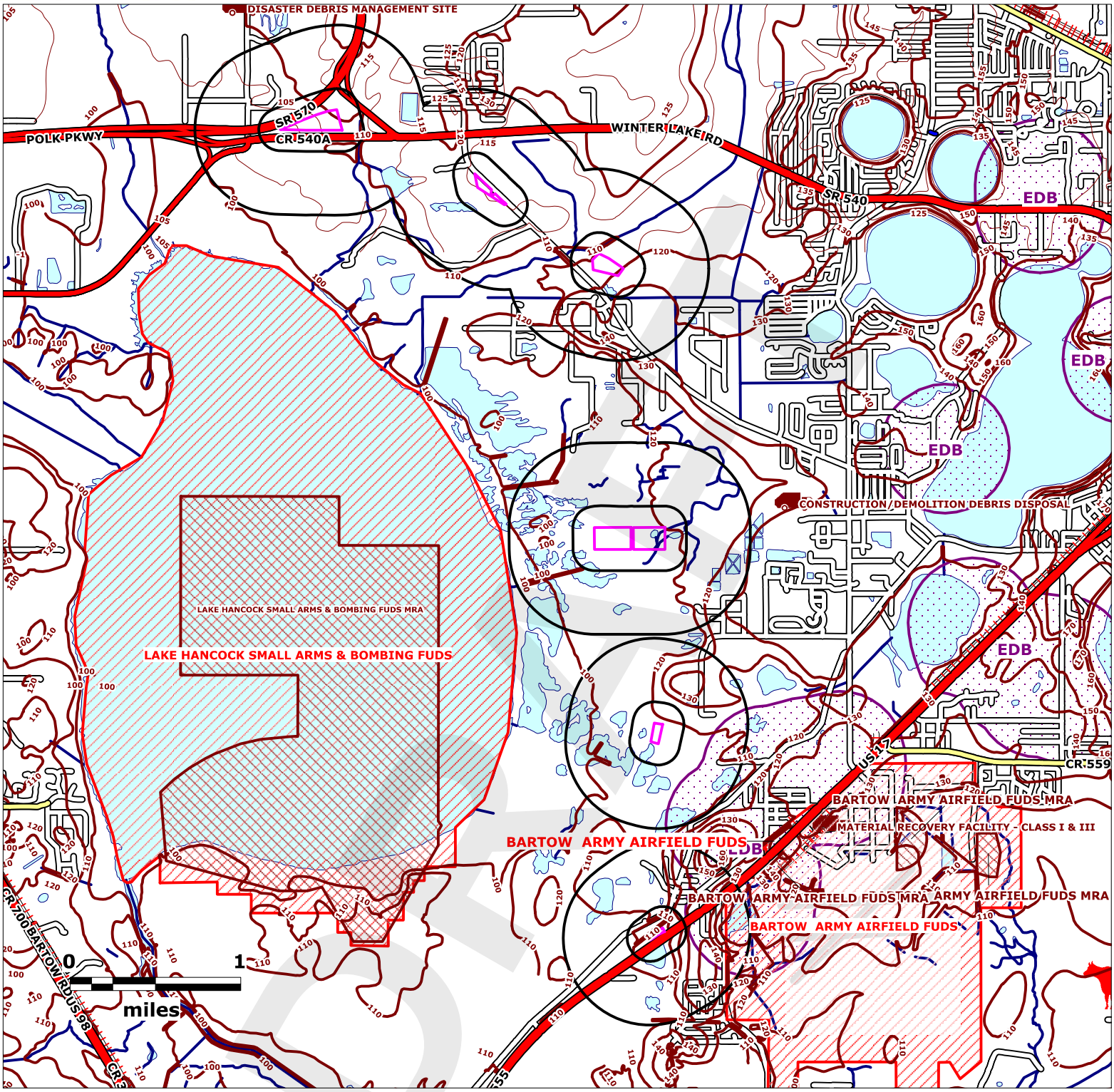
NPLLIENS. CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, ERNS, NONTSD, ECHO, TANKS, & INSTENG sites - 1/8 Mile

Subject Property

CCP-1 PART B
Polk County, Florida

EDM Job No: 24922
September 20, 2019

Custom Radius Research Report
Environmental Impact Areas Map



Source: FDEP and USEPA Geodata

Map Scale and Property Boundaries are Approximate

Subject Property

CCP-1 PART B
Polk County, Florida

EDM Job No: 24922
September 20, 2019

- FDEP Brownfield Areas
- FDEP Brownfield Sites
- USEPA NPL & FDEP STNPL Sites
- FDEP Delineated GW Contamination
- Formerly Used Defense Sites FUDS
- FUDS Munitions Response Areas
- FDEP Cattle Dipping Vat
- FDEP Solid Waste Sites
- Approximate Site Boundary

ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Site Summary Table

Report Date: 9/20/2019

MapID & Pgm List	Fac ID No	Site Dist(Mi) & Direction	Site Name	Site Address
1				
ECHO	110043769099	0.08 1	BARTOW AUTO SALVAGE	3450 US HIGHWAY 17 N BARTOW, FL 33830
ECHO	110044886004	0.08 1	SCRAP IT III LLC	3450 US HIGHWAY 17 N BARTOW, FL 33830
NONTSD	FLR000177469	0.08 1	BARTOW AUTO SALVAGE	3450 US HIGHWAY 17 N BARTOW, FL 338309235
2				
LUST	8623579	0.09 1	CHRISTINAS MARKET-MATTIES GROCERY	3470 HWY 17 N BARTOW, FL 33830
TANKS	8623579	0.09 1	CHRISTINAS MARKET-MATTIES GROCERY	3470 HWY 17 N BARTOW, FL 33830
3				
ECHO	110059798759	0.08 1	LAKE HANCOCK	3217 OLD BARTOW EAGLE LAKE RD BARTOW, FL 33830
4				
SLDWST	95912	0.42 1	POLK COUNTY BOARD OF CO COMMISSIONERS	3000 SHEFFIELD RD , FL
5				
ECHO	110020892710	0.10 1	POLK COUNTY HOUSEHOLD HAZARDOUS WASTE FACILITY	5 ENVIRONMENTAL LOOP S WINTER HAVEN, FL 33880
NONTSD	FLR000115329	0.10 1	POLK COUNTY HOUSEHOLD HAZARDOUS WASTE FA	5 ENVIRONMENTAL LOOP S WINTER HAVEN, FL 33880
6				
SLDWST	49722	0.45 1	NORTH POLK CENTRAL LF (SITE 201)	7399 DECASTRO ROAD WINTER HAVEN, FL 33880
SLDWST	95745	0.45 1	POLK COUNTY SOLID WASTE DIVISION	10 ENVIRONMENTAL LOOP , FL

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USEPA RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION (RCRAInfo)

(NONTSD)

FACILITY ID NUMBER, NAME AND LOCATION

FLR000177469
BARTOW AUTO SALVAGE
3450 US HIGHWAY 17 N
BARTOW, FL 33830-9235

EPA ENVIROFACTS ON LINE REPORT (May Not Be Available For All Records)

CONTACT INFORMATION:

2600 BLAIR STONE ROAD
TALLAHASSEE FL 32399-2400
Contact: NON NOTIFIER
Contact Telephone: 850-245-8707
Contact Email:
Agency Lat - Lon:

MAP ID NUMBER: 1
Dist (Miles): 0.08
Direction:

NONTSD

BRS Reported Waste:

RCRIS INFORMATION

NOTIFICATION DATE: 4/3/2013 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 3/27/2012 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 7/28/2011 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

VIOLATION INFO

EVAL DT: 20110728 **EVAL AGCY:** S **EVAL TYPE:** COMPLIANCE EVALUATION INSPECTION ON-SITE

VIOL FOUND?: Y

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VIOL TYPE: XXS State Statute or Regulation
VIOL DT: 20110728 **VIOL DETER AGCY:** S **VIOL RESP AGCY:** S
ENF DT: 20120124 **ENF AGCY:** S **ENF TYPE:** DEP MEETING
COMPL DT: 20120327

VIOL TYPE: PCR Permit Condition or Requirement
VIOL DT: 20110728 **VIOL DETER AGCY:** S **VIOL RESP AGCY:** S
ENF DT: 20120124 **ENF AGCY:** S **ENF TYPE:** DEP MEETING
COMPL DT: 20120327

VIOL TYPE: XXS State Statute or Regulation
VIOL DT: 20110728 **VIOL DETER AGCY:** S **VIOL RESP AGCY:** S
ENF DT: 20120104 **ENF AGCY:** S **ENF TYPE:** DEP MEETING
COMPL DT: 20120327

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

FRS ID NUMBER, NAME AND LOCATION:

110043769099
BARTOW AUTO SALVAGE
3450 US HIGHWAY 17 N
BARTOW, FL 33830

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 27.94176/ -81.80184

MAP ID NUMBER: 1
Dist (Miles): 0.08
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: N
SDWISID?: N
RCRAInfo ID?: Y
TRIS ID?: N
GHG ID?: N
FAC SIC CODES:
FAC NAICS CODES: 423930
TRIS REPORTER?:
FIPS CODE: 12105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105015301100
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 46.464
POP /SQ MI WITHIN 3 MI: 311.93
TRIBAL WITHIN 25 MI:

 # INSPS IN 5 YRS: 1
LAST INSP: 4/3/2013
DAYS LAST INSP:
 # INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
 # FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT : 4/23/2012
 # PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP: 4/3/2013
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF: 4/23/2012
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER:

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:
CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
 # CAA INFORMAL ENF ACTS LAST 5 YRS:
 # CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA TOTAL PENALTIES:
CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR COMPL:
CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID:
CWA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
 # CWA INFORMAL ENF ACTS LAST 5 YRS:
 # CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS:

CWA CURR COMPL:
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:

CWA 3YR QRTS EFFL EXCEED:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

RCRIS INFO:

RCRA ID: FLR000177469
RCRA PERMIT TYPE: CESQG
NAICS CODE: 423930
RCRA INSPS IN LAST 5 YRS: 1
RCRA DAYS LAST EVAL: 1740
RCRA INFORMAL ENF ACTS LAST 5 YRS:
RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION: 04/23/2012

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS: 0

RCRA CURR COMPL: No Violation
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
SDWA INFORMAL ENF ACTS LAST 5 YRS:
SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

FRS ID NUMBER, NAME AND LOCATION:

110044886004
SCRAP IT III LLC
3450 US HIGHWAY 17 N
BARTOW, FL 33830

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 27.94176/ -81.80184

MAP ID NUMBER: 1
Dist (Miles): 0.08
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: Y
SDWISID?: N
RCRAInfo ID?: N
TRIS ID?: N
GHG ID?: N
FAC SIC CODES: 5015
FAC NAICS CODES: 423140
TRIS REPORTER?:
FIPS CODE: FL105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105015301100
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 46.464
POP /SQ MI WITHIN 3 MI: 311.93
TRIBAL WITHIN 25 MI:

INSPS IN 5 YRS: 0
LAST INSP:
DAYS LAST INSP:
INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT :
PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP:
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF:
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER: Y

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:

CAA TOTAL PENALTIES:

CAA CURR COMPL:

EDM

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
CAA INFORMAL ENF ACTS LAST 5 YRS:
CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID: FLR05H230
CWA PERMIT TYPE: Minor
NAICS CODE: 423140
SIC CODE: 5015
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
CWA INFORMAL ENF ACTS LAST 5 YRS:
CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS: 0

CWA CURR COMPL: No Violation
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:
CWA 3YR QRTS EFFL EXCEED:

RCRIS INFO:

RCRA ID:
RCRA PERMIT TYPE:
NAICS CODE:
RCRA INSPS IN LAST 5 YRS:
RCRA DAYS LAST EVAL:
RCRA INFORMAL ENF ACTS LAST 5 YRS:
RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION:

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS:

RCRA CURR COMPL:
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
SDWA INFORMAL ENF ACTS LAST 5 YRS:
SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

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FDEP LEAKING UNDERGROUND STORAGE TANKS REPORT

(LUST)

FACILITY ID NUMBER, NAME AND LOCATION

8623579
CHRISTINAS MARKET-MATTIES GROCERY
3470 HWY 17 N
BARTOW, FL 33830-

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

OWNERSHIP INFO:

PROPERTY OWNER
RED HOLDING LLC
1909 VERANO DR
HAINES CITY, FL 33844-
(863)421-0148
COUNTY ID: 53 POLK
AGCY LAT/LON(DMS): 27,56,31.82 81,48,2.63
FAC OPERATOR: THOMAS, DARRELL
FAC TEL #: (941)533-6428

MAP ID NUMBER: 2
Dist (Miles): 0.09
Direction:

LUST

FAC STATUS: CLOSED **FAC TYPE:** A - Retail Station

SCORE 66 **SCORE EFF DT:** 1/6/1998 **RANK:** 1381 **SCORE WHEN RANKED:** 66 **FAC CLNUP STATUS:**

DISCHARGE INFORMATION

Mapid: 2

DISCHARGE DATE: 1/27/1989

INSPECTION DATE:
CLEANUP WORK STATUS: COMPLETED
CLEANUP REQUIRED? R - CLEANUP REQUIRED **CLEANUP COMBINED:**
INFO SOURCE: E - EDI
DISCH CLNUP STATUS: 7/10/2008 SRCR - SRCR COMPLETE
CONTAMINATED MEDIA?: **SOIL:** N **SUR WATER:** N **GR WATER:** Y **MON WELL:** Y **# DW WELLS CONTAMINATED:** 0
POLLUTANT : Y - Unknown/Not Reported **GALLONS** **OTHER**

CLEANUP INFORMATION

Mapid: 2

PGM ELIG OFF:
PGM ELIG SCORE: **PGM ELIG SCORE EFF DT:** **PGM ELIG RA**
ELIG STAT: **ELIG STAT DT:** **APPL RCVD:** **LOI:** **ELIG LTR SNT:** **REDETERM:**
DEDUCT AMT: **DEDUCT PD TO DT:** **COPAY AMT:** **COPAY TO DT:** **CAP AMT:**
CLNUP PROG: **CLNUP OFF:** PCLP53 - FL DOH IN POLK COUNTY

SITE ASSESSMENT

CLNP RESP: -
FUND ELLIG: -
ACTUAL COMPLETION DATE:
PAYMENT DATE:
ACTUAL COST:

REMEDIAL ACTION PLAN

CLEANUP RESP: -
FUND ELLIG: -
ORDER APPRV DATE:
ACTUAL COMPL DATE:
PAYMENT DATE:
ACTUAL COST:

REMEDIAL ACTION

CLEANUP RESP: -
FUND ELLIG: -
ACTUAL COST:
YEARS TO COMPL: 0

SITE REHABILITATION COMPLETION REPORT

ACTION TYPE: SRCR - SITE REHABILITATION COMPLETION REPORT
SUBMIT DATE: 01-04-2008
REVIEW DATE: 01-16-2008
ISSUE DATE: 07-10-2008
COMPL STATUS: A - APPROVED
COMPL STATUS DT: 06-30-2008
COMMENTS:

SOURCE REMOVAL

CLEANUP RESP: -
FUND ELLIG: -
ACTUAL COMPLETION DATE:
FREE PRODUCT REMOVAL?(Y/N):
SOIL REMOVAL? (Y/N):
SOIL TONNAGE REMOVED:
SOIL TREATMENT?(Y/N):
OTHER TREATMENT?:
ALT PROC STATUS:
ALT PROC STATUS DT:
ALT PROC COMMENT:

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FDEP LEAKING UNDERGROUND STORAGE TANKS REPORT

(LUST)

DISCHARGE INFORMATION

Mapid: 2

DISCHARGE DATE: 10/19/1991

INSPECTION DATE: 3/5/1992
CLEANUP WORK STATUS: COMPLETED
CLEANUP REQUIRED? R - CLEANUP REQUIRED
CLEANUP COMBINED:
INFO SOURCE: A - ABANDONED TANK RESTORATION
DISCH CLNUP STATUS: 7/10/2008 SRCR - SRCR COMPLETE
CONTAMINATED MEDIA?: **SOIL:** **SUR WATER:** **GR WATER:** **MON WELL:** **# DW WELLS CONTAMINATED:**
POLLUTANT : B - Unleaded Gas **GALLONS** **OTHER**

CLEANUP INFORMATION

Mapid: 2

PGM ELIG OFF: PCLP53 - FL DOH IN POLK COUNTY
PGM ELIG SCORE: 66 **PGM ELIG SCORE EFF DT:** 1/6/1998 **PGM ELIG RA** 1381
ELIG STAT: E **ELIG STAT DT:** 6/9/1992 **APPL RCVD:** 7/30/1991 **LOI:** **ELIG LTR SNT:** 6/9/1992 **REDETERM:** N
DEDUCT AMT: 500 **DEDUCT PD TO DT:** 500 **COPAY AMT:** 0 **COPAY TO DT:** 0 **CAP AMT:**
CLNUP PROG: A - ABANDONED TANK RESTO **CLNUP OFF:** PCLP53 - FL DOH IN POLK COUNTY

SITE ASSESSMENT

CLNP RESP: ST - STATE
FUND ELLIG: SCR - PRIORITY SCORE ORDER
ACTUAL COMPLETION DATE:
PAYMENT DATE:
ACTUAL COST:

REMEDIAL ACTION PLAN

CLEANUP RESP: ST - STATE
FUND ELLIG: -
ORDER APPRV DATE:
ACTUAL COMPL DATE:
PAYMENT DATE:
ACTUAL COST:

REMEDIAL ACTION

CLEANUP RESP: ST - STATE
FUND ELLIG: -
ACTUAL COST:
YEARS TO COMPL: 0

SITE REHABILITATION COMPLETION REPORT

ACTION TYPE: SRCR - SITE REHABILITATION COMPLETION REPORT
SUBMIT DATE: 01-04-2008
REVIEW DATE: 01-04-2008
ISSUE DATE: 07-10-2008
COMPL STATUS: A - APPROVED
COMPL STATUS DT: 06-30-2008
COMMENTS:

SOURCE REMOVAL

CLEANUP RESP: -
FUND ELLIG: -
ACTUAL COMPLETION DATE:
FREE PRODUCT REMOVAL?(Y/N):
SOIL REMOVAL? (Y/N):
SOIL TONNAGE REMOVED:
SOIL TREATMENT?(Y/N):
OTHER TREATMENT?:
ALT PROC STATUS:
ALT PROC STATUS DT:
ALT PROC COMMENT:

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FDEP LEAKING UNDERGROUND STORAGE TANKS REPORT

TANKS Data for LUST Sites:

FACILITY ID NUMBER, NAME AND LOCATION

8623579
CHRISTINAS MARKET-MATTIES GROCERY
3470 HWY 17 N
BARTOW, FL 33830

OWNERSHIP INFORMATION

,
CONTACT TEL #:
CONTACT:
FACILTY TEL #: 9415336428
COUNTY ID: 53 POLK

MAP ID NUMBER: 2
Dist (Miles): 0.09
Direction:

TANKS

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FAC STATUS: CLOSED **FAC TYPE:** Retail Station

TANK #:	TANK VOL(GALS):	INST.DATE:	TANK CONTENTS:	TANK POSITION:	TANK STATUS (as of...):
1	8000	01-Dec-1977	Unleaded Gas	UNDERGROUND	REMOVED 31-May-1992

CONSTRUCTION TYPE: BALL CHECK VALVE/FIBERGLASS
PIPING TYPE:
LEAK MONITORING: UNKNOWN

TANK #:	TANK VOL(GALS):	INST.DATE:	TANK CONTENTS:	TANK POSITION:	TANK STATUS (as of...):
2	8000	01-Dec-1977	Unleaded Gas	UNDERGROUND	REMOVED 31-May-1992

CONSTRUCTION TYPE: BALL CHECK VALVE/FIBERGLASS
PIPING TYPE:
LEAK MONITORING: UNKNOWN

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

FRS ID NUMBER, NAME AND LOCATION:

110059798759
LAKE HANCOCK
3217 OLD BARTOW EAGLE LAKE RD
BARTOW, FL 33830

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 27.943232/ -81.80324

MAP ID NUMBER: 3
Dist (Miles): 0.08
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: Y
SDWISID?: N
RCRAInfo ID?: N
TRIS ID?: N
GHG ID?: N
FAC SIC CODES:
FAC NAICS CODES:
TRIS REPORTER?:
FIPS CODE: FL105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105014702204
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 46.108
POP /SQ MI WITHIN 3 MI: 339.15
TRIBAL WITHIN 25 MI:

 # INSPS IN 5 YRS: 0
LAST INSP:
DAYS LAST INSP:
 # INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
 # FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT :
 # PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP:
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF:
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER:

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:
CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
 # CAA INFORMAL ENF ACTS LAST 5 YRS:
 # CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA TOTAL PENALTIES:
CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR COMPL:
CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID: FLR10NZ43
CWA PERMIT TYPE: Minor
NAICS CODE:
SIC CODE:
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
 # CWA INFORMAL ENF ACTS LAST 5 YRS:
 # CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS: 0

CWA CURR COMPL: No Violation
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:
CWA 3YR QRTS EFFL EXCEED:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

RCRIS INFO:

RCRA ID:
RCRA PERMIT TYPE:
NAICS CODE:
RCRA INSPS IN LAST 5 YRS:
RCRA DAYS LAST EVAL:
RCRA INFORMAL ENF ACTS LAST 5 YRS:
RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION:

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS:

RCRA CURR COMPL:
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
SDWA INFORMAL ENF ACTS LAST 5 YRS:
SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

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FDEP SOLID WASTE FACILITIES LIST

(SLDWST)

FACILITY ID, NAME AND LOCATION:

95912
POLK COUNTY BOARD OF CO COMMISSIONERS
3000 SHEFFIELD RD
WINTER HAVEN, FL

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN //
AGENCY LAT: ::
AGENCY LON: ::

MAP ID NUMBER: 4
Dist (Miles): 0.42
Direction:

SLDWST

RESP AUTHORITY:

, 33880

SITE CONTACT:

,

LAND OWNER:

,

FACILITY CLASS: 754/WASTE TIRE COLLECTOR
CLASS STATUS: REGISTERED (R)

FACILITY CLASS: 754 /WASTE TIRE COLLECTOR
CLASS STATUS: REGISTERED (R)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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USEPA RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION (RCRAInfo)

(NONTSD)

FACILITY ID NUMBER, NAME AND LOCATION

FLR000115329
POLK COUNTY HOUSEHOLD HAZARDOUS WASTE FA
5 ENVIRONMENTAL LOOP S
WINTER HAVEN, FL 33880

EPA ENVIROFACTS ON LINE REPORT (May Not Be Available For All Records)

CONTACT INFORMATION:

10 ENVIRONMENTAL LOOP S
WINTER HAVEN FL 33880-1072
Contact: BROOKS STAYER
Contact Telephone: 863-284-4319
Contact Email: BROOKSSTAYER@POLK-COU
Agency Lat - Lon: 28.012924 -81.840967

MAP ID NUMBER: 5
Dist (Miles): 0.10
Direction:

NONTSD

BRS Reported Waste:

RCRIS INFORMATION

NOTIFICATION DATE: 5/23/2018 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 6/19/2013 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 12/27/2011 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

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NOTIFICATION DATE: 2/2/2011 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 1/9/2008 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 12/15/2004 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

VIOLATION INFO

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

FRS ID NUMBER, NAME AND LOCATION:

110020892710
POLK COUNTY HOUSEHOLD HAZARDOUS WASTE
5 ENVIRONMENTAL LOOP S
WINTER HAVEN, FL 33880

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 28.013225/ -81.840817

MAP ID NUMBER: 5
Dist (Miles): 0.10
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: N
SDWISID?: N
RCRAInfo ID?: Y
TRIS ID?: N
GHG ID?: N
FAC SIC CODES:
FAC NAICS CODES: 562111
TRIS REPORTER?:
FIPS CODE: 12105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105011721202
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 17.849
POP /SQ MI WITHIN 3 MI: 327.07
TRIBAL WITHIN 25 MI:

 # INSPS IN 5 YRS: 1
LAST INSP: 6/18/2013
DAYS LAST INSP:
 # INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
 # FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT :
 # PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP: 6/18/2013
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF:
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER:

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:
CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
 # CAA INFORMAL ENF ACTS LAST 5 YRS:
 # CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA TOTAL PENALTIES:
CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR COMPL:
CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID:
CWA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
 # CWA INFORMAL ENF ACTS LAST 5 YRS:
 # CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS:

CWA CURR COMPL:
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:

CWA 3YR QRTS EFFL EXCEED:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

RCRIS INFO:

RCRA ID: FLR000115329
RCRA PERMIT TYPE: CESQG
NAICS CODE: 562111
RCRA INSPS IN LAST 5 YRS: 1
RCRA DAYS LAST EVAL: 1664
 # RCRA INFORMAL ENF ACTS LAST 5 YRS:
 # RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION:

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS: 0

RCRA CURR COMPL: No Violation
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
 # SDWA INFORMAL ENF ACTS LAST 5 YRS:
 # SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

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FDEP SOLID WASTE FACILITIES LIST

(SLDWST)

FACILITY ID, NAME AND LOCATION:

49722
NORTH POLK CENTRAL LF (SITE 201)
7399 DECASTRO ROAD
WINTER HAVEN, FL 33880

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN 30 /28S /25E
AGENCY LAT: 28:1:26.03
AGENCY LON: 81:50:50.1

MAP ID NUMBER: 6
Dist (Miles): 0.45
Direction:

SLDWST

RESP AUTHORITY:
POLK COUNTY WASTE & RECYCLING DIVI

WINTER HAVEN, FL 33880

SITE CONTACT:
ANA WOOD

,
(863) 284-4319

LAND OWNER:
POLK COUNTY
P O BOX 39
BARTOW, FL 33830

FACILITY CLASS: 100/CLASS I LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 100 /CLASS I LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 300/CLASS III LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 300 /CLASS III LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 330/SOURCE-SEPARATED ORGANICS PROC. FAC. (SOPF)
CLASS STATUS: ACTIVITY NOT PERMITTED/REGISTERED (N)

FACILITY CLASS: 330 /SOURCE-SEPARATED ORGANICS PROC. FAC. (SOPF)
CLASS STATUS: ACTIVITY NOT PERMITTED/REGISTERED (N)

FACILITY CLASS: 751/WASTE TIRE COLLECTION CENTER
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 751 /WASTE TIRE COLLECTION CENTER
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 910/DISASTER DEBRIS MANAGEMENT SITE
CLASS STATUS: INACTIVE (I)

FACILITY CLASS: 910 /DISASTER DEBRIS MANAGEMENT SITE
CLASS STATUS: INACTIVE (I)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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FDEP SOLID WASTE FACILITIES LIST

(SLDWST)

FACILITY ID, NAME AND LOCATION:

95745
POLK COUNTY SOLID WASTE DIVISION
10 ENVIRONMENTAL LOOP
WINTER HAVEN, FL

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN //
AGENCY LAT: ::
AGENCY LON: ::

MAP ID NUMBER: 6
Dist (Miles): 0.45
Direction:

SLDWST

RESP AUTHORITY:

, 33880

SITE CONTACT:

,

LAND OWNER:

,

FACILITY CLASS: 754/WASTE TIRE COLLECTOR
CLASS STATUS: INACTIVE (I)

FACILITY CLASS: 754 /WASTE TIRE COLLECTOR
CLASS STATUS: INACTIVE (I)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Proximal Site Summary Table

This table includes mapped sites whose plotted coordinates fall just outside of the ASTM or client defined research distance but whose property boundaries may still extend into the search area. These sites are typically large commercial or industrial tracts that may merit inclusion in the evaluation process. Detail data reports on any of these sites may be requested and will be sent as an addendum to this report at no additional cost.

Report Date: 9/20/2019

MapID Prgm List	Fac ID No	Site Dist(mi) & Direction	Site Name	Site Address
1A				
ECHO	110020553220	0.20 1	DURATEK WALL CORPORATION	3390 U.S. HIGHWAY 17 NORTH BARTOW, FL 33830
ECHO	110039629970	0.20 1	OLDCASTLE PRECAST INC	3390 HWY 17 N BARTOW, FL 33830
ECHO	110041943868	0.20 1	DURATEK WALL SYSTEMS - BUILDIN	UNKNOWN BARTOW, FL 33830
2A				
TANKS	8838653	0.20 1	TYRE EQUIPMENT	HWY 17 N BARTOW, FL 33830
3A				
ECHO	110032760796	0.23 1	HIDDEN CREEK SUBDIVISION	INTERSECTION OF OLD THORNHILL WINTER HAVEN, FL 33880
4A				
ECHO	110060370049	0.18 1	HIDDEN CREEK	UNKNOWN WINTER HAVEN, FL 33880
5A				
ECHO	110044265577	0.20 1	SR 540 (WINTER LAKE RD) @ THORNHILL ROAD	UNKNOWN WINTER HAVEN, FL 33880

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ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Non-Mapped Records Summary Table

This table is a listing of database records that have not been plotted within our mapping system and could exist within your Study Area. Detail data reports on any of these sites may be requested and will be sent as an addendum to this report at no additional cost.

Report Date: 9/20/2019

Pgm List & Fac ID No	Site Name	Site Address
STCERC		
NONE 533FDER	BARTOW LANDFILL-ABANDONED	HWY 17 BARTOW, FL

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Agency List Descriptions

USEPA and State Databases are updated on a quarterly basis. Supplemental Databases are updated on an annual basis.

Florida Department of Environmental Protection (FDEP)

State Designated Brownfields(BRWNFLDS)

The FDEP Brownfields database contains a listing of State Designated Brownfield Areas and Brownfield Sites. Brownfields are typically defined as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Agency File Date: 7/29/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

Dry Cleaners List(DRY)

The FDEP Dry Cleaning Facilities List is comprised of data from the FDEP Storage Tank and Contamination Monitoring (STCM) database and the Drycleaning Solvent Cleanup Program- Priority Ranking List. It contains a listing of those Dry Cleaning sites (and suspected historical Dry Cleaning sites) who have registered with the FDEP and/or have applied for the Dry Cleaning Solvent Cleanup Program.

Agency File Date: 6/28/2019 **Received by EDM:** 7/1/2019 **EDM Database Updated:** 7/1/2019

Institutional and/or Engineering Controls(INSTENG)

The FDEP Institutional Controls Registry Database (INSTENG) contains sites that have had Institutional and/or Engineering Controls implemented to regulate exposure to environmental hazards

Agency File Date: 5/16/2019 **Received by EDM:** 5/20/2019 **EDM Database Updated:** 5/20/2019

Leaking Underground Storage Tanks List(LUST)

The FDEP LUST list identifies facilities and/or locations that have notified the FDEP of a possible release of contaminants from petroleum storage systems. This Report is generated from the FDEP Storage Tank and Contamination Monitoring Database (STCM).

Agency File Date: 7/19/2019 **Received by EDM:** 7/19/2019 **EDM Database Updated:** 7/22/2019

Solid Waste Facilities List(SLDWST)

The FDEP SLDWST list identifies locations that have been permitted to conduct solid waste handling activities including Landfills, Transfer Stations and sites handling Bio-Hazardous wastes. Sites listed with "##" after the Facility ID Number are historical locations, obtained from documents on record at local agencies.

Agency File Date: 5/20/2019 **Received by EDM:** 5/20/2019 **EDM Database Updated:** 5/20/2019

State CERCLIS/SEMS Equivalent(STCERC)

The STCERC list is compiled from the FDEP Site Investigation Section list, the Florida SITES list(historical) and the FDEP Cleanup Sites list. These sites are being assessed and/or cleaned up as a result of identified or suspected contamination from the release of hazardous substances. The FDEP Cleanup Sites list programs include: Brownfields, Petroleum, EPA Superfund (CERCLA), Drycleaning, Responsible Party Cleanup, State Funded Cleanup, State Owned Lands Cleanup and Hazardous Waste Cleanup.

Agency File Date: 8/11/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

State NPL Equivalent(STNPL)

The FDEP State Funded Cleanup list contains facilities and/or locations where there are no viable responsible parties; the site poses an imminent hazard; and the site does not qualify for Superfund or is a low priority for EPA. Remedial efforts at these sites are currently being addressed through State funded cleanup action.

Agency File Date: 8/10/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

Underground/Aboveground Storage Tanks(TANKS)

The FDEP TANKS list contains sites with registered aboveground and underground storage tanks containing regulated petroleum products.

Agency File Date: 6/17/2019 **Received by EDM:** 6/17/2019 **EDM Database Updated:** 8/7/2019

Voluntary Cleanup List(VOLCLNUP)

The VOLCLNUP List is derived from the FDEP Brownfields Site Rehabilitation Agreement (BSRA) database and the FDEP Office of Waste Cleanup Responsible Party Sites database. This list identifies those sites that have signed an agreement to Voluntarily cleanup a site and/or sites where legal responsibility for site rehabilitation exists pursuant to Florida Statutes and is being conducted either voluntarily or pursuant to enforcement activity.

Agency File Date: 5/6/2019 **Received by EDM:** 5/20/2019 **EDM Database Updated:** 5/20/2019

United States Environmental Protection Agency (EPA)

Comprehensive Env Response, Compensation & Liability Information System List(CERCLIS)

The US EPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database tracks potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are proposed to be on the NPL, are on the NPL and sites that are in the screening and assessment phase for possible inclusion on the NPL. The CERCLIS database was retired in November of 2013 and has been replaced by the Superfund Enterprise Management System (SEMS).

Agency File Date: 11/12/2013 **Received by EDM:** 2/18/2016 **EDM Database Updated:** 2/18/2016

DRAFT

RCRIS Handlers with Corrective Action(CORRACTS)

The US EPA Corrective Action Sites (CORRACTS) database is a listing of hazardous waste handlers that have undergone RCRA corrective action activity.

Agency File Date: 5/13/2019 **Received by EDM:** 5/20/2019 **EDM Database Updated:** 5/20/2019

Enforcement and Compliance History(ECHO)

The US EPA Enforcement and Compliance History Online (ECHO) database provides integrated compliance and enforcement information on facilities regulated under the Clean Air Act (CAA), Clean Water Act (CWA), Safe Drinking Water Act (SDWA) and Resource Conservation and Recovery Act (RCRA).

Agency File Date: 3/3/2019 **Received by EDM:** 3/8/2019 **EDM Database Updated:** 3/11/2019

Emergency Response Notification System List(ERNS)

The Emergency Response Notification System (ERNS) database stores information on oil discharges and hazardous substance releases. The ERNS program is a cooperative data sharing effort among the EPA, DOT and the National Response Center (NRC), which currently provides access to this data.

Agency File Date: 8/4/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

Archived Cerclis Sites(NFRAP)

The US EPA NFRAP list contains archived data of CERCLIS records where the EPA has completed assessment activities and determined that no further steps to list the site on the NPL will be taken. NFRAP sites may be reviewed in the future to determine if they should be returned to CERCLIS based upon newly identified contamination problems at the site. The NFRAP database was retired in November of 2013 and has been replaced by the Superfund Enterprise Management System (SEMS) .

Agency File Date: 10/25/2013 **Received by EDM:** 2/18/2016 **EDM Database Updated:** 2/18/2016

RCRA-LQG,SQG,CESQG and Transporters(NONTSD)

The EDM NONTSD list is a subset of the US EPA RCRAInfo System and identifies facilities that generate and transport hazardous wastes. These facilities may be Large Quantity Generators (LQG), Small Quantity Generators (SQG), Conditionally Exempt SQG's (CESQG) as well as" Non-Notifiers" and "Non-Handlers".

Agency File Date: 4/29/2019 **Received by EDM:** 4/30/2019 **EDM Database Updated:** 5/1/2019

National Priorities List(NPL)

The US EPA National Priorities List (NPL) contains facilities and/or locations where environmental contamination has been confirmed and prioritized for cleanup activities under the Superfund Program. EDM's NPL Report includes sites that are currently on the NPL as well as sites that have been Proposed, Withdrawn and/or Deleted from the list. Previously, information for the NPL was managed under the CERLIS data management system. In 2014 this system was replaced with the Superfund Enterprise Management System (SEMS). EPA last updated CERCLIS in November of 2013. EDM's NPL Report contains available SEMS data and the archived CERCLIS data relative to NPL sites.

Agency File Date: 6/11/2019 **Received by EDM:** 7/17/2019 **EDM Database Updated:** 7/18/2019

NPL Liens List(NPLLIENS)

The US EPA NPL Liens List identifies those sites where under authority granted by CERCLA, liens have been filed against real property in order to recover expenditures from remedial action or when the property owner receives a notice of potential liability.

Agency File Date: 5/14/2019 **Received by EDM:** 5/28/2019 **EDM Database Updated:** 5/29/2019

Superfund Enterprise Management System Active Site Inventory List(SEMSACTV)

The US EPA Superfund Enterprise Management System (SEMS) tracks potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. The SEMSACTV list contains sites that are on the National Priorities List (NPL) as well as sites that are prosposed for or in the screening and assessment phase for possible inclusion on the NPL. SEMS has replaced the CERCLIS database, which was retired in November of 2013.

Agency File Date: 6/11/2019 **Received by EDM:** 7/1/2019 **EDM Database Updated:** 7/1/2019

Superfund Enterprise Management System Archived Site Inventory List(SEMSARCH)

The US EPA Superfund Enterprise Management System (SEMS), contains archived data of CERCLIS or SEMS records where the EPA has completed assessment activities and determined that no further steps to list the site on the NPL will be taken. These sites may be reviewed in the future to determine if they should be returned to SEMS based upon newly identified contamination problems at the site. SEMS has replaced the CERCLIS database, which was retired in November of 2013. The SEMSARCH database contains these newly archived records under the SEMS database management system.

Agency File Date: 6/11/2019 **Received by EDM:** 7/1/2019 **EDM Database Updated:** 7/2/2019

Tribal Lust List(TRIBLLUST)

EDM's Tribal LUST list is derived from the USEPA Region IV Tribal Tanks database by extracting those sites with indicators of past and/or current releases.

Agency File Date: 2/24/2010 **Received by EDM:** 3/9/2010 **EDM Database Updated:** 3/9/2010

Tribal Tanks List(TRIBLTANKS)

The USEPA Region IV Tribal Tanks database lists Active and Closed storage tank facilities on Native American lands.

Agency File Date: 2/24/2010 **Received by EDM:** 3/9/2010 **EDM Database Updated:** 3/9/2010

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RCRA-Treatment, Storage and/or Disposal Sites(TSD)

The EDM TSD list is a subset of the US EPA RCRAInfo system and identifies facilities that Treat, Store and/or Dispose of hazardous waste.

Agency File Date:	4/29/2019	**Received by EDM:**	4/30/2019	**EDM Database Updated:**	5/1/2019

Brownfields Management System(USBRWNFLDS)

The US EPA Brownfields program provides information on environmentally distressed properties that have received Grants or Targeted funding for cleanup and redevelopment . Tribal Brownfield sites are included in the USBRWNFLDS database.

Agency File Date:	5/28/2019	**Received by EDM:**	5/28/2019	**EDM Database Updated:**	5/28/2019

Institutional and/or Engineering Controls(USINSTENG)

The USINSTENG list is compiled from data elements contained in the NPL, CORRACTS and USBRWNFLDS lists.

Agency File Date:	5/28/2019	**Received by EDM:**	5/28/2019	**EDM Database Updated:**	5/28/2019

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Environmental Impact Areas

Brownfield Areas and Sites

The FDEP Brownfields database contains a listing of State Designated Brownfield Areas and Brownfield Sites. Brownfields are typically defined as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Agency File Date: 7/29/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

https://floridadep.gov/waste/waste-cleanup/content/brownfields-program

Cattle Dipping Vats

From the 1910's through the 1950's, vats were filled with an arsenic solution for the control and eradication of the cattle fever tick. Other pesticides such as DDT where also widely used. By State law, all cattle, horses, mules, goats, and other susceptible animals were required to be dipped every 14 days. Under certain circumstances, the arsenic and other pesticides remaining at the site may present an environmental or public health hazard.

Some of the sites have been located and are currently under investigation. However, most of the listings are from old records of the State Livestock Board, which listed each vat as it was put into operation. In addition, some privately operated vats may have existed which were not listed by the Livestock Board. EDM's Cattle Dipping Vat sites are retrieved from the Voluntary Cleanup and STCERC datablases. For additional information on Cattle Dipping Vats visit the FDEP and FDOH websites at:

Agency File Date: 10/31/2018 **Received by EDM:** 1/25/2019 **EDM Database Updated:** 1/25/2019

https://floridadep.gov/waste/district-business-support/content/cattle-dipping-vats-cdv

http://www.floridahealth.gov/environmental-health/drinking-water/cattledipvathome.html

Formerly Used Defense Sites

The DoD is responsible for the environmental restoration of properties that were formerly owned by, leased to or otherwise possessed by the United States and operated under the jurisdiction of the Secretary of Defense prior to October 1986. Such properties are known as Formerly Used Defense Sites (FUDS). The Army is the executive agent for the program and the U.S. Army Corps of Engineers manages and directs the program's administration. For more information on the FUDS Program, including maps and data on individual sites, visit the Army Corps of Engineers website at:

Agency File Date: 5/29/2018 **Received by EDM:** 1/25/2019 **EDM Database Updated:** 1/25/2019

http://www.usace.army.mil/Missions/Environmental/Formerly-Used-Defense-Sites/

FUDS Munitions Response Sites

The DoD developed the Military Munitions Response Program (MMRP) in 2001 to addresses munitions-related concerns, including explosive safety, environmental, and health hazards from releases of unexploded ordnance (UXO), discarded military munitions (DDM), and munitions constituents (MC) found at locations, other than operational ranges, on active and Base Realignment and Closure (BRAC) installations and Formerly Used Defense Sites (FUDS) properties. The MMRP addresses non-operational range lands with suspected or known hazards from munitions and explosives of concern (MEC) which occurred prior to September 2002, but are not already included with an Installation Response Program (IRP) site cleanup activity. For more information on the FUDS MMRP Program, including maps and data on individual sites, visit the Army Corps of Engineers website at:

Agency File Date: 5/14/2018 **Received by EDM:** 1/25/2019 **EDM Database Updated:** 1/25/2019

http://www.asaie.army.mil/Public/ESOH/mmrp.html

Groundwater Contamination Areas

The Ground Water Contamination Areas GIS layer is a statewide map showing the boundaries of delineated areas of known groundwater contamination pursuant to Chapter 62-524, F.A.C., New Potable Water Well Permitting In Delineated Areas. 38 Florida counties have been delineated primarily for the agricultural pesticide ethylene dibromide (EDB), and to a much lesser extent, volatile organic and petroleum contaminants. This GIS layer represents approximately 427,897 acres in 38 counties in Florida that have been delineated for groundwater contamination. However, it does not represent all known sources of groundwater contamination for the state of Florida.

This information is intended to be used by regulatory agencies issuing potable water well construction permits in areas of ground water contamination to protect public health and the ground water resource. Permitted water wells in these areas must meet specific well construction criteria and water testing prior to well use. This dataset only indicates the presence or absence of specific groundwater contaminants and does not represent all known sources of groundwater contamination in the state of Florida.

Agency File Date: 11/28/2018 **Received by EDM:** 1/24/2019 **EDM Database Updated:** 1/24/2019

https://floridadep.gov/water/source-drinking-water/content/delineated-areas

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National Priorities List

The US EPA National Priorities List (NPL) contains facilities and/or locations where environmental contamination has been confirmed and prioritized for cleanup activities under the Superfund Program. EDM's NPL site boundaries data include sites that are currently on the NPL as well as sites that have been Proposed, Withdrawn and/or Deleted from the list.

Agency File Date: 11/14/2018 **Received by EDM:** 12/10/2018 **EDM Database Updated:** 1/22/2019

https://www.epa.gov/superfund/search-superfund-sites-where-you-live

Solid Waste Facilities

The FDEP SLDWST list identifies locations that have been permitted to conduct solid waste handling activities.

Agency File Date: 1/23/2019 **Received by EDM:** 1/24/2019 **EDM Database Updated:** 1/25/2019

https://floridadep.gov/waste

State Funded Cleanup Sites

The FDEP State Funded Cleanup list contains facilities and/or locations where there are no viable responsible parties; the site poses an imminent hazard; and the site does not qualify for Superfund or is a low priority for EPA. Remedial efforts at these sites are currently being addressed through State funded cleanup action.

Agency File Date: 8/10/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

https://floridadep.gov/waste/waste-cleanup/documents/state-funded-cleanup-program-site-list

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CONTAMINATION TECHNICAL MEMORANDUM

(PREFERRED POND SITES)

Florida Turnpike Enterprise

SR 570B (Central Polk Parkway) Segment 1
From SR 570 (Polk Parkway) to SR 35 (US 17)

Polk County, Florida

Financial Management Number: 440897-2-32-01

October 2, 2019

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

The analysis in this document has been supplemented by the CSER Addendum to Mainline and Pond CSER's.

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1.1 Purpose of Report 1
1.2 Project Description 1
2.0 Methodology 1
3.0 Contamination Evaluation 3
3.1 Preferred Pond Sites Summary 3
4.0 Summary 8

APPENDICES

CSER Appendix A: Project Location and Pond Alternative Location Maps
CSER Appendix B: Environmental Database Report

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1.0 Introduction

1.1 Purpose of Report

The purpose of this Contamination Technical Memorandum (Tech Memo) is to identify contamination sites within or adjacent to the 7 preferred Stormwater Management Facilities (SMFs) and Flood Plain Compensation (FPCs) areas, and provide risk ratings for each SMF/FPC. Contamination can have a significant negative impact on the project and therefore the early identification of any contamination involvement will provide valuable input during the evaluation process.

Previously, separate Level I Contamination Screening Evaluation Reports (CSERs) were provided for the mainline (April 12, 2019) and preliminary pond alternatives (December 19, 2018).

This report provides a brief summary for the 4 pond sites (SMF 1, SMF 2, SMF 3, and FPC 2) which were previously evaluated. See Level I CSER dated December 19, 2018 for details regarding preliminary pond alternatives. Three final pond sites (FPC 1, FPC 3, and FPC 4) are new and were not previously evaluated.

1.2 Project Description

The Central Polk Parkway (CPP/SR 570B) will be a new four-lane divided limited access facility in Polk County, Florida. Through coordination with Florida's Turnpike Enterprise it has been determined that this new corridor will be a Strategic Intermodal System (SIS) highway. This roadway network is a planned new alignment toll facility that will connect the Polk Parkway (SR 570) with SR 60 to the south. The project is located between the City of Lakeland to the north and the City of Bartow to the west and will be completed with three Financial Project Identification Numbers (FPID). See Project Location Map in **Appendix A**. Part A, FPID 440897-2-32-01, will focus on development of an optimized alignment, identify right-of-way needs, and development of Phase 1 plans. Part B, FPID 440897-2-32-01, will focus on final right-of-way maps, permitting, and final construction plans. FPID 440987-4-22-01, will be to perform a Project Development and Environment (PD&E) Study from the termination of Part A at US 17 (SR 35) to SR 60. FPID 440897-3-32-01 will utilize the alignment recommendation from the FPID 440897-4-22-01 PD&E Study and will prepare final right-of-way maps, permitting, and develop final construction plans from US 17 (SR 35) to SR 60.

2.0 Methodology

This Tech Memo was developed as an abbreviated Design phase contamination study and was not intended to satisfy all of the requirements as referenced in the PD&E Manual, Part 2, Chapter 20 Contamination. Instead, the level of effort was designed to supplement previous studies.

To assist with accomplishing the project objectives, an environmental data report was prepared on September 20, 2019 by Environmental Data Management, Inc. (EDM) to identify sites within ⅛-mile of the SMFs/FPCs that are associated with documented contamination issues from petroleum products or other hazardous materials. The contamination screening buffer for

Landfill; Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and National Priorities List (NPL) regulatory databases was extended to ½-mile. The EDM report is presented in **Appendix B**. The EDM report has been utilized as a preliminary screening tool to identify facilities that have reported contamination issues to various county, state, and federal agencies.

Contamination risk ratings were assigned to each SMF/FPC based on the findings of a site reconnaissance and desktop review. The risk rating system is divided into four categories of risk as defined by the FDOT in the PD&E Manual: *Part 2, Chapter 20 Contamination*. These four degrees of risk are “No,” “Low,” “Medium,” and “High.” This system expresses the degree of concern for potential contamination problems. The definition for each risk rating is provided in Chapter 20.

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3.0 Contamination Evaluation

3.1 Preferred Pond Sites Summary

A contamination evaluation for total of 7 preferred pond sites was performed for this project. Details for each potential contamination site and preferred pond site investigated are provided in the Preferred Pond Sites Summary table below. The location of each contamination site is illustrated in **CSER Appendix A**.

Table 1 – Preferred Pond Sites Summary

Pond ID	Comments	Risk Rating for Preferred Pond Sites
SMF 1	This site was previously evaluated in the Level I CSER dated December 19, 2018. Based on a distance of 900 feet to the nearest contamination concern (Hazardous Waste Collection Facility), regulatory status, and cross-gradient groundwater flow direction of the Polk County North Central Landfill, SMF 1 was assigned an initial risk rating of Low. During the September 19, 2019 site reconnaissance, SMF 1 was observed as an existing stormwater pond and woods. No new contamination concerns were identified. EDM's regulatory report identified 2 potential contamination sites within the vicinity of SMF 1. None were located onsite. The following provides a discussion of the potential contamination sites: <u>Polk County Household Hazardous Waste Facility</u> <u>5 Environmental Loop</u> <u>NONTSD: FLR000115329</u> <u>ECHO: 110020802710</u> <u>Distance from ROW: 900 feet northwest</u> <u>Contaminants of Concern: Hazardous Waste</u> This site was previously evaluated in the Level I CSER for preliminary ponds dated December 19, 2018. Based on a distance of 900 feet and regulatory status, this facility was considered a low contamination concern to this pond site. <u>North Central Landfill/Polk County Solid Waste</u> <u>10 Environmental Loop (and SR 540)</u> <u>Solid Waste ID: 49722, 95745</u> <u>Distance from ROW: Closed Class I landfill is 1,700 feet west</u> <u>Contaminants of Concern: Solid Waste, Hazardous Waste</u> This site was previously evaluated in the Level I CSER for preliminary ponds dated December 19, 2018. Based on a distance of 900 feet to the nearest contamination concern (Hazardous Waste Collection Facility), regulatory status, and cross-gradient groundwater flow direction of the Polk County North Central Landfill, this facility was considered a low contamination concern to this pond site. No new contamination concerns were identified during this contamination evaluation. Since no new contamination concerns were identified during this contamination evaluation, SMF 1 retains a risk rating of Low.	Low
SMF 2 (Formerly SMF 2A, and eastern portion of SMF 2B)	This site was previously evaluated in the Level I CSER dated December 19, 2018 (formerly SMF 2A, and a portion of SMF 2B).Based on a lack of contamination concerns, SMF 2A and SMF 2B were both assigned a risk rating of No. During the September 19, 2019 site reconnaissance, SMF 2 was observed as pasture. EDM's report identified no regulated facilities within or adjacent to SMF 2. Since no new contamination concerns were identified during this contamination evaluation, SMF 2 retains a risk rating of No.	No

Table 1 – Preferred Pond Sites Summary

Pond ID	Comments	Risk Rating for Preferred Pond Sites
SMF 3 (Formerly western portion of SMF 3B)	This site was previously evaluated in the Level I CSER for preliminary ponds dated December 19, 2018. Based on the proximity to the former strip mine located adjacent south and west, SMF 3B was assigned an initial risk rating of Low. During the September 19, 2019 site reconnaissance, SMF 3 was observed as pasture. No contamination concerns were noted. EDM's regulatory report identified 1 potential contamination site within the vicinity of SMF 3. None were located onsite. This site was also identified in the Level I CSER for the mainline. The following provides a discussion of the this site: <u>Polk County Board of County Commissioners</u> <u>3000 Sheffield Road</u> <u>Solid Waste No: 95912</u> <u>Distance from ROW: 3,700 feet south of SMF 3</u> <u>Contaminant of Concern: Solid Waste (waste tire collector)</u> For the Solid Waste database listing, EDM's report states this facility is a registered waste tire collector. Based on a distance of 3,700 feet, and the nature of the regulatory database listing, this facility is not considered a contamination concern to SMF 3. Since no new contamination concerns were identified, SMF 3 retains a risk rating of Low.	Low
FPC 1	FPC 1 was not previously evaluated in the Level I CSER for preliminary ponds. During the site reconnaissance, FPC 1 was observed as pasture and woods. A mobile pump with an empty 55-gallon drum (see photo below) was observed in the central area onsite. No stains or odors were noted at the pump. Offsite, two 1,000-gallon Aboveground Storage Tanks (ASTs) (not labeled, presumably diesel) were observed approximately 30 feet southwest of FPC 1 (see photo below). The ASTs were situated in concrete containment. No obvious stained soil or stressed vegetation was observed. Mobile pump with 55-gallon drum (empty), central area looking northeast Offsite, 2 ASTs located adjacent south EDM's report identified no regulated facilities within or adjacent to FPC 1. Tierra reviewed historic aerial photographs from 1941 to 2018. Based on Tierra's review, FPC 1 was depicted as pasture, woods and trails from 1941 to 2018. Offsite southwest, 2 ASTs were added in 2009. Tierra reviewed the "Bartow, Fla." topographic map dated 1949 and photorevised in 1987. The map depicts FPC 1 in white shading indicating pasture. Based on the proximity to 2 petroleum ASTs (30 feet offsite), FPC 1 is assigned a risk rating of Low.	Low

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Table 1 – Preferred Pond Sites Summary

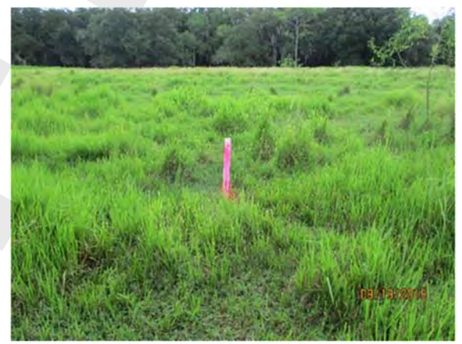
Pond ID	Comments	Risk Rating for Preferred Pond Sites
FPC 2 (formerly SMF 3B)	FPC 2 was previously evaluated in the Level I CSER dated December 19, 2018 (eastern portion of SMF 3B). Based on the proximity to the former strip mine located adjacent south, this pond site was assigned an initial risk rating of Low. During the September 19, 2019 site reconnaissance, FPC 2 was observed as pasture. No contamination concerns were noted. EDM's report identified no regulated facilities within or adjacent to FPC 2. Based on the lack of new contamination concerns, FPC 2 retains a risk rating of Low.	Low
FPC 3	FPC 3 was not previously evaluated in the Level I CSER for preliminary ponds. During the site reconnaissance, FPC 3 was observed as pasture. Two piezometers were observed onsite. The piezometers were installed by Tierra for geotechnical purposes (to measure depth to shallow groundwater). Offsite, a manmade pond is located adjacent south.  Piezometer in north-central area looking southeast South-central area looking south EDM's regulatory report identified 1 potential contamination site within the vicinity of FPC 3. None were located onsite. The following provides a discussion of the potential contamination site: <u>Polk County Board of County Commissioners</u> <u>3000 Sheffield Road</u> <u>Solid Waste ID: 95912</u> <u>Distance from ROW: 800 feet northeast</u> <u>Contaminants of Concern: Solid Waste, Petroleum</u> During the site reconnaissance, this site was observed as Polk County Fleet Management facility. For the Solid Waste database listing, EDM's report states this facility is a registered waste tire collector. Based on the April 25, 2019 FDEP inspection form, this facility has two 10,000-gallon ASTs. The ASTs are located approximately 1,300 feet northeast of FPC 3. Based on a distance of at least 800 feet, this facility is not considered a contamination concern to FPC 3. Tierra reviewed historic aerial photographs from 1941 to 2018. Based on Tierra's review, FPC 3 was depicted as pasture from 1941 to 1957. Earthwork (phosphate mining) was depicted in 1968 and 1971. A haul road was depicted along the east boundary in 1980. Possible earthwork (reclamation) was depicted in 1993. FPC 3 appears as pasture, similar to it's current configuration since 1994. Tierra reviewed historic topographic map "Bartow, Fla." Dated 1949 and photorevised in 1987. The map depicts FPC 3 in white shading indicating pasture with purple shading labeled "Reclaimed Strip Mine." Based on the historic use as part of a phosphate mine, FPC 3 is assigned a risk rating of Medium.	Medium

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Table 1 – Preferred Pond Sites Summary

Pond ID	Comments	Risk Rating for Preferred Pond Sites
FPC 4	FPC 4 was not previously evaluated in the Level I CSER for preliminary ponds. During site reconnaissance, FPC 4 was observed as portions of 4 residential properties: 3423, 3427, 3447 and 3453 US Highway 17. Three single family homes were located onsite at 3423, 3447, and 3453 US Highway 17. Several paint and insect spray containers, each less than 2-gallons were observed inside detached sheds located at each of these 3 residences. Shed floors were concrete and wood. Additionally, the western portion of FPC 4 was observed as an overgrown, low, wet area. One 3-inch diameter metal pipe (presumably a former potable well) was observed approximately 10 feet north of the residence at 3423 US Highway 17. Septic tanks/drainfields were not obvious onsite. Houses (3447 & 3453 US 17) in east-central area Shed in east-central area House (3423 US 17) in east-central area onsite Shed in east-central area Offsite, an abandoned railroad corridor was observed approximately 170 feet north. The rails and lumber were removed. Additionally, a Tampa Electric Company (TECO) substation was observed approximately 220 feet north. EDM's regulatory report identified 3 potential contamination sites within the vicinity of FPC 4. None were located onsite. All 3 sites were also identified in the Level I CSER for the mainline. The following provides a discussion of the 3 potential contamination sites: <u>Lake Hancock</u> <u>3217 Old Bartow Eagle Lake Rd, Bartow</u> <u>ECHO ID: 110059798759</u> <u>Distance from ROW: 0.85 miles west</u> <u>Contaminants of Concern: NA</u> During the site reconnaissance, this site was observed as pasture. This site is listed on the Environmental Protection Agency's (EPA's) Enforcement and Compliance History Online (ECHO) database. In this instance, the listing is due to an NPDES permit. Presumably, the permit was issued for earthwork activities taking place circa 2012 located approximately 0.85 miles west of this project. No code violations, enforcements or other contamination concerns are reported. Based on the separation distance and lack of contamination concerns, this facility is not a contamination concern to FPC 4. <u>Christina's Market</u> <u>3468-3470 US 17, Bartow</u> <u>Fac. ID: 8623579</u> <u>Distance from ROW: 300 feet east</u> <u>Contaminants of Concern: Petroleum</u> During the site reconnaissance, this facility was observed as Lizzy's Supermarket/OnPoint Wingz. According to information found on the Florida Department of Environmental Protection (FDEP) OCULUS database, this facility formerly maintained two 8,000-gallon unleaded gasoline Underground Storage Tanks (USTs), removed in 1992. Petroleum discharges were reported on January 27, 1989 and October 29, 1991. Cleanup was combined and the discharges were issued a Site Rehabilitation Completion Order (SRCO) on July 10, 2008. Given the lack of current contamination concerns and significant distance, this facility is not a contamination concern to FPC 4.	Low

Table 1 – Preferred Pond Sites Summary		
Pond ID	**Comments**	**Risk Rating for Preferred Pond Sites**
	Scrap It III / Bartow Auto Salvage 3450 US 17, Bartow Hazardous Materials ID: FLR000177469 Distance from ROW: 220 feet south Contaminants of Concern: Petroleum, automotive fluids During the site reconnaissance, this facility was observed as Scrap It III, an auto salvage yard. According to information found on FDEP's MapDirect database, this facility is a registered Conditionally Exempt Small Quantity Generator (CESQG) of hazardous wastes with no unresolved code violations, enforcements, or other contamination concerns reported. Given the lack of reported contamination concerns and significant distance, this facility is a low contamination concern to FPC 4. Tierra reviewed historic aerial photographs from 1941 to 2018. Based on Tierra's review, FPC 4 is depicted as woods and low, wet areas from 1941 to 1968. The properties were depicted similar to their current configurations with 3 structures (residences) onsite since 1971. Tierra reviewed historic topographic map "Bartow, Fla." Dated 1949 and photorevised in 1987. The map depicts 3 residential structures in purple shading indicating they were added between 1949 and 1987. The western area was depicted as swamp or marsh. Based on the proximity to Scrap It III automobile salvage yard, FPC 4 is assigned a risk rating of Low.	

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4.0 Summary

A total of 7 preferred pond sites were evaluated during this contamination evaluation. The following table presents a summary of the risk ratings assigned for these pond sites:

Table 2 – Risk Rating Matrix – Preferred Pond Sites				
	Initial Risk Ratings			
	High	Medium	Low	No
Pond Sites	0	1	5	1

Based on the conclusions of the study and the risk ratings noted above, the following recommendations are made for this project:

Additional information may become available or site-specific conditions may change from the time this report was prepared and should be considered prior to acquiring right-of-way and/or proceeding with roadway construction. Variables that may change the risk rating include a facility's non-compliance to environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessment of the facilities should be considered.

For the pond alternatives rated "No" for potential contamination, no further action is planned. The site has been evaluated and determined not to have potential contamination risk to the study area at this time.

For those pond alternatives rated "Low" for potential contamination, no further action is required at this time. These sites/facilities have the potential to impact the study area, but based on select variables have been determined to have low risk to the project at this time.

For risk ratings of High or Medium, Level II field screening should be conducted. These sites have been determined to have potential contaminants, which may impact the project. A soil and groundwater sampling plan should be developed for each site. The sampling plan should provide sufficient detail as to the number of soil and groundwater samples to be obtained and the specific analytical test to be performed. A site location sketch for each facility showing all proposed boring locations and groundwater monitoring wells should be prepared. The District Contamination Impact Coordinator (DCIC) should be consulted regarding the site specific Level II field screening scope of work.

A NESHAP Asbestos survey may be warranted for structures (including buried cementitious pipe, if any) identified on FPC 4.

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CSER APPENDIX A

Project Location Map and Pond Alternative Location Maps

DRAFT

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

PROJECT LOCATION MAP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-1

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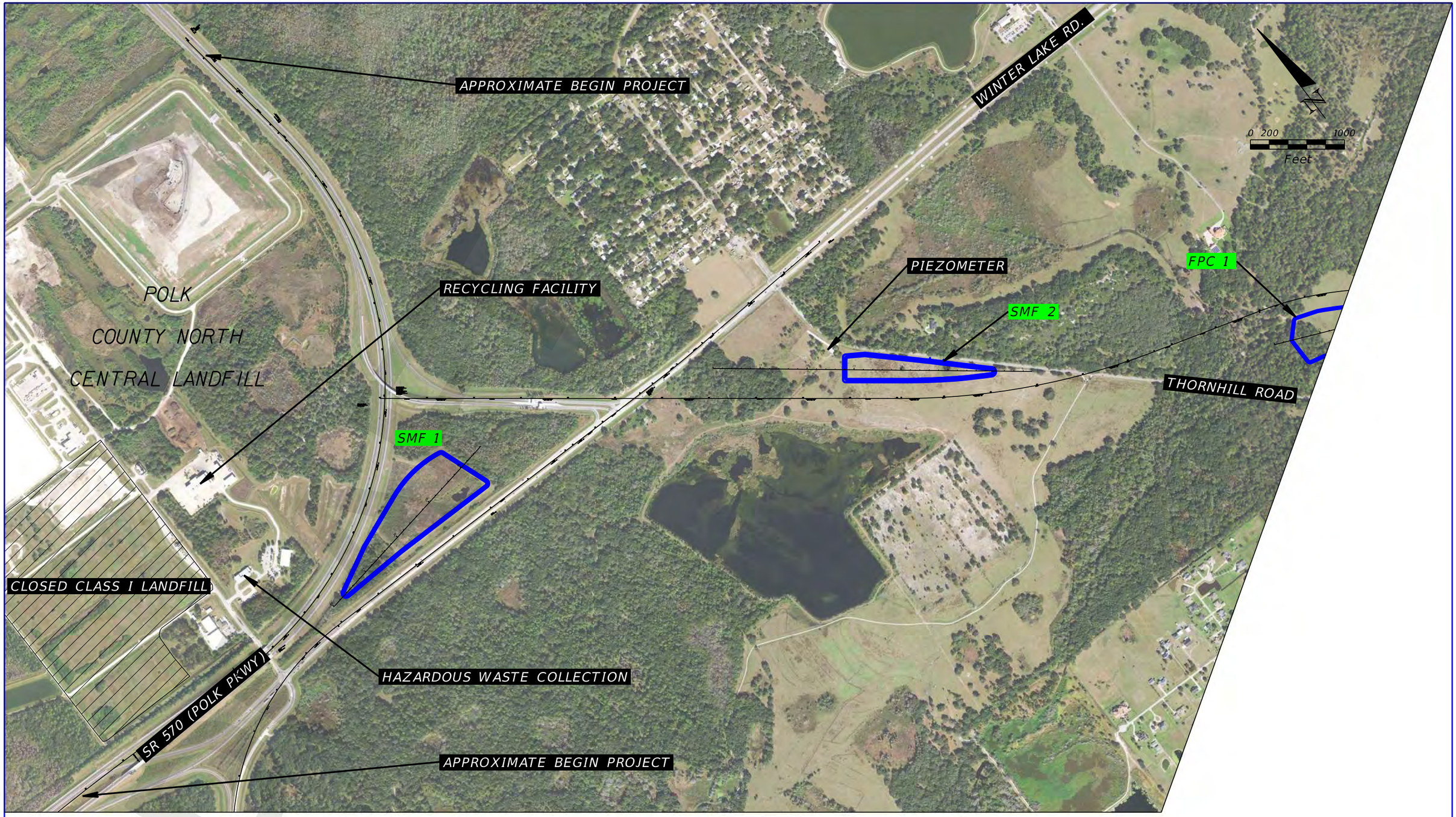

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME GREEN = NO/LOW RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-2

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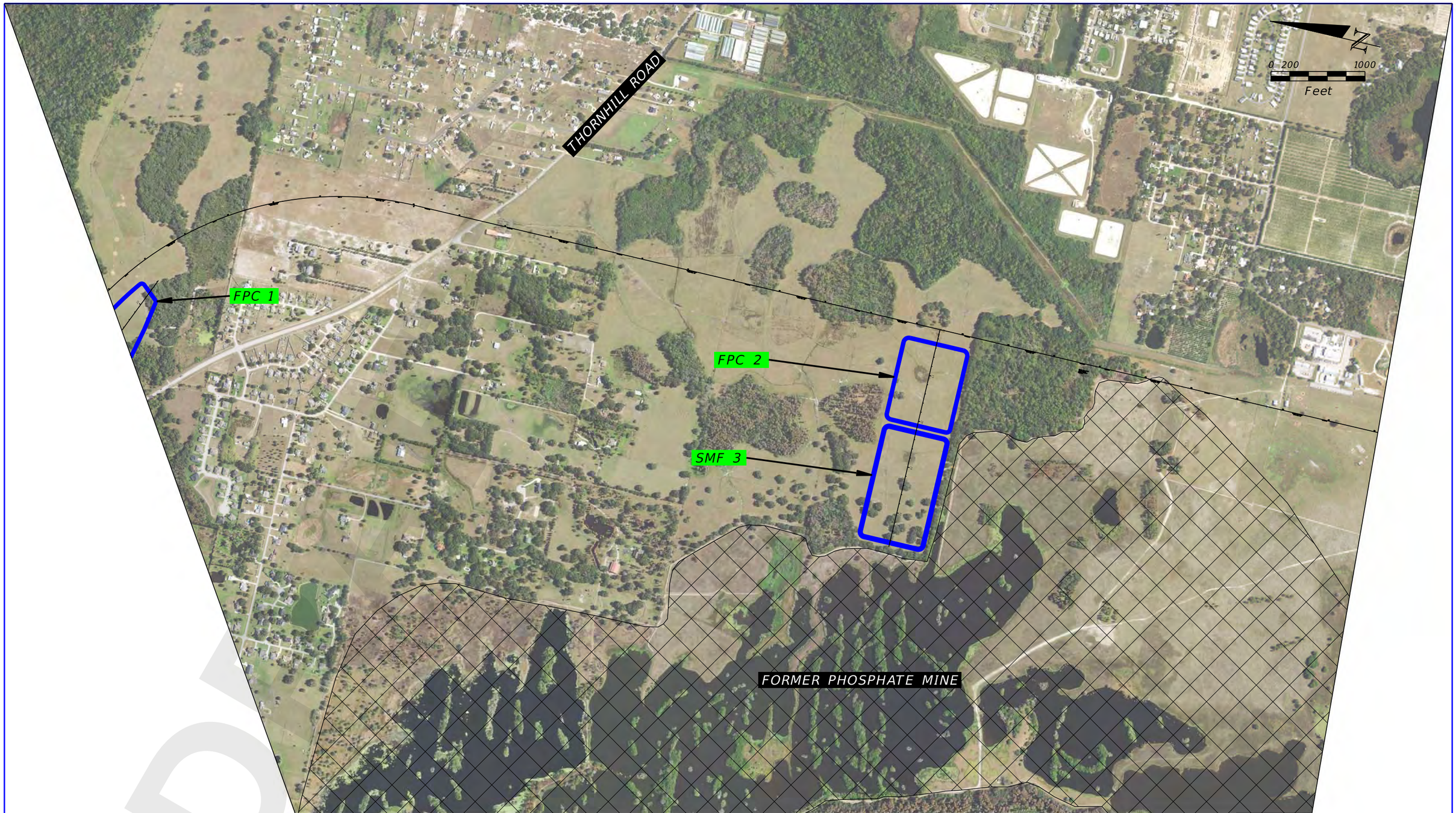

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME GREEN = NO/LOW RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-3

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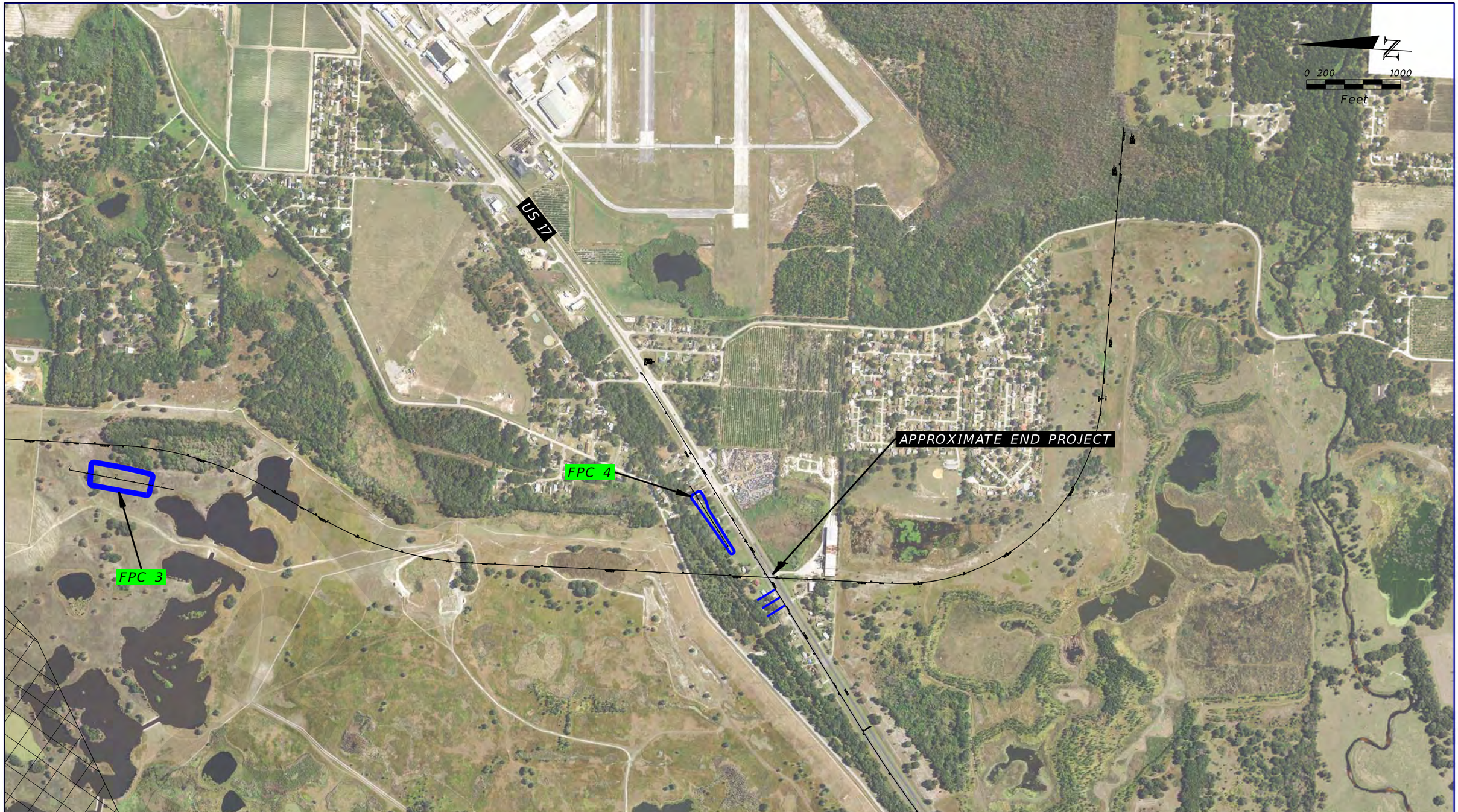

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME GREEN = NO/LOW RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-4

bsawaska 9/17/2019 12:25:24 PM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvAlts03.dgn

CSER APPENDIX B

Environmental Database Report

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Environmental Data Report

Custom Radius Research

CCP-1 PART B

Polk County, Florida

Prepared For:

Tierra Inc
7351 Temple Terrace Hwy
Tampa, FL 33637

Prepared By:

Environmental Data Management, Inc.
2840 West Bay Drive, Suite 208
Largo, Florida 33770

September 20, 2019

DRAFT

Environmental Data Management, Inc.
2840 West Bay Drive, Suite 208
Largo, Florida 33770
Tel. (727) 586-1700
http://www.edm-net.com

September 20, 2019

Chris Garth
Tierra Inc
7351 Temple Terrace Hwy
Tampa, FL 33637

Subject: **Custom Radius Research - EDM Project #24922**

Dear Mr. Garth

Thank you for choosing Environmental Data Management, Inc. The following report provides the results of our environmental data research that you requested for the following location:

CCP-1 PART B

Polk County, Florida

The following is a summary of the components contained within this report:

- **Executive Summary** –lists the databases that were searched for this report, the search distance criteria and the number of sites identified for each database.
- **Map of Study Area**– street map showing the location of the Subject Property and any regulatory listed sites identified within the search criteria.
- **Site Summary Table** –displays the Map ID number, Permit or Registration number, Name/Address and the Government Database(s) for the identified regulatory listed sites.
- **Detail Reports** – data detail for each database record identified.
- **Proximal Records Table** – a listing of potentially relevant sites identified just beyond the search criteria.
- **Non-Mapped Records Table** - lists those government records that do not contain sufficient address information to plot within our GIS system, but may still exist within your study area.
- **Addl Maps (where applicable)** – includes Recent Aerial Photo, USGS Topographic maps, FEMA Floodplain & NWI Wetland Map, map of statewide American Indian Lands and our Environmental Impact Areas map, showing the location of suspect sites such as NPL/STNPL, Brownfields, FUDS, etc.... Our Florida well data report is also include with the Standard and Comprehensive formats.
- **Agency List Descriptions –** defines the regulatory databases included in this report along with the dates that each database was last updated by the respective agency and EDM.

At EDM we take great pride in our work, and continually strive to provide you with the most accurate and thorough research service available. This report is only intended as a means to assist in identifying locations that may pose an environmental concern relative to the property under evaluation. Its use is not intended to replace the need for a complete environmental assessment or regulatory file review, but rather as a supplement to the overall evaluation.

Thank you again for selecting EDM as your data research provider. Should you have any questions regarding this report or our service, please feel free to contact us. We appreciate the opportunity to be of service to you and look forward to working with you in the future.

ENVIRONMENTAL DATA MANAGEMENT, INC.

DRAFT

Report Date: 9/20/2019

Executive Summary

Client Information	Project Information
Tierra Inc 7351 Temple Terrace Hwy Tampa FL 33637 Client Job No: Client P.O. No:	Custom Radius Research CCP-1 PART B Polk County, Florida EDM Job No# 24922

The following table displays the databases that were included in the research provided, the respective search distance for each database and the number of records identified for each database. The distance values indicated are measured from the centroid of the Subject Property. The absence of records in this table and the Site Summary Tables indicates that our research found no data for other sites located within the specified search distances.

	# Found
EPA DATABASES	
National Priorities List(NPL)	0
Superfund Enterprise Management System Active Site Inventory List(SEMSACTV)	0
Comprehensive Env Response, Compensation & Liability Information System List(CERCLIS)	0
Superfund Enterprise Management System Archived Site Inventory List(SEMSARCH)	0
Archived Cerclis Sites(NFRAP)	0
Emergency Response Notification System List(ERNS)	0
RCRIS Handlers with Corrective Action(CORRACTS)	0
RCRA-Treatment, Storage and/or Disposal Sites(TSD)	0
RCRA-LQG,SQG,CESQG and Transporters(NONTSD)	2
Tribal Tanks List(TRIBLTANKS)	0
Tribal Lust List(TRIBLLUST)	0
Brownfields Management System(USBRWNFLDS)	0
Institutional and/or Engineering Controls(USINSTENG)	0
NPL Liens List(NPLLIENS)	0
Enforcement and Compliance History(ECHO)	4
FDEP DATABASES	
State NPL Equivalent(STNPL)	0
State CERCLIS/SEMS Equivalent(STCERC)	0
Solid Waste Facilities List(SLDWST)	3
Leaking Underground Storage Tanks List(LUST)	1
Underground/Aboveground Storage Tanks(TANKS)	1
State Designated Brownfields(BRWNFLDS)	0
Voluntary Cleanup List(VOLCLNUP)	0
Institutional and/or Engineering Controls(INSTENG)	0
Dry Cleaners List(DRY)	0

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***** Disclaimer *****

Please understand that the regulatory databases we utilize were not originally intended for our use, but rather for the source agency's internal tracking of sites for which they have jurisdiction or other interest. As a result of this difference in intended use, their data is frequently found to be incomplete or inaccurate, and is less than ideal for our use. Additionally, limitations exist in mapping data detail and accuracy. Our report is not to be relied upon for any purpose other than to "point" at approximate locations where further evaluation may be warranted. No conclusion can be based solely upon our report. Rather, our report should be used in conjunction with other relevant information to direct your attention at potential problem areas; which should be followed up by site inspections, interviews with relevant personnel and regulatory file review. Readers proceed at their own risk in relying upon this data, in whole or in part, for use within any evaluation. The EDM Service Request Form contains more detailed language with regard to such limitations, the terms of which the reader must accept in their entirety before utilizing this report. If the signed contract is not available to the reader, EDM will gladly furnish a copy upon request. Requests via email authorization are construed to be in accordance with these terms.

EDM

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Custom Radius Research Report
Street Map

Source: US Census Bureau TIGER Files

Map Scale and Property Boundaries are Approximate

Approximate Site Boundary

NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST sites - 1/2 Mile

NPLLIENS. CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, ERNS, NONTSD, ECHO, TANKS, & INSTENG sites - 1/8 Mile

Subject Property

CCP-1 PART B
Polk County, Florida

EDM Job No: 24922
September 20, 2019

Custom Radius Research Report
2017 Aerial Photo

Source: Florida Department of Transportation

Map Scale and Property Boundaries are Approximate

Approximate Site Boundary

NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST sites - 1/2 Mile

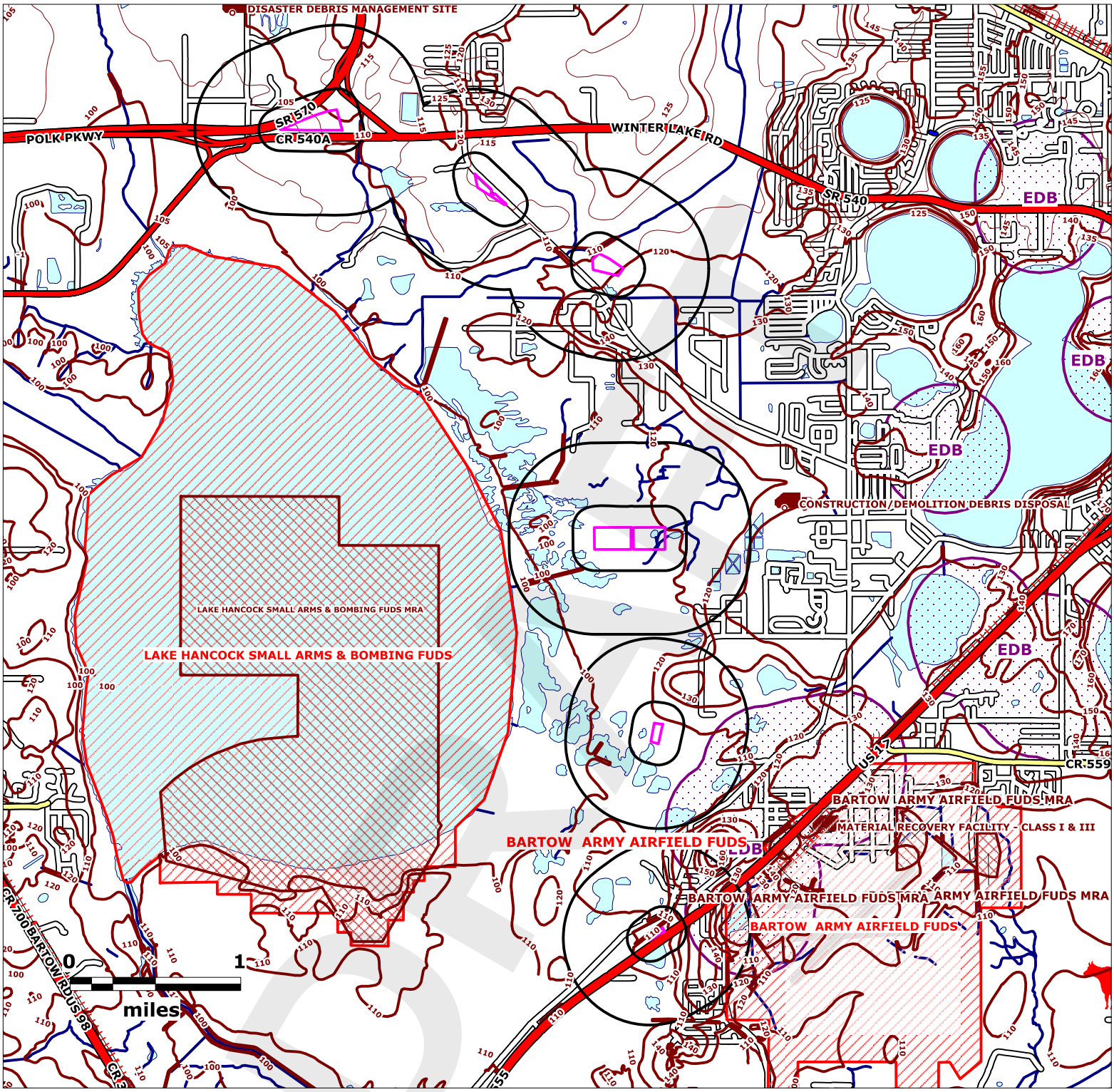
NPLLIENS. CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, ERNS, NONTSD, ECHO, TANKS, & INSTENG sites - 1/8 Mile

Subject Property

CCP-1 PART B
Polk County, Florida

EDM Job No: 24922
September 20, 2019

Custom Radius Research Report
Environmental Impact Areas Map



Source: FDEP and USEPA Geodata

Map Scale and Property Boundaries are Approximate

Subject Property

CCP-1 PART B
Polk County, Florida

EDM Job No: 24922
September 20, 2019

- FDEP Brownfield Areas
- FDEP Brownfield Sites
- USEPA NPL & FDEP STNPL Sites
- FDEP Delineated GW Contamination
- Formerly Used Defense Sites FUDS
- FUDS Munitions Response Areas
- FDEP Cattle Dipping Vat
- FDEP Solid Waste Sites
- Approximate Site Boundary

ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Site Summary Table

Report Date: 9/20/2019

MapID & Pgm List	Fac ID No	Site Dist(Mi) & Direction	Site Name	Site Address
1				
ECHO	110043769099	0.08 1	BARTOW AUTO SALVAGE	3450 US HIGHWAY 17 N BARTOW, FL 33830
ECHO	110044886004	0.08 1	SCRAP IT III LLC	3450 US HIGHWAY 17 N BARTOW, FL 33830
NONTSD	FLR000177469	0.08 1	BARTOW AUTO SALVAGE	3450 US HIGHWAY 17 N BARTOW, FL 338309235
2				
LUST	8623579	0.09 1	CHRISTINAS MARKET-MATTIES GROCERY	3470 HWY 17 N BARTOW, FL 33830
TANKS	8623579	0.09 1	CHRISTINAS MARKET-MATTIES GROCERY	3470 HWY 17 N BARTOW, FL 33830
3				
ECHO	110059798759	0.08 1	LAKE HANCOCK	3217 OLD BARTOW EAGLE LAKE RD BARTOW, FL 33830
4				
SLDWST	95912	0.42 1	POLK COUNTY BOARD OF CO COMMISSIONERS	3000 SHEFFIELD RD , FL
5				
ECHO	110020892710	0.10 1	POLK COUNTY HOUSEHOLD HAZARDOUS WASTE FACILITY	5 ENVIRONMENTAL LOOP S WINTER HAVEN, FL 33880
NONTSD	FLR000115329	0.10 1	POLK COUNTY HOUSEHOLD HAZARDOUS WASTE FA	5 ENVIRONMENTAL LOOP S WINTER HAVEN, FL 33880
6				
SLDWST	49722	0.45 1	NORTH POLK CENTRAL LF (SITE 201)	7399 DECASTRO ROAD WINTER HAVEN, FL 33880
SLDWST	95745	0.45 1	POLK COUNTY SOLID WASTE DIVISION	10 ENVIRONMENTAL LOOP , FL

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USEPA RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION (RCRAInfo)

(NONTSD)

FACILITY ID NUMBER, NAME AND LOCATION

FLR000177469
BARTOW AUTO SALVAGE
3450 US HIGHWAY 17 N
BARTOW, FL 33830-9235

EPA ENVIROFACTS ON LINE REPORT (May Not Be Available For All Records)

CONTACT INFORMATION:

2600 BLAIR STONE ROAD
TALLAHASSEE FL 32399-2400
Contact: NON NOTIFIER
Contact Telephone: 850-245-8707
Contact Email:
Agency Lat - Lon:

MAP ID NUMBER: 1
Dist (Miles): 0.08
Direction:

NONTSD

BRS Reported Waste:

RCRIS INFORMATION

NOTIFICATION DATE: 4/3/2013 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 3/27/2012 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 7/28/2011 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

VIOLATION INFO

EVAL DT: 20110728 **EVAL AGCY:** S **EVAL TYPE:** COMPLIANCE EVALUATION INSPECTION ON-SITE

VIOL FOUND?: Y

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VIOL TYPE: XXS State Statute or Regulation
VIOL DT: 20110728 **VIOL DETER AGCY:** S **VIOL RESP AGCY:** S
ENF DT: 20120124 **ENF AGCY:** S **ENF TYPE:** DEP MEETING
COMPL DT: 20120327

VIOL TYPE: PCR Permit Condition or Requirement
VIOL DT: 20110728 **VIOL DETER AGCY:** S **VIOL RESP AGCY:** S
ENF DT: 20120124 **ENF AGCY:** S **ENF TYPE:** DEP MEETING
COMPL DT: 20120327

VIOL TYPE: XXS State Statute or Regulation
VIOL DT: 20110728 **VIOL DETER AGCY:** S **VIOL RESP AGCY:** S
ENF DT: 20120104 **ENF AGCY:** S **ENF TYPE:** DEP MEETING
COMPL DT: 20120327

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

FRS ID NUMBER, NAME AND LOCATION:

110043769099
BARTOW AUTO SALVAGE
3450 US HIGHWAY 17 N
BARTOW, FL 33830

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 27.94176/ -81.80184

MAP ID NUMBER: 1
Dist (Miles): 0.08
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: N
SDWISID?: N
RCRAInfo ID?: Y
TRIS ID?: N
GHG ID?: N
FAC SIC CODES:
FAC NAICS CODES: 423930
TRIS REPORTER?:
FIPS CODE: 12105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105015301100
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 46.464
POP /SQ MI WITHIN 3 MI: 311.93
TRIBAL WITHIN 25 MI:

 # INSPS IN 5 YRS: 1
LAST INSP: 4/3/2013
DAYS LAST INSP:
 # INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
 # FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT : 4/23/2012
 # PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP: 4/3/2013
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF: 4/23/2012
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER:

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:
CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
 # CAA INFORMAL ENF ACTS LAST 5 YRS:
 # CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA TOTAL PENALTIES:
CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR COMPL:
CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID:
CWA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
 # CWA INFORMAL ENF ACTS LAST 5 YRS:
 # CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS:

CWA CURR COMPL:
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:

CWA 3YR QRTS EFFL EXCEED:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

RCRIS INFO:

RCRA ID: FLR000177469
RCRA PERMIT TYPE: CESQG
NAICS CODE: 423930
RCRA INSPS IN LAST 5 YRS: 1
RCRA DAYS LAST EVAL: 1740
RCRA INFORMAL ENF ACTS LAST 5 YRS:
RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION: 04/23/2012

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS: 0

RCRA CURR COMPL: No Violation
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
SDWA INFORMAL ENF ACTS LAST 5 YRS:
SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

FRS ID NUMBER, NAME AND LOCATION:

110044886004
SCRAP IT III LLC
3450 US HIGHWAY 17 N
BARTOW, FL 33830

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 27.94176/ -81.80184

MAP ID NUMBER: 1
Dist (Miles): 0.08
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: Y
SDWISID?: N
RCRAInfo ID?: N
TRIS ID?: N
GHG ID?: N
FAC SIC CODES: 5015
FAC NAICS CODES: 423140
TRIS REPORTER?:
FIPS CODE: FL105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105015301100
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 46.464
POP /SQ MI WITHIN 3 MI: 311.93
TRIBAL WITHIN 25 MI:

INSPS IN 5 YRS: 0
LAST INSP:
DAYS LAST INSP:
INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT :
PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP:
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF:
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER: Y

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:

CAA TOTAL PENALTIES:

CAA CURR COMPL:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
CAA INFORMAL ENF ACTS LAST 5 YRS:
CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID: FLR05H230
CWA PERMIT TYPE: Minor
NAICS CODE: 423140
SIC CODE: 5015
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
CWA INFORMAL ENF ACTS LAST 5 YRS:
CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS: 0

CWA CURR COMPL: No Violation
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:
CWA 3YR QRTS EFFL EXCEED:

RCRIS INFO:

RCRA ID:
RCRA PERMIT TYPE:
NAICS CODE:
RCRA INSPS IN LAST 5 YRS:
RCRA DAYS LAST EVAL:
RCRA INFORMAL ENF ACTS LAST 5 YRS:
RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION:

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS:

RCRA CURR COMPL:
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
SDWA INFORMAL ENF ACTS LAST 5 YRS:
SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:
GHG EMMISSIONS MT: N

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FDEP LEAKING UNDERGROUND STORAGE TANKS REPORT

(LUST)

FACILITY ID NUMBER, NAME AND LOCATION

8623579
CHRISTINAS MARKET-MATTIES GROCERY
3470 HWY 17 N
BARTOW, FL 33830-

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

OWNERSHIP INFO:

PROPERTY OWNER
RED HOLDING LLC
1909 VERANO DR
HAINES CITY, FL 33844-
(863)421-0148
COUNTY ID: 53 POLK
AGCY LAT/LON(DMS): 27,56,31.82 81,48,2.63
FAC OPERATOR: THOMAS, DARRELL
FAC TEL #: (941)533-6428

MAP ID NUMBER: 2
Dist (Miles): 0.09
Direction:

LUST

FAC STATUS: CLOSED **FAC TYPE:** A - Retail Station

SCORE 66 **SCORE EFF DT:** 1/6/1998 **RANK:** 1381 **SCORE WHEN RANKED:** 66 **FAC CLNUP STATUS:**

DISCHARGE INFORMATION

Mapid: 2

DISCHARGE DATE: 1/27/1989

INSPECTION DATE:
CLEANUP WORK STATUS: COMPLETED
CLEANUP REQUIRED? R - CLEANUP REQUIRED **CLEANUP COMBINED:**
INFO SOURCE: E - EDI
DISCH CLNUP STATUS: 7/10/2008 SRCR - SRCR COMPLETE
CONTAMINATED MEDIA?: **SOIL:** N **SUR WATER:** N **GR WATER:** Y **MON WELL:** Y **# DW WELLS CONTAMINATED:** 0
POLLUTANT : Y - Unknown/Not Reported **GALLONS** **OTHER**

CLEANUP INFORMATION

Mapid: 2

PGM ELIG OFF:
PGM ELIG SCORE: **PGM ELIG SCORE EFF DT:** **PGM ELIG RA**
ELIG STAT: **ELIG STAT DT:** **APPL RCVD:** **LOI:** **ELIG LTR SNT:** **REDETERM:**
DEDUCT AMT: **DEDUCT PD TO DT:** **COPAY AMT:** **COPAY TO DT:** **CAP AMT:**
CLNUP PROG: **CLNUP OFF:** PCLP53 - FL DOH IN POLK COUNTY

SITE ASSESSMENT

CLNP RESP: -
FUND ELLIG: -
ACTUAL COMPLETION DATE:
PAYMENT DATE:
ACTUAL COST:

REMEDIAL ACTION PLAN

CLEANUP RESP: -
FUND ELLIG: -
ORDER APPRV DATE:
ACTUAL COMPL DATE:
PAYMENT DATE:
ACTUAL COST:

REMEDIAL ACTION

CLEANUP RESP: -
FUND ELLIG: -
ACTUAL COST:
YEARS TO COMPL: 0

SITE REHABILITATION COMPLETION REPORT

ACTION TYPE: SRCR - SITE REHABILITATION COMPLETION REPORT
SUBMIT DATE: 01-04-2008
REVIEW DATE: 01-16-2008
ISSUE DATE: 07-10-2008
COMPL STATUS: A - APPROVED
COMPL STATUS DT: 06-30-2008
COMMENTS:

SOURCE REMOVAL

CLEANUP RESP: -
FUND ELLIG: -
ACTUAL COMPLETION DATE:
FREE PRODUCT REMOVAL?(Y/N):
SOIL REMOVAL? (Y/N):
SOIL TONNAGE REMOVED:
SOIL TREATMENT?(Y/N):
OTHER TREATMENT?:
ALT PROC STATUS:
ALT PROC STATUS DT:
ALT PROC COMMENT:

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FDEP LEAKING UNDERGROUND STORAGE TANKS REPORT

(LUST)

DISCHARGE INFORMATION

Mapid: 2

DISCHARGE DATE: 10/19/1991

INSPECTION DATE: 3/5/1992
CLEANUP WORK STATUS: COMPLETED
CLEANUP REQUIRED? R - CLEANUP REQUIRED
CLEANUP COMBINED:
INFO SOURCE: A - ABANDONED TANK RESTORATION
DISCH CLNUP STATUS: 7/10/2008 SRCR - SRCR COMPLETE
CONTAMINATED MEDIA?: **SOIL:** **SUR WATER:** **GR WATER:** **MON WELL:** **# DW WELLS CONTAMINATED:**
POLLUTANT : B - Unleaded Gas **GALLONS** **OTHER**

CLEANUP INFORMATION

Mapid: 2

PGM ELIG OFF: PCLP53 - FL DOH IN POLK COUNTY
PGM ELIG SCORE: 66 **PGM ELIG SCORE EFF DT:** 1/6/1998 **PGM ELIG RA** 1381
ELIG STAT: E **ELIG STAT DT:** 6/9/1992 **APPL RCVD:** 7/30/1991 **LOI:** **ELIG LTR SNT:** 6/9/1992 **REDETERM:** N
DEDUCT AMT: 500 **DEDUCT PD TO DT:** 500 **COPAY AMT:** 0 **COPAY TO DT:** 0 **CAP AMT:**
CLNUP PROG: A - ABANDONED TANK RESTO **CLNUP OFF:** PCLP53 - FL DOH IN POLK COUNTY

SITE ASSESSMENT

CLNP RESP: ST - STATE
FUND ELLIG: SCR - PRIORITY SCORE ORDER
ACTUAL COMPLETION DATE:
PAYMENT DATE:
ACTUAL COST:

REMEDIAL ACTION PLAN

CLEANUP RESP: ST - STATE
FUND ELLIG: -
ORDER APPRV DATE:
ACTUAL COMPL DATE:
PAYMENT DATE:
ACTUAL COST:

REMEDIAL ACTION

CLEANUP RESP: ST - STATE
FUND ELLIG: -
ACTUAL COST:
YEARS TO COMPL: 0

SITE REHABILITATION COMPLETION REPORT

ACTION TYPE: SRCR - SITE REHABILITATION COMPLETION REPORT
SUBMIT DATE: 01-04-2008
REVIEW DATE: 01-04-2008
ISSUE DATE: 07-10-2008
COMPL STATUS: A - APPROVED
COMPL STATUS DT: 06-30-2008
COMMENTS:

SOURCE REMOVAL

CLEANUP RESP: -
FUND ELLIG: -
ACTUAL COMPLETION DATE:
FREE PRODUCT REMOVAL?(Y/N):
SOIL REMOVAL? (Y/N):
SOIL TONNAGE REMOVED:
SOIL TREATMENT?(Y/N):
OTHER TREATMENT?:
ALT PROC STATUS:
ALT PROC STATUS DT:
ALT PROC COMMENT:

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FDEP LEAKING UNDERGROUND STORAGE TANKS REPORT

TANKS Data for LUST Sites:

FACILITY ID NUMBER, NAME AND LOCATION

8623579
CHRISTINAS MARKET-MATTIES GROCERY
3470 HWY 17 N
BARTOW, FL 33830

OWNERSHIP INFORMATION

,
CONTACT TEL #:
CONTACT:
FACILTY TEL #: 9415336428
COUNTY ID: 53 POLK

MAP ID NUMBER: 2
Dist (Miles): 0.09
Direction:

TANKS

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FAC STATUS: CLOSED **FAC TYPE:** Retail Station

TANK #:	TANK VOL(GALS):	INST.DATE:	TANK CONTENTS:	TANK POSITION:	TANK STATUS (as of...):
1	8000	01-Dec-1977	Unleaded Gas	UNDERGROUND	REMOVED 31-May-1992

CONSTRUCTION TYPE: BALL CHECK VALVE/FIBERGLASS
PIPING TYPE:
LEAK MONITORING: UNKNOWN

TANK #:	TANK VOL(GALS):	INST.DATE:	TANK CONTENTS:	TANK POSITION:	TANK STATUS (as of...):
2	8000	01-Dec-1977	Unleaded Gas	UNDERGROUND	REMOVED 31-May-1992

CONSTRUCTION TYPE: BALL CHECK VALVE/FIBERGLASS
PIPING TYPE:
LEAK MONITORING: UNKNOWN

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

FRS ID NUMBER, NAME AND LOCATION:

110059798759
LAKE HANCOCK
3217 OLD BARTOW EAGLE LAKE RD
BARTOW, FL 33830

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 27.943232/ -81.80324

MAP ID NUMBER: 3
Dist (Miles): 0.08
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: Y
SDWISID?: N
RCRAInfo ID?: N
TRIS ID?: N
GHG ID?: N
FAC SIC CODES:
FAC NAICS CODES:
TRIS REPORTER?:
FIPS CODE: FL105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105014702204
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 46.108
POP /SQ MI WITHIN 3 MI: 339.15
TRIBAL WITHIN 25 MI:

 # INSPS IN 5 YRS: 0
LAST INSP:
DAYS LAST INSP:
 # INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
 # FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT :
 # PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP:
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF:
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER:

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:
CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
 # CAA INFORMAL ENF ACTS LAST 5 YRS:
 # CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA TOTAL PENALTIES:
CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR COMPL:
CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID: FLR10NZ43
CWA PERMIT TYPE: Minor
NAICS CODE:
SIC CODE:
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
 # CWA INFORMAL ENF ACTS LAST 5 YRS:
 # CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS: 0

CWA CURR COMPL: No Violation
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:
CWA 3YR QRTS EFFL EXCEED:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

RCRIS INFO:

RCRA ID:
RCRA PERMIT TYPE:
NAICS CODE:
RCRA INSPS IN LAST 5 YRS:
RCRA DAYS LAST EVAL:
RCRA INFORMAL ENF ACTS LAST 5 YRS:
RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION:

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS:

RCRA CURR COMPL:
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
SDWA INFORMAL ENF ACTS LAST 5 YRS:
SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

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FDEP SOLID WASTE FACILITIES LIST

Report Date: 9/20/2019

(SLDWST)

FACILITY ID, NAME AND LOCATION:

95912
POLK COUNTY BOARD OF CO COMMISSIONERS
3000 SHEFFIELD RD
WINTER HAVEN, FL

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN //
AGENCY LAT: ::
AGENCY LON: ::

MAP ID NUMBER: 4
Dist (Miles): 0.42
Direction:

SLDWST

RESP AUTHORITY:
, 33880

SITE CONTACT:
,

LAND OWNER:
,

FACILITY CLASS: 754/WASTE TIRE COLLECTOR
CLASS STATUS: REGISTERED (R)

FACILITY CLASS: 754 /WASTE TIRE COLLECTOR
CLASS STATUS: REGISTERED (R)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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USEPA RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION (RCRAInfo)

(NONTSD)

FACILITY ID NUMBER, NAME AND LOCATION

FLR000115329
POLK COUNTY HOUSEHOLD HAZARDOUS WASTE FA
5 ENVIRONMENTAL LOOP S
WINTER HAVEN, FL 33880

EPA ENVIROFACTS ON LINE REPORT (May Not Be Available For All Records)

CONTACT INFORMATION:

10 ENVIRONMENTAL LOOP S
WINTER HAVEN FL 33880-1072
Contact: BROOKS STAYER
Contact Telephone: 863-284-4319
Contact Email: BROOKSSTAYER@POLK-COU
Agency Lat - Lon: 28.012924 -81.840967

MAP ID NUMBER: 5
Dist (Miles): 0.10
Direction:

NONTSD

BRS Reported Waste:

RCRIS INFORMATION

NOTIFICATION DATE: 5/23/2018 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 6/19/2013 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 12/27/2011 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

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NOTIFICATION DATE: 2/2/2011 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 1/9/2008 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 12/15/2004 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

VIOLATION INFO

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

FRS ID NUMBER, NAME AND LOCATION:

110020892710
POLK COUNTY HOUSEHOLD HAZARDOUS WASTE
5 ENVIRONMENTAL LOOP S
WINTER HAVEN, FL 33880

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 28.013225/ -81.840817

MAP ID NUMBER: 5
Dist (Miles): 0.10
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: N
SDWISID?: N
RCRAInfo ID?: Y
TRIS ID?: N
GHG ID?: N
FAC SIC CODES:
FAC NAICS CODES: 562111
TRIS REPORTER?:
FIPS CODE: 12105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105011721202
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 17.849
POP /SQ MI WITHIN 3 MI: 327.07
TRIBAL WITHIN 25 MI:

 # INSPS IN 5 YRS: 1
LAST INSP: 6/18/2013
DAYS LAST INSP:
 # INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
 # FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT :
 # PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP: 6/18/2013
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF:
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER:

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:
CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
 # CAA INFORMAL ENF ACTS LAST 5 YRS:
 # CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA TOTAL PENALTIES:
CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR COMPL:
CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID:
CWA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
 # CWA INFORMAL ENF ACTS LAST 5 YRS:
 # CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS:

CWA CURR COMPL:
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:

CWA 3YR QRTS EFFL EXCEED:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

RCRIS INFO:

RCRA ID: FLR000115329
RCRA PERMIT TYPE: CESQG
NAICS CODE: 562111
RCRA INSPS IN LAST 5 YRS: 1
RCRA DAYS LAST EVAL: 1664
 # RCRA INFORMAL ENF ACTS LAST 5 YRS:
 # RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION:

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS: 0

RCRA CURR COMPL: No Violation
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
 # SDWA INFORMAL ENF ACTS LAST 5 YRS:
 # SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

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FDEP SOLID WASTE FACILITIES LIST

(SLDWST)

FACILITY ID, NAME AND LOCATION:

49722
NORTH POLK CENTRAL LF (SITE 201)
7399 DECASTRO ROAD
WINTER HAVEN, FL 33880

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN 30 /28S /25E
AGENCY LAT: 28:1:26.03
AGENCY LON: 81:50:50.1

MAP ID NUMBER: 6
Dist (Miles): 0.45
Direction:

SLDWST

RESP AUTHORITY:
POLK COUNTY WASTE & RECYCLING DIVI

WINTER HAVEN, FL 33880

SITE CONTACT:
ANA WOOD

,
(863) 284-4319

LAND OWNER:
POLK COUNTY
P O BOX 39
BARTOW, FL 33830

FACILITY CLASS: 100/CLASS I LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 100 /CLASS I LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 300/CLASS III LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 300 /CLASS III LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 330/SOURCE-SEPARATED ORGANICS PROC. FAC. (SOPF)
CLASS STATUS: ACTIVITY NOT PERMITTED/REGISTERED (N)

FACILITY CLASS: 330 /SOURCE-SEPARATED ORGANICS PROC. FAC. (SOPF)
CLASS STATUS: ACTIVITY NOT PERMITTED/REGISTERED (N)

FACILITY CLASS: 751/WASTE TIRE COLLECTION CENTER
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 751 /WASTE TIRE COLLECTION CENTER
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 910/DISASTER DEBRIS MANAGEMENT SITE
CLASS STATUS: INACTIVE (I)

FACILITY CLASS: 910 /DISASTER DEBRIS MANAGEMENT SITE
CLASS STATUS: INACTIVE (I)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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FDEP SOLID WASTE FACILITIES LIST

(SLDWST)

FACILITY ID, NAME AND LOCATION:

95745
POLK COUNTY SOLID WASTE DIVISION
10 ENVIRONMENTAL LOOP
WINTER HAVEN, FL

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN //
AGENCY LAT: ::
AGENCY LON: ::

MAP ID NUMBER: 6
Dist (Miles): 0.45
Direction:

SLDWST

RESP AUTHORITY: , 33880

SITE CONTACT: ,

LAND OWNER: ,

FACILITY CLASS: 754/WASTE TIRE COLLECTOR
CLASS STATUS: INACTIVE (I)

FACILITY CLASS: 754 /WASTE TIRE COLLECTOR
CLASS STATUS: INACTIVE (I)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Proximal Site Summary Table

This table includes mapped sites whose plotted coordinates fall just outside of the ASTM or client defined research distance but whose property boundaries may still extend into the search area. These sites are typically large commercial or industrial tracts that may merit inclusion in the evaluation process. Detail data reports on any of these sites may be requested and will be sent as an addendum to this report at no additional cost.

Report Date: 9/20/2019

MapID Prgm List	Fac ID No	Site Dist(mi) & Direction	Site Name	Site Address
1A				
ECHO	110020553220	0.20 1	DURATEK WALL CORPORATION	3390 U.S. HIGHWAY 17 NORTH BARTOW, FL 33830
ECHO	110039629970	0.20 1	OLDCASTLE PRECAST INC	3390 HWY 17 N BARTOW, FL 33830
ECHO	110041943868	0.20 1	DURATEK WALL SYSTEMS - BUILDIN	UNKNOWN BARTOW, FL 33830
2A				
TANKS	8838653	0.20 1	TYRE EQUIPMENT	HWY 17 N BARTOW, FL 33830
3A				
ECHO	110032760796	0.23 1	HIDDEN CREEK SUBDIVISION	INTERSECTION OF OLD THORNHILL WINTER HAVEN, FL 33880
4A				
ECHO	110060370049	0.18 1	HIDDEN CREEK	UNKNOWN WINTER HAVEN, FL 33880
5A				
ECHO	110044265577	0.20 1	SR 540 (WINTER LAKE RD) @ THORNHILL ROAD	UNKNOWN WINTER HAVEN, FL 33880

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ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Non-Mapped Records Summary Table

This table is a listing of database records that have not been plotted within our mapping system and could exist within your Study Area. Detail data reports on any of these sites may be requested and will be sent as an addendum to this report at no additional cost.

Report Date: 9/20/2019

Pgm List & Fac ID No	Site Name	Site Address
STCERC		
NONE 533FDER	BARTOW LANDFILL-ABANDONED	HWY 17 BARTOW, FL

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Agency List Descriptions

USEPA and State Databases are updated on a quarterly basis. Supplemental Databases are updated on an annual basis.

Florida Department of Environmental Protection (FDEP)

State Designated Brownfields(BRWNFLDS)

The FDEP Brownfields database contains a listing of State Designated Brownfield Areas and Brownfield Sites. Brownfields are typically defined as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Agency File Date: 7/29/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

Dry Cleaners List(DRY)

The FDEP Dry Cleaning Facilities List is comprised of data from the FDEP Storage Tank and Contamination Monitoring (STCM) database and the Drycleaning Solvent Cleanup Program- Priority Ranking List. It contains a listing of those Dry Cleaning sites (and suspected historical Dry Cleaning sites) who have registered with the FDEP and/or have applied for the Dry Cleaning Solvent Cleanup Program.

Agency File Date: 6/28/2019 **Received by EDM:** 7/1/2019 **EDM Database Updated:** 7/1/2019

Institutional and/or Engineering Controls(INSTENG)

The FDEP Institutional Controls Registry Database (INSTENG) contains sites that have had Institutional and/or Engineering Controls implemented to regulate exposure to environmental hazards

Agency File Date: 5/16/2019 **Received by EDM:** 5/20/2019 **EDM Database Updated:** 5/20/2019

Leaking Underground Storage Tanks List(LUST)

The FDEP LUST list identifies facilities and/or locations that have notified the FDEP of a possible release of contaminants from petroleum storage systems. This Report is generated from the FDEP Storage Tank and Contamination Monitoring Database (STCM).

Agency File Date: 7/19/2019 **Received by EDM:** 7/19/2019 **EDM Database Updated:** 7/22/2019

Solid Waste Facilities List(SLDWST)

The FDEP SLDWST list identifies locations that have been permitted to conduct solid waste handling activities including Landfills, Transfer Stations and sites handling Bio-Hazardous wastes. Sites listed with "##" after the Facility ID Number are historical locations, obtained from documents on record at local agencies.

Agency File Date: 5/20/2019 **Received by EDM:** 5/20/2019 **EDM Database Updated:** 5/20/2019

State CERCLIS/SEMS Equivalent(STCERC)

The STCERC list is compiled from the FDEP Site Investigation Section list, the Florida SITES list(historical) and the FDEP Cleanup Sites list. These sites are being assessed and/or cleaned up as a result of identified or suspected contamination from the release of hazardous substances. The FDEP Cleanup Sites list programs include: Brownfields, Petroleum, EPA Superfund (CERCLA), Drycleaning, Responsible Party Cleanup, State Funded Cleanup, State Owned Lands Cleanup and Hazardous Waste Cleanup.

Agency File Date: 8/11/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

State NPL Equivalent(STNPL)

The FDEP State Funded Cleanup list contains facilities and/or locations where there are no viable responsible parties; the site poses an imminent hazard; and the site does not qualify for Superfund or is a low priority for EPA. Remedial efforts at these sites are currently being addressed through State funded cleanup action.

Agency File Date: 8/10/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

Underground/Aboveground Storage Tanks(TANKS)

The FDEP TANKS list contains sites with registered aboveground and underground storage tanks containing regulated petroleum products.

Agency File Date: 6/17/2019 **Received by EDM:** 6/17/2019 **EDM Database Updated:** 8/7/2019

Voluntary Cleanup List(VOLCLNUP)

The VOLCLNUP List is derived from the FDEP Brownfields Site Rehabilitation Agreement (BSRA) database and the FDEP Office of Waste Cleanup Responsible Party Sites database. This list identifies those sites that have signed an agreement to Voluntarily cleanup a site and/or sites where legal responsibility for site rehabilitation exists pursuant to Florida Statutes and is being conducted either voluntarily or pursuant to enforcement activity.

Agency File Date: 5/6/2019 **Received by EDM:** 5/20/2019 **EDM Database Updated:** 5/20/2019

United States Environmental Protection Agency (EPA)

Comprehensive Env Response, Compensation & Liability Information System List(CERCLIS)

The US EPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database tracks potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are proposed to be on the NPL, are on the NPL and sites that are in the screening and assessment phase for possible inclusion on the NPL. The CERCLIS database was retired in November of 2013 and has been replaced by the Superfund Enterprise Management System (SEMS).

Agency File Date: 11/12/2013 **Received by EDM:** 2/18/2016 **EDM Database Updated:** 2/18/2016

DRAFT

RCRIS Handlers with Corrective Action(CORRACTS)

The US EPA Corrective Action Sites (CORRACTS) database is a listing of hazardous waste handlers that have undergone RCRA corrective action activity.

Agency File Date: 5/13/2019 **Received by EDM:** 5/20/2019 **EDM Database Updated:** 5/20/2019

Enforcement and Compliance History(ECHO)

The US EPA Enforcement and Compliance History Online (ECHO) database provides integrated compliance and enforcement information on facilities regulated under the Clean Air Act (CAA), Clean Water Act (CWA), Safe Drinking Water Act (SDWA) and Resource Conservation and Recovery Act (RCRA).

Agency File Date: 3/3/2019 **Received by EDM:** 3/8/2019 **EDM Database Updated:** 3/11/2019

Emergency Response Notification System List(ERNS)

The Emergency Response Notification System (ERNS) database stores information on oil discharges and hazardous substance releases. The ERNS program is a cooperative data sharing effort among the EPA, DOT and the National Response Center (NRC), which currently provides access to this data.

Agency File Date: 8/4/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

Archived Cerclis Sites(NFRAP)

The US EPA NFRAP list contains archived data of CERCLIS records where the EPA has completed assessment activities and determined that no further steps to list the site on the NPL will be taken. NFRAP sites may be reviewed in the future to determine if they should be returned to CERCLIS based upon newly identified contamination problems at the site. The NFRAP database was retired in November of 2013 and has been replaced by the Superfund Enterprise Management System (SEMS) .

Agency File Date: 10/25/2013 **Received by EDM:** 2/18/2016 **EDM Database Updated:** 2/18/2016

RCRA-LQG,SQG,CESQG and Transporters(NONTSD)

The EDM NONTSD list is a subset of the US EPA RCRAInfo System and identifies facilities that generate and transport hazardous wastes. These facilities may be Large Quantity Generators (LQG), Small Quantity Generators (SQG), Conditionally Exempt SQG's (CESQG) as well as" Non-Notifiers" and "Non-Handlers".

Agency File Date: 4/29/2019 **Received by EDM:** 4/30/2019 **EDM Database Updated:** 5/1/2019

National Priorities List(NPL)

The US EPA National Priorities List (NPL) contains facilities and/or locations where environmental contamination has been confirmed and prioritized for cleanup activities under the Superfund Program. EDM's NPL Report includes sites that are currently on the NPL as well as sites that have been Proposed, Withdrawn and/or Deleted from the list. Previously, information for the NPL was managed under the CERLIS data management system. In 2014 this system was replaced with the Superfund Enterprise Management System (SEMS). EPA last updated CERCLIS in November of 2013. EDM's NPL Report contains available SEMS data and the archived CERCLIS data relative to NPL sites.

Agency File Date: 6/11/2019 **Received by EDM:** 7/17/2019 **EDM Database Updated:** 7/18/2019

NPL Liens List(NPLLIENS)

The US EPA NPL Liens List identifies those sites where under authority granted by CERCLA, liens have been filed against real property in order to recover expenditures from remedial action or when the property owner receives a notice of potential liability.

Agency File Date: 5/14/2019 **Received by EDM:** 5/28/2019 **EDM Database Updated:** 5/29/2019

Superfund Enterprise Management System Active Site Inventory List(SEMSACTV)

The US EPA Superfund Enterprise Management System (SEMS) tracks potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. The SEMSACTV list contains sites that are on the National Priorities List (NPL) as well as sites that are prosposed for or in the screening and assessment phase for possible inclusion on the NPL. SEMS has replaced the CERCLIS database, which was retired in November of 2013.

Agency File Date: 6/11/2019 **Received by EDM:** 7/1/2019 **EDM Database Updated:** 7/1/2019

Superfund Enterprise Management System Archived Site Inventory List(SEMSARCH)

The US EPA Superfund Enterprise Management System (SEMS), contains archived data of CERCLIS or SEMS records where the EPA has completed assessment activities and determined that no further steps to list the site on the NPL will be taken. These sites may be reviewed in the future to determine if they should be returned to SEMS based upon newly identified contamination problems at the site. SEMS has replaced the CERCLIS database, which was retired in November of 2013. The SEMSARCH database contains these newly archived records under the SEMS database management system.

Agency File Date: 6/11/2019 **Received by EDM:** 7/1/2019 **EDM Database Updated:** 7/2/2019

Tribal Lust List(TRIBLLUST)

EDM's Tribal LUST list is derived from the USEPA Region IV Tribal Tanks database by extracting those sites with indicators of past and/or current releases.

Agency File Date: 2/24/2010 **Received by EDM:** 3/9/2010 **EDM Database Updated:** 3/9/2010

Tribal Tanks List(TRIBLTANKS)

The USEPA Region IV Tribal Tanks database lists Active and Closed storage tank facilities on Native American lands.

Agency File Date: 2/24/2010 **Received by EDM:** 3/9/2010 **EDM Database Updated:** 3/9/2010

DRAFT

RCRA-Treatment, Storage and/or Disposal Sites(TSD)

The EDM TSD list is a subset of the US EPA RCRAInfo system and identifies facilities that Treat, Store and/or Dispose of hazardous waste.

Agency File Date:	4/29/2019	**Received by EDM:**	4/30/2019	**EDM Database Updated:**	5/1/2019

Brownfields Management System(USBRWNFLDS)

The US EPA Brownfields program provides information on environmentally distressed properties that have received Grants or Targeted funding for cleanup and redevelopment . Tribal Brownfield sites are included in the USBRWNFLDS database.

Agency File Date:	5/28/2019	**Received by EDM:**	5/28/2019	**EDM Database Updated:**	5/28/2019

Institutional and/or Engineering Controls(USINSTENG)

The USINSTENG list is compiled from data elements contained in the NPL, CORRACTS and USBRWNFLDS lists.

Agency File Date:	5/28/2019	**Received by EDM:**	5/28/2019	**EDM Database Updated:**	5/28/2019

DRAFT

Environmental Impact Areas

Brownfield Areas and Sites

The FDEP Brownfields database contains a listing of State Designated Brownfield Areas and Brownfield Sites. Brownfields are typically defined as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Agency File Date: 7/29/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

https://floridadep.gov/waste/waste-cleanup/content/brownfields-program

Cattle Dipping Vats

From the 1910's through the 1950's, vats were filled with an arsenic solution for the control and eradication of the cattle fever tick. Other pesticides such as DDT where also widely used. By State law, all cattle, horses, mules, goats, and other susceptible animals were required to be dipped every 14 days. Under certain circumstances, the arsenic and other pesticides remaining at the site may present an environmental or public health hazard.

Some of the sites have been located and are currently under investigation. However, most of the listings are from old records of the State Livestock Board, which listed each vat as it was put into operation. In addition, some privately operated vats may have existed which were not listed by the Livestock Board. EDM's Cattle Dipping Vat sites are retrieved from the Voluntary Cleanup and STCERC datablases. For additional information on Cattle Dipping Vats visit the FDEP and FDOH websites at:

Agency File Date: 10/31/2018 **Received by EDM:** 1/25/2019 **EDM Database Updated:** 1/25/2019

https://floridadep.gov/waste/district-business-support/content/cattle-dipping-vats-cdv

http://www.floridahealth.gov/environmental-health/drinking-water/cattledipvathome.html

Formerly Used Defense Sites

The DoD is responsible for the environmental restoration of properties that were formerly owned by, leased to or otherwise possessed by the United States and operated under the jurisdiction of the Secretary of Defense prior to October 1986. Such properties are known as Formerly Used Defense Sites (FUDS). The Army is the executive agent for the program and the U.S. Army Corps of Engineers manages and directs the program's administration. For more information on the FUDS Program, including maps and data on individual sites, visit the Army Corps of Engineers website at:

Agency File Date: 5/29/2018 **Received by EDM:** 1/25/2019 **EDM Database Updated:** 1/25/2019

http://www.usace.army.mil/Missions/Environmental/Formerly-Used-Defense-Sites/

FUDS Munitions Response Sites

The DoD developed the Military Munitions Response Program (MMRP) in 2001 to addresses munitions-related concerns, including explosive safety, environmental, and health hazards from releases of unexploded ordnance (UXO), discarded military munitions (DDM), and munitions constituents (MC) found at locations, other than operational ranges, on active and Base Realignment and Closure (BRAC) installations and Formerly Used Defense Sites (FUDS) properties. The MMRP addresses non-operational range lands with suspected or known hazards from munitions and explosives of concern (MEC) which occurred prior to September 2002, but are not already included with an Installation Response Program (IRP) site cleanup activity. For more information on the FUDS MMRP Program, including maps and data on individual sites, visit the Army Corps of Engineers website at:

Agency File Date: 5/14/2018 **Received by EDM:** 1/25/2019 **EDM Database Updated:** 1/25/2019

http://www.asaie.army.mil/Public/ESOH/mmrp.html

Groundwater Contamination Areas

The Ground Water Contamination Areas GIS layer is a statewide map showing the boundaries of delineated areas of known groundwater contamination pursuant to Chapter 62-524, F.A.C., New Potable Water Well Permitting In Delineated Areas. 38 Florida counties have been delineated primarily for the agricultural pesticide ethylene dibromide (EDB), and to a much lesser extent, volatile organic and petroleum contaminants. This GIS layer represents approximately 427,897 acres in 38 counties in Florida that have been delineated for groundwater contamination. However, it does not represent all known sources of groundwater contamination for the state of Florida.

This information is intended to be used by regulatory agencies issuing potable water well construction permits in areas of ground water contamination to protect public health and the ground water resource. Permitted water wells in these areas must meet specific well construction criteria and water testing prior to well use. This dataset only indicates the presence or absence of specific groundwater contaminants and does not represent all known sources of groundwater contamination in the state of Florida.

Agency File Date: 11/28/2018 **Received by EDM:** 1/24/2019 **EDM Database Updated:** 1/24/2019

https://floridadep.gov/water/source-drinking-water/content/delineated-areas

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National Priorities List

The US EPA National Priorities List (NPL) contains facilities and/or locations where environmental contamination has been confirmed and prioritized for cleanup activities under the Superfund Program. EDM's NPL site boundaries data include sites that are currently on the NPL as well as sites that have been Proposed, Withdrawn and/or Deleted from the list.

Agency File Date: 11/14/2018 **Received by EDM:** 12/10/2018 **EDM Database Updated:** 1/22/2019

https://www.epa.gov/superfund/search-superfund-sites-where-you-live

Solid Waste Facilities

The FDEP SLDWST list identifies locations that have been permitted to conduct solid waste handling activities.

Agency File Date: 1/23/2019 **Received by EDM:** 1/24/2019 **EDM Database Updated:** 1/25/2019

https://floridadep.gov/waste

State Funded Cleanup Sites

The FDEP State Funded Cleanup list contains facilities and/or locations where there are no viable responsible parties; the site poses an imminent hazard; and the site does not qualify for Superfund or is a low priority for EPA. Remedial efforts at these sites are currently being addressed through State funded cleanup action.

Agency File Date: 8/10/2019 **Received by EDM:** 8/12/2019 **EDM Database Updated:** 8/12/2019

https://floridadep.gov/waste/waste-cleanup/documents/state-funded-cleanup-program-site-list

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LEVEL I
CONTAMINATION SCREENING EVALUATION REPORT

Florida Turnpike Enterprise

SR 570B (Central Polk Parkway) Segment 1
From SR 570 (Polk Parkway) to SR 35 (US 17)

Polk County, Florida

Financial Management Number: 440897-2-32-01

December 2018

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

The analysis in this document has been supplemented by the CSER Addendum to Mainline and Pond CSER's.

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APPENDICES

CSER Appendix A: Project Location and Pond Alternative Location Maps
CSER Appendix B: Historic Aerial Photographs
CSER Appendix C: USGS Topographic Map
CSER Appendix D: Environmental Database Report
CSER Appendix E: Site Photographs
CSER Appendix F: Supplemental Information

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1.0 Project Summary

1.1 Purpose of Report

The purpose of this report is to present the findings of a Level I Contamination Screening Evaluation for the SR 570B (Central Polk Parkway) Segment 1 from SR 570 (Polk Parkway) to SR 35 (US 17). This report identifies and evaluates known and potential contamination problems, issues, presents testing and remedial recommendations, and discusses possible project impacts. *This report is provided for the pond alternatives. A separate report will be provided for the mainline in the future.*

1.2 Project Description

The Central Polk Parkway (CPP/SR 570B) will be a new four-lane divided limited access facility in Polk County, Florida. Through coordination with Florida's Turnpike Enterprise it has been determined that this new corridor will be a Strategic Intermodal System (SIS) highway. This roadway network is a planned new alignment toll facility that will connect the Polk Parkway (SR 570) with SR 60 to the south. The project is located between the City of Lakeland to the north and the City of Bartow to the west and will be completed with three Financial Project Identification Numbers (FPID). Part A, FPID 440897-2-32-01, will focus on development of an optimized alignment, identify right-of-way needs, and development of Phase 1 plans. Part B, FPID 440897-2-32-01, will focus on final right-of-way maps, permitting, and final construction plans. FPID 440987-4-22-01, which is currently being scoped, will be to perform a Project Development and Environment (PD&E) Study from the termination of Part A at US 17 (SR 35) to SR 60. FPID 440897-3-32-01 will utilize the alignment recommendation from the FPID 440897-4-22-01 PD&E Study and will prepare final right-of-way maps, permitting, and develop final construction plans from US 17 (SR 35) to SR 60.

The limits of this project are within the boundaries of the PD&E study, FPID 423601-1-22-01 Central Polk Parkway from SR 60 to SR 570 (Polk Parkway) and from SR 60 to Interstate 4. The 423601-1-22-01 State Environmental Impact Report (SEIR) was signed in March 2011. FPID No. 431641-1-52-01 for Segment 1 of the Central Polk Parkway from SR 570 (Polk Parkway) to south of US 17 (SR 35) which began in February of 2013 and was partially completed to Phase I by FDOT District One. The District One project was then placed on hold in April 2016 stopping any future work on the project noting insufficient funding and traffic volume support. Under FPID 440897-2-32-01 Part A for this project, the Central Polk Parkway Segment 1 project limits for the scope of work will extend from the SR 570 (Polk Parkway) at SR 540 (Winter Lake Road) to US 17 (SR 35), approximately six miles in Polk County. Access to this new alignment from the south at US 17 (SR 35) will be by an at-grade intersection and the facility will feature an All-Electronic Tolling (AET). Coordination with FTE will be necessary in the future to find an optimum location for the AET Plaza locations. This project also includes new interchanges at SR 570 (Polk Parkway) and SR 540 (Winter Lake Road).

The primary purpose of Part A for the Segment 1 project is to develop an Alternatives Evaluation Report which will focus on the design optimization of the previous FDOT District One design. The project scope of services included the evaluation of three interchange alternatives at SR 570 (Polk Parkway), three interchange alternatives at US 17 (SR 35), two interchange

alternatives at SR 540 (Winter Lake Road), and two over/under alternatives at Thornhill Road (two locations) and Old Bartow Eagle Lake Road. In addition, the analysis includes evaluating the Central Polk Parkway mainline typical section and horizontal geometrics in order to minimize right-of-way needs and impacts. The previously completed geometrics under the District One contract were reviewed, and eight locations throughout the corridor where refinements are plausible were identified. See **Figure 1** for the project location map which includes eight focus areas that were identified through the analysis. Each area includes several design alternatives for analysis in an attempt to refine the original design. These alternatives address right-of-way need, residential and business impacts, roadway geometrics as it relates to safety and traffic volumes, stormwater management facilities, preliminary structural design, environmental, geotechnical, and utility concerns. These alternatives were analyzed to identify cost savings measures and right-of-way savings to balance the projected project funding to support the construction financial feasibility for this project.

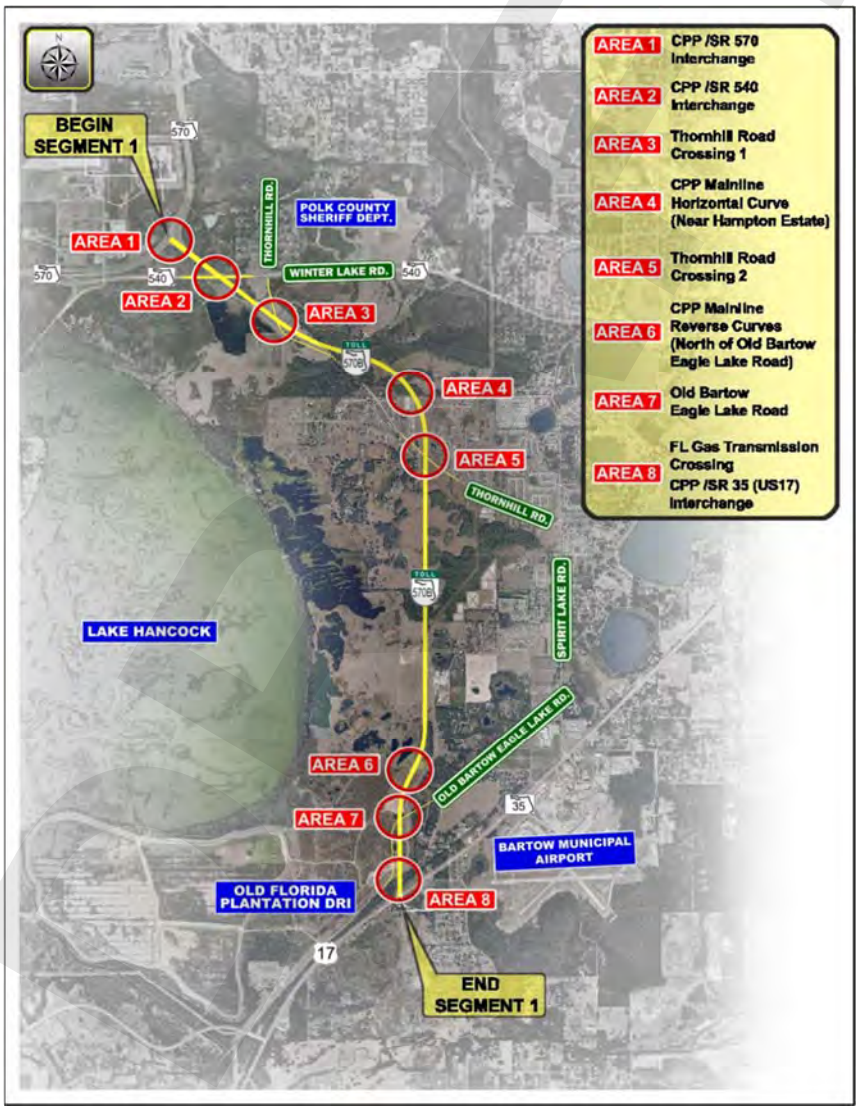

Figure 1

2.0 Methodology

This Contamination Screening Evaluation Report (CSER) was performed in accordance with Chapter 20 of the PD&E Manual. The evaluation included the following tasks:

- Document review using the Polk County Property Appraiser's website;
- A regulatory review of governmental databases for permits and/or violations associated with contamination issues;
- Obtaining and evaluating historic aerial photographs and topographic maps in an effort to determine potential contamination issues. Copies of select historic aerial photographs are presented in **CSER Appendix B**;
- Topographic maps were reviewed to develop an understanding of previous land uses in the study area and to identify any areas that may show historic, natural and manmade features, which aid in determining potential contamination concerns. A copy of the topographic map is provided in **CSER Appendix C**;
- Conducting site visits to verify information provided and to identify other potential concerns within the vicinity of the project; and
- Determining the contamination potential and assigning a risk rating for each potential contamination site identified within the proposed project limits.

Additionally, Tierra reviewed the PD&E Central Polk Parkway, Final Contamination Screening Evaluation Report, dated December 2010 (Revised March 2011), and FPID 423601-1-22-01. Applicable contamination sites are discussed in **Section 5.0**, Project Impacts.

Preliminary risk ratings were assigned for sixteen pond alternatives in the Preliminary Desktop Review of Preliminary Pond Alternatives letter report dated 8/31/2015 (FPID 431641-32-01). However, the pond locations were different than those evaluated for this Level I contamination screening evaluation.

2.1 Regulatory Review

An environmental database search using Environmental Data Management, Inc. (EDM) was conducted on December 6, 2018 to use as a preliminary screening tool to identify sites, facilities or listings within the study area containing documented or suspected petroleum contamination or other hazardous materials. In accordance the with PD&E Manual Chapter 20, paragraph 20.2.2.1 recommended Contamination Screening Buffer (CSB), a search radius of ½ of a mile was performed for Landfill; Comprehensive Environmental Response, Compensation, and Liability Act; and National Priorities List regulatory databases. EDM used a search distance of ⅛ mile for all other databases.

The regulatory review of federal and state environmental records utilizes an integrated geographic information system database. The database report provides geocoded and non-geocoded regulatory listings of interest that are identified within the study area. Each listing is located by address, facility identification (ID) number and field verified where possible. All are reviewed for the potential of contamination to impact the project. The reviewed records include information compiled by the United States Environmental Protection Agency (EPA), the FDEP, and other various reporting programs, as identified in EDM's report. A complete list of all regulatory record databases searched is included in EDM's environmental database search

report, provided in **CSER Appendix D**. A summary of the potential contamination sites identified for each pond alternative is provided in Section 5, Project Impacts.

2.2 Site Reconnaissance

A site visit was conducted on December 17, 2018 to evaluate each property within and in close proximity to the study area for potential contamination concerns. The reconnaissance included a systematic inspection of each parcel within the study area looking for signs of potential contamination. This was achieved by first driving the mainline roadway and/or nearby roads in both directions to get generalized information on the study area, then walking specific parcels of interest fronting the Right Of Way (ROW) to gain specific information regarding the usage and condition of the parcel. Photographs of potential contamination concerns and other prominent features were taken during the site inspection. Select images are presented in **CSER Appendix E**.

Some of the typical physical indicators for contamination concerns include: railroad tracks, fill ports and vent pipes associated with underground storage tanks (USTs); oil/petroleum staining; drums; chemical containers; refuse; illicit dumping; solid waste; stressed vegetation; dry cleaning facilities; material handling from adjacent businesses; petroleum dispensers; excavated areas; agricultural use; chemical mix/load areas; stormwater outfall areas; surface water indicators; groundwater monitor wells, restricted area/contamination/HAZMAT/petroleum pipeline signage, and other property uses that may present contamination concerns.

The site reconnaissance in conjunction with the review of historic aerial photography, regulatory database searches, and review/evaluation of available data allows the site to be rated as to the degree of contamination concern as discussed in Section 3.

2.3 Supplemental Regulatory Information

In addition to the environmental database search report, Tierra supplemented the regulatory records review with readily available information from various online sources as listed below. A copy of useful documentation is included in **CSER Appendix F**.

- FDEP Map Direct
- FDEP OCULUS Document Management System
- FDEP Storage Tank/Contaminated Facility search
- FDEP Hazardous Waste Facilities Search
- FDEP Solid Waste Facility Inventory
- EPA EnviroMapper for Envirofacts Multi-system Search

2.4 Interviews/Correspondence

Communication with land owners, facility operators, residents, and governmental agencies can aid in the understanding of past and current land uses within the study area. Where possible or when necessary, interviews or requests for information are collected in an effort to identify potential concerns associated with petroleum storage tanks; automotive or marine, maintenance, service or repair facilities; dry-cleaning processes; and other industrial or

agricultural operations that could affect the project. No interviews were conducted for this contamination screening evaluation.

3.0 Determination of Potential Risk

After gathering and reviewing all readily available public information and conducting site reconnaissance, contamination risk ratings were assigned to sites of potential contamination concern. The rating system is divided into four categories of risk as defined by the FDOT in the PD&E Manual, Part 2, Chapter 20, Section 20.2.2.4, Determination of Risk Rating. These four degrees of risk are “No,” “Low,” “Medium,” and “High.” This system expresses the degree of concern for potential contamination problems.

No Risk Site

A review of available information on the property and a review of the conceptual or design plans indicates there is no potential contamination impact to the project. It is possible that contaminants had been handled on the property. However, findings from the contamination screening evaluation or sampling and testing results indicate that contamination impacts are not expected.

Low Risk Site

A review of available information indicates that former or current activities on the property have an ongoing contamination issue, has a hazardous waste generator ID number, or handles hazardous materials in some capacity. However, based on the review of conceptual or design plans and/or findings from the contamination screening evaluation or sampling and testing results, it is not likely that there would be any contamination impacts to the project.

Medium Risk Site

After a review of conceptual or design plans and findings from a contamination screening evaluation or sampling and testing results, a potential contamination impact to the project has been identified. If there is insufficient information (such as regulatory records or site historic documents) to make a determination as to the potential for contamination impact, and there is reasonable suspicion that contamination may exist, the property should be rated at least as a “Medium.” Properties used historically as gasoline stations and which have not been evaluated or assessed by regulatory agencies, sites with abandoned in place underground petroleum storage tanks or currently operating gasoline stations should receive this rating.

High Risk Site

After a review of all available information and conceptual or design plans, there is appropriate analytical data that shows contamination will substantially impact construction activities, have implications to ROW acquisition or have other potential transfer of contamination related liability to the FDOT.

While not specifically discussed in Chapter 20 as a basis for a “High” risk rating, sites located within 500 feet of the project limits also receive this rating when identified as contaminated by state and/or federal regulatory agencies. This rating is assigned in consideration of a dewatering permit that may be necessary under the National Pollutant Discharge Elimination System (NPDES) program.

4.0 Project Setting

4.1 Land Use

Land use is an important factor when evaluating historical and current environmental conditions. Evaluating the past use of properties can assist in determining possible chemical constituents that may have been used or associated with a particular parcel. Current land use records, typically supplied by the local county or municipality, also provide environmental professionals additional information.

Historic aerial photographs were reviewed to develop a history of the previous land uses within the study area and to identify areas that may have historical uses which pose potential contamination concerns.

Historic aerial photographs dated 1941, 1952, 1957, 1968, 1971, 1980, 1993, 1994, 1999, 2004-2010, 2012-2014, 2016-2018 were reviewed from the University of Florida, FDOT Survey & Mapping, and Google Earth online libraries. A summary of our review is discussed in the table below. A copy of the 2017 aerial photograph is presented in **CSER Appendix A**. Copies of select historic aerial photographs are presented in **CSER Appendix B**.

Additional site specific current land use details regarding facilities/sites of concern are included in the Potential Contamination Sites Summary Table in Section 5.

Table 1 – Summary of Historical Aerial Photograph Review

Pond Alternative	Historical Use	Contamination Concerns
SMF 1	Woods, trails, low, wet area; manmade stormwater pond since at least 1999	No contamination concerns noted
SMF 2A	Pasture; low, wet in central area	No contamination concerns noted
SMF 2B	Pasture, woods and a haul road	No contamination concerns noted
SMF 3A	Pasture with drainage swales	No contamination concerns noted
SMF 3B	Pasture with drainage swales and low, wet areas	Offsite south strip mine from at least 1968 to 1970s

During the site reconnaissance on December 17, 2018, the existing Polk Parkway and other roadways were observed in the configuration presented in **CSER Appendix A**. The current land use in surrounding areas was observed as woods and pasture, and existing roadways. Offsite, the North Central Landfill was noted north of SMF 1A and the existing Polk Parkway. Contamination concerns identified are further discussed in **Section 5.0**.

4.2 Regional Geology and Hydrogeology

Aquifers of Florida

The Floridan aquifer is found throughout Florida and extends into the southern portions of Alabama, Georgia, and South Carolina. This aquifer system is comprised of a sequence of limestone and dolomite, which thickens from about 250 feet in Georgia to about 3000 feet in south Florida. The Floridan aquifer system has been divided into an upper and lower aquifer separated by a unit of lower permeability. The upper Floridan aquifer is the principal source of water supply in most of north and central Florida. In the southern portion of the state, where it is deeper and contains brackish water, the aquifer has been used for the injection of sewage and industrial waste. Groundwater flow is generally from highs near the center of the state towards the coast.

In southwestern Florida, aquifers that lie between the surficial aquifer system and the Floridan aquifer system are collectively referred to as the intermediate aquifer system. This aquifer system starts in Hillsborough and Polk counties and extends south through Polk County. The intermediate aquifer system is under confined conditions and is mainly comprised of permeable layers of sand, shell and limestone separated by clay confining units. It is the main source of water supply for Sarasota, Charlotte and Polk counties where the underlying Floridan aquifer contains brackish water. Much of the water pumped from this aquifer system is used for agriculture. In most places, water percolates down from the surficial aquifer system above to the intermediate aquifer system. Lateral flow is generally from a high area in Polk County towards major surface water features and the Gulf of Mexico.

The surficial aquifer system in Florida includes any otherwise undefined aquifers that are present at land surface. The surficial aquifer is mainly used for domestic, commercial, or small municipal supplies. The surficial aquifer system is generally under unconfined, or water table, conditions and is made up of mostly unconsolidated sand, shelly sand, and shell. The aquifer thickness is typically less than 50 feet. Groundwater in the surficial aquifer generally flows from areas of higher elevation towards the coast or streams where it can discharge as base flow. Water enters the aquifer from rainfall and exits as base flow to streams, discharge to the coast, evapotranspiration, and downward recharge to deeper aquifers.

The sand and gravel aquifer is the primary source of water for Santa Rosa and Escambia Counties in the western panhandle of Florida. The aquifer consists of sand and gravel with interbedded layers of silt and clay. The clay layers form local confined conditions within the aquifer. Groundwater flow is generally towards the coast. In Florida, the aquifer contains two high- permeability zones separated by less permeable sands and clays. The lower zone, which is under confined conditions, is referred to as the "main producing zone" because most of the groundwater use is withdrawn from this zone.

The Biscayne Aquifer is the primary source of water for all of Dade and Broward Counties and the southern portion of Palm Beach County. Water from the Biscayne is also transported by pipeline to the Florida Keys. The aquifer consists of highly permeable limestone and less

permeable sand and sandstone. The northern part of the aquifer has more sand and grades northward and westward into the sandy deposits that are part of the surficial aquifer system. In most places, the highly permeable rocks of the Biscayne aquifer are covered by a thin veneer of porous soil and aquifer water levels rise rapidly in response to rainfall. Water in the Biscayne aquifer is unconfined and generally flows toward streams, the ocean and the extensive system of canals in south Florida.

Hydrology – Site Reconnaissance

During site reconnaissance, surface waters observed included the eastern portion of SMF 1, and swales and low, wet areas on SMF 3A and SMF 3B. No monitor wells, irrigation wells or potable wells were identified onsite within the pond alternative ROWs during the site reconnaissance. Land generally sloped towards surrounding manmade drainage features, and low, wet areas within and near the project limits. Existing surface drainage appears to be infiltration and runoff generally towards surrounding manmade drainage features and low, wet areas. Offsite, one 2-inch diameter piezometer was observed adjacent east of SFM 2B. This piezometer does not appear to be related to any known contamination issues.

4.3 United States Geological Society (USGS) Quadrangle Map

Topographic maps are reviewed to develop an understanding of previous land uses in the study area and to identify any areas that may show historic, natural and manmade features, which aid in determining potential contamination concerns. The USGS 7.5-Minute “Auburndale, Florida” Quadrangle dated 1975, photo-revised 1988; and “Bartow, Florida” Quadrangle dated 1949, photo-revised 1987 were reviewed as part of this study. A copy of the topographic maps are provided in **CSER Appendix C**. A summary of the topographic map review is included in the following table.

Table 2 – Summary of USGS Topographic Map Review

Pond Alternative	Historical Use	Contamination Concerns
SMF 1	Woods and submerged areas	No contamination concerns noted
SMF 2A	Pasture	No contamination concerns noted
SMF 2B	Pasture and a haul road; east area cleared by 1993	No contamination concerns noted
SMF 3A	Pasture, a ditch and swamp or marsh areas	No contamination concerns noted
SMF 3B	Pasture, a ditch and swamp or marsh areas	Offsite south strip mine

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5.0 Project Impacts

5.1 Pond Alternative and Potential Contamination Sites Summary

Based on the methodologies completed by Tierra, a total of four potential contamination sites were identified within the study area which may impact the proposed improvements for this project. Details for each site investigated are provided in the Potential Contamination Sites Summary table below. The location of each contamination site is illustrated in **CSER Appendix A**. Relevant background information for these sites is presented in **CSER Appendix F**.

Table 3 – Pond Alternative Summary

Pond ID	Potential Contamination Site Name & Address	Facility ID	Distance From Existing or Proposed Right of Way Limits	Contaminants of Concern	Comments	Initial Risk Rating for Pond Alternative
SMF 1	Polk County Household Hazardous Waste Facility 5 Environmental Loop	NONTSD FLR000115329 ECHO 110020802710	900 feet northwest	Hazardous Waste	During the site reconnaissance, SMF 1 was observed as an existing stormwater pond and woods. No monitor wells, structures or contamination concerns were noted. The NONTSD database listing states this facility was identified as a Conditionally Exempt Small Quantity Generator (CESQG) of hazardous waste based on site inspections conducted on 5/23/2018, 6/19/2013 and 12/15/2004. Based on EDM's Environmental Compliance and History Online (ECHO) database listing, there were no reports of code violations, enforcements or other contamination concerns. Also, this facility has no underground injection wells. Based on a distance of 900 feet and regulatory status, this facility is not considered a contamination concern to this pond alternative at this time.	Low
	North Central Landfill/Polk County Solid Waste 10 Environmental Loop (and SR 540)	Solid Waste 49722, 95745	Household Hazardous Waste Collection Facility 1,000 feet northwest; Class I landfill is 1,700 feet west;	Solid Waste Hazardous Waste	EDM's report for Solid Waste ID 49722 states this facility includes Class I and Class III landfills, an organics processing facility, a waste tire collection center, and an inactive Disaster Debris Management Site (DDMS). According to the FDEP Inspection Checklist dated 5/23/2018 (found on OCULUS), this facility was in compliance. This inspection included Routine Class I and Class III landfill inspections and a closure inspection for the Waste Tire Collection Center facility. According to the Polk County North Central Landfill Site Assessment Plan (found on OCULUS) dated October 2008, this facility was previously a phosphate mine (Saddle Creek Mine), has been used as a landfill since 1977, and groundwater flow in the surficial aquifer is generally towards the southwest, cross gradient to this pond alternative. Alternative CTLs are used since the groundwater was considered "poor quality." The summary stated "based on the alternate CTL specified in Table I of Chapter 62-777 FAC, iron is the only parameter detected in any detection or compliance wells at the NCLF that might require a remedial strategy; all other parameters fit within the No Further Action criteria…because they were not detected anywhere onsite." The Site Layout and Well Location Map (Figure 4-1) found in this report depicts the nearest contamination concerns as the Household Hazardous Waste Collection facility located approximately 1,000 feet northwest of SMF 1; and the nearest point of the "Closed Unlined Class I Landfill" approximately 1,700 feet west of SMF 1. See excerpts in **CSER Appendix F**. The 3rd Quarter Gas Migration Report (methane) with sample date 9/28/2018 states that results for all sample locations were 0.0% of Lower Explosive Limit (LEL). See report in **CSER Appendix F**. Based on the distance of 1,700 feet and lack of exceedances, methane gas is not considered a contamination concern at this time. Based on the groundwater Compliance Monitoring Report Third Quarter 2018 (found on OCULUS), dated 10/2/2018, benzene was detected in one (1) monitor well (SW-107) located approximately 2,700 feet north of SMF 1, and pH was detected beyond the standard limits of 6.5 to 8.5 at a total of ten (10) monitor well locations approximately 2,700 feet north of SMF 1. See excerpts in **CSER Appendix F**. Based on the distance of 2,700 feet, the groundwater exceedances are not considered contamination concerns to SMF 1 at this time. Solid Waste ID 95745 (North Polk Central Landfill Site #201) is for registration as a waste tire collector. Based on the generic nature of this database listing and lack of contamination concerns, this facility is not considered a contamination concern to this pond alternative. Based on a distance of 1,000 feet to the nearest contamination concern (Hazardous Waste Collection Facility), regulatory status, and cross-gradient groundwater flow direction of the Polk County North Central Landfill, SMF 1 is assigned an initial risk rating of "Low."	

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SMF 2A	SR 540 (Winter Lake Road) at Thornnhill Road	ECHO 110044265577	1,000 feet north	None	During the site reconnaissance, this pond alternative was observed as pasture and trails. No monitor wells, structures or contamination concerns were noted. EDM's report states no violations were identified for the NPDES minor permit (NPDES ID: FLR10KY75). Based on the location plotted on EDM's map, this listing is approximately 1,000 feet north of this pond alternative. Based on a distance of 1,000 feet and the lack of contamination concerns, this facility is not considered a contamination concern to this pond alternative. Based on a lack of contamination concerns, SMF 2A is assigned a risk rating of "No."	No
SMF 2B	SR 540 (Winter Lake Road) at Thornnhill Road	ECHO 110044265577	600 feet northeast	None	During the site reconnaissance, this pond alternative was observed as pasture and trails. No structures were noted. Offsite, one (1) 2-inch diameter piezometer (presumably) within steel protective casing was observed approximately 20 feet east of this pond alternative. This piezometer does not appear to be related to any known contamination issues. EDM's report states no violations were identified for the NPDES minor permit (NPDES ID: FLR10KY75). Based on the location plotted on EDM's map, this listing is approximately 600 feet northeast of this pond alternative. Based on a distance of 600 feet, and the lack of contamination concerns, this facility is not considered a contamination concern to this pond alternative. Based on a lack of contamination concerns, SMF 2B is assigned a risk rating of "No."	No
SMF 3A	Polk County Board of County Commissioners 3000 Sheffield Road	Solid Waste: 95912	2,500 feet south of SMF 3A	Solid Waste	During the site reconnaissance, this pond alternative was observed generally as pasture, with wooded areas and swales. No monitor wells, structures or contamination concerns were noted. For the Solid Waste database listing, EDM's report states this facility is a registered waste tire collector. Based on a distance of 2,500 feet, the nature of the regulatory database listing, and lack of contamination concerns this facility is not considered a contamination concern to SMF 3A. Based on the lack of contamination concerns, SMF 3A is assigned an initial risk rating of "No."	No
SMF 3B	Polk County Board of County Commissioners 3000 Sheffield Road	Solid Waste: 95912	3,200 feet south of SMF 3B	Solid Waste	During the site reconnaissance, this pond alternative was observed generally as pasture, with wooded areas and swales. No monitor wells, structures or contamination concerns were noted. For the Solid Waste database listing, EDM's report states this facility is a registered waste tire collector. Based on a distance of 3,200 feet, the nature of the regulatory database listing, and lack of contamination concerns this facility is not considered a contamination concern to SMF 3B. The strip mine noted on historic aerial photographs and topographic maps was located adjacent south. Tierra presumes this was a phosphate mine which was common in this region. No structures were noted in close proximity to this pond alternative on historic aerial photographs or topographic maps. Based on the proximity to the former strip mine located adjacent south, SMF 3B is assigned an initial risk rating of "Low."	Low

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6.0 Conclusions and Recommendations

A total of five pond alternatives were evaluated during this Level I Contamination Screening Evaluation. The following table presents a summary of the risk ratings assigned for each pond alternative:

Table 4 – Pond Alternative Risk Rating Summary

Pond ID	Initial Risk Ratings
SMF 1	Low
SMF 2A	No
SMF 2B	No
SMF 3A	No
SMF 3B	Low

Table 5 – Risk Rating Matrix

	Initial Risk Ratings			
	High	Medium	Low	No
Pond Alternatives	0	0	2	3

Based on the conclusions of the study and the risk ratings noted above, the following recommendations are made for this project:

Additional information may become available or site-specific conditions may change from the time this report was prepared and should be considered prior to acquiring right-of-way and/or proceeding with roadway construction. Variables that may change the risk rating include a facility's non-compliance to environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessment of the facilities should be considered.

Regardless of risk rating, pond alternatives selected for final design should be screened for buried debris to the pond bottom design depth.

For the pond alternatives rated "No" for potential contamination, no further action is planned. The site has been evaluated and determined not to have any potential contamination risk to the study area at this time.

For those pond alternatives rated "Low" for potential contamination, no further action is required at this time. These sites/facilities have the potential to impact the study area, but based on select variables have been determined to have low risk to the project at this time.

If risk ratings are upgraded to "High" or "Medium," Level II field screening should be conducted. These sites have been determined to have potential contaminants, which may impact the project. A soil and groundwater sampling plan should be developed for each site. The sampling plan should provide sufficient detail as to the number of soil and groundwater samples to be obtained and the specific analytical test to be performed. A site location sketch for each facility showing all proposed boring locations and groundwater monitoring wells should be prepared. The District Contamination Impact Coordinator (DCIC) should be consulted regarding the site specific Level II field screening scope of work.

CSER APPENDIX A

Project Location Map and
Pond Alternative Location Maps

DRAFT

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

PROJECT LOCATION MAP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-1

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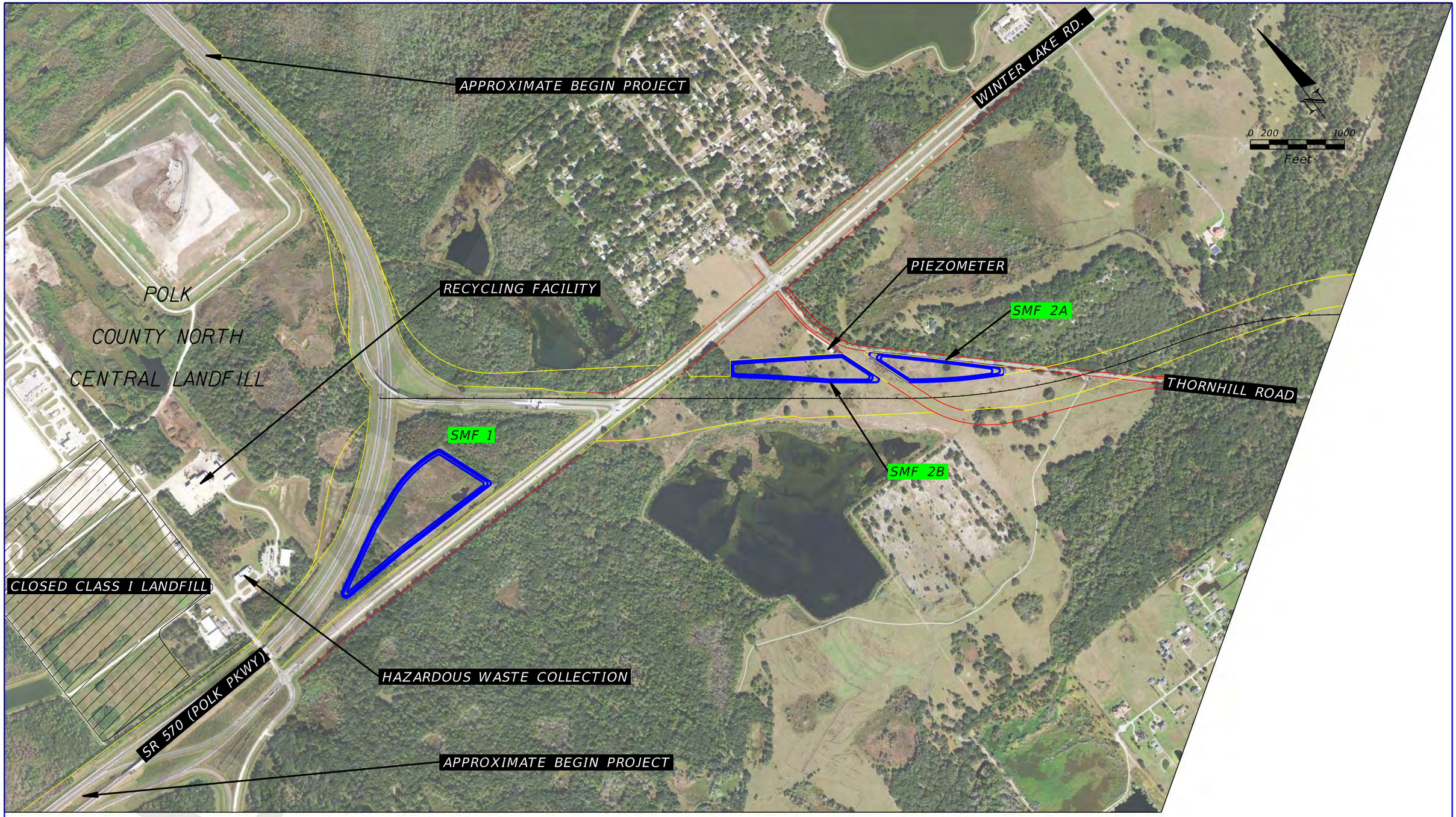

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME GREEN = NO/LOW RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-2

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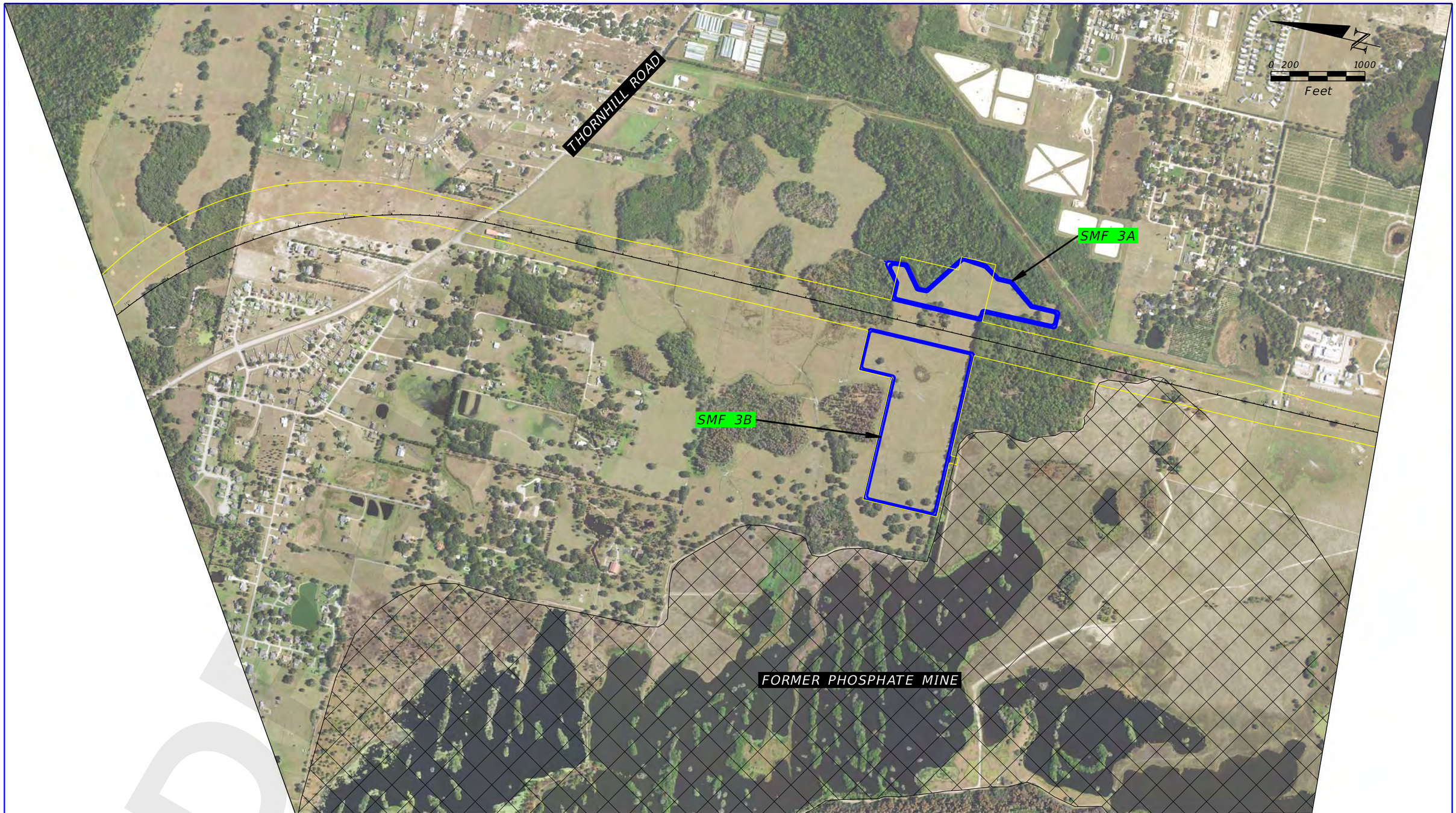


SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME GREEN = NO/LOW RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
A-3

bsawaska 12/18/2018 2:07:18 PM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvAlts02.dgn

SOURCE: FDOT SURVEY AND MAPPING DATED 2017

POND ALTERNATIVES LOCATION MAP

POND NAME GREEN = NO/LOW RISK SITES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

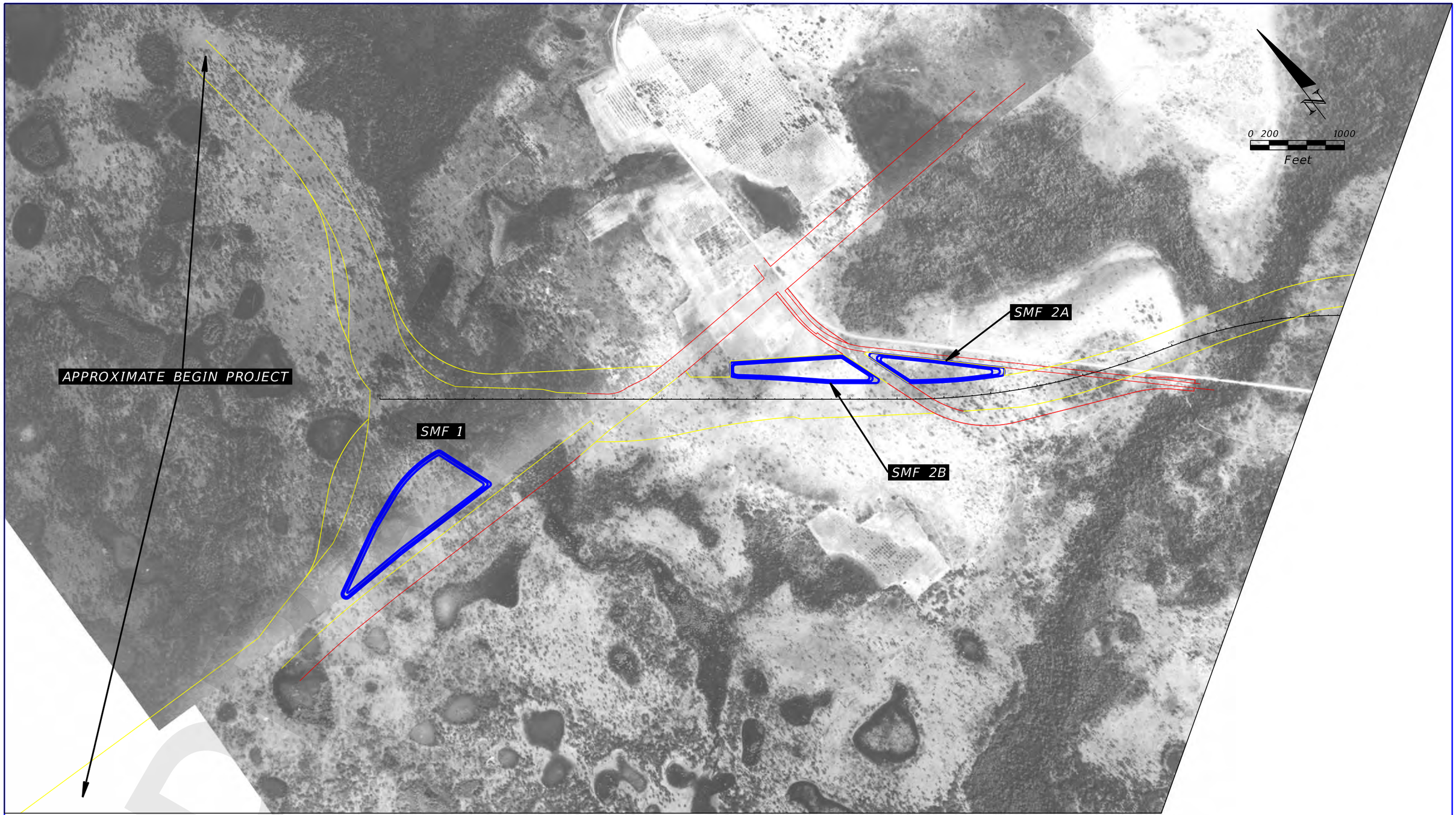
SHEET NO.
A-4

bsawaska 12/18/2018 2:08:30 PM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvAlts03.dgn

APPENDIX B

Historic Aerial Photographs

DRAFT



SOURCE: UNIVERSITY OF FLORIDA

1941 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-1

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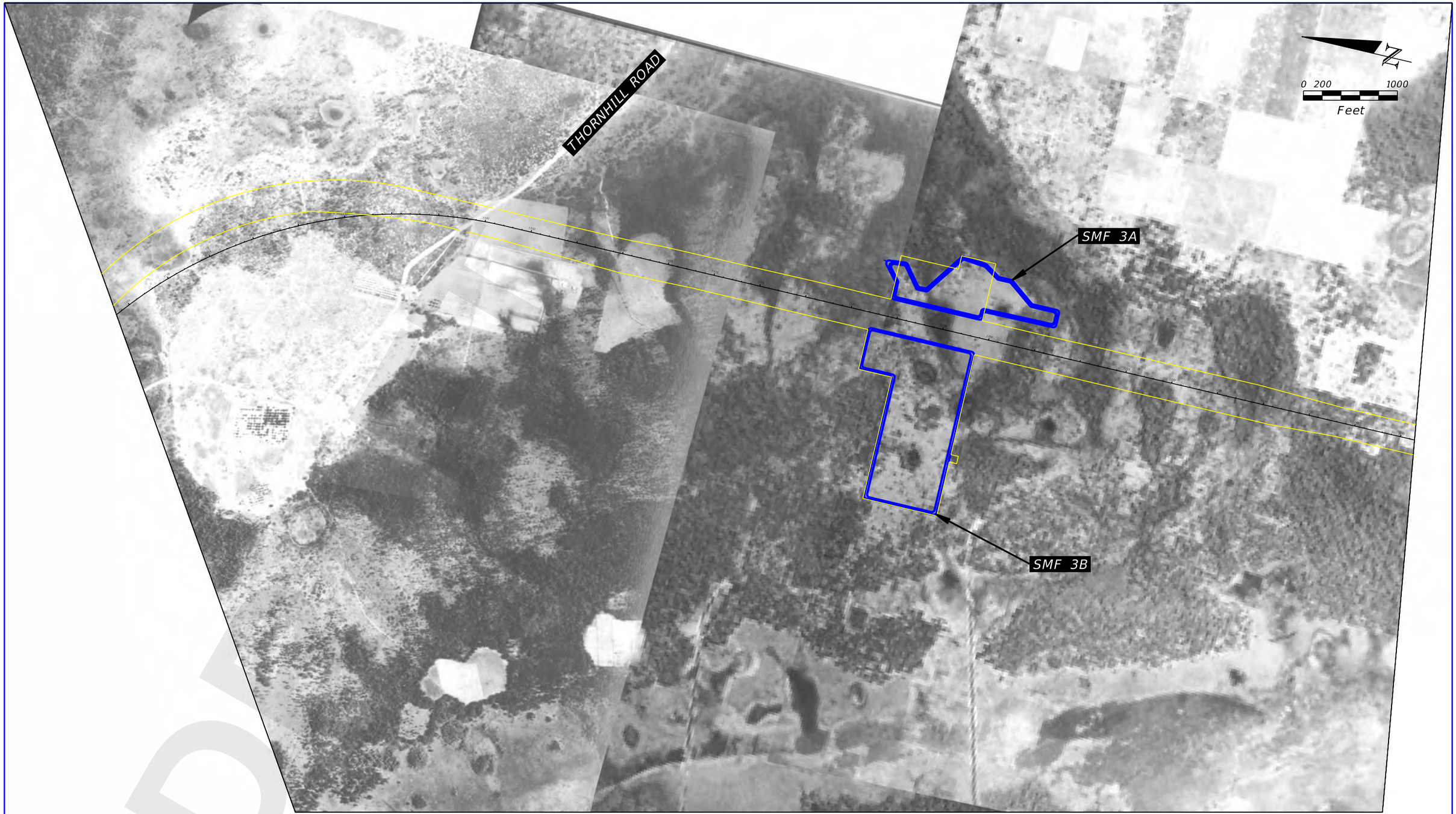

SOURCE: UNIVERSITY OF FLORIDA

1941 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
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TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-2

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SOURCE: UNIVERSITY OF FLORIDA

1941 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-3

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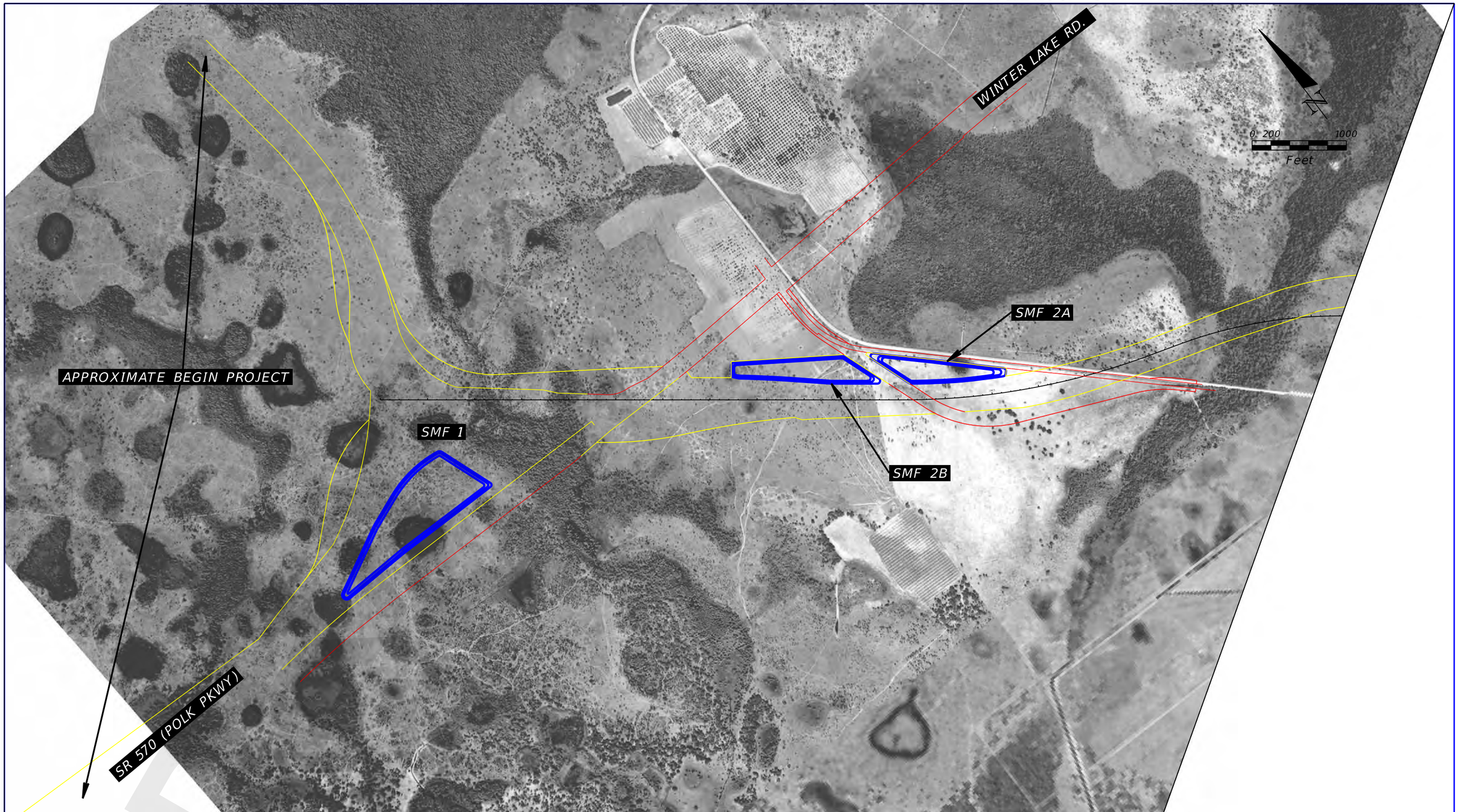

SOURCE: UNIVERSITY OF FLORIDA

1952 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-4

bsawaska 12/19/2018 2:59:18 PM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvHist1952A.dgn

SOURCE: UNIVERSITY OF FLORIDA

1952 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
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			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-5

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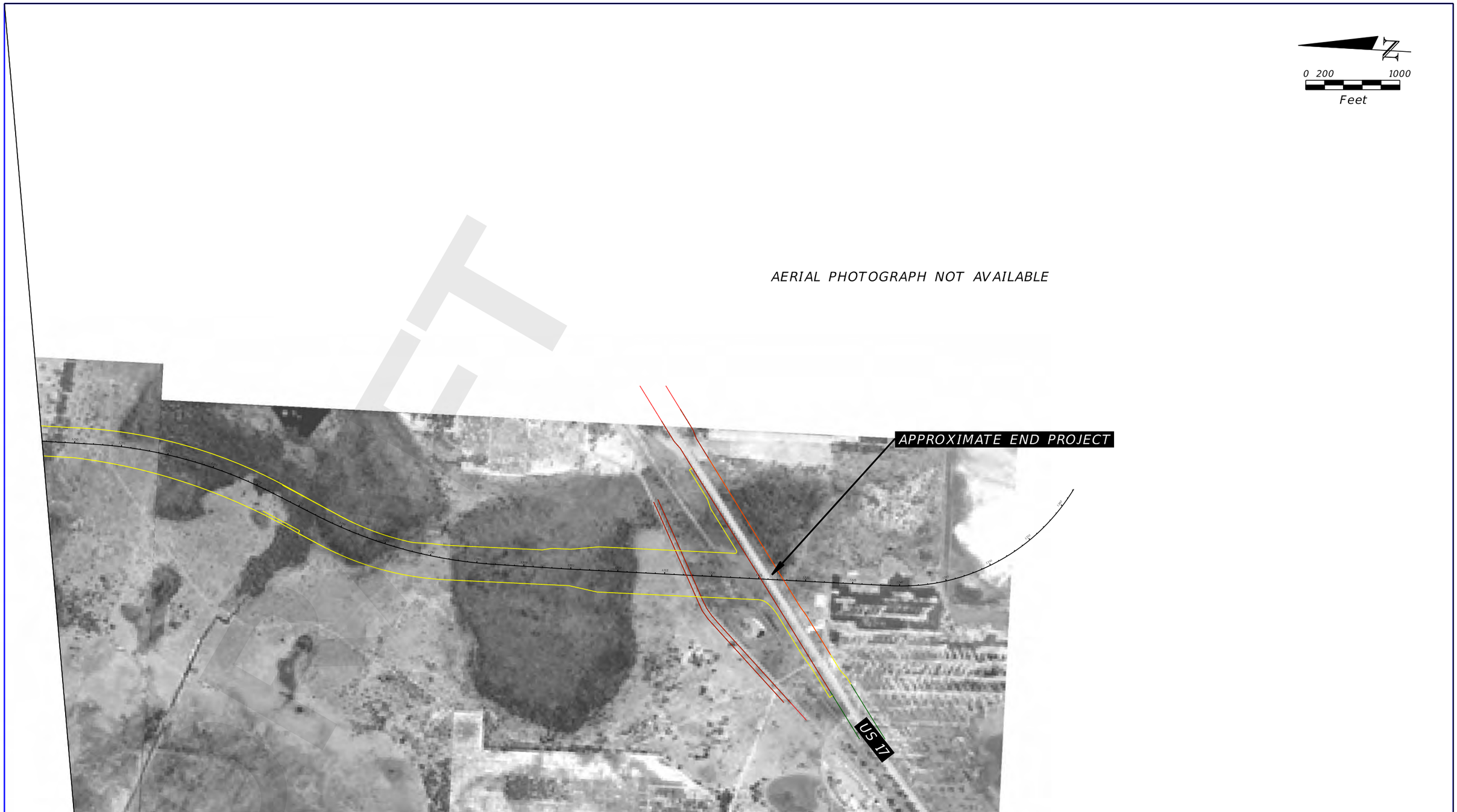

SOURCE: UNIVERSITY OF FLORIDA

1952 HISTORICAL AERIAL PHOTOGRAPH

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TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-6

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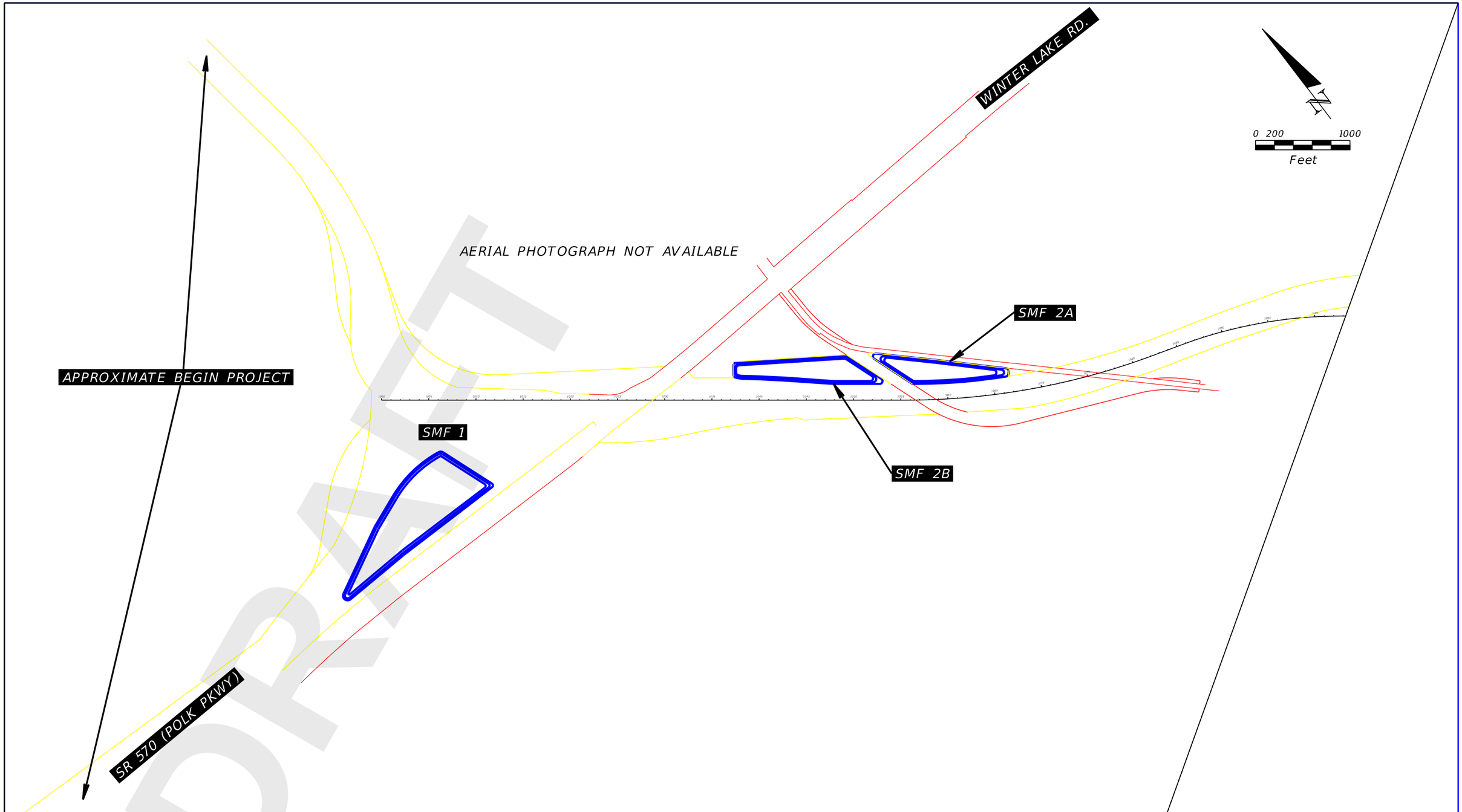

SOURCE: UNIVERSITY OF FLORIDA

1957 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-7

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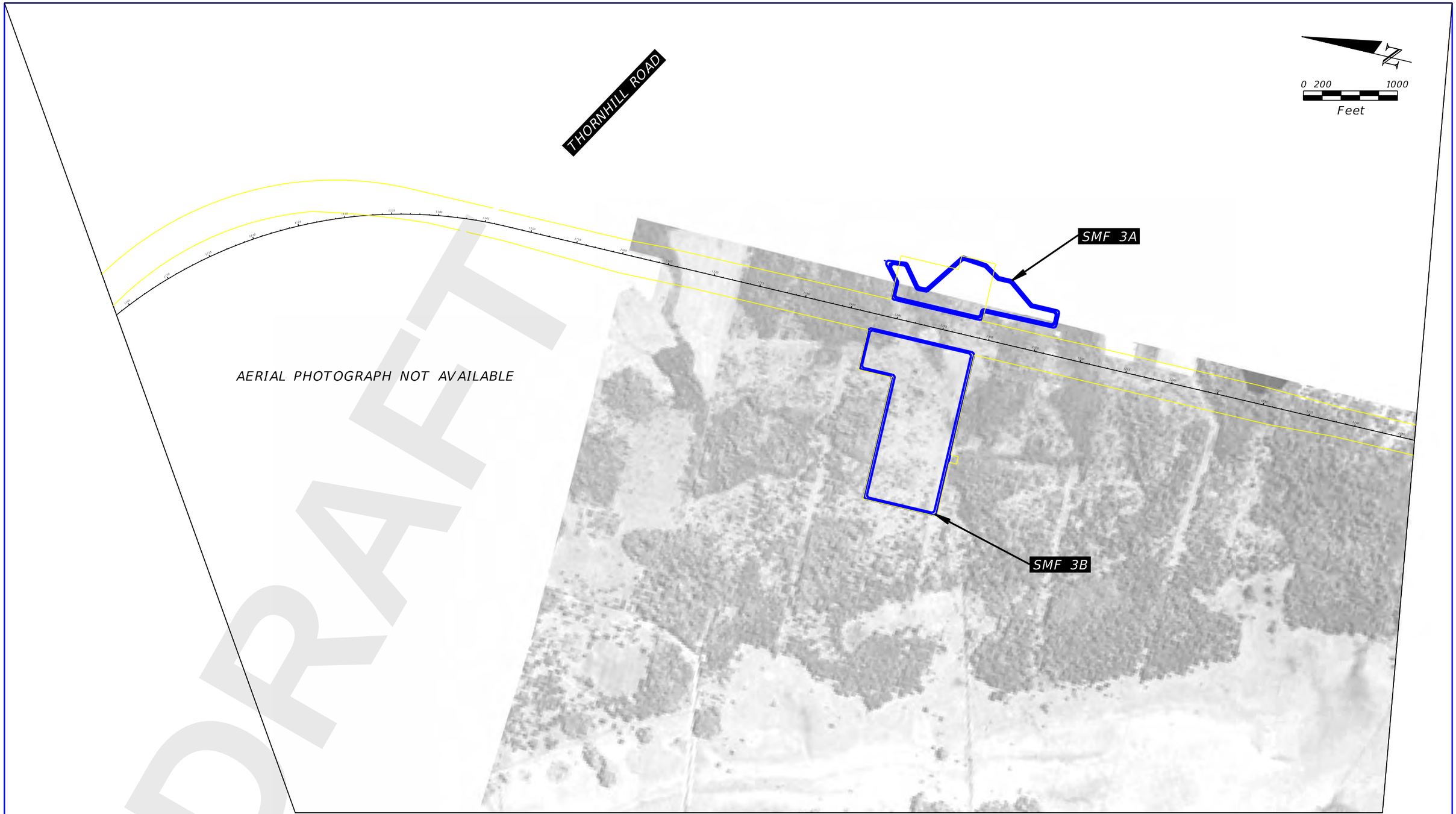

SOURCE: UNIVERSITY OF FLORIDA

1957 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
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TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-8

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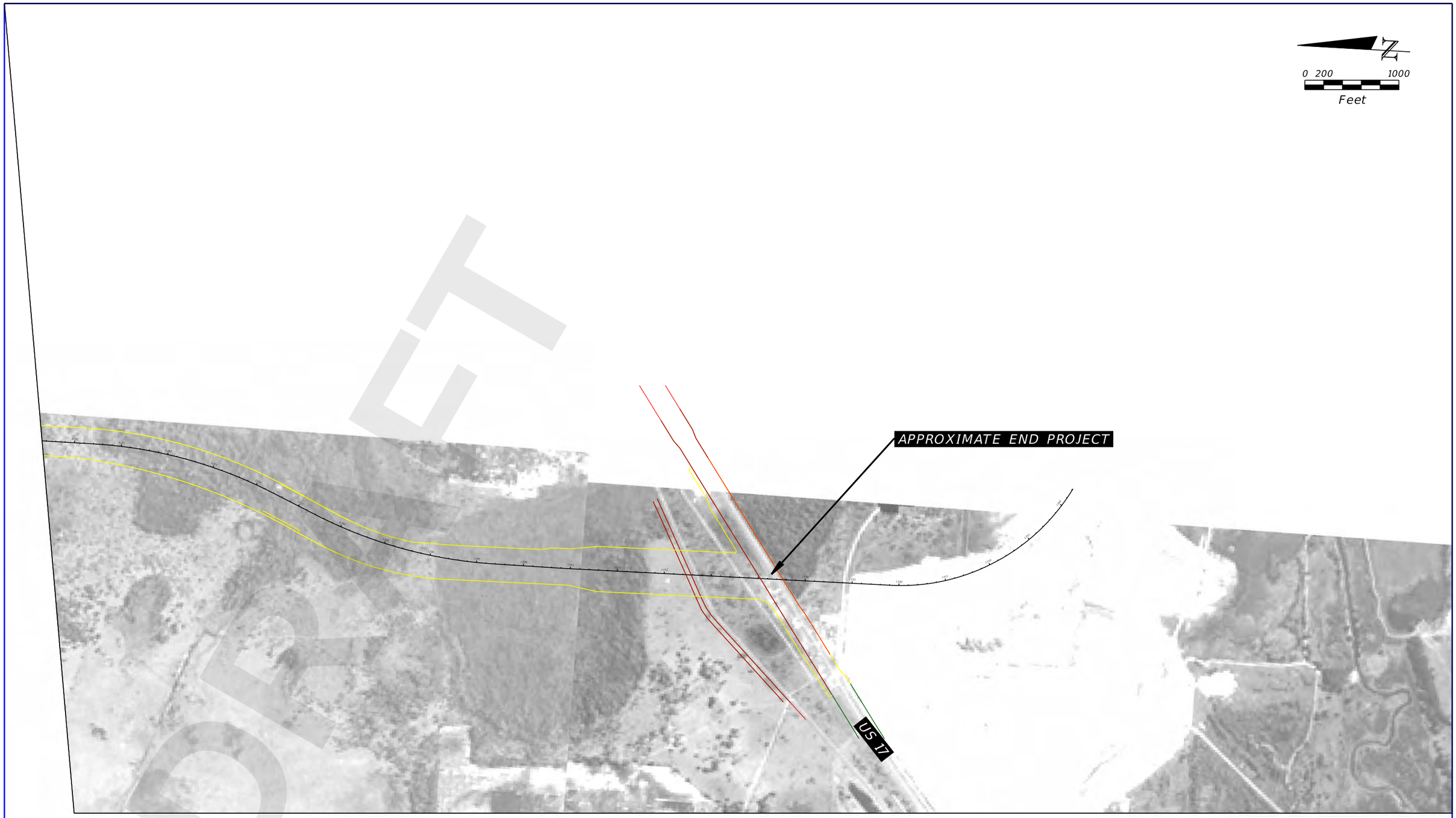

SOURCE: UNIVERSITY OF FLORIDA

1957 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
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TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-9

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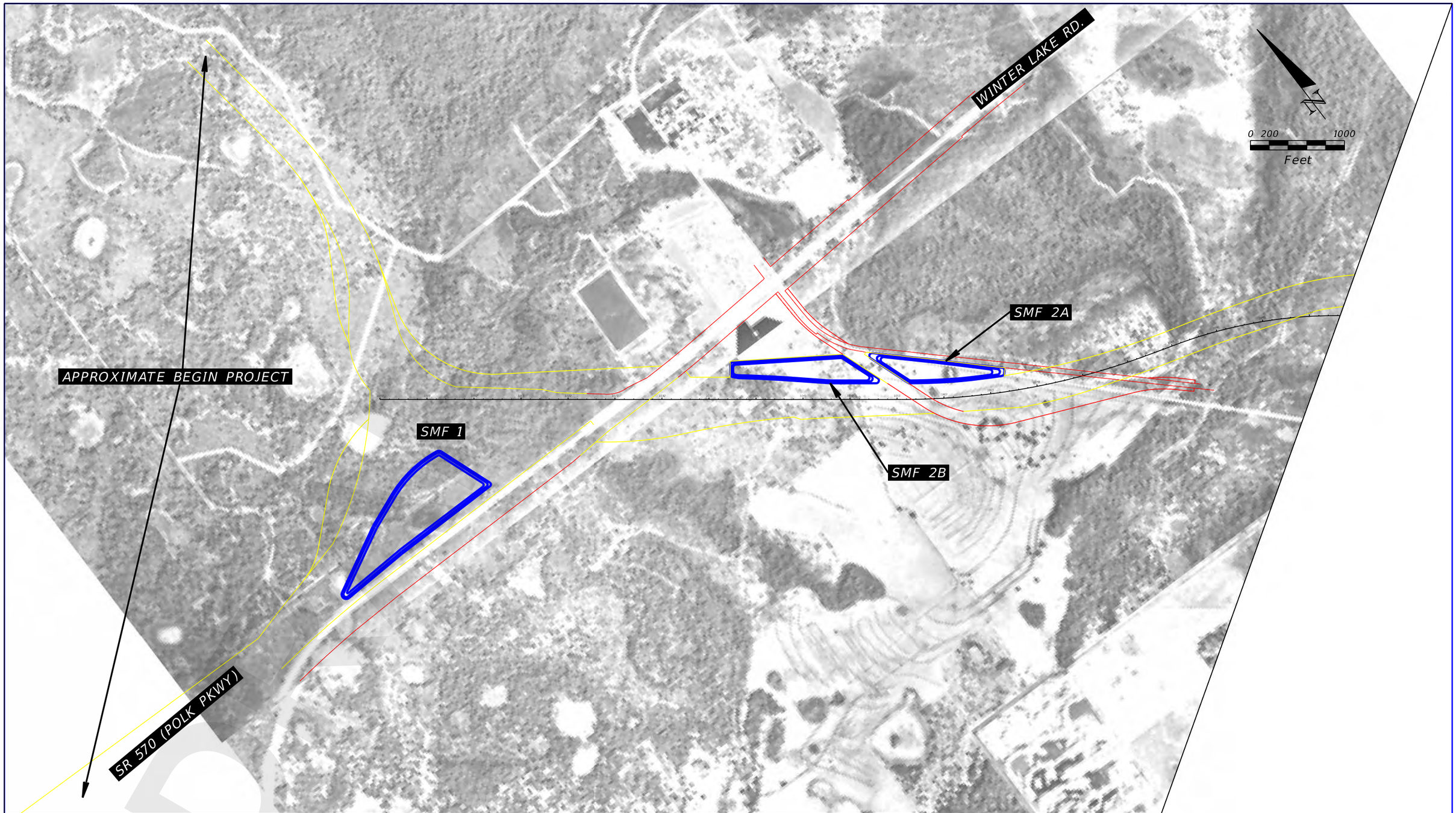

SOURCE: UNIVERSITY OF FLORIDA

1968 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-10

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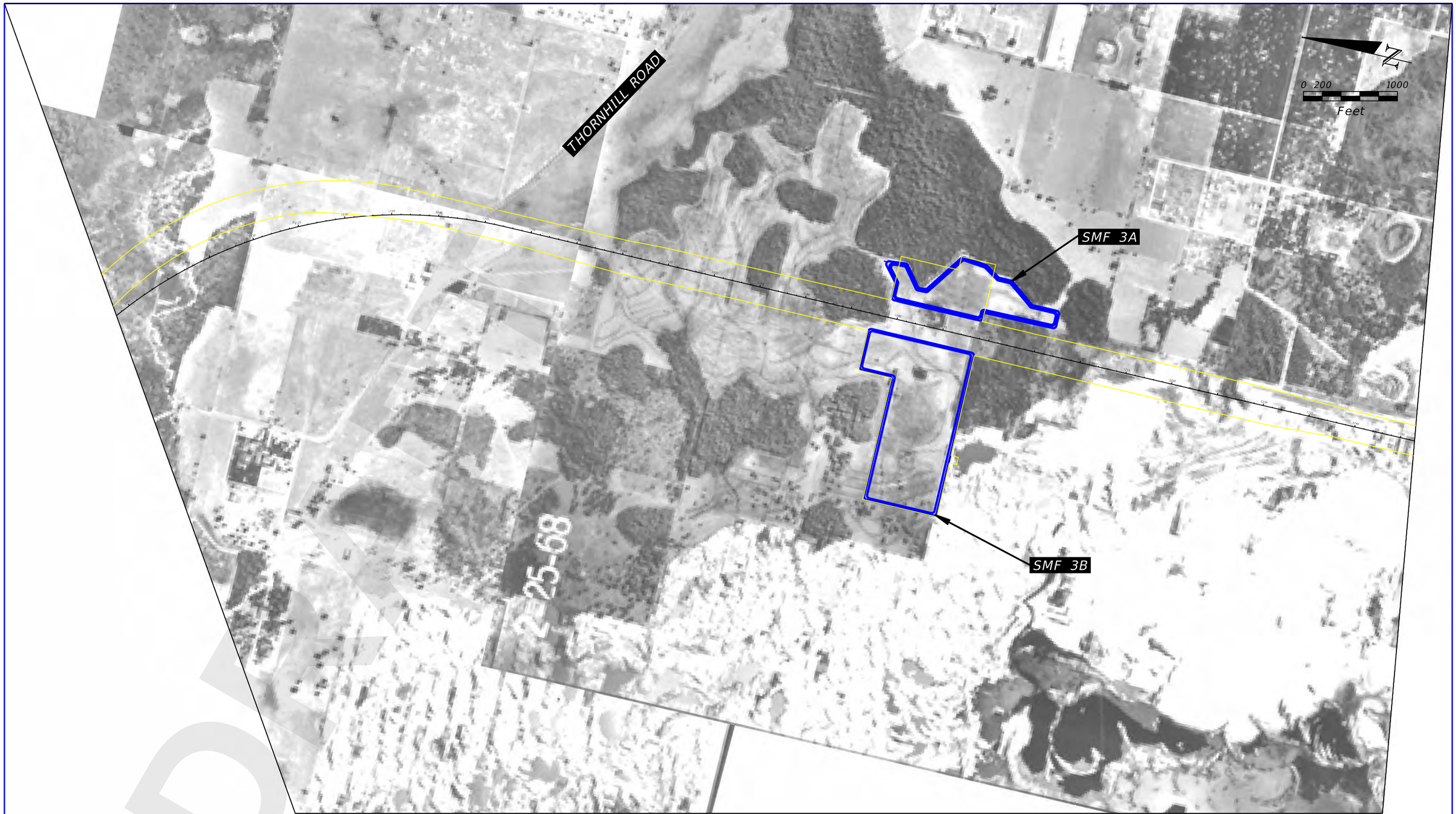

SOURCE: UNIVERSITY OF FLORIDA

1968 HISTORICAL AERIAL PHOTOGRAPH

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-11

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SOURCE: UNIVERSITY OF FLORIDA

1968 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-12

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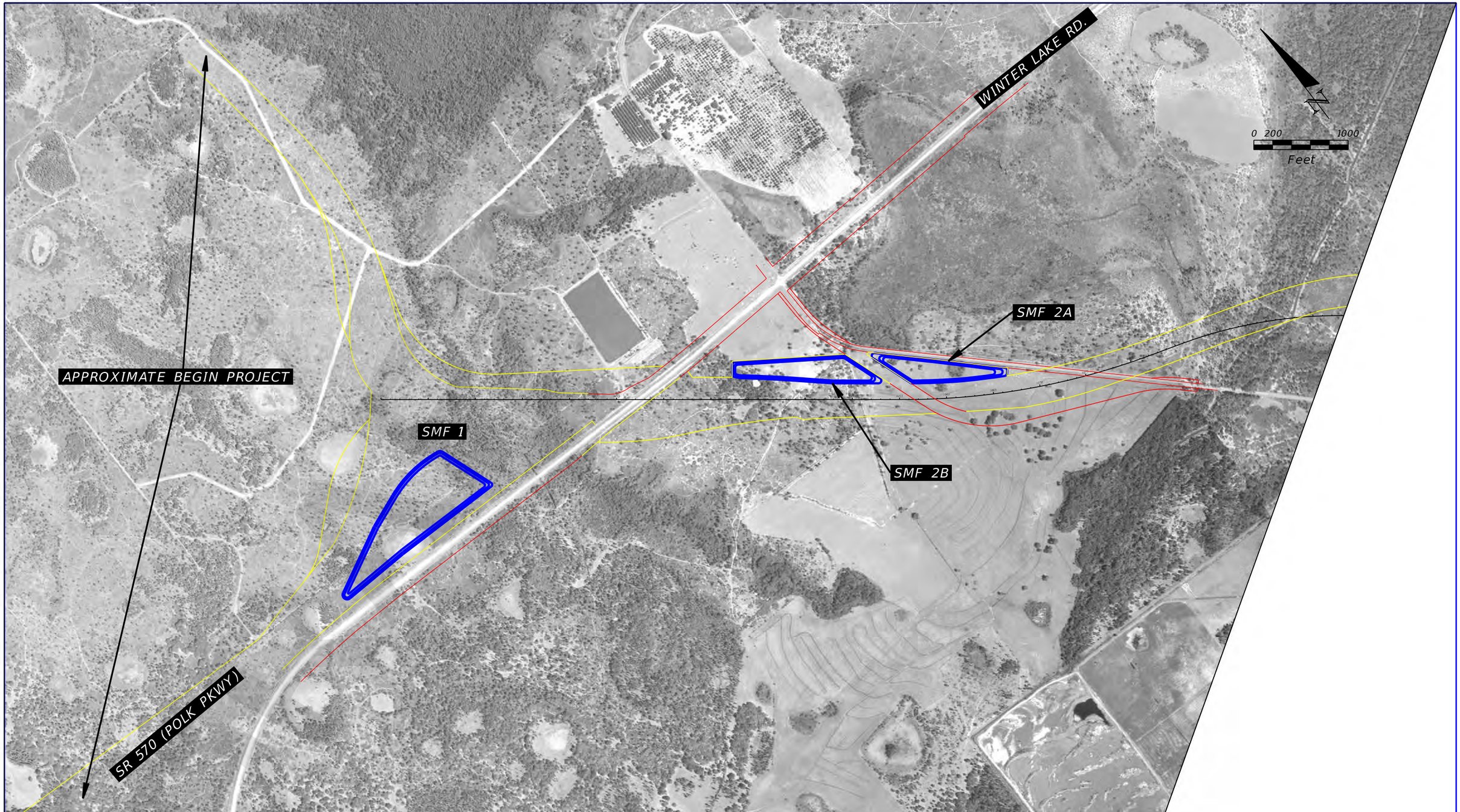

SOURCE: FDOT SURVEY AND MAPPING

1971 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-13

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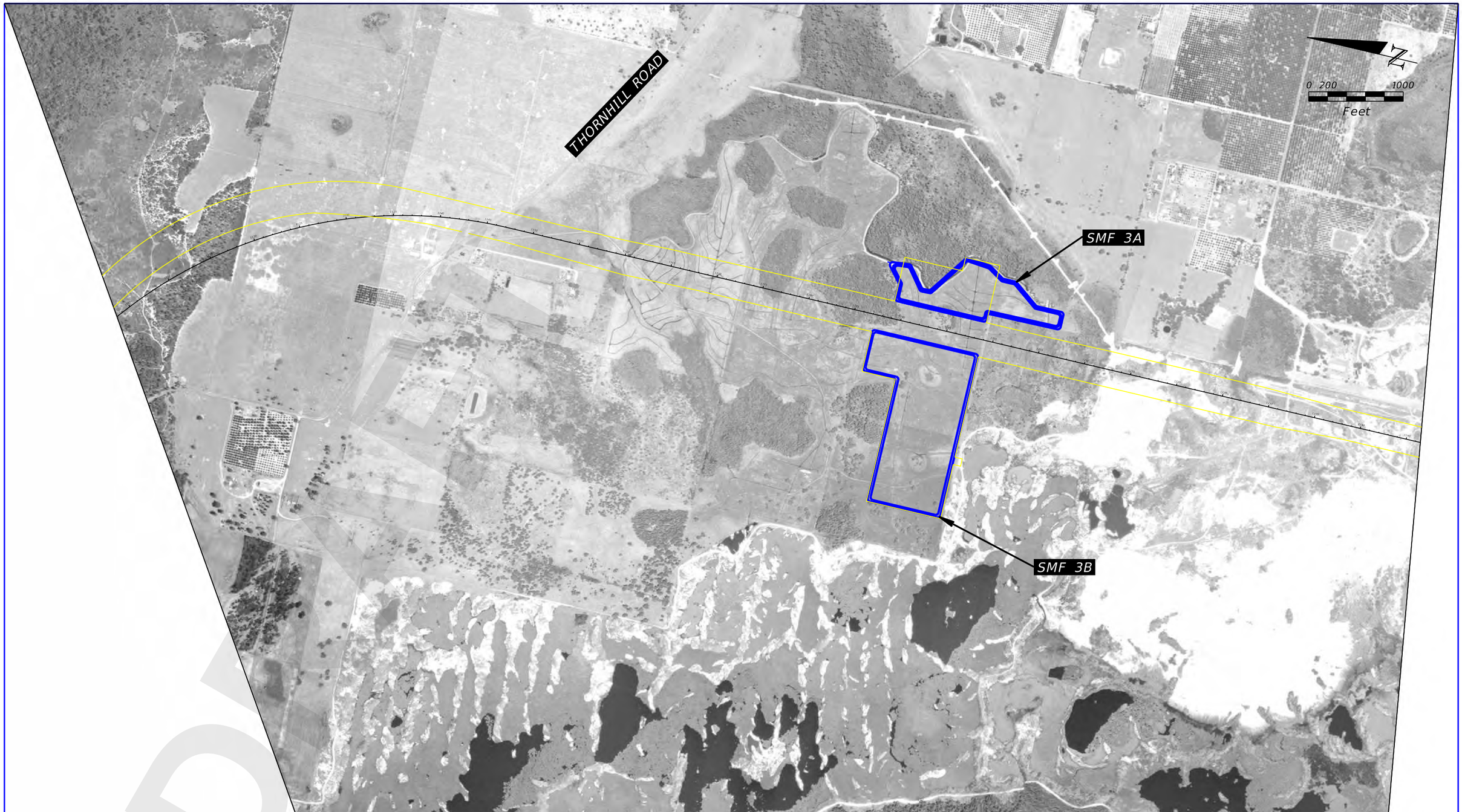

SOURCE: FDOT SURVEY AND MAPPING

1971 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
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TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION-6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-14

bsawaska 12/17/2018 8:54:55 AM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvHist1971B.dgn

SOURCE: FDOT SURVEY AND MAPPING

1971 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-15

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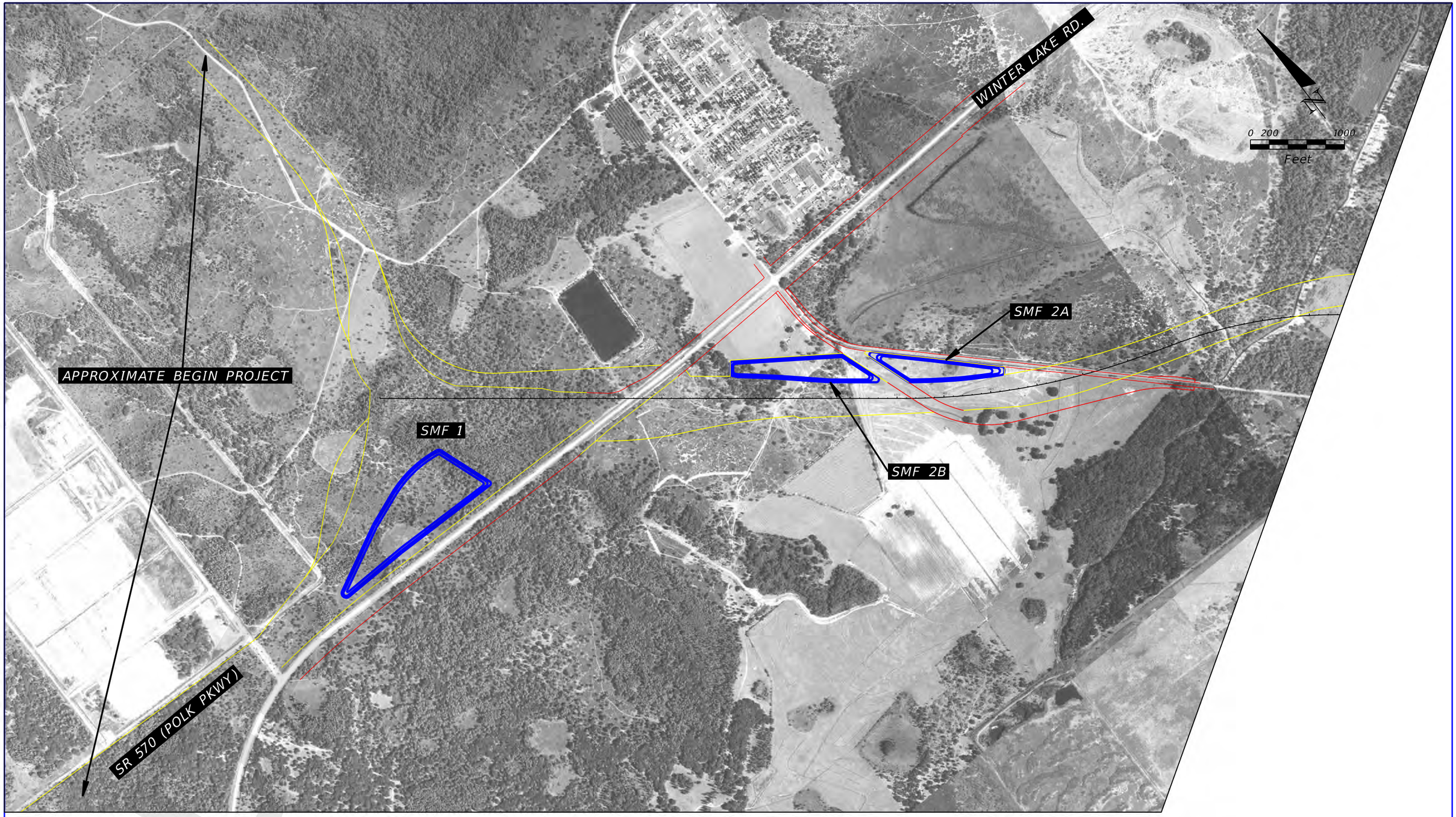

SOURCE: FDOT SURVEY AND MAPPING

1980 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-16

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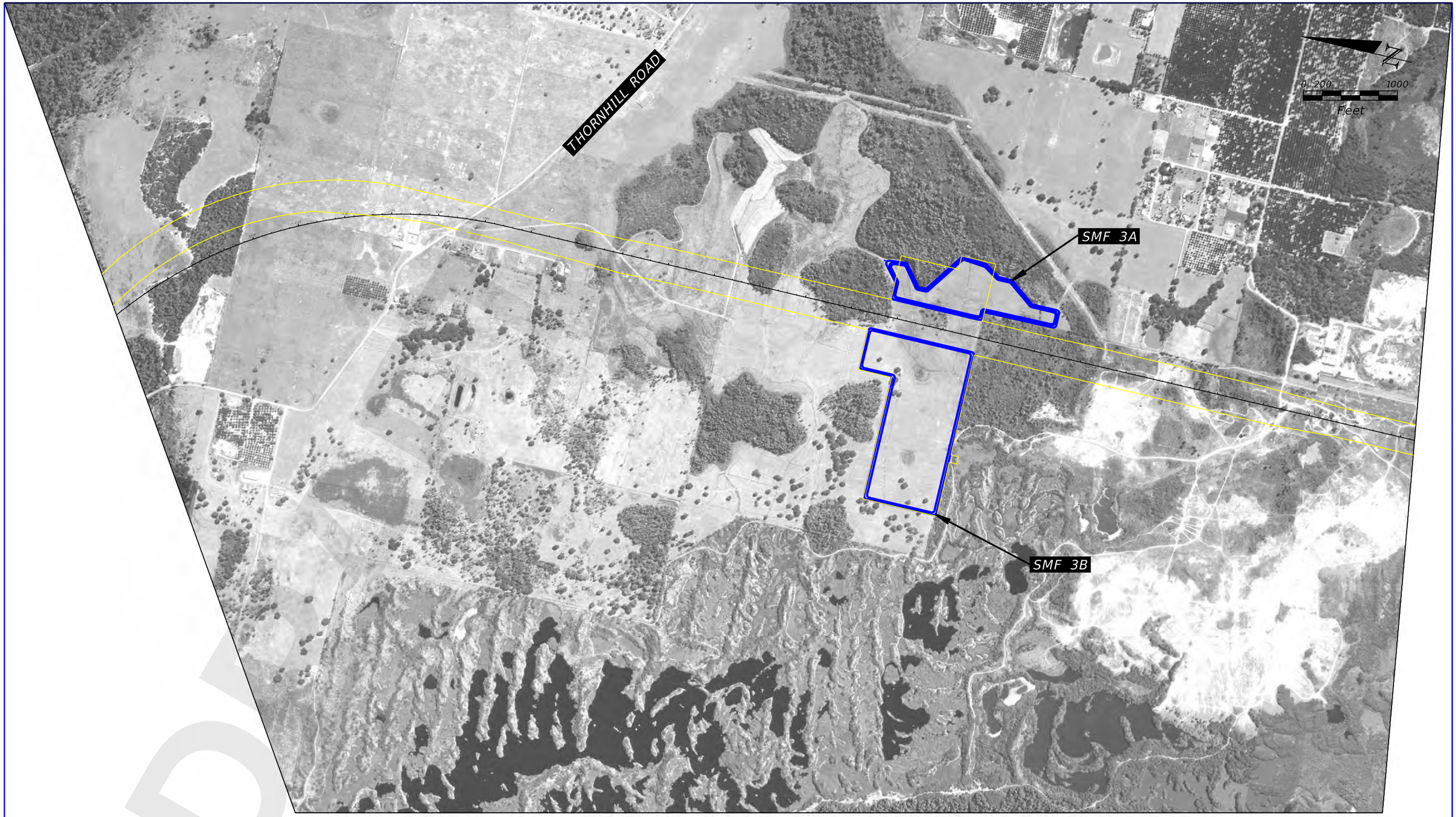

SOURCE: FDOT SURVEY AND MAPPING

1980 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-17

bsawaska 12/17/2018 8:55:46 AM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvHist1980B.dgn

SOURCE: FDOT SURVEY AND MAPPING

1980 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-18

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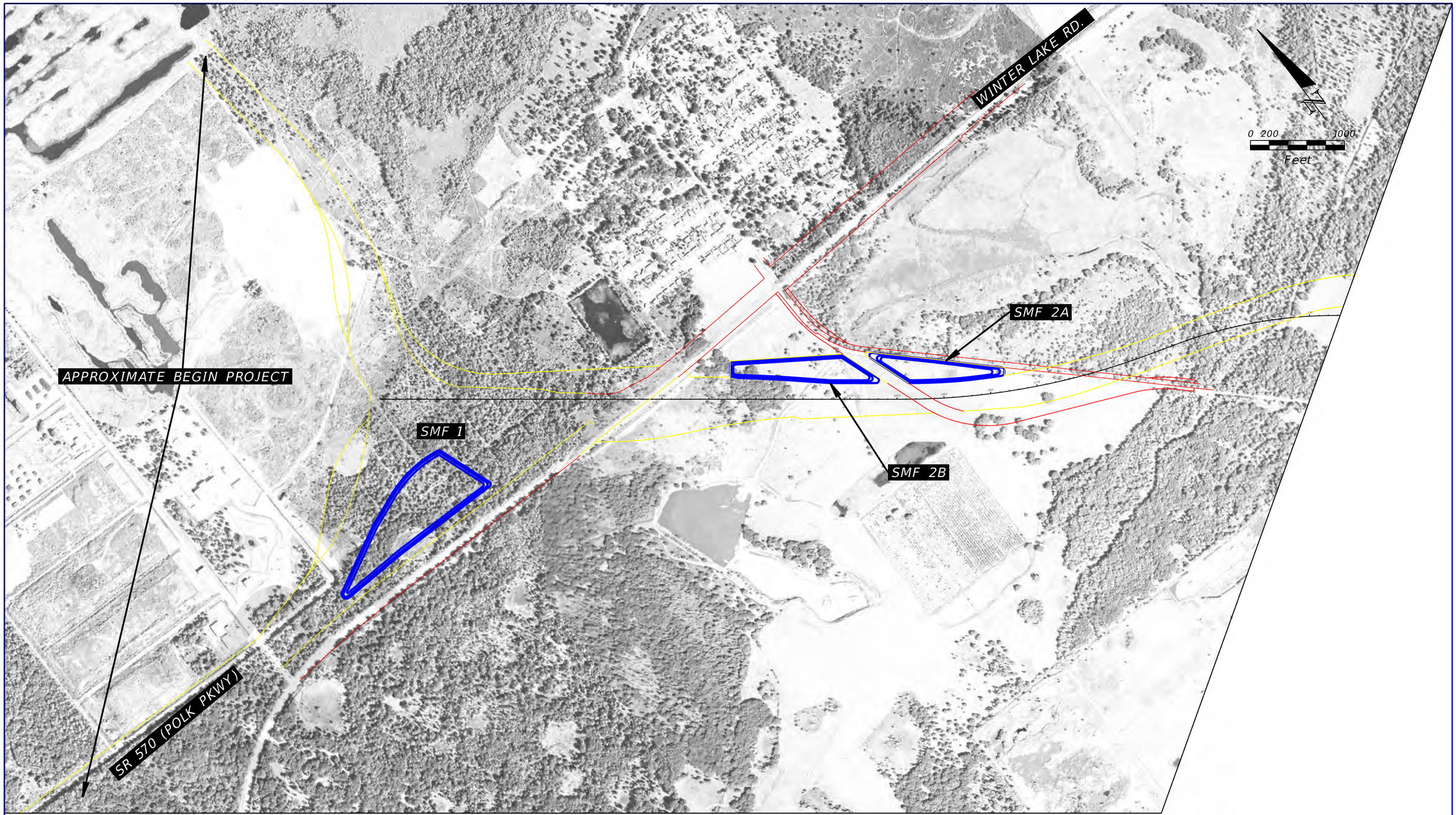

SOURCE: FDOT SURVEY AND MAPPING

1993 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-19

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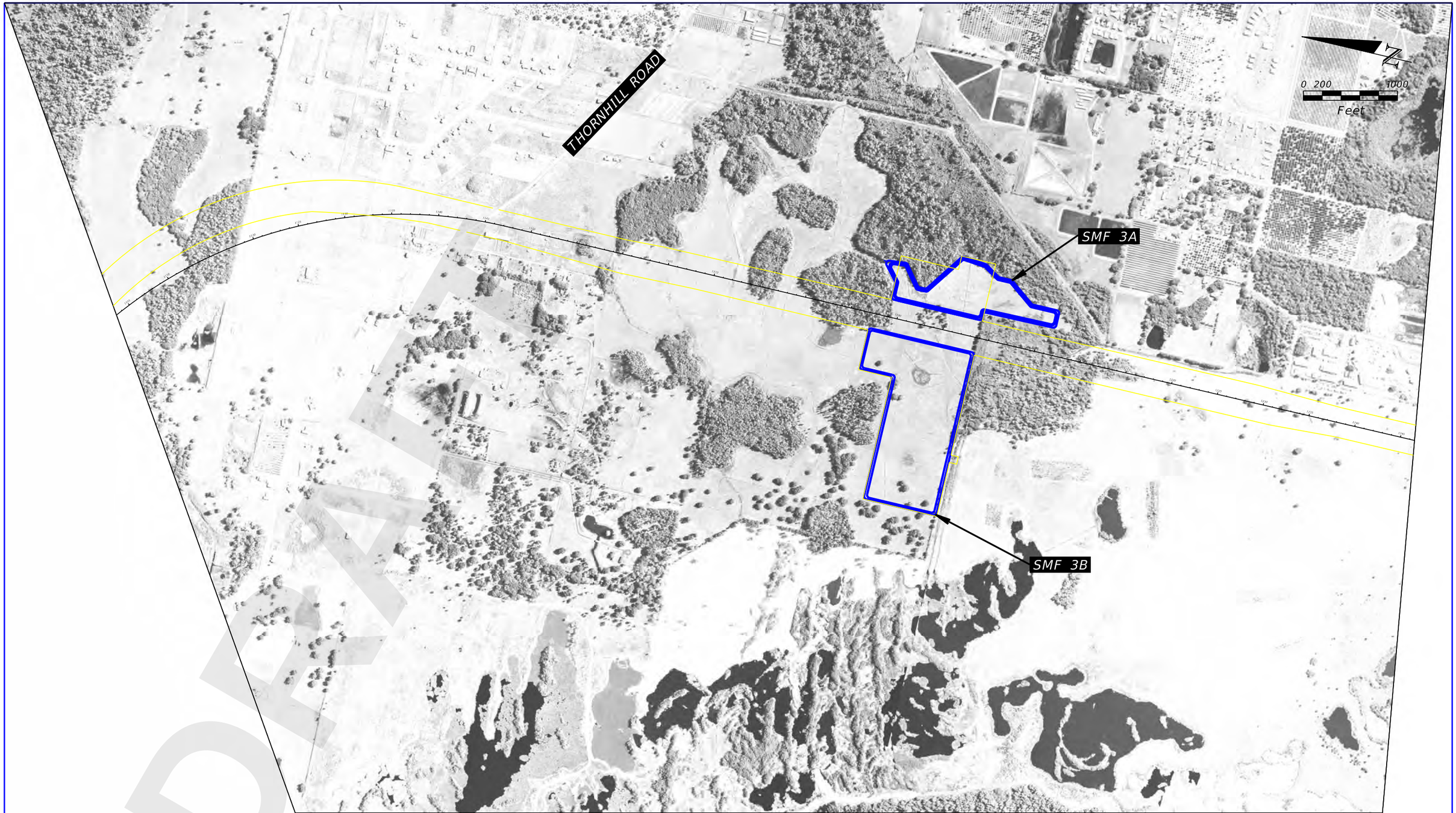

SOURCE: FDOT SURVEY AND MAPPING

1993 HISTORICAL AERIAL PHOTOGRAPH

DRAFT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-20

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SOURCE: FDOT SURVEY AND MAPPING

1993 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-21

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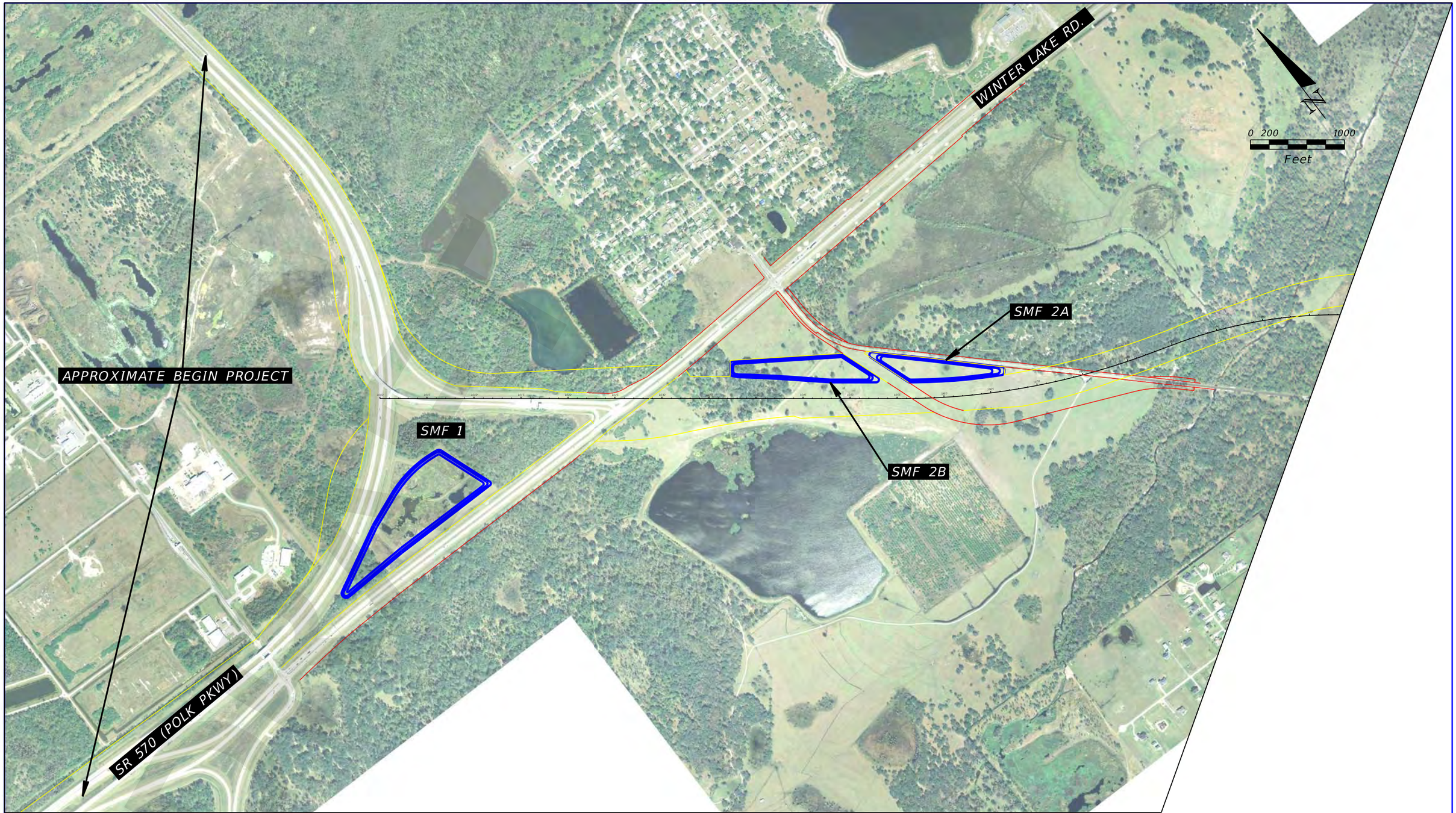

SOURCE: FDOT SURVEY AND MAPPING

2005 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-22

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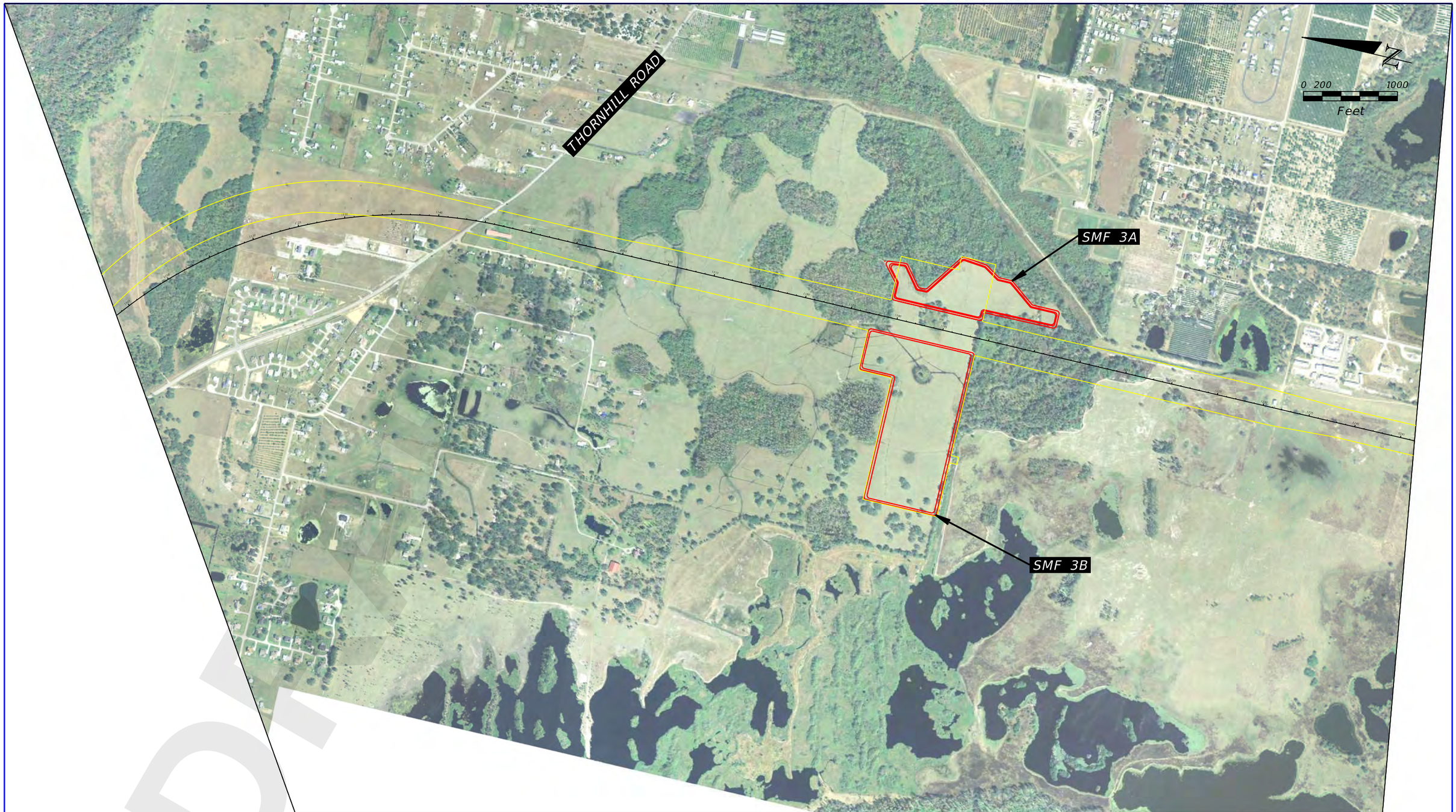


SOURCE: FDOT SURVEY AND MAPPING

2005 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
B-23

bsawaska 12/17/2018 8:57:26 AM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvHist2005B.dgn

SOURCE: FDOT SURVEY AND MAPPING

2005 HISTORICAL AERIAL PHOTOGRAPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

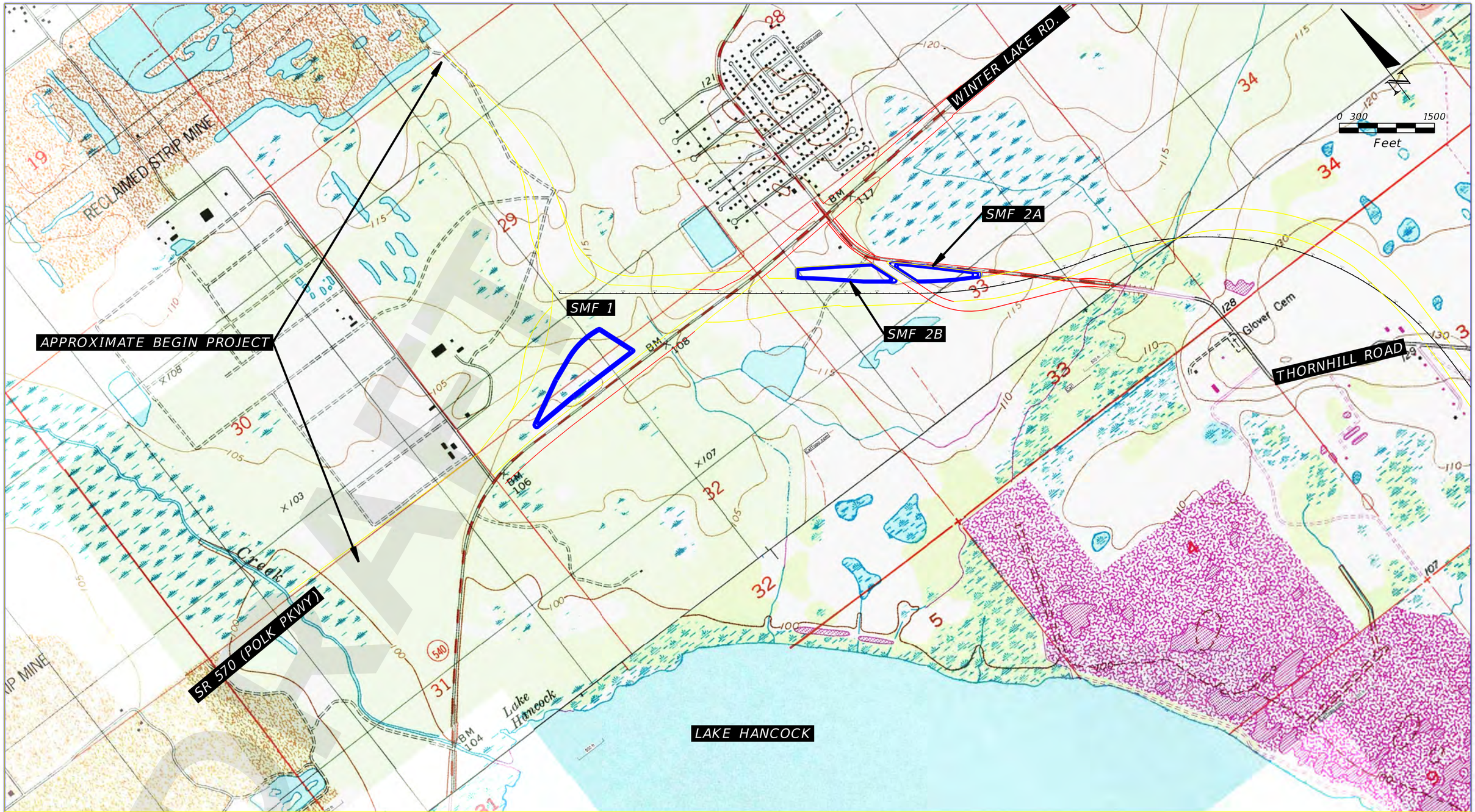
SHEET NO.
B-24

bsawaska 12/17/2018 8:57:37 AM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvHist2005C.dgn

CSER APPENDIX C

USGS Topographic Map

DRAFT



SOURCE: USGS 7.5-MINUTE "BARTOW, FLORIDA" DATED 1949, (PHOTOREVISED 1987)
SOURCE: USGS 7.5-MINUTE "AUBURNDALE, FLORIDA" DATED 1975, (PHOTOREVISED 1988)

USGS TOPOGRAPHIC MAP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
C-1

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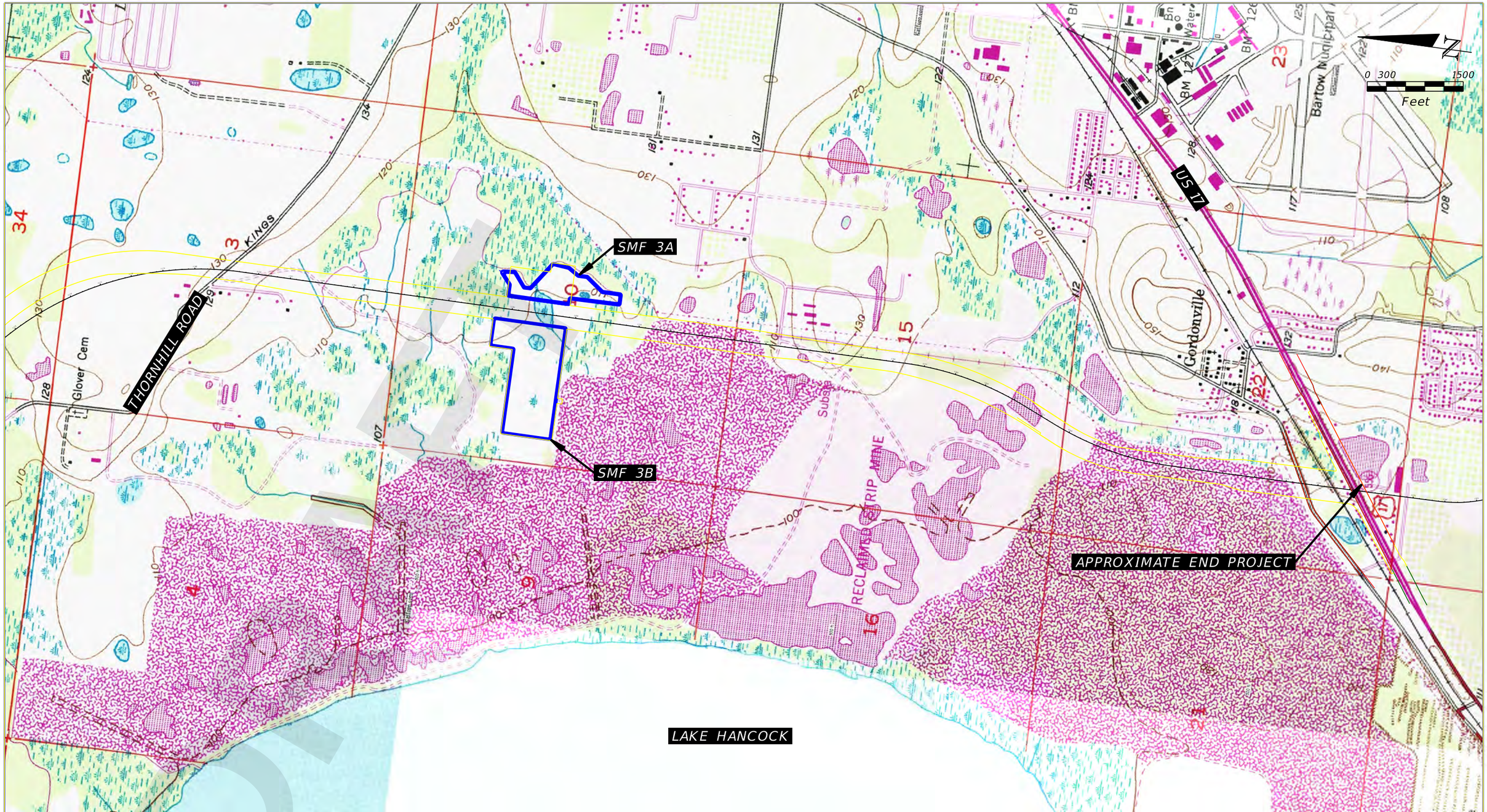

SOURCE: USGS 7.5-MINUTE "BARTOW, FLORIDA" DATED 1949, (PHOTOREVISED 1987)
SOURCE: USGS 7.5-MINUTE "AUBURNDALE, FLORIDA" DATED 1975, (PHOTOREVISED 1988)

USGS TOPOGRAPHIC MAP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-181-001E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	POLK	440897-2-32-01

CENTRAL POLK PARKWAY - SEGMENT 1
POLK COUNTY, FLORIDA

SHEET NO.
C-2

bsawaska 12/18/2018 1:25:42 PM J:\6511\2017 Files\6511-17-181 CPP-1\-001_Design\Microstation\pdgeoEnvTopo02.dgn

CSER APPENDIX D

Environmental Database Report

DRAFT

Environmental Data Report

Custom Radius Research

CPP-1 DESIGN

Polk County, Florida

Prepared For:

Tierra Inc
7351 Temple Terrace Hwy
Tampa, FL 33637

Prepared By:

Environmental Data Management, Inc.
2840 West Bay Drive, Suite 208
Largo, Florida 33770

December 06, 2018

DRAFT

Environmental Data Management, Inc.
2840 West Bay Drive, Suite 208
Largo, Florida 33770
Tel. (727) 586-1700
http://www.edm-net.com

December 06, 2018

Chris Garth
Tierra Inc
7351 Temple Terrace Hwy
Tampa, FL 33637

Subject: **Custom Radius Research - EDM Project #24629**

Dear Mr. Garth

Thank you for choosing Environmental Data Management, Inc. The following report provides the results of our environmental data research that you requested for the following location:

CPP-1 DESIGN

Polk County, Florida

The following is a summary of the components contained within this report:

- **Executive Summary** –lists the databases that were searched for this report, the search distance criteria and the number of sites identified for each database.
- **Map of Study Area**– street map showing the location of the Subject Property and any regulatory listed sites identified within the search criteria.
- **Site Summary Table** –displays the Map ID number, Permit or Registration number, Name/Address and the Government Database(s) for the identified regulatory listed sites.
- **Detail Reports** – data detail for each database record identified.
- **Proximal Records Table** – a listing of potentially relevant sites identified just beyond the search criteria.
- **Non-Mapped Records Table** - lists those government records that do not contain sufficient address information to plot within our GIS system, but may still exist within your study area.
- **Addl Maps (where applicable)** – includes Recent Aerial Photo, USGS Topographic maps, FEMA Floodplain & NWI Wetland Map, map of statewide American Indian Lands and our Environmental Impact Areas map, showing the location of suspect sites such as NPL/STNPL, Brownfields, FUDS, etc.... Our Florida well data report is also include with the Standard and Comprehensive formats.
- **Agency List Descriptions –** defines the regulatory databases included in this report along with the dates that each database was last updated by the respective agency and EDM.

At EDM we take great pride in our work, and continually strive to provide you with the most accurate and thorough research service available. This report is only intended as a means to assist in identifying locations that may pose an environmental concern relative to the property under evaluation. Its use is not intended to replace the need for a complete environmental assessment or regulatory file review, but rather as a supplement to the overall evaluation.

Thank you again for selecting EDM as your data research provider. Should you have any questions regarding this report or our service, please feel free to contact us. We appreciate the opportunity to be of service to you and look forward to working with you in the future.

ENVIRONMENTAL DATA MANAGEMENT, INC.

DRAFT

Report Date: 12/6/2018

Executive Summary

Client Information	Project Information
Tierra Inc 7351 Temple Terrace Hwy Tampa FL 33637 Client Job No: 6511-17-181-001E Client P.O. No:	Custom Radius Research CPP-1 DESIGN Polk County, Florida EDM Job No# 24629

The following table displays the databases that were included in the research provided, the respective search distance for each database and the number of records identified for each database. The distance values indicated are measured from the centroid of the Subject Property. The absence of records in this table and the Site Summary Tables indicates that our research found no data for other sites located within the specified search distances.

	# Found
EPA DATABASES	
National Priorities List(NPL)	0
Superfund Enterprise Management System Active Site Inventory List(SEMSACTV)	0
Comprehensive Env Response, Compensation & Liability Information System List(CERCLIS)	0
Superfund Enterprise Management System Archived Site Inventory List(SEMSARCH)	0
Archived Cerclis Sites(NFRAP)	0
Emergency Response Notification System List(ERNS)	0
RCRIS Handlers with Corrective Action(CORRACTS)	0
RCRA-Treatment, Storage and/or Disposal Sites(TSD)	0
RCRA-LQG,SQG,CESQG and Transporters(NONTSD)	1
Tribal Tanks List(TRIBLTANKS)	0
Tribal Lust List(TRIBLLUST)	0
Brownfields Management System(USBRWNFLDS)	0
Institutional and/or Engineering Controls(USINSTENG)	0
NPL Liens List(NPLLIENS)	0
Enforcement and Compliance History(ECHO)	2
FDEP DATABASES	
State NPL Equivalent(STNPL)	0
State CERCLIS/SEMS Equivalent(STCERC)	0
Solid Waste Facilities List(SLDWST)	3
Leaking Underground Storage Tanks List(LUST)	0
Underground/Aboveground Storage Tanks(TANKS)	0
State Designated Brownfields(BRWNFLDS)	0
Voluntary Cleanup List(VOLCLNUP)	0
Institutional and/or Engineering Controls(INSTENG)	0
Dry Cleaners List(DRY)	0

DRAFT

***** Disclaimer *****

Please understand that the regulatory databases we utilize were not originally intended for our use, but rather for the source agency's internal tracking of sites for which they have jurisdiction or other interest. As a result of this difference in intended use, their data is frequently found to be incomplete or inaccurate, and is less than ideal for our use. Additionally, limitations exist in mapping data detail and accuracy. Our report is not to be relied upon for any purpose other than to "point" at approximate locations where further evaluation may be warranted. No conclusion can be based solely upon our report. Rather, our report should be used in conjunction with other relevant information to direct your attention at potential problem areas; which should be followed up by site inspections, interviews with relevant personnel and regulatory file review. Readers proceed at their own risk in relying upon this data, in whole or in part, for use within any evaluation. The EDM Service Request Form contains more detailed language with regard to such limitations, the terms of which the reader must accept in their entirety before utilizing this report. If the signed contract is not available to the reader, EDM will gladly furnish a copy upon request. Requests via email authorization are construed to be in accordance with these terms.

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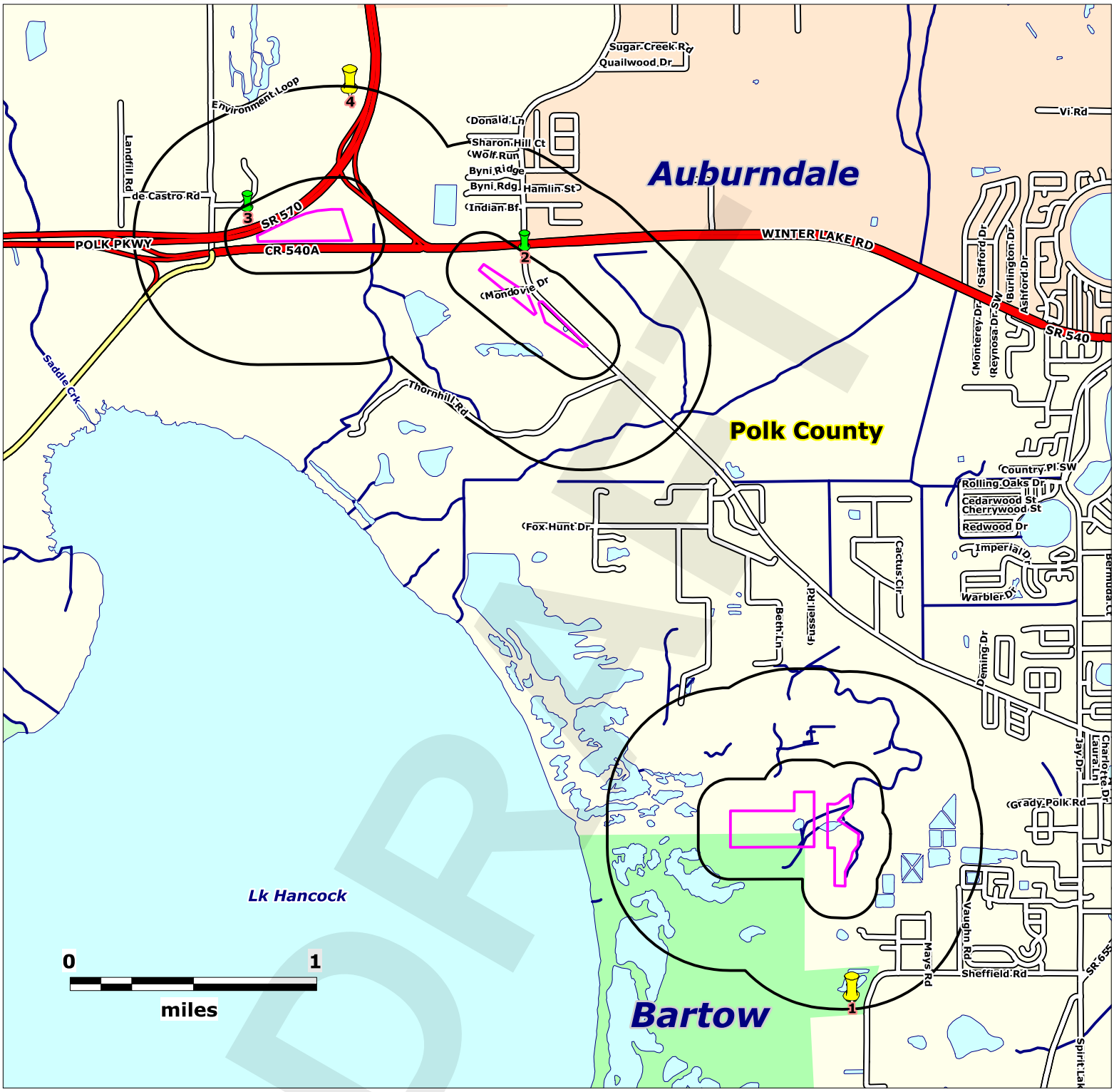
Custom Radius Research Report
Street Map



Source: US Census Bureau TIGER Files

Map Scale and Property Boundaries are Approximate

Approximate Site Boundary

NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST sites - 1/2 Mile

NPLLIENS. CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, ERNS, NONTSD, ECHO, TANKS, & INSTENG sites - 1/8 Mile

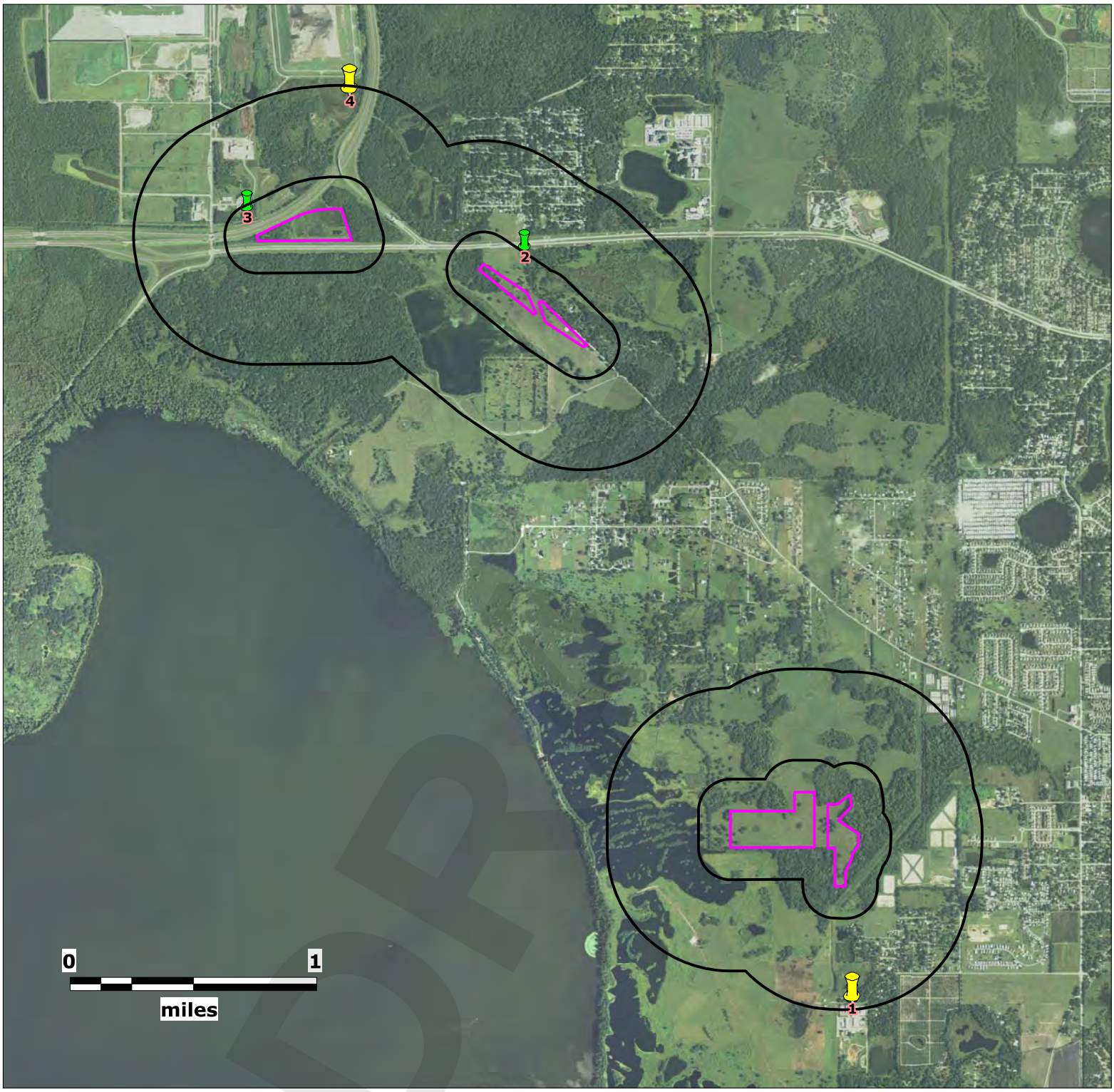
Subject Property

CPP-1 DESIGN
6511-17-181-001E
Polk County, Florida

EDM Job No: 24629
December 6, 2018

DRAFT

Custom Radius Research Report
2015 Aerial Photo



Source: USDA National Agriculture Imagery Program (NAIP)

Map Scale and Property Boundaries are Approximate

Approximate Site Boundary

NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST sites - 1/2 Mile

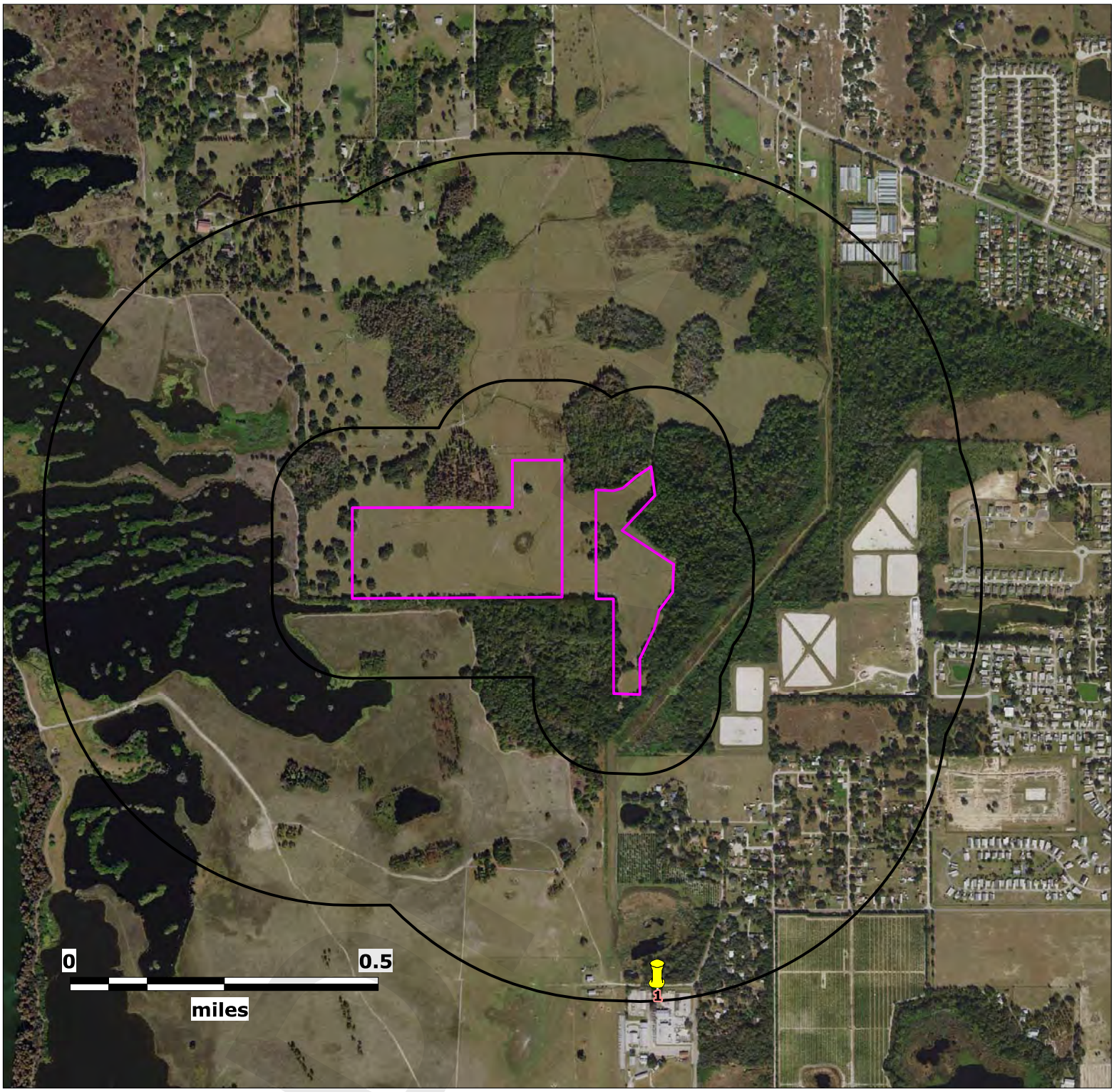
NPLLIENS. CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, ERNS, NONTSD, ECHO, TANKS, & INSTENG sites - 1/8 Mile

Subject Property

CPP-1 DESIGN
6511-17-181-001E
Polk County, Florida

EDM Job No: 24629
December 6, 2018

Custom Radius Research Report
2017 Aerial Photo



Source: Florida Department of Transportation

Map Scale and Property Boundaries are Approximate

Approximate Site Boundary

NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST sites - 1/2 Mile

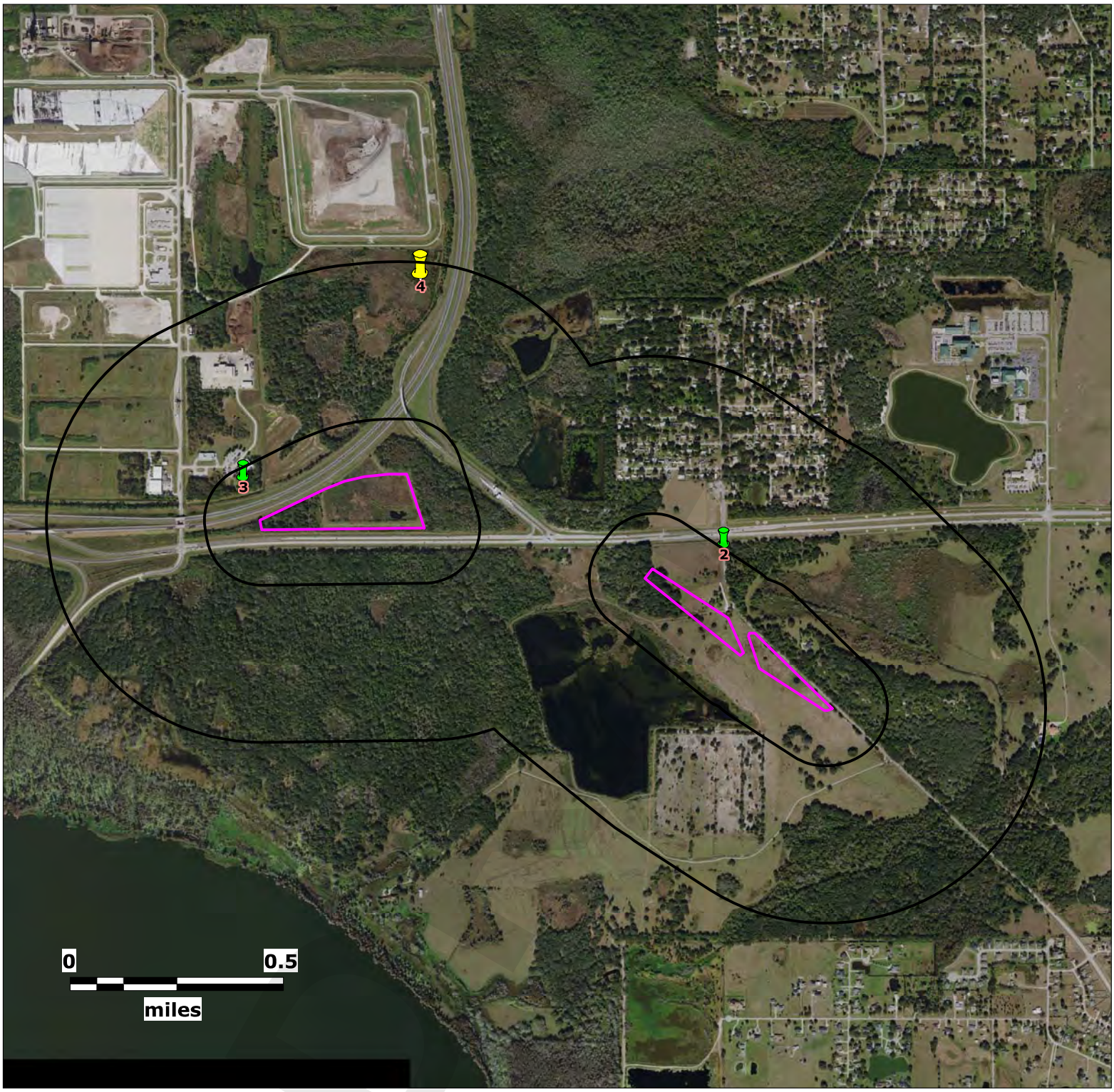
NPLLIENS. CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, ERNS, NONTSD, ECHO, TANKS, & INSTENG sites - 1/8 Mile

Subject Property

CPP-1 DESIGN
6511-17-181-001E
Polk County, Florida

EDM Job No: 24629
December 6, 2018

Custom Radius Research Report
2017 Aerial Photo



Source: Florida Department of Transportation

Map Scale and Property Boundaries are Approximate

Approximate Site Boundary

NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST sites - 1/2 Mile

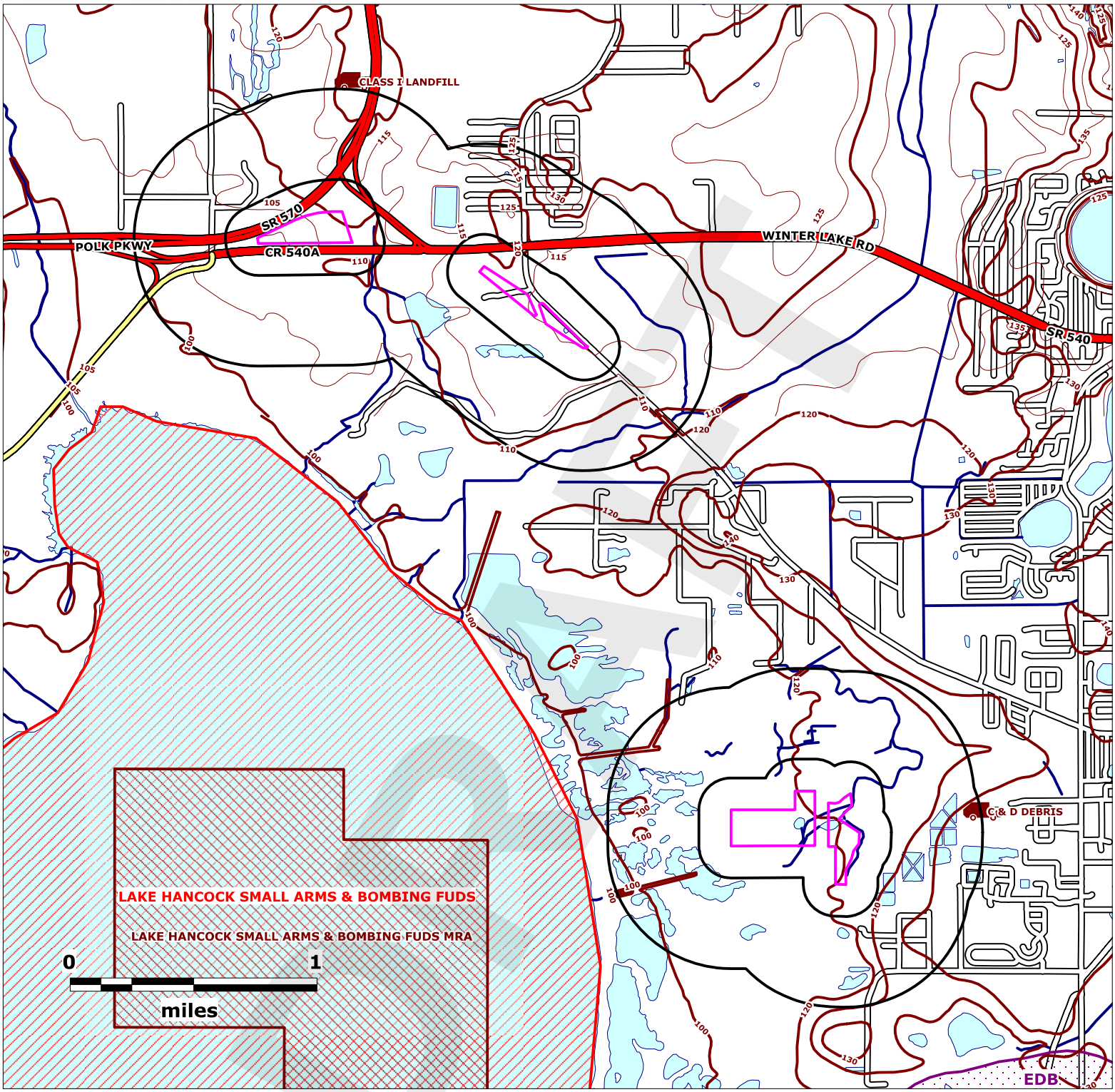
NPLLIENS. CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, ERNS, NONTSD, ECHO, TANKS, & INSTENG sites - 1/8 Mile

Subject Property

CPP-1 DESIGN
6511-17-181-001E
Polk County, Florida

EDM Job No: 24629
December 6, 2018

Custom Radius Research Report
Environmental Impact Areas Map



Source: FDEP and USEPA Geodata

Map Scale and Property Boundaries are Approximate

Subject Property

CPP-1 DESIGN
6511-17-181-001E
Polk County, Florida

EDM Job No: 24629
December 6, 2018

- FDEP Brownfield Areas
- FDEP Brownfield Sites
- USEPA NPL & FDEP STNPL Sites
- FDEP Delineated GW Contamination
- Formerly Used Defense Sites FUDS
- FUDS Munitions Response Areas
- FDEP Cattle Dipping Vat
- FDEP Solid Waste Sites
- Approximate Site Boundary

ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Site Summary Table

Report Date: 12/6/2018

MapID & Pgm List	Fac ID No	Site Dist(Mi) & Direction	Site Name	Site Address
1				
SLDWST	95912	0.82 SE	POLK COUNTY BOARD OF CO COMMISSIONERS	3000 SHEFFIELD RD , FL
2				
ECHO	110044265577	2.50 NW	SR 540 (WINTER LAKE RD) @ THORNHILL ROAD	UNKNOWN WINTER HAVEN, FL 33880
3				
ECHO	110020892710	3.25 NW	POLK COUNTY HOUSEHOLD HAZARDOUS WASTE FACILITY	5 ENVIRONMENTAL LOOP S WINTER HAVEN, FL 33880
NONTSD	FLR000115329	3.25 NW	POLK COUNTY HOUSEHOLD HAZARDOUS WASTE	5 ENVIRONMENTAL LOOP S WINTER HAVEN, FL 33880
4				
SLDWST	49722	3.39 NW	NORTH POLK CENTRAL LF (SITE 201)	SR540, 5.4MI E US98 WINTER HAVEN, FL 33880
SLDWST	95745	3.39 NW	POLK COUNTY SOLID WASTE DIVISION	10 ENVIRONMENTAL LOOP , FL

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FDEP SOLID WASTE FACILITIES LIST

Report Date: 12/6/2018

(SLDWST)

FACILITY ID, NAME AND LOCATION:

95912
POLK COUNTY BOARD OF CO COMMISSIONERS
3000 SHEFFIELD RD
WINTER HAVEN , FL

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN //
AGENCY LAT: ::
AGENCY LON: ::

MAP ID NUMBER: 1
Dist (Miles):
Direction:

SLDWST

RESP AUTHORITY:

, 33880

SITE CONTACT:

,

LAND OWNER:

,

FACILITY CLASS: 754/WASTE TIRE COLLECTOR
CLASS STATUS: REGISTERED (R)

FACILITY CLASS: 754 /WASTE TIRE COLLECTOR
CLASS STATUS: REGISTERED (R)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

FRS ID NUMBER, NAME AND LOCATION:

110044265577
SR 540 (WINTER LAKE RD) @ THORNHILL ROAD
UNKNOWN
WINTER HAVEN, FL 33880

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 28.010278/ -81.821389

MAP ID NUMBER: 2
Dist (Miles):
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: Y
SDWISID?: N
RCRAInfo ID?: N
TRIS ID?: N
GHG ID?: N
FAC SIC CODES:
FAC NAICS CODES:
TRIS REPORTER?:
FIPS CODE: 12105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105014702200
MAJ FAC?:
ACTV PERM?:
% MINORITY WITHIN 3 MI: 25.841
POP /SQ MI WITHIN 3 MI: 530.98
TRIBAL WITHIN 25 MI:

 # INSPS IN 5 YRS: 0
LAST INSP:
DAYS LAST INSP:
 # INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
 # FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT :
 # PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP:
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF:
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER:

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:
_____UU__

CLEAN AIR ACT INFO:

ICIS AIR ID:
CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
 # CAA INFORMAL ENF ACTS LAST 5 YRS:
 # CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA TOTAL PENALTIES:
CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR COMPL:
CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID: FLR10KY75
CWA PERMIT TYPE: Minor
NAICS CODE:
SIC CODE:
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
 # CWA INFORMAL ENF ACTS LAST 5 YRS:
 # CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS: 0

CWA CURR COMPL: No Violation
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:
_____UU__
CWA 3YR QRTS EFFL EXCEED:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

RCRIS INFO:

RCRA ID:
RCRA PERMIT TYPE:
NAICS CODE:
RCRA INSPS IN LAST 5 YRS:
RCRA DAYS LAST EVAL:
RCRA INFORMAL ENF ACTS LAST 5 YRS:
RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION:

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS:

RCRA CURR COMPL:
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
SDWA INFORMAL ENF ACTS LAST 5 YRS:
SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

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USEPA RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION (RCRAInfo)

(NONTSD)

FACILITY ID NUMBER, NAME AND LOCATION

FLR000115329
POLK COUNTY HOUSEHOLD HAZARDOUS WASTE
5 ENVIRONMENTAL LOOP S
WINTER HAVEN, FL 33880-0000

EPA ENVIROFACTS ON LINE REPORT (May Not Be Available For All Records)

CONTACT INFORMATION:

10 ENVIRONMENTAL LOOP S
WINTER HAVEN FL 33880-1072
Contact: BROOKS STAYER
Contact Telephone: 863-284-4319
Contact Email: BROOKSSTAYER@POLK-COU
Agency Lat - Lon: 28.012924 -81.840967

MAP ID NUMBER: 3
Dist (Miles):
Direction:

NONTSD

RCRIS INFORMATION

NOTIFICATION DATE: 5/23/2018 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 6/19/2013 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?:
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 12/27/2011 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

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NOTIFICATION DATE: 2/2/2011 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?:
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 1/9/2008 **SOURCE:** NOTIFICATION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): NOT A GENERATOR-VERIFIED
GEN STATUS(State): NOT A GENERATOR-VERIFIED
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?: N
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

NOTIFICATION DATE: 12/15/2004 **SOURCE:** INSPECTION

TSD?: NOT A TSD,VERIFIED
GEN STATUS(Fed): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
GEN STATUS(State): CONDITIONALLY EXEMPT SQG(<100 KG PER MONTH)
MIXED WSTE GEN?: N
IMPORTER?: N
OFFSITE RECPT?:
TRANSPORTER?: NOT A TRANSPORTER,VERIFIED
XFER FAC?: N
SHRT TRM GEN?: N
RECYCLER?: N
NON-NOTIFIER?: NON-NOTIFIER

UNIV WST DEST?: N
ON SITE BURNER?: N
FURNACE?: N
UNDGRND INJ?: NO UNDERGROUND INJECT
UO BURNER?: N
UO PROC?: N
UO RECY?: N
UO TRANS?: N
UO XFER?: N
UO MRKT BRN?: N
UO SPEC MRKT?: N

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

FRS ID NUMBER, NAME AND LOCATION:

110020892710
POLK COUNTY HOUSEHOLD HAZARDOUS WASTE
5 ENVIRONMENTAL LOOP S
WINTER HAVEN, FL 33880

EPA REG: 04
TRIBAL?: N
FED FAC?:
COUNTY: POLK
AGENCY LAT/LON: 28.013225/ -81.840817

MAP ID NUMBER: 3
Dist (Miles):
Direction:

ECHO

ECHO ON LINE REPORTS (May Not Be Available For All Records)

GENERAL FACILITY INFO:

AFS ID?: N
NPDES ID?: N
SDWISID?: N
RCRAInfo ID?: Y
TRIS ID?: N
GHG ID?: N
FAC SIC CODES:
FAC NAICS CODES: 562111
TRIS REPORTER?:
FIPS CODE: 12105
HUC CODE: 03100101
AIR NAA?
WBD CODE:
CONG DIST: 15
CENSUS BLK: 12105011721202
MAJ FAC?:
ACTV PERM?: Y
% MINORITY WITHIN 3 MI: 17.849
POP /SQ MI WITHIN 3 MI: 327.07
TRIBAL WITHIN 25 MI:

 # INSPS IN 5 YRS: 1
LAST INSP: 6/18/2013
DAYS LAST INSP:
 # INFORMAL ENF ACTS LAST 5 YRS : 0
LAST INFORMAL ENF ACT :
 # FORMAL ENF ACTS LAST 5 YRS : 0
LAST FORMAL ENF ACT :
 # PENALTIES ASSESSED LAST 5 YRS : 0
TOTAL PENALTIES ASSESSED : 0
LAST PENALTY AMT :

LAST EPA INSP:
LAST STATE INSP: 6/18/2013
LAST FORMAL EPA ENF:
LAST FORMAL STATE ENF:
LAST INFORMAL EPA ENF:
LAST INFORMAL STATE ENF:
FAC FED AGENCY:
FAC IMP WATERS DISCHARGER:

QTRS NONCMPL LAST 5 YRS: 0
PGMS IN NONCOMPL: 0
CURR COMPL: No Violation
CURR IN SNC?: N
3YR QRTLY COMPL STATUS:

CLEAN AIR ACT INFO:

ICIS AIR ID:
CAA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CAA INSPS IN LAST 5 YRS:
CAA DAYS LAST INSPN:
 # CAA INFORMAL ENF ACTS LAST 5 YRS:
 # CAA FORMAL ENF ACTS LAST 5 YRS:
CAA DATE LAST FORMAL ACTION:

CAA TOTAL PENALTIES:
CAA LAST PENALTY DATE:
CAA LAST PENALTY AMT:
CAA QTRS NONCMPL LAST 5 YRS:

CAA CURR COMPL:
CAA CURR HPV/SNC FLAG: N
CAA 3YR QRTLY COMPL STATUS:

CLEAN WATER ACT INFO:

NPDES ID:
CWA PERMIT TYPE:
NAICS CODE:
SIC CODE:
CWA INSPS IN LAST 5 YRS:
CWA DAYS LAST INSPN:
 # CWA INFORMAL ENF ACTS LAST 5 YRS:
 # CWA FORMAL ENF ACTS LAST 5 YRS:
CWA DATE LAST FORMAL ACTION:

CWA TOTAL PENALTIES:
CWA LAST PENALTY DATE:
CWA LAST PENALTY AMT:
CWA QTRS NONCMPL LAST 5 YRS:

CWA CURR COMPL:
CWA CURR HPV/SNC FLAG: N
CWA 3YR QRTLY COMPL STATUS:

CWA 3YR QRTS EFFL EXCEED:

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USEPA ENFORCEMENT AND COMPLIANCE HISTORY

(ECHO)

RCRIS INFO:

RCRA ID: FLR000115329
RCRA PERMIT TYPE: CESQG
NAICS CODE: 562111
RCRA INSPS IN LAST 5 YRS: 1
RCRA DAYS LAST EVAL: 1664
 # RCRA INFORMAL ENF ACTS LAST 5 YRS:
 # RCRA FORMAL ENF ACTS LAST 5 YRS:
RCRA DATE LAST FORMAL ACTION:

RCRA TOTAL PENALTIES:
RCRA LAST PENALTY DATE:
RCRA LAST PENALTY AMT:
RCRA QTRS NONCMPL LAST 5 YRS: 0

RCRA CURR COMPL: No Violation
RCRA CURR HPV/SNC FLAG: N
RCRA 3YR QRTLY COMPL STATU

SDWA INFO:

SDWA ID:
SWDA SYST TYPE:
 # SDWA INFORMAL ENF ACTS LAST 5 YRS:
 # SDWA FORMAL ENF ACTS LAST 5 YRS:
SDWA CURR COMPL:
SDWA CURR HPV/SNC FLAG: N

TRIS INFO:

TRIS ID:
TRIS TOTAL LBS ONSITE/OFFSITE:
TRIS LBS REL ONSITE:
TRIS LBS TXFR OFFSITE:
TRIS PAST RPTS?:

FED ENF INFO:

TOTAL FEC CASES 5 YRS:
FEC LAST DATE:
FEC TOTAL PENLTY:

GRN HOUSE GAS INFO:

GHG ID:

GHG EMMISSIONS MT: N

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FDEP SOLID WASTE FACILITIES LIST

(SLDWST)

FACILITY ID, NAME AND LOCATION:

49722
NORTH POLK CENTRAL LF (SITE 201)
SR540, 5.4MI E US98
WINTER HAVEN , FL 33880

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN 30 /28S /25E
AGENCY LAT: 28:1:26.03
AGENCY LON: 81:50:50.1

MAP ID NUMBER: 4
Dist (Miles):
Direction:

S L D W S T

RESP AUTHORITY:
POLK COUNTY WASTE & RECYCLING DIVI

WINTER HAVEN, FL 33880

SITE CONTACT:
ANA WOOD

,
(863) 284-4319

LAND OWNER:
POLK COUNTY
P O BOX 39
BARTOW, FL 33830

FACILITY CLASS: 100/CLASS I LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 100 /CLASS I LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 300/CLASS III LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 300 /CLASS III LANDFILL
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 330/SOURCE-SEPARATED ORGANICS PROC. FAC. (SOPF)
CLASS STATUS: ACTIVITY NOT PERMITTED/REGISTERED (N)

FACILITY CLASS: 330 /SOURCE-SEPARATED ORGANICS PROC. FAC. (SOPF)
CLASS STATUS: ACTIVITY NOT PERMITTED/REGISTERED (N)

FACILITY CLASS: 751/WASTE TIRE COLLECTION CENTER
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 751 /WASTE TIRE COLLECTION CENTER
CLASS STATUS: ACTIVE (A)

FACILITY CLASS: 910/DISASTER DEBRIS MANAGEMENT SITE
CLASS STATUS: INACTIVE (I)

FACILITY CLASS: 910 /DISASTER DEBRIS MANAGEMENT SITE
CLASS STATUS: INACTIVE (I)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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FDEP SOLID WASTE FACILITIES LIST

(SLDWST)

FACILITY ID, NAME AND LOCATION:

95745
POLK COUNTY SOLID WASTE DIVISION
10 ENVIRONMENTAL LOOP
WINTER HAVEN , FL

DISTRICT SWD
COUNTY POLK
SEC/TWN/RN //
AGENCY LAT: ::
AGENCY LON: ::

MAP ID NUMBER: 4
Dist (Miles):
Direction:

SLDWST

RESP AUTHORITY:
, 33880

SITE CONTACT:
,

LAND OWNER:
,

FACILITY CLASS: 754/WASTE TIRE COLLECTOR
CLASS STATUS: INACTIVE (I)

FACILITY CLASS: 754 /WASTE TIRE COLLECTOR
CLASS STATUS: INACTIVE (I)

FDEP INFORMATION PORTAL ON LINE DOCUMENTS **(May Not Be Available For All Records)**

FDEP INFORMATION PORTAL ON LINE REPORTS **(May Not Be Available For All Records)**

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ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Proximal Site Summary Table

This table includes mapped sites whose plotted coordinates fall just outside of the ASTM or client defined research distance but whose property boundaries may still extend into the search area. These sites are typically large commercial or industrial tracts that may merit inclusion in the evaluation process. Detail data reports on any of these sites may be requested and will be sent as an addendum to this report at no additional cost.

Report Date: 12/6/2018

MapID Prgm List	Fac ID No	Site Dist(mi) & Direction	Site Name	Site Address
1A				
SLDWST	51556	0.85 E	POLK C&D DEBRIS DUMP	300 GRADY POLK RD WINTER HAVEN, FL 33880
2A				
ECHO	110007463324	2.64 NW	CIRCLE K #7289	SR 546 THORNHILL RD AUBURNDALE, FL 33823
NONTSD	FLD984251918	2.64 NW	CIRCLE K #7289	SR 546 THORNHILL RD AUBURNDALE, FL 33619
TANKS	8624190	2.64 NW	CIRCLE K #7289	SR 546 & THORNHILL RD AUBURNDALE, FL 33823

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ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Non-Mapped Records Summary Table

This table is a listing of database records that have not been plotted within our mapping system and could exist within your Study Area. Detail data reports on any of these sites may be requested and will be sent as an addendum to this report at no additional cost.

Report Date: 12/6/2018

Pgm List & Fac ID No	Site Name	Site Address
ECHO		
110053891062	RAINBOW CHASE RV RESORT	, FL
110053891142	OAKLEY TRANSPORT INC.	, FL
110055215388	LAKESIDE LANDINGS - PHASE 3	UNKNOWN WINTER HAVEN, FL 33880
110055626461	CENTRAL POINTE	UNKNOWN WINTER HAVEN, FL 33880
110058919960	VILLAMAR PHASE ONE	UNKNOWN WINTER HAVEN, FL 33880
110060354566	PALMETTO EAGLE LAKE-THORNHILL ROAD, L	UNKNOWN WINTER HAVEN, FL 33880
110070114440	COVENTRY COVE	UNKNOWN WINTER HAVEN, FL 33880
110070115964	BEST FAB EXPANSION	UNKNOWN WINTER HAVEN, FL 33880
STCERC		
NONE 533FDER	BARTOW LANDFILL-ABANDONED	HWY 17 BARTOW, FL

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Agency List Descriptions

USEPA and State Databases are updated on a quarterly basis. Supplemental Databases are updated on an annual basis.

Florida Department of Environmental Protection (FDEP)

State Designated Brownfields(BRWNFLDS)

The FDEP Brownfields database contains a listing of State Designated Brownfield Areas and Brownfield Sites. Brownfields are typically defined as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Agency File Date: 10/13/2018 **Received by EDM:** 10/18/2018 **EDM Database Updated:** 10/18/2018

Dry Cleaners List(DRY)

The FDEP Dry Cleaning Facilities List is comprised of data from the FDEP Storage Tank and Contamination Monitoring (STCM) database and the Drycleaning Solvent Cleanup Program- Priority Ranking List. It contains a listing of those Dry Cleaning sites (and suspected historical Dry Cleaning sites) who have registered with the FDEP and/or have applied for the Dry Cleaning Solvent Cleanup Program.

Agency File Date: 11/1/2018 **Received by EDM:** 11/28/2018 **EDM Database Updated:** 11/28/2018

Institutional and/or Engineering Controls(INSTENG)

Agency File Date: 10/6/2018 **Received by EDM:** 10/10/2018 **EDM Database Updated:** 10/10/2018

Leaking Underground Storage Tanks List(LUST)

The FDEP LUST list identifies facilities and/or locations that have notified the FDEP of a possible release of contaminants from petroleum storage systems. This Report is generated from the FDEP Storage Tank and Contamination Monitoring Database (STCM).

Agency File Date: 9/10/2018 **Received by EDM:** 12/5/2018 **EDM Database Updated:** 12/5/2018

Solid Waste Facilities List(SLDWST)

The FDEP SLDWST list identifies locations that have been permitted to conduct solid waste handling activities including Landfills, Transfer Stations and sites handling Bio-Hazardous wastes. Sites listed with "##" after the Facility ID Number are historical locations, obtained from documents on record at local agencies.

Agency File Date: 10/18/2018 **Received by EDM:** 10/18/2018 **EDM Database Updated:** 10/18/2018

State CERCLIS/SEMS Equivalent(STCERC)

The STCERC list is compiled from the FDEP Site Investigation Section list, the Florida SITES list(historical) and the FDEP Cleanup Sites list. These sites are being assessed and/or cleaned up as a result of identified or suspected contamination from the release of hazardous substances. The FDEP Cleanup Sites list programs include: Brownfields, Petroleum, EPA Superfund (CERCLA), Drycleaning, Responsible Party Cleanup, State Funded Cleanup, State Owned Lands Cleanup and Hazardous Waste Cleanup.

Agency File Date: 10/8/2018 **Received by EDM:** 10/18/2018 **EDM Database Updated:** 10/19/2018

State NPL Equivalent(STNPL)

The FDEP State Funded Cleanup list contains facilities and/or locations where there are no viable responsible parties; the site poses an imminent hazard; and the site does not qualify for Superfund or is a low priority for EPA. Remedial efforts at these sites are currently being addressed through State funded cleanup action.

Agency File Date: 10/5/2018 **Received by EDM:** 10/10/2018 **EDM Database Updated:** 10/10/2018

Underground/Aboveground Storage Tanks(TANKS)

The FDEP TANKS list contains sites with registered aboveground and underground storage tanks containing regulated petroleum products.

Agency File Date: 9/10/2018 **Received by EDM:** 9/18/2018 **EDM Database Updated:** 9/19/2018

Voluntary Cleanup List(VOLCLNUP)

The VOLCLNUP List is derived from the FDEP Brownfields Site Rehabilitation Agreement (BSRA) database and the FDEP Office of Waste Cleanup Responsible Party Sites database. This list identifies those sites that have signed an agreement to Voluntarily cleanup a site and/or sites where legal responsibility for site rehabilitation exists pursuant to Florida Statutes and is being conducted either voluntarily or pursuant to enforcement activity.

Agency File Date: 10/31/2018 **Received by EDM:** 10/31/2018 **EDM Database Updated:** 10/31/2018

United States Environmental Protection Agency (EPA)

Comprehensive Env Response, Compensation & Liability Information System List(CERCLIS)

The US EPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database tracks potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are proposed to be on the NPL, are on the NPL and sites that are in the screening and assessment phase for possible inclusion on the NPL. The CERCLIS database was retired in November of 2013 and has been replaced by the Superfund Enterprise Management System (SEMS).

Agency File Date: 11/12/2013 **Received by EDM:** 2/18/2016 **EDM Database Updated:** 2/18/2016

DRAFT

RCRIS Handlers with Corrective Action(CORRACTS)

The US EPA Corrective Action Sites (CORRACTS) database is a listing of hazardous waste handlers that have undergone RCRA corrective action activity.

Agency File Date: 9/17/2018 **Received by EDM:** 9/19/2018 **EDM Database Updated:** 9/20/2018

Enforcement and Compliance History(ECHO)

The US EPA Enforcement and Compliance History Online (ECHO) database provides integrated compliance and enforcement information on facilities regulated under the Clean Air Act (CAA), Clean Water Act (CWA), Safe Drinking Water Act (SDWA) and Resource Conservation and Recovery Act (RCRA).

Agency File Date: 11/3/2018 **Received by EDM:** 11/7/2018 **EDM Database Updated:** 11/14/2018

Emergency Response Notification System List(ERNS)

The Emergency Response Notification System (ERNS) database stores information on oil discharges and hazardous substance releases. The ERNS program is a cooperative data sharing effort among the EPA, DOT and the National Response Center (NRC), which currently provides access to this data.

Agency File Date: 7/29/2018 **Received by EDM:** 8/1/2018 **EDM Database Updated:** 8/3/2018

Archived Cerclis Sites(NFRAP)

The US EPA NFRAP list contains archived data of CERCLIS records where the EPA has completed assessment activities and determined that no further steps to list the site on the NPL will be taken. NFRAP sites may be reviewed in the future to determine if they should be returned to CERCLIS based upon newly identified contamination problems at the site. The NFRAP database was retired in November of 2013 and has been replaced by the Superfund Enterprise Management System (SEMS) .

Agency File Date: 10/25/2013 **Received by EDM:** 2/18/2016 **EDM Database Updated:** 2/18/2016

RCRA-LQG,SQG,CESQG and Transporters(NONTSD)

The EDM NONTSD list is a subset of the US EPA RCRAInfo System and identifies facilities that generate and transport hazardous wastes. These facilities may be Large Quantity Generators (LQG), Small Quantity Generators (SQG), Conditionally Exempt SQG's (CESQG) as well as" Non-Notifiers" and "Non-Handlers".

Agency File Date: 9/17/2018 **Received by EDM:** 9/24/2018 **EDM Database Updated:** 9/27/2018

National Priorities List(NPL)

The US EPA National Priorities List (NPL) contains facilities and/or locations where environmental contamination has been confirmed and prioritized for cleanup activities under the Superfund Program. EDM's NPL Report includes sites that are currently on the NPL as well as sites that have been Proposed, Withdrawn and/or Deleted from the list. Previously, information for the NPL was managed under the CERLIS data management system. In 2014 this system was replaced with the Superfund Enterprise Management System (SEMS). EPA last updated CERCLIS in November of 2013. EDM's NPL Report contains available SEMS data and the archived CERCLIS data relative to NPL sites.

Agency File Date: 7/17/2018 **Received by EDM:** 8/8/2018 **EDM Database Updated:** 8/14/2018

NPL Liens List(NPLLIENS)

The US EPA NPL Liens List identifies those sites where under authority granted by CERCLA, liens have been filed against real property in order to recover expenditures from remedial action or when the property owner receives a notice of potential liability.

Agency File Date: 8/13/2018 **Received by EDM:** 10/10/2018 **EDM Database Updated:** 10/10/2018

Superfund Enterprise Management System Active Site Inventory List(SEMSACTV)

The US EPA Superfund Enterprise Management System (SEMS) tracks potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. The SEMSACTV list contains sites that are on the National Priorities List (NPL) as well as sites that are prosposed for or in the screening and assessment phase for possible inclusion on the NPL. SEMS has replaced the CERCLIS database, which was retired in November of 2013.

Agency File Date: 6/8/2018 **Received by EDM:** 8/6/2018 **EDM Database Updated:** 8/7/2018

Superfund Enterprise Management System Archived Site Inventory List(SEMSARCH)

The US EPA Superfund Enterprise Management System (SEMS), contains archived data of CERCLIS or SEMS records where the EPA has completed assessment activities and determined that no further steps to list the site on the NPL will be taken. These sites may be reviewed in the future to determine if they should be returned to SEMS based upon newly identified contamination problems at the site. SEMS has replaced the CERCLIS database, which was retired in November of 2013. The SEMSARCH database contains these newly archived records under the SEMS database management system.

Agency File Date: 6/8/2018 **Received by EDM:** 8/6/2018 **EDM Database Updated:** 8/7/2018

Tribal Lust List(TRIBLLUST)

EDM's Tribal LUST list is derived from the USEPA Region IV Tribal Tanks database by extracting those sites with indicators of past and/or current releases.

Agency File Date: 2/24/2010 **Received by EDM:** 3/9/2010 **EDM Database Updated:** 3/9/2010

Tribal Tanks List(TRIBLTANKS)

The USEPA Region IV Tribal Tanks database lists Active and Closed storage tank facilities on Native American lands.

Agency File Date: 2/24/2010 **Received by EDM:** 3/9/2010 **EDM Database Updated:** 3/9/2010

DRAFT

RCRA-Treatment, Storage and/or Disposal Sites(TSD)

The EDM TSD list is a subset of the US EPA RCRAInfo system and identifies facilities that Treat, Store and/or Dispose of hazardous waste.

Agency File Date: 9/17/2018 **Received by EDM:** 9/24/2018 **EDM Database Updated:** 9/27/2018

Brownfields Management System(USBRWNFLDS)

The US EPA Brownfields program provides information on environmentally distressed properties that have received Grants or Targeted funding for cleanup and redevelopment . Tribal Brownfield sites are included in the USBRWNFLDS database.

Agency File Date: 7/24/2018 **Received by EDM:** 7/24/2018 **EDM Database Updated:** 7/25/2018

Institutional and/or Engineering Controls(USINSTENG)

The USINSTENG list is compiled from data elements contained in the NPL, CORRACTS and USBRWNFLDS lists.

Agency File Date: 9/17/2018 **Received by EDM:** 9/19/2018 **EDM Database Updated:** 9/20/2018

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Environmental Impact Areas

Brownfield Areas and Sites

The FDEP Brownfields database contains a listing of State Designated Brownfield Areas and Brownfield Sites. Brownfields are typically defined as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Agency File Date: 1/6/2017 **Received by EDM:** 12/28/2016 **EDM Database Updated:** 1/6/2017

https://floridadep.gov/waste/waste-cleanup/content/brownfields-program

Cattle Dipping Vats

From the 1910's through the 1950's, vats were filled with an arsenic solution for the control and eradication of the cattle fever tick. Other pesticides such as DDT where also widely used. By State law, all cattle, horses, mules, goats, and other susceptible animals were required to be dipped every 14 days. Under certain circumstances, the arsenic and other pesticides remaining at the site may present an environmental or public health hazard.

Some of the sites have been located and are currently under investigation. However, most of the listings are from old records of the State Livestock Board, which listed each vat as it was put into operation. In addition, some privately operated vats may have existed which were not listed by the Livestock Board. EDM's Cattle Dipping Vat sites are retrieved from the Voluntary Cleanup and STCERC datablases. For additional information on Cattle Dipping Vats visit the FDEP and FDOH websites at:

Agency File Date: 9/21/2016 **Received by EDM:** 9/30/2016 **EDM Database Updated:** 9/30/2016

https://floridadep.gov/waste/district-business-support/content/cattle-dipping-vats-cdv

http://www.floridahealth.gov/environmental-health/drinking-water/cattledipvathome.html

Formerly Used Defense Sites

The DoD is responsible for the environmental restoration of properties that were formerly owned by, leased to or otherwise possessed by the United States and operated under the jurisdiction of the Secretary of Defense prior to October 1986. Such properties are known as Formerly Used Defense Sites (FUDS). The Army is the executive agent for the program and the U.S. Army Corps of Engineers manages and directs the program's administration. For more information on the FUDS Program, including maps and data on individual sites, visit the Army Corps of Engineers website at:

Agency File Date: 11/22/2016 **Received by EDM:** 1/27/2017 **EDM Database Updated:** 1/27/2017

http://www.usace.army.mil/Missions/Environmental/Formerly-Used-Defense-Sites/

FUDS Munitions Response Sites

The DoD developed the Military Munitions Response Program (MMRP) in 2001 to addresses munitions-related concerns, including explosive safety, environmental, and health hazards from releases of unexploded ordnance (UXO), discarded military munitions (DDM), and munitions constituents (MC) found at locations, other than operational ranges, on active and Base Realignment and Closure (BRAC) installations and Formerly Used Defense Sites (FUDS) properties. The MMRP addresses non-operational range lands with suspected or known hazards from munitions and explosives of concern (MEC) which occurred prior to September 2002, but are not already included with an Installation Response Program (IRP) site cleanup activity. For more information on the FUDS MMRP Program, including maps and data on individual sites, visit the Army Corps of Engineers website at:

Agency File Date: 11/22/2016 **Received by EDM:** 1/27/2017 **EDM Database Updated:** 1/27/2017

http://www.asaie.army.mil/Public/ESOH/mmrp.html

Groundwater Contamination Areas

The Ground Water Contamination Areas GIS layer is a statewide map showing the boundaries of delineated areas of known groundwater contamination pursuant to Chapter 62-524, F.A.C., New Potable Water Well Permitting In Delineated Areas. 38 Florida counties have been delineated primarily for the agricultural pesticide ethylene dibromide (EDB), and to a much lesser extent, volatile organic and petroleum contaminants. This GIS layer represents approximately 427,897 acres in 38 counties in Florida that have been delineated for groundwater contamination. However, it does not represent all known sources of groundwater contamination for the state of Florida.

This information is intended to be used by regulatory agencies issuing potable water well construction permits in areas of ground water contamination to protect public health and the ground water resource. Permitted water wells in these areas must meet specific well construction criteria and water testing prior to well use. This dataset only indicates the presence or absence of specific groundwater contaminants and does not represent all known sources of groundwater contamination in the state of Florida.

Agency File Date: 10/15/2010 **Received by EDM:** 3/25/2013 **EDM Database Updated:** 3/26/2013

https://floridadep.gov/water/source-drinking-water/content/delineated-areas

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National Priorities List

The US EPA National Priorities List (NPL) contains facilities and/or locations where environmental contamination has been confirmed and prioritized for cleanup activities under the Superfund Program. EDM's NPL site boundaries data include sites that are currently on the NPL as well as sites that have been Proposed, Withdrawn and/or Deleted from the list.

Agency File Date: 3/26/2007 **Received by EDM:** 8/3/2008 **EDM Database Updated:** 8/3/2008

https://www.epa.gov/superfund/search-superfund-sites-where-you-live

State Funded Cleanup Sites

The FDEP State Funded Cleanup list contains facilities and/or locations where there are no viable responsible parties; the site poses an imminent hazard; and the site does not qualify for Superfund or is a low priority for EPA. Remedial efforts at these sites are currently being addressed through State funded cleanup action.

Agency File Date: 8/1/2007 **Received by EDM:** 8/4/2008 **EDM Database Updated:** 8/4/2008

https://floridadep.gov/waste/waste-cleanup/documents/state-funded-cleanup-program-site-list

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CSER APPENDIX E

Site Photographs

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Site Photographs

SMF 1: north boundary looking south

SMF 2A: western area looking east

SMF 2B: northeast area looking southwest

Piezometer located adjacent east of SMF 2B

SMF 3A: western boundary looking east

SMF 2B: northern area looking south

CSER APPENDIX F

Supplemental Information

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Polk County North Central Landfill

Site Assessment Plan – October 2008

10 Environmental Loop

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POLK COUNTY NORTH CENTRAL LANDFILL
SITE ASSESSMENT PLAN
IN THE FORMAT OF
CHAPTER 62-780.600(8) FAC

Prepared for:

POLK COUNTY
BOARD OF COUNTY COMMISSIONERS
10 Environmental Loop
Winter Haven, Florida 33880-1069

Prepared by:

JONES EDMUNDS & ASSOCIATES, INC.
730 NE Waldo Road
Gainesville, Florida 32641

Certificate of Authorization #1841
Certificate of Authorization #133

October 2008

10/14/08

Thomas R. Brown, P.G.
Florida P.G. No. 2486

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INTRODUCTION

On behalf of Polk County, Jones Edmunds & Associates, Inc. prepared this contaminant evaluation plan in response to the Florida Department of Environmental Protection's Notice of Evaluation Monitoring Letter for the North Central Landfill (NCLF) dated April 29, 2008.

The April 29, 2008 Notice cites detections of Iron in 22 wells, Total Dissolved Solids (TDS) in 17 wells, Arsenic in 3 wells, Ammonia in 2 wells, Antimony in 1 well, and Benzene in 1 well as justification for initiating evaluation monitoring in compliance with Rule 62-701.510(7) FAC at the NCLF for 25 wells. A copy of this Notice is included in Attachment A.

Jones Edmunds responded to the Notice in a letter dated May 14, 2008 which requested that FDEP re-evaluate the requirement for initiating evaluation monitoring. The May 14, 2008 letter outlined the justification for questioning the applicability of evaluation monitoring for the NCLF and a more detailed justification was submitted on July 2, 2008 including supporting data. These submittals presented data and conclusions that demonstrated that the NCLF is already in compliance with Rule 62-701.510(7)(a) FAC and no action is required by that Rule based on the data collected up to and including the first semiannual event of 2008. To date, the County has not received a written response to these submittals and has therefore assumed that a contaminant evaluation plan is required.

E-mail correspondence with FDEP dated July 17, 2008 led to the removal of the requirement to install a compliance well associated with DW-1. A copy of this correspondence is included in Attachment A. The constituents of concern (COC) for the NCLF evaluation monitoring are established as Iron, TDS, Arsenic, and Ammonia. Antimony was removed in the July 17, 2008 FDEP e-mail, and Benzene should be removed because it has not been detected in nearly 2 years and compliance monitoring did not detect it at the zone of discharge or in the detection wells.

The final contamination evaluation report under Rule 62-701.510(7)(a)4 FAC will be required to be compliant with a Chapter 62-780 FAC Site Assessment Report (SAR). This contaminant evaluation plan (this document) has been submitted in the format of a Rule 62-780.600 FAC SAR. In effect, the plan outlines how each requirement of the SAR under Rule 62-780.600(8) FAC will be assessed.

As FDEP requested, this document has been submitted in one hard-copy with an additional copy in electronic (pdf) format.

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RULE 62-780.600(8)(a) FAC—SUMMARY OF SITE-ASSESSMENT ACTIVITIES

1.0 SITE HISTORY AND OPERATIONS

1.1 PRESENT REAL PROPERTY AND FACILITY OWNERS

The present real property and facility owner is the Polk County Board of County Commissioners which purchased the property from Agrico Chemical Company. A copy of the Warranty Deed and boundary survey for the NCLF property was submitted in the solid waste permit expansion application (Jones Edmunds, 2005) and is included in this document as Attachment B.

1.2 PAST AND PRESENT OPERATIONS

According to the Warranty Deed (see Attachment B), the site was mined for phosphate and was no longer in natural condition before the County acquired it. According to the Florida Bureau of Mine Reclamation, the remaining reclamation requirements for this mine (Saddle Creek Mine) were released to allow for the landfill expansion. This variance was based on the industrial nature of the landfill. Based on topography, several parts of the site were used as phosphate strip-mine and mine-related stockpiling before the site was permitted for landfilling. The NCLF is an active municipal solid waste disposal facility which has been in operation since its acquisition in 1977.

1.3 PRODUCTS, BY-PRODUCTS, AND WASTES GENERATED

The facility has been operated as a landfill since 1977. Therefore, no products have been used or manufactured nor have any byproducts and wastes been generated during the life of the facility. Before 1977 the site was a phosphate mine and the resulting spoil remains on-site and at least partially un-reclaimed.

1.4 CURRENT AND PAST ENVIRONMENTAL PERMITS AND ENFORCEMENT ACTIONS

The site is currently operated and monitored under Solid Waste Permit Number 31164-009-SO, issued by FDEP on March 28, 2007. A short summary of enforcement actions will be included in the SAR.

1.5 KNOWN SPILLS OR RELEASES OF MATERIALS

There are no unreported significant spills or releases of materials that may be potential contaminant sources. Leachate spills have occurred on-site as previously reported to FDEP.

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compliance wells were developed using the surge-and-purge method by the driller to a turbidity measurement to 2 NTU or until stability was reached as determined by a Jones Edmunds Geologist.

The new compliance wells and the wells cited in the FDEP Notice were sampled and analyzed for the parameters listed in Rules 62-701.510(8)(a) and 8(d) FAC. Well sampling records are included in Attachment J and the results of the sampling are included in Attachment K.

7.0 DATA

Attachment H includes the latitude and longitude of each of the compliance wells as surveyed on July 31, 2008 by Keith and Schnars, P.A. The survey is provided relative to the National Geodetic Vertical Datum of 1929 and meets the specification listed in Rule 62-780.600(5)(j) FAC. The Site Assessment Report will include a signed and sealed survey of these locations.

8.0 WELL CONSTRUCTION DETAILS WITH WATER-LEVEL ELEVATIONS

Well construction details, including the datum (top-of-casing) elevation and the screened interval of each well, are provided in Attachment L, Table 8-1. Water-level elevations and depth-to-water measurements from the first semiannual monitoring event of 2003 (03S1) to the initial evaluation monitoring event of July 2008 are provided in Attachment L, Tables 8-2 and 8-3. A hydrograph of the surficial aquifer from 03S1 to the initial evaluation monitoring event of July 2008 is presented in Attachment L, Figures 8-1a and 8-1b.

9.0 WATER-LEVEL ELEVATION CONTOUR MAPS

Semiannual groundwater contour maps for the surficial aquifer from 03S1 to 08S1 were provided in the solid waste permit expansion application (Jones Edmunds 2005) and in subsequent routine sampling reports and are included in this document as Attachment M. The groundwater contour map of the July 2008 evaluation monitoring event is included as Figure 9-1. Please note that the compliance well water level data were not used in drafting the contour map because the scale of the map places the compliance wells very close to the detection wells.

Groundwater flow in the surficial aquifer at the landfill is to the southwest with moderate mounding occurring directly under the Phase III area. The current monitoring well network has detection wells on the west and south boundaries of the solid waste area and on the east, west, and south boundaries of the Phase III area. Upgradient background wells are north and east of the solid waste disposal areas.

The screened intervals of the surficial detection wells are designed so that the potentiometric surface encounters the screen. The screened intervals for the compliance wells were designed to encounter the saturated zone in the detection wells. While installing the compliance wells, the observing geologists noted that the samples were dry until a saturated zone was encountered below the established potentiometric surface. Once this saturated zone was encountered, the well

27.3 IMPLICATIONS OF MONITORING RESULTS

Groundwater at and around the NCLF is under lands controlled by the site owner (Polk County), and exposure to this groundwater is limited to the sampling professionals under contract with the County. Because exposure is limited, alternative Cleanup Target Levels (CTL) are proposed under the following justification:

- Rule 62-780.650 or 680 FAC allows for alternate CTL as listed in Chapter 62-777 FAC, Table I.
- Chapter 62-777 FAC states that the CTL are the higher of Florida's drinking water standards or background—unless the aquifer is "low yield" <u>or</u> "poor quality" in which case the CTL are as listed in Table I of the referenced Chapter.
- *Low Yield* is defined in Rule 62-780.200(27) FAC, which includes a requirement of an average hydraulic conductivity of 1.0 foot/day. While the onsite wells have very low recharge rates, the average hydraulic conductivity has been calculated as 2.17 feet/day. Therefore, this aquifer does not qualify as a 'low yield' aquifer.
- *Poor Quality* is defined in Rule 62-780.200(35) FAC as groundwater having background concentrations that exceed Florida's primary or secondary drinking water standards. Of the COC, both Iron and TDS in the background include concentrations over their respective secondary drinking water standard. Therefore, the surficial aquifer at the NCLF is of poor quality and the alternative CTLs apply.
- The alternate CTL for the NCLF COC in groundwater of poor quality, as listed in Chapter 62-777 FAC, Table I, are:
  - Iron at 3,000 μg/L
  - Arsenic at 100 μg/L
  - TDS at 5,000 mg/L
  - Ammonia at 28 mg/L

Table 27-1 includes all detections of the listed COC found above the alternative CTL, as allowed under Chapter 62-777 FAC.

28.0 <u>WELL LOCATION MAP WITH ISOCONCENTRATION CONTOURS</u>

Iron is the only detected parameter which exceeded its corresponding CTL, as determined under Chapter 62-777 FAC, and the only location where the CTL is at the zone of discharge is in the Phase III Landfill area. Because the source of the Iron is known to be the fill material used to build the site up to grade, the extent of the CTL exceedances can be estimated as shown in Figure 28-1. Please notice the similarity of the patterns of Iron concentrations in Figure 28-1 with the locations where unsuitable soils (carbon-rich organic mucks) were located in the Phase III application. Drawing C-5 from the Phase III application, included as Attachment N, depicts the unsuitable soils and wetland locations for the pre-construction site as the hatched area.

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As the Figure 28-1 shows, none of the CTL exceedances from the Phase III site can be expected to migrate across the gradient barrier imposed by the perimeter ditch because the ditch extends below the saturated unit of the shallow aquifer. This isoconcentration map includes the data collected in July 2008.

28.1 SUMMARY

Based on the alternate CTL specified in Table I of Chapter 62-777 FAC, Iron is the only parameter detected in any detection or compliance wells at the NCLF that might require a remedial strategy; all other parameters fit within the No Further Action criteria of Subsection 62-780.680(1)(c) FAC because they were not detected above the CTL anywhere on-site.

28.2 CONTAMINANT ASSESSMENT PLAN

Using Iron as the COC, Jones Edmunds proposes four possible courses of action. Of these, it appears that the most valid is No Further Action based on the Background Demonstration (28.2.3).

28.2.1 No Further Action Based on Secondary Standards Exemption

The initial landfill permit and discharge allowance were issued in 1977. Because the NCLF can be defined as an existing installation, it should be exempt from compliance with secondary standards such as Iron, as allowed under Rule 62-520.520(1) FAC. Because Iron is the only parameter detected above the CTL listed in Chapter 62-777 FAC and the site is exempt from compliance with the standards set for Iron, the facility should be allowed to be released from further action for this contaminant assessment.

28.2.2 Extension of Zone of Discharge based on the Nature of Discharge

The *Justification for Not Implementing an Evaluation Monitoring Program at Polk County North Central Landfill* (Jones Edmunds 2008) demonstrates that the detections of Iron, Arsenic, Ammonia, and TDS are caused by the soils, including the disturbed in-situ soils and the soils from off-site borrow areas, used to build the site to grade and not from the discharge of waste or waste constituents into the groundwater. If the facility is to be regulated based on discharges from clean fill, the zone of discharge should be based on the limits of the imported soils. Under this course of action, the zone of discharge will be relocated to 100 feet beyond the limits of the regraded areas and soil stockpiles.

28.2.3 No Further Action Based on the Background Demonstration

The *Justification for Not Implementing an Evaluation Monitoring Program at Polk County North Central Landfill* (Jones Edmunds, 2008) compared data collected after waste placement with data collected before waste placement, which clearly demonstrates that there are no discernable impacts from waste or waste constituents in the groundwater. Using the scientifically preferred

method of intra-well comparisons, these detections should be considered background and, in accordance with Chapter 62-520 FAC, are not violations of the FDEP water quality standards or criteria.

Please note that EPA's *MSW Landfill Criteria Technical Manual Chapter 5 Subpart E Ground-Water Monitoring and Corrective Action* (available on the EPA website at: http://www.epa.gov/garbage/landfill/techman/subparte.pdf) states that the purpose of groundwater monitoring at solid waste facilities is to *intercept ground water that has been contaminated by leachate from the MSWLF unit.* This is mirrored in FDEP Rule 62-701.340(1) FAC, which states that the performance standard of the landfill is to *control the movement of waste and waste constituents into the environment.* The detections at NCLF, particularly at the Phase III expansion, have been proven to not have been contaminated by leachate or any other waste by-product from the MSWLF unit because no waste had been disposed of in the unit when the first "hits" were recorded. The EPA technical manual also states, on page 222, paragraph 3: *If the facility is new, ground-water samples collected from both upgradient and downgradient locations prior to waste disposal can be used to establish background water quality.*

Because there are no violations of FDEP water quality standards or criteria based on a valid comparison of EPA-approved background, no further action is warranted and the evaluation monitoring program should be terminated.

28.2.4 Natural Attenuation with Monitoring Using an Alternative Point of Compliance and an Alternative Evaluation Monitoring List

Because Rule 62-777.150(7) FAC specifies that alternate CTL do not establish standards under Chapter 62-520 FAC, the use of alternate CTL does not allow the site to resume routine monitoring unless the standards listed in Chapter 62-520 FAC are met at the zone of discharge. While Chapter 62-780 FAC allows for alternate CTL that will continue to remove Arsenic, Ammonia, and Total dissolved solids from the COC list, if the zone of discharge is not modified the site will be forced to enter evaluation monitoring at every sampling event even though Chapter 62-780 FAC allows No Further Action for these parameters.

Under this course of action, Polk County will propose to submit a permit modification for the NCLF to adjust the zone of discharge based on the following:

- Rule 62-701.340(5) FAC allows a modification of the zone of discharge for solid waste facilities in accordance with Rule 62-522.500 FAC.
- Rule 62-522.500(1) FAC allows the permittee to petition for a modification of the zone of discharge based on monitoring data that indicate that the existing zone of discharge is or may be violated. (NCLF can establish that monitoring data indicate that Arsenic, Ammonia, Total dissolved solids, and Iron will continue to be detected at the current concentrations at the existing zone of discharge near Phase III and Phase II.)

- Rule 62-522.410(c) FAC allows for an alternate zone of discharge where multiple sites occur "within close proximity." The alternate zone of discharge may be beyond 100 feet from the site boundary based on Rule 62-522.410(b) FAC. The permit modification application will establish that:
  - Expanding the zone of discharge will not cause violations in present or future potable water supplies.
  - Expanding the zone of discharge will not interfere with existing or designated uses of contiguous waters.
  - The economic and social benefits of expanding the zone of discharge will outweigh the economic, environmental, and social costs.
- The NCLF is composed of multiple sites with a downgradient boundary where CTL are not violated. The alternate zone of discharge will likely be proposed at the current zone of discharge along the northern, western, and the southern boundaries. The zone of discharge may be proposed beyond the "100 feet from the solid waste boundary" along the eastern and southeastern boundary of the site—likely at the perimeter ditch of Phase III. Surface water sampling may be proposed in the perimeter ditch to ascertain whether contamination is getting into the stormwater control system. Additional background wells may be proposed within the property boundary on the eastern boundary to establish an overall gradient to the southeast.

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Table 27-1 Results in Comparison to Alternative CTL	
COC	Iron
CTL	3,000 µg/L
CW-15	3,390 µg/L
CW-16	23,500 µg/L
CW-17	53,800 µg/L
CW-18	40,200 µg/L
CW-20	85,100 µg/L
SW-12A	7,180 µg/L
SW-101	4,160 µg/L
SW-102	38,400 µg/L
SW-103	5,860 µg/L
SW-104	59,400 µg/L
SW-105	21,800 µg/L
SW-106	68,700 µg/L
SW-107	41,000 µg/L
SW-108	26,000 µg/L
SW-109	7,860 µg/L

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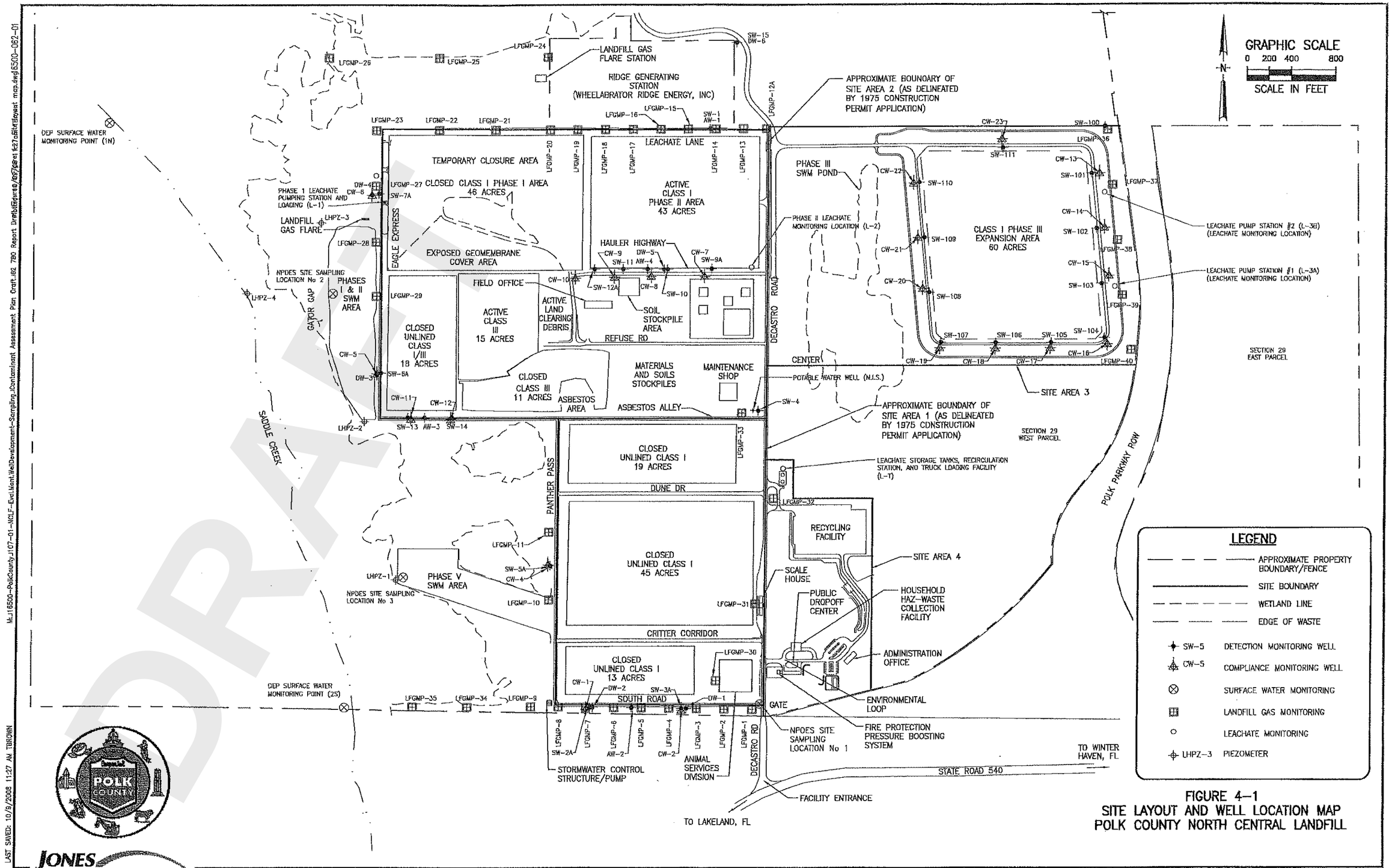

FIGURE 4-1
SITE LAYOUT AND WELL LOCATION MAP
POLK COUNTY NORTH CENTRAL LANDFILL

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JONES EDMUNDS

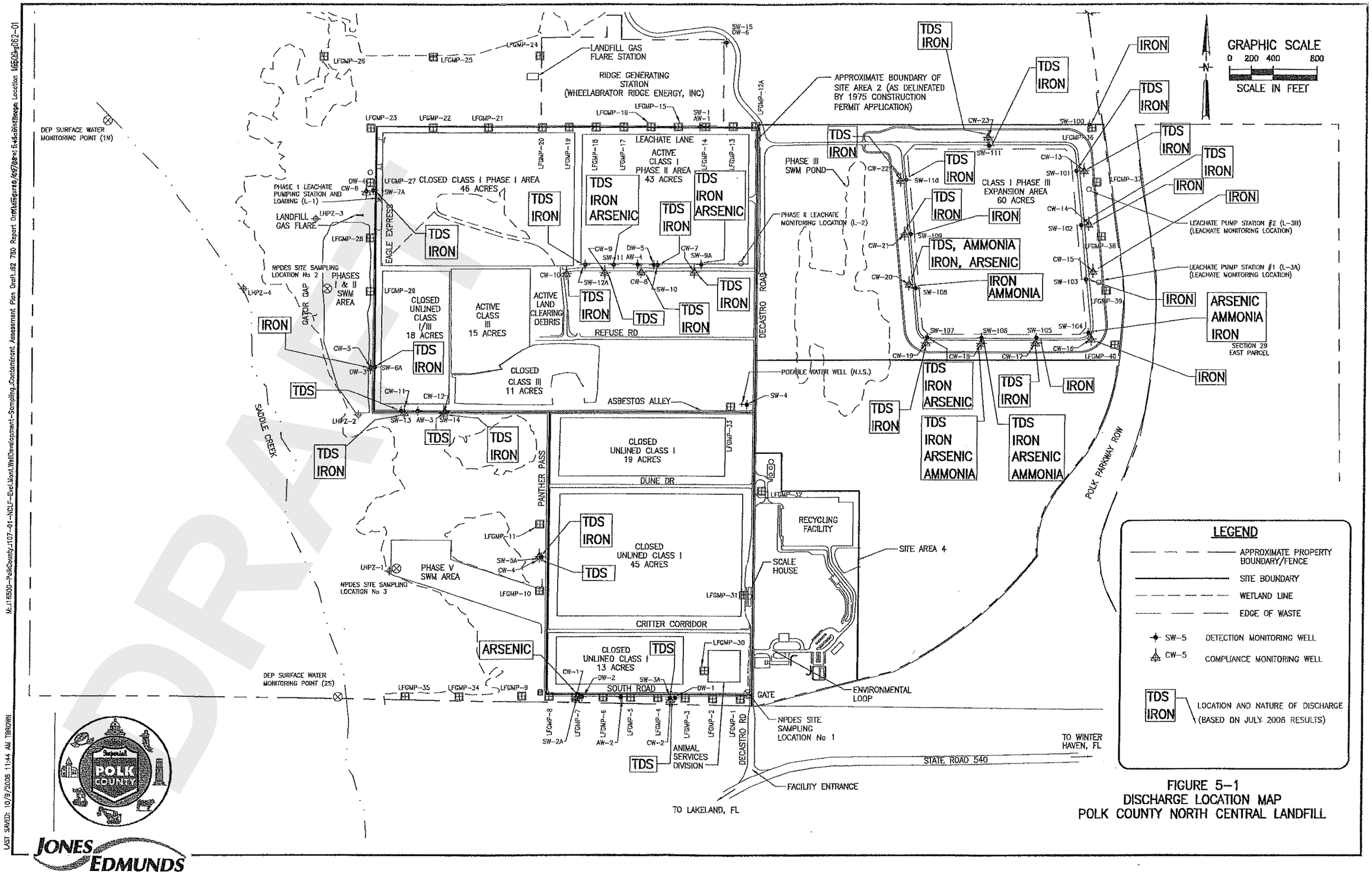
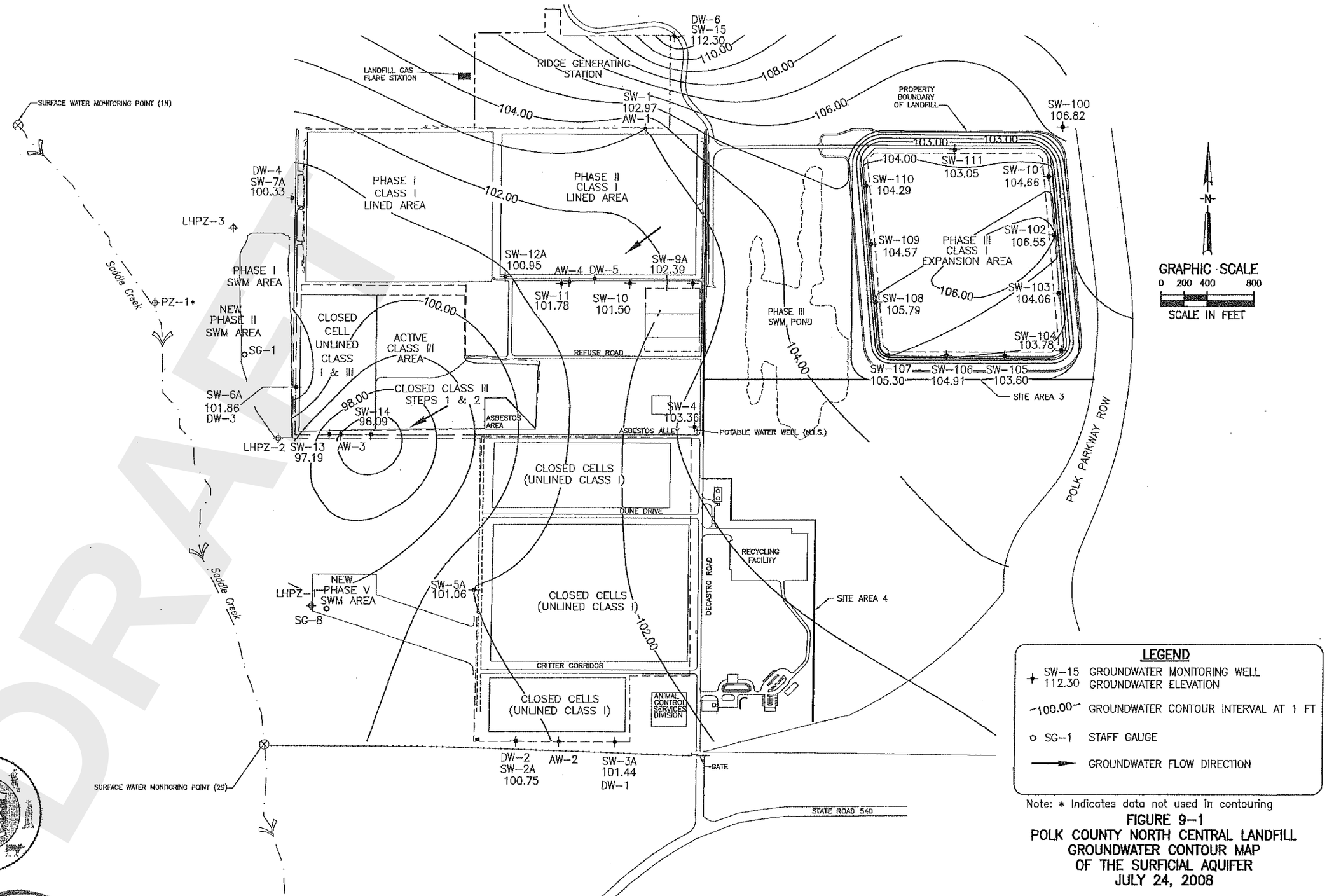


FIGURE 5-1
DISCHARGE LOCATION MAP
POLK COUNTY NORTH CENTRAL LANDFILL



Note: * Indicates data not used in contouring

FIGURE 9-1
POLK COUNTY NORTH CENTRAL LANDFILL
GROUNDWATER CONTOUR MAP
OF THE SURFICIAL AQUIFER
JULY 24, 2008

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JONES EDMUNDS

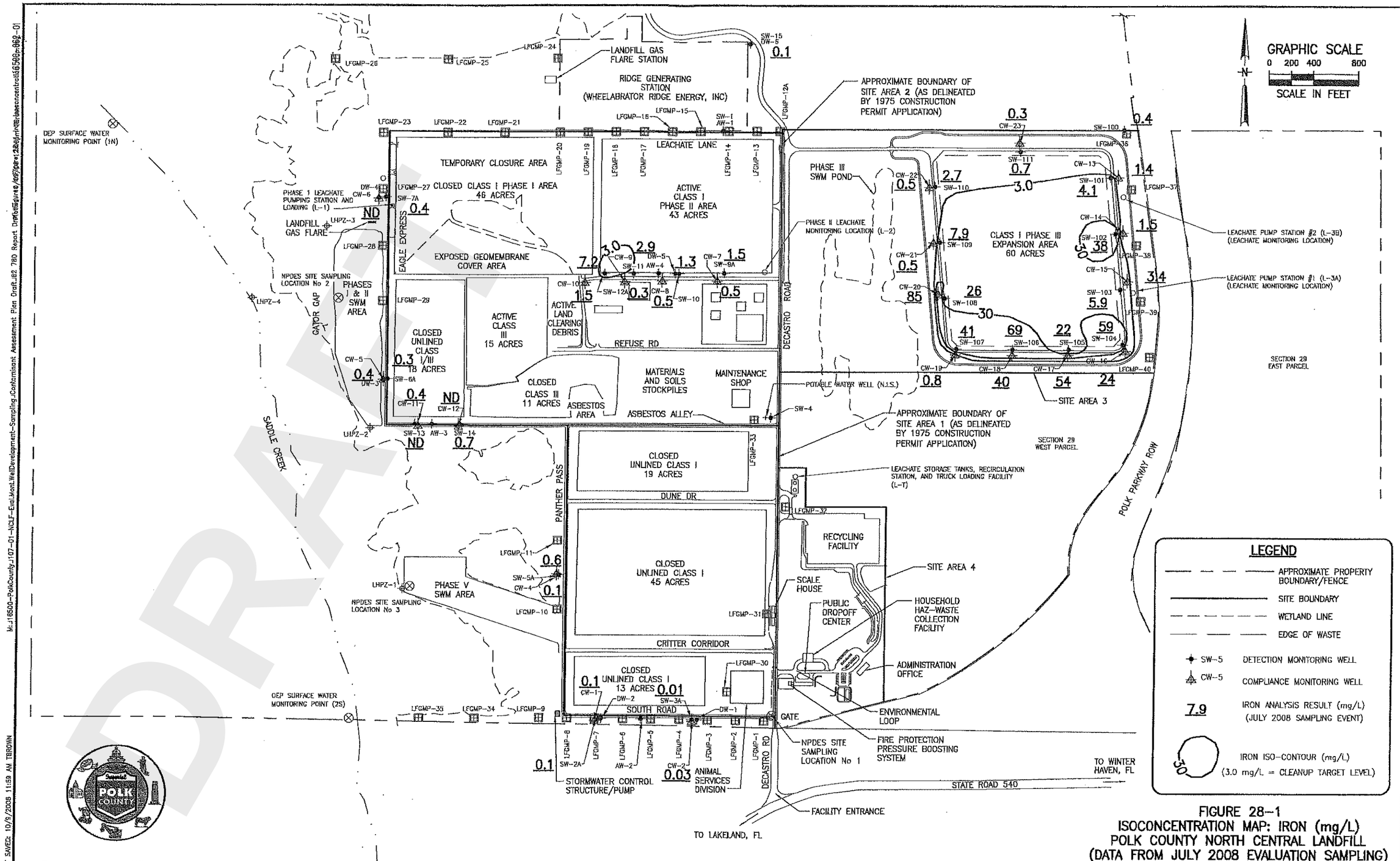

FIGURE 28-1
ISOCONCENTRATION MAP: IRON (mg/L)
POLK COUNTY NORTH CENTRAL LANDFILL
(DATA FROM JULY 2008 EVALUATION SAMPLING)

Polk County North Central Class I Landfill - Site 201

WACS Fac. ID: 49722

Compliance Monitoring Report Third Quarter 2018

October 2, 2018

WACS Fac. ID: 49722

DRAFT

Florida's Crossroads of Opportunity

Board of County Commissioners

10 Environmental Loop South
Winter Haven, FL 33880

POLK COUNTY

PHONE: 863-284-4319
FAX: 863-284-4321
www.polk-county.net

WASTE & RECYCLING DIVISION

POLK COUNTY
NORTH CENTRAL CLASS 1 LANDFILL
SITE 201

COMPLIANCE MONITORING REPORT
THIRD QUARTER 2018

WACS Facility ID: 49722
FDEP Permit No. 31164-029-S0-01

Prepared by:

POLK COUNTY
Waste & Recycling Division
Engineering Department

October 2, 2018

DRAFT

COMMISSIONERS: George Lindsey III, Vice Chairman • Melony M. Bell • Bill Braswell • R. Todd Dantzler, Chairman • John Hall

POLK COUNTY

Third Quarter 2018
NCLF Class I
October 2, 2018

Mr. Steven Tafuni, Compliance Assurance
FDEP – Southwest District
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926

RE: Polk County North Central Class I Landfill Site (Site #201)
Compliance Monitoring Report – Third Quarter 2018
Permit No. 31164-029-S0-01
WACS Facility ID: 49722

Dear Mr. Tafuni,

This report presents data from the Third Quarter 2018 sampling event performed on September 6, 2018 at the Polk County, North Central Landfill by Advanced Environmental Laboratories, Inc. (AEL).

Groundwater elevations used in preparing the contour map for this event (provided as **Figure 1**) were recorded on September 5, 2018.

As part of this quarterly monitoring event, background well SW-100; detection wells SW-104, SW-107, SW-108, and SW-109; and compliance wells CW-16, CW-18, CW-19, CW-20, and CW-21 were sampled and analyzed by AEL for benzene and vinyl chloride. Field parameters including: static depth to water, dissolved oxygen, pH, specific conductivity, temperature, turbidity, and observed colors or sheens were collected and recorded during sample collection. Groundwater sampling logs have been attached in **Appendix A**.

Laboratory analytical results were reported in exceedance of groundwater standards for pH and Benzene. A summary of the analytical report has been provided as **Table 1**. The complete laboratory analytical report with chain of custody has been attached as **Appendix B**. Groundwater concentrations reported during this event were generally consistent with historical values with the following exception:

- Concentrations of dissolved oxygen have generally decreased by approximately 50% when compared to third quarter 2017 results.

If you have any questions regarding this report, please contact Polk County Waste and Recycling at (863) 284-4319.

Sincerely,
Polk County Waste & Recycling

Josh Newell, E.I.
Program Engineer

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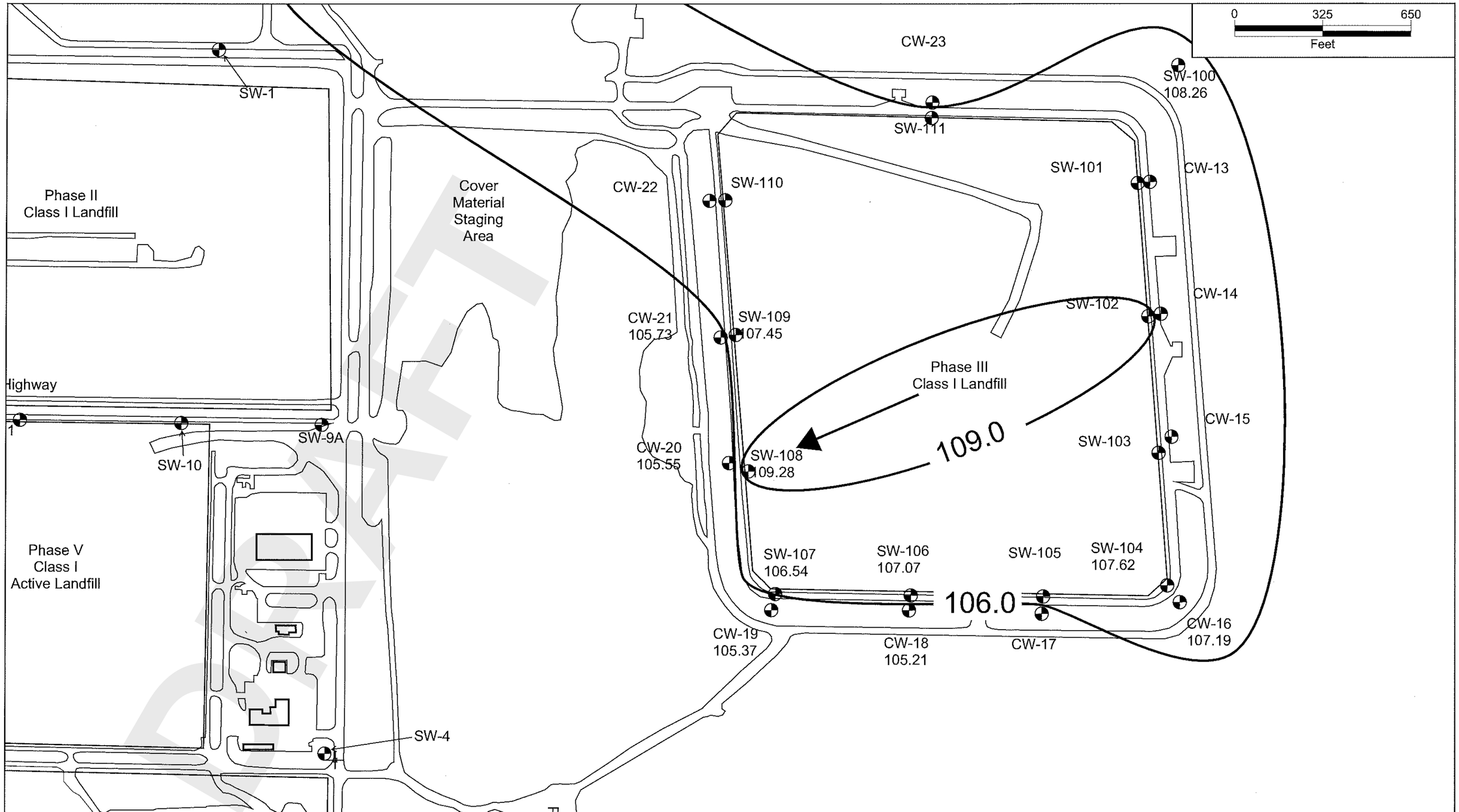


POLK COUNTY WASTE & RECYCLING

GROUNDWATER CONTOUR MAP

Polk County - NCLF
WAC 49722 - (Site 201)
(Data Collected: September 5, 2018)

LEGEND

SW-26	Approximate Well Location
— 99.0 —	Approximate Groundwater Contour
⟶	Approximate Groundwater Flow Direction

N

Figure: 01	Revision: 00
Date: 9/28/2018	
Source: Polk County	
Scale: 1 inch = 325 feet	
Created By: JSN	

TABLE 1: POLK COUNTY - NORTH CENTRAL LANDFILL
SUMMARY OF GROUNDWATER MONITORING RESULTS
THIRD QUARTER 2018
NCLF (SITE 201)

Analytical Parameter	Date Sampled	Conductivity (Field)	DO (Field)	GW Elevation	Temperature (Field)	Turbidity (Field)	pH (Field)	Benzene	Vinyl Chloride
Standard		-	-	-	-	-	***6.5-8.5 ****	***1***	***1***
Units	-	umhos/cm @ 25.0°C	mg/L	feet	°C	NTU	SU	µg/L	µg/L
Back-ground Well									
SW-100	9/6/2018	628	0.79	108.26	21.3	1.56	6.68	0.20 U	0.20 U
Compliance Wells									
CW-16	9/6/2018	824	0.12	107.19	21.5	0.85	***6.04***	0.20 U	0.20 U
CW-18	9/6/2018	667	0.08	105.21	22.6	1.39	***6.22***	0.20 U	0.20 U
CW-19	9/6/2018	858	0.22	105.37	22.3	0.97	***6.28***	0.20 U	0.20 U
CW-20	9/6/2018	1584	0.08	105.55	20.7	7.34	***5.83***	0.20 U	0.20 U
CW-21	9/6/2018	871	0.74	105.73	21.6	1.41	***5.92***	0.20 U	0.20 U
Detection Wells									
SW-104	9/6/2018	752	0.07	107.62	27.7	4.97	***6.32***	0.20 U	0.20 U
SW-106	9/6/2018	1095	0.12	107.07	27.6	4.3	***6.46***	0.20 U	0.20 U
SW-107	9/6/2018	989	0.08	106.54	27.5	1.21	***6.19***	***2.1***	0.20 U
SW-108	9/6/2018	884	0.07	109.28	27.5	1.31	***6.30***	0.20 U	0.73 I
SW-109	9/6/2018	343	0.14	107.45	26.8	5.22	***5.49***	0.20 U	0.20 U

Notes:

1 – Shaded bolded and italicised results indicate an exceedance of the Primary Drinking Water Standard shown.
(1) – No Standard
***** – Secondary Drinking Water Standard
I – Value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U – Compound was analyzed for but not detected.
DO – Dissolved Oxygen

DRAFT

North Central Landfill - Site 201

WACS Fac. ID: 49722

Third Quarter Landfill Gas Monitoring Migration Results

9-28-2018

DRAFT

Johnson, Sabrina O

From: Newell, Josh <JoshNewell@polk-county.net>
Sent: Tuesday, October 9, 2018 11:34 AM
To: SWD_Waste
Cc: Tafuni, Steven; Pincelli, Gregory
Subject: WACS ID 49722: 2018 3rd Quarter Leachate and Gas Reports Polk County North Central Landfill
Attachments: NCLF 2018 3rd QTR Landfill Gas.pdf; NCLF 2018 3rd QTR Leachate Qty.pdf

Good Morning:

Please find attached the 3rd Quarter Leachate Summary and Gas Migration Monitoring Results for the Polk County North Central Landfill WACS ID 49722.

If you have any questions, or need additional information, please contact us.

Thank you,
-Josh

Joshua Newell, EI
Solid Waste Program Engineer
Polk County Waste & Recycling
10 Environmental Loop South
Winter Haven, FL 33880
Office: 863.284.4319 ext 239
JoshNewell@polk-county.net

DRAFT

North Central Landfill Site #201
Third Quarter: July through September 2018
GAS MIGRATION MONITORING

POLK COUNTY BOARD OF COUNTY COMMISSIONERS
WASTE & RECYCLING DIVISION

Date Sampled: 9/28/2018

Sample Unit: Landtec GEM 5000 Serial #G502528
Sampled By: Stacy Glaser

GAS MONITORING PROBE ID	% OF LEL	GAS MONITORING PROBE ID	% OF LEL
LFGMP-2	0.0	LFGMP-27	0.0
LFGMP-4	0.0	LFGMP-29	0.0
LFGMP-6	0.0	LFGMP-30	0.0
LFGMP-8	0.0	LFGMP-31	0.0
LFGMP-10	0.0	LFGMP-32	0.0
LFGMP-11	0.0	LFGMP-33	0.0
LFGMP-13	0.0	LFGMP-36	0.0
LFGMP-14	0.0	LFGMP-37	0.0
LFGMP-15	0.0	LFGMP-38	0.0
LFGMP-16	0.0	LFGMP-39	0.0
LFGMP-17	0.0	LFGMP-40	0.0
LFGMP-18	0.0		
LFGMP-19	0.0	Scalehouse	0.0
LFGMP-20	0.0	Leachate Tanks	0.0
LFGMP-21	0.0		
LFGMP-22	0.0		
LFGMP-23	0.0		

Phase III Landfill Gas Monitoring Locations: Filling of north cell began 11/26/07.
Phase III Landfill Gas Monitoring Locations: Filling of south cell began 10/27/08.

100% of LEL = 5% CH4 by Volume
CH4=Methane (%VOL)

Please note that the allowable detection limit is 100% LEL at the property line.

DRAFT

Total Phase II (Collection) (includes detection)	Total Phase III (Collection)	Total Phase III (Detection)	Total Phase V (Collection) (3)	Total Phase V (Detection)	Total Phase's I, II, III & V	SELF Total	NELF Total	Total Generated	Total Hauled To Treatment (4)	Total Discharged to Polk County Utilities POTW (4)	Monthly Balance (1)
Gallons	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons
152,666	183,346	1,193	509,543	1,194	949,232	30,482	6,930	986,644	0	1,110,655	-124,011
172,397	244,807	2,242	528,712	1,481	1,077,999	20,698	7,098	1,105,795	0	1,029,505	76,290
369,651	173,310	2,733	163,600	612	809,555	19,228	7,278	836,061	0	559,730	276,331
431,841	187,633	5,476	561,783	620	1,284,433	18,274	7,410	1,310,117	0	832,748	477,369
739,157	288,186	41,848	792,457	1,010	1,986,758	22,419	6,350	2,015,527	0	1,162,924	852,603
419,438	284,978	42,102	1,662,982	3,815	2,538,075	17,199	7,372	2,562,646	1,030,890	1,065,000	466,756
495,922	102,352	39,163	1,283,582	1,471	2,041,018	10,604	6,861	2,058,483	1,667,085	0	391,398
608,969	217,543	79,904	1,287,274	1,496	2,361,768	22,480	8,029	2,392,276	1,764,015	0	628,261
556,733	253,844	92,847	553,280	4,014	1,582,818	10,499	7,477	1,600,794	1,410,308	0	190,486
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
3,946,774	1,935,999	307,508	7,343,213	15,713	14,631,656	171,883	64,805	14,868,344	5,872,298	5,760,562	

Phase II Leakage Rate	Phase III Detection Qty	Phase III Leakage Rate	Phase V Detection Qty	Phase V Leakage Rate
Action Leakage Rate	Total Acres	Action Leakage Rate	Active Acres	Action Leakage Rate
254	60	254	10	144
gals/acre/day	Gallons	gals/acre/day	Gallons	gals/acre/day
93.62	1,193	0.64	1,194	3.85
6.13	2,242	1.33	1,481	5.29
3.06	2,733	1.47	612	1.97
5.58	5,476	3.04	620	2.07
9.90	41,848	22.50	1,010	3.26
3.26	42,102	23.39	3,815	12.72
3.60	39,163	21.06	1,471	4.75
20.21	79,904	42.96	1,496	4.83
22.84	92,847	51.58	4,014	13.38
0.00	0	0.00	0	0.00
0.00	0	0.00	0	0.00
0.00	0	0.00	0	0.00
14.15	307,508	14.04	15,713	4.30

H-199

DRAFT

ate balance indicates more leachate is hauled or discharged off-site than collected. This occurs under the following scenarios:

d or discharged off-site.

APPENDIX I

DRAINAGE MAPS & REGIONAL STORMWATER MANAGEMENT OPTIONS

DRAFT

DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

NAVD 88 EL. = NGVD 29 EL. - 0.85'

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kisinger Campo & Associates Corp.
201 N. Franklin Street, Suite 400
Tampa, Florida 33602
Florida Certificate of Authorization No. 02317
Engineer of Record: Ali Tayebnejad, P.E.
P.E. No.: 42775

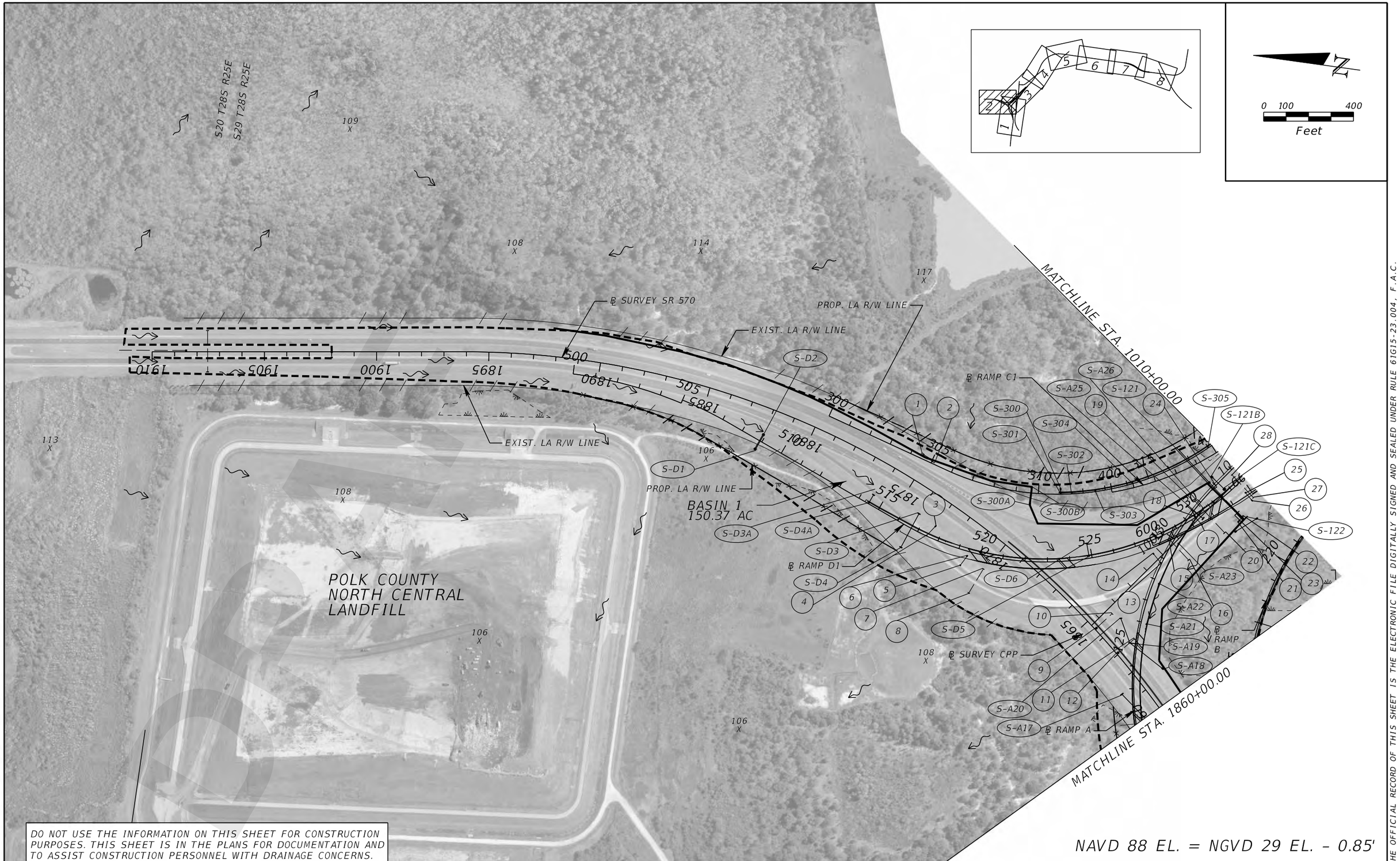
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

DRAINAGE MAP (1)

SHEET NO.
I - 1

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



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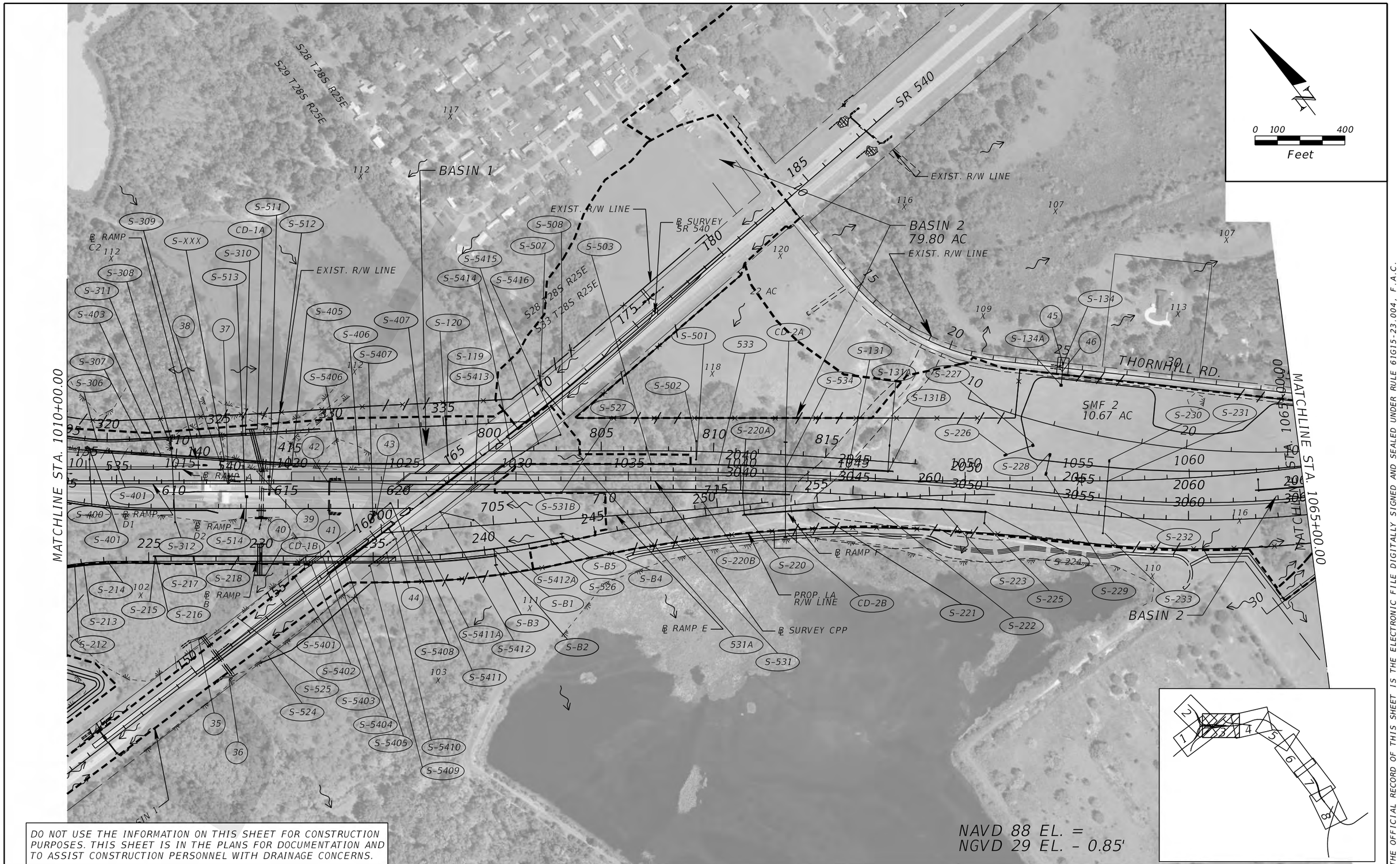
SR 570B	POLK	440897-2-52-01

DRAINAGE MAP (2)

SHEET NO.
I - 2

reskandari 10/21/2020 2:02:25 PM M:\1201739.00_CPP\44089725201\drainage\DRMPRD02.dgn



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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

DRAINAGE MAP (3)

SHEET NO.
I - 3

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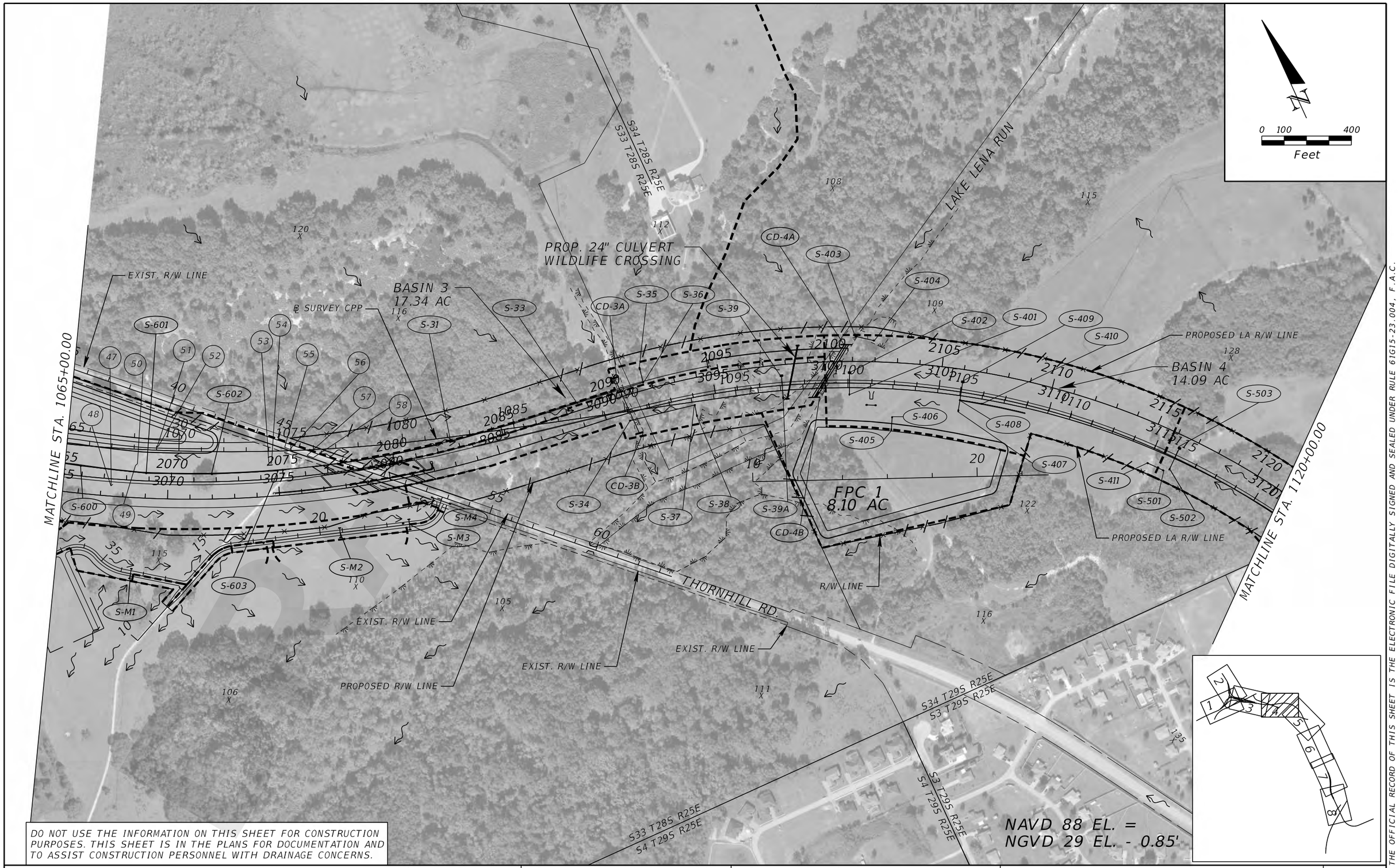

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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

DRAINAGE MAP (4)

SHEET NO.
I - 4

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reskandari 10/21/2020 2:03:53 PM M:\1201739.00_CPP\44089725201\drainage\DRMPRD04.dgn

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DRAINAGE MAP (5)

SHEET NO.
I - 5

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DRAINAGE MAP (6)

SHEET NO.
I - 6

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

DRAINAGE MAP (7)

SHEET NO.
I - 7

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P.E. No.: 42775

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

DRAINAGE MAP (8)

SHEET NO.
I - 8

reskandari 10/21/2020 2:08:09 PM M:\1201739.00_CPP\44089725201\drainage\DRMPRD08.dgn

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P.E. No.: 42775

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

INTERCHANGE DRAINAGE MAP

SHEET NO.
I-9

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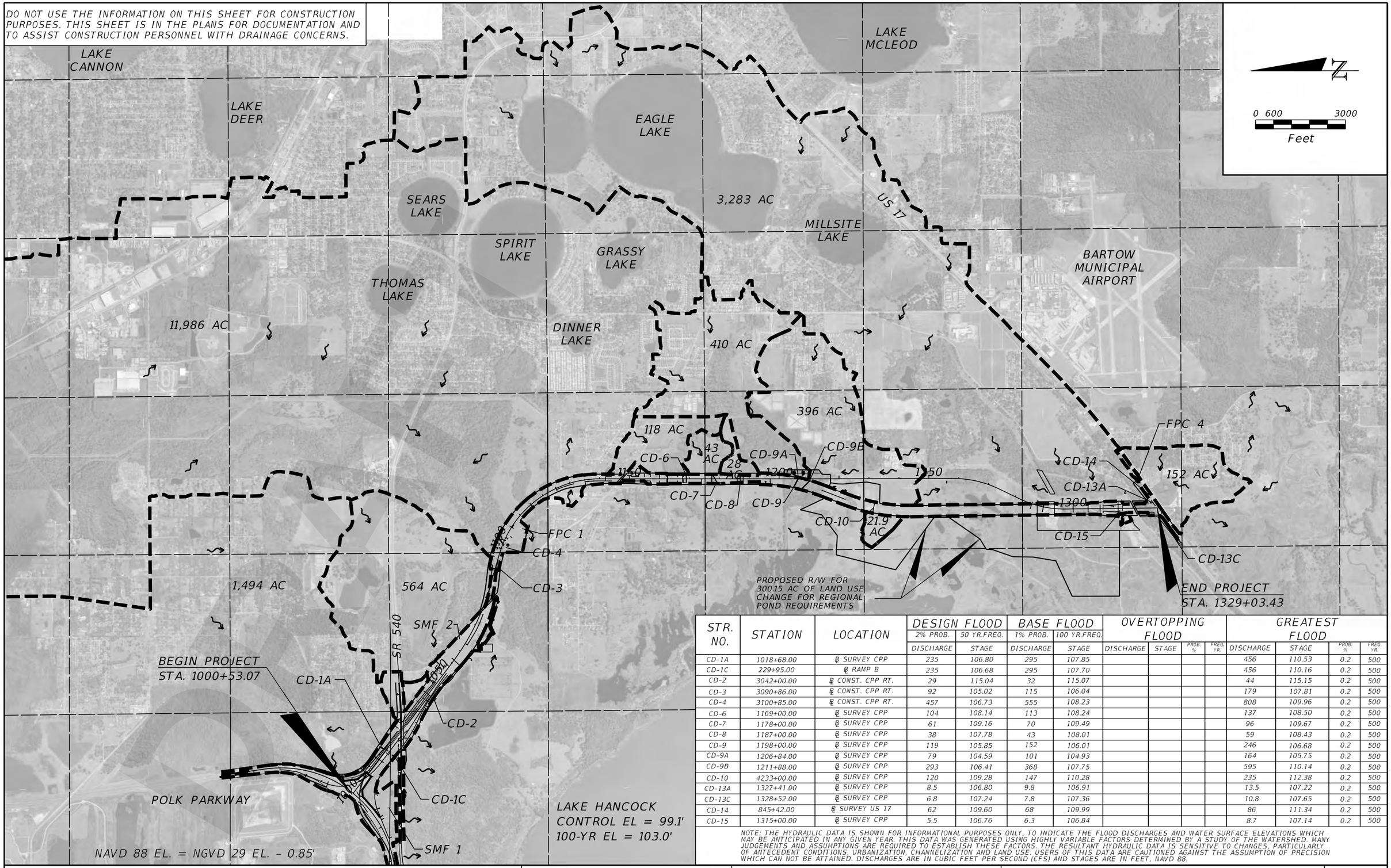

STR. NO.	STATION	LOCATION	DESIGN FLOOD 2% PROB. DISCHARGE	DESIGN FLOOD 50 YR.FREQ. STAGE	BASE FLOOD 1% PROB. DISCHARGE	BASE FLOOD 100 YR.FREQ. STAGE	OVERTOPPING FLOOD DISCHARGE	OVERTOPPING FLOOD STAGE	OVERTOPPING FLOOD PROB. %	OVERTOPPING FLOOD FREQ. YR.	GREATEST FLOOD DISCHARGE	GREATEST FLOOD STAGE	GREATEST FLOOD PROB. %	GREATEST FLOOD FREQ. YR.
CD-1A	1018+68.00	℄ SURVEY CPP	235	106.80	295	107.85					456	110.53	0.2	500
CD-1C	229+95.00	℄ RAMP B	235	106.68	295	107.70					456	110.16	0.2	500
CD-2	3042+00.00	℄ CONST. CPP RT.	29	115.04	32	115.07					44	115.15	0.2	500
CD-3	3090+86.00	℄ CONST. CPP RT.	92	105.02	115	106.04					179	107.81	0.2	500
CD-4	3100+85.00	℄ CONST. CPP RT.	457	106.73	555	108.23					808	109.96	0.2	500
CD-6	1169+00.00	℄ SURVEY CPP	104	108.14	113	108.24					137	108.50	0.2	500
CD-7	1178+00.00	℄ SURVEY CPP	61	109.16	70	109.49					96	109.67	0.2	500
CD-8	1187+00.00	℄ SURVEY CPP	38	107.78	43	108.01					59	108.43	0.2	500
CD-9	1198+00.00	℄ SURVEY CPP	119	105.85	152	106.01					246	106.68	0.2	500
CD-9A	1206+84.00	℄ SURVEY CPP	79	104.59	101	104.93					164	105.75	0.2	500
CD-9B	1211+88.00	℄ SURVEY CPP	293	106.41	368	107.75					595	110.14	0.2	500
CD-10	4233+00.00	℄ SURVEY CPP	120	109.28	147	110.28					235	112.38	0.2	500
CD-13A	1327+41.00	℄ SURVEY CPP	8.5	106.80	9.8	106.91					13.5	107.22	0.2	500
CD-13C	1328+52.00	℄ SURVEY CPP	6.8	107.24	7.8	107.36					10.8	107.65	0.2	500
CD-14	845+42.00	℄ SURVEY US 17	62	109.60	68	109.99					86	111.34	0.2	500
CD-15	1315+00.00	℄ SURVEY CPP	5.5	106.76	6.3	106.84					8.7	107.14	0.2	500

NOTE: THE HYDRAULIC DATA IS SHOWN FOR INFORMATIONAL PURPOSES ONLY, TO INDICATE THE FLOOD DISCHARGES AND WATER SURFACE ELEVATIONS WHICH MAY BE ANTICIPATED IN ANY GIVEN YEAR. THIS DATA WAS GENERATED USING HIGHLY VARIABLE FACTORS DETERMINED BY A STUDY OF THE WATERSHED. MANY JUDGEMENTS AND ASSUMPTIONS ARE REQUIRED TO ESTABLISH THESE FACTORS. THE RESULTANT HYDRAULIC DATA IS SENSITIVE TO CHANGES, PARTICULARLY OF ANTECEDENT CONDITIONS, URBANIZATION, CHANNELIZATION AND LAND USE. USERS OF THIS DATA ARE CAUTIONED AGAINST THE ASSUMPTION OF PRECISION WHICH CAN NOT BE ATTAINED. DISCHARGES ARE IN CUBIC FEET PER SECOND (CFS) AND STAGES ARE IN FEET, NAVD 88.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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Tampa, Florida 33602
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P.E. No.: 42775

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

MASTER DRAINAGE MAP

SHEET NO.
I - 10

$USERS $DATES $TIMES $FILES

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

1
MES
24" RCP FL 109.37
24" RCP FL 109.33

2
MES
24" RCP FL 109.11
24" RCP FL 109.16

3
ENDWALL
15" RCP FL 109.51

4
INLET
GRATE EL. 122.30
15" RCP FL 117.60

5
INLET
GRATE EL. 127.12
15" RCP FL 121.78

6
ENDWALL
15" RCP FL 107.74

7
ENDWALL
18" RCP FL 107.35

8
ENDWALL
18" RCP FL 106.02

9
INLET
GRATE EL. 108.05
24" RCP FL 104.76

10
ENDWALL
24" RCP FL 104.44

11
ENDWALL
24" RCP FL 104.41

12
INLET
GRATE EL. 107.98
24" RCP FL 104.66

13
INLET
GRATE EL. 128.82
15" CMP FL 123.47

14
ENDWALL
15" CMP FL 104.99

15
ENDWALL
24" RCP FL 104.83

16
ENDWALL
24" RCP FL 104.64

17
INLET
GRATE EL. 122.98
15" CMP FL 118.86

18
ENDWALL
15" CMP FL 110.19

19
ENDWALL
30" RCP FL 105.37

20
ENDWALL
30" RCP FL 104.77

21
MES
24" RCP FL 104.87

22
MES
24" RCP FL 104.81

23
ENDWALL
3'x6' CBC FL 106.43

24
ENDWALL
3'x6' CBC FL 106.61

25
INLET
GRATE EL. 115.67
15" CMP FL 111.34

26
ENDWALL
15" CMP FL 105.01

27
ENDWALL
18" RCP FL 104.95

28
ENDWALL
18" RCP FL 105.21

29
MES
36" RCP FL 104.23
36" RCP FL 104.23

30
MES
36" RCP FL 104.10
36" RCP FL 104.05

31
INLET
GRATE EL. 107.58
30" RCP FL 103.54

32
MES
30" RCP FL 103.30

33
CONTROL STRUCTURE
GRATE EL. 107.80
6" PVC ORIFICE FL 104.30
6" PVC ORIFICE FL 104.14
6" PVC ORIFICE FL 104.17
36" RCP FL 103.71
36" RCP FL 103.69
36" RCP FL 103.67

34
MES
36" RCP FL 103.19
36" RCP FL 103.21
36" RCP FL 103.16

34A
MES
24" RCP FL 105.01

34B
MES
24" RCP FL 104.49

34C
MES
4-30" PIPE FL 99.1

35
ENDWALL
8'x6' CBC FL 98.29
8'x6' CBC FL 98.21

35A
ENDWALL
24" RCP FL 104.44
24" RCP FL 104.46

35B
INLET
GRATE EL. 104.34
24" RCP FL UNKNOWN
24" RCP FL UNKNOWN
24" RCP FL UNKNOWN

36
ENDWALL
8'x6' CBC FL 98.21
8'x6' CBC FL 98.22

37
MES
8" PVC FL 108.89

38
ENDPIPE
8" PVC FL UNKNOWN

39
ENDWALL
2-8'x8' CBC FL 100.09

40
ENDWALL
2-8'x8' CBC FL 99.63

41
ENDWALL
18" RCP FL 106.95
18" RCP FL 106.96
18" RCP FL 106.99

42
ENDWALL
18" RCP FL 107.08
18" RCP FL 107.06
18" RCP FL 107.02

43
INLET
GRATE EL. 108.81
14"x23" RCP FL 106.59

44
MES
14"X23" RCP FL 106.29

45
ENDPIPE
18" RCP FL 110.77

46
ENDPIPE
18" RCP FL 110.32

47
ENDPIPE
12" CMP FL 114.09

48
ENDPIPE
12" CMP FL 113.61

49
ENDPIPE
12" CMP FL 113.89

50
ENDPIPE
12" CMP FL 113.80

51
ENDPIPE
12" CMP FL 113.48

52
ENDPIPE
12" CMP FL 113.05

53
ENDPIPE
12" CMP FL 111.60

54
ENDPIPE
12" CMP FL 111.44

55
ENDPIPE
18" CMP FL 111.69

56
ENDPIPE
18" CMP FL 111.68

57
ENDPIPE
18" CMP FL 111.94

58
ENDPIPE
18" CMP FL 111.98

61
ENDPIPE
14"x23" RCP FL 126.48

62
ENDPIPE
14"x23" RCP FL 126.36

63
ENDPIPE
12" DIP FL 112.11

64
ENDPIPE
12" DIP FL 112.26

65
ENDPIPE
8" PVC FL 111.09

66
ENDPIPE
8" PVC FL 111.44

67
MES
18" CMP FL 109.12

68
MES
18" CMP FL 109.04

69
MES
18" CMP FL 109.18

70
MES
18" CMP FL 109.21

71
MES
18" CMP FL 109.06

72
MES
18" CMP FL 109.08

73
MES
18" CMP FL 108.83

74
MES
18" CMP FL 108.87

75
MES
18" CMP FL 108.47

76
MES
18" CMP FL 108.62

77
MES
18" CMP FL 108.15

78
MES
18" CMP FL 108.47

79
MES
18" CMP FL 108.07

80
MES
18" CMP FL 107.96

81
MES
18" CMP FL 107.83

82
MES
18" CMP FL 107.71

83
MES
18" CMP FL 107.48

84
MES
18" CMP FL 107.55

85
ENDPIPE
42" RCP FL 105.16

86
MES
18" CMP FL 107.63

87
MES
18" CMP FL 107.47

88
MES
18" CMP FL 108.17

89
MES
18" CMP FL 108.41

90
MES
18" CMP FL 108.56

91
MES
18" CMP FL 109.16

92
MES
18" CMP FL 109.43

93
MES
18" CMP FL 109.59

94
MES
18" CMP FL 109.65

95
MES
18" CMP FL 110.01

96
MES
18" CMP FL 110.58

97
MES
18" CMP FL 111.92

98
MES
18" CMP FL 112.54

99
MES
18" CMP FL 113.43

99A
MES
18" CMP FL 114.22

99B
MES
18" CMP FL 115.27

100
MES
18" CMP FL 112.63

101
MES
18" CMP FL 111.37

102
MES
18" CMP FL 110.26

103
MES
18" CMP FL 109.59

104
MES
18" CMP FL 108.60

105
MES
18" CMP FL 108.49

106
MES
18" CMP FL 107.89

107
MES
18" CMP FL 107.81

108
MES
18" CMP FL 107.76

109
MES
18" CMP FL 107.56

110
MES
18" CMP FL 106.86

111
MES
18" CMP FL 106.65

112
ENDPIPE
42" RCP FL 105.28

113
INLET
GRATE EL. 110.37
42" RCP FL SE. 105.44
42" RCP FL NW. 105.47

114
MES
18" CMP FL 105.54

115
MES
18" CMP FL 105.77

116
ENDPIPE
15" RCP FL 106.94

117
INLET
GRATE EL. 110.65
15" RCP FL 107.28

118
MES
18" CMP FL 108.01

119
MES
18" CMP FL 108.09

120
MES
18" CMP FL 108.83

121
MES
18" CMP FL 108.66

122
MES
18" CMP FL 108.98

123
MES
18" CMP FL 108.87

124
MES
18" CMP FL 114.34

125
MES
18" CMP FL 114.72

DRAFT

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kisinger Campo & Associates Corp.
201 N. Franklin Street, Suite 400
Tampa, Florida 33602
Florida Certificate of Authorization No. 02317
Engineer of Record: Ali Tayebnejad, P.E.
P.E. No.: 42775

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

EXISTING DRAINAGE STRUCTURE (1)

SHEET NO.
I - 11

126
MES
18" CMP FL 109.23

127
MES
18" CMP FL 109.29

128
INLET
GRATE EL. 115.85
15" RCP FL 109.74

129
ENDPIPE
15" RCP FL 109.40

130
MES
18" CMP FL 109.81

131
MES
18" CMP FL 109.91

132
MES
18" CMP FL 109.67

133
MES
18" CMP FL 109.57

134
MES
18" CMP FL 109.70

135
MES
18" CMP FL 109.77

136
MES
18" CMP FL 109.45

137
MES
18" CMP FL 109.31

138 TO 199 NOT USED

200
ENDPIPE
36" RCP FL 103.90

201
ENDPIPE
36" RCP FL 103.81

202
MES
18" RCP FL 105.73

203
MES
18" RCP FL 105.71

204 TO 499 NOT USED

500
ENDPIPE
18" CPP FL 111.60

501
INLET
GRATE EL. 115.06
18" CPP FL 111.93

502
ENDWALL
19"x30" RCP FL 113.61

503
ENDWALL
19"x30" RCP FL 113.67

504 TO 999 NOT USED

1000
ENDWALL
30" RCP FL 104.62
30" RCP FL 104.59

1001
ENDWALL
30" RCP FL 104.04
30" RCP FL 104.04

1002
ENDWALL
36" RCP FL 103.77
36" RCP FL 103.79
36" RCP FL 103.75

1003
MES
36" RCP FL 103.62
36" RCP FL 103.46
36" RCP FL 103.47

1004
INLET
GRATE EL. 109.72
24" RCP FL 105.78

1005
ENDWALL
24" RCP FL 104.05

1006
MES
36" RCP FL 104.26

1007
MES
36" RCP FL 104.27

1008
ENDWALL
15" CMP FL 105.83

1009
INLET
GRATE EL. 121.30
15" CMP FL N. 117.29
18" RCP FL W. 117.30

1010
INLET
GRATE EL. 124.25
18" RCP FL 120.30

1011
ENDPIPE
36" CMP FL 97.83

1012
ENDPIPE
36" CMP FL 97.59

1013
ENDPIPE
18" CMP FL 101.04

1014
ENDPIPE
18" CMP FL 102.41

1015
ENDPIPE
18" CMP FL 102.37

1016
ENDPIPE
18" CMP FL 101.96

1017
INLET
GRATE EL. 129.06
18" RCP FL 125.56

1018
INLET
GRATE EL. 133.34
18" RCP FL E. 125.18
18" RCP FL N. 125.25

1019
ENDWALL
18" RCP FL 124.99

1020
INLET
GRATE EL. 127.31
18" RCP FL 123.70

1021
MANHOLE
RIM EL. 127.85
18" RCP FL E. 123.22
18" RCP FL W. 123.21

1022
INLET
GRATE EL. 127.01
18" RCP FL E. 122.81
18" RCP FL W. 122.56

1023
INLET
GRATE EL. 124.95
18" RCP FL E. 120.71
18" RCP FL W. 120.66

1024
ENDWALL
15" CMP FL 120.42

1025
INLET
GRATE EL. 136.77
15" CMP FL 132.60

1026
INLET
GRATE EL. 120.55
18" RCP FL W. 116.20
18" RCP FL E. 116.30

1027
INLET
GRATE EL. 116.07
18" RCP FL W. 112.40
18" RCP FL E. 112.39

1028
INLET
GRATE EL. 113.18
18" RCP FL W. 109.45
18" RCP FL E. 109.50

1029
INLET
GRATE EL. 111.31
15" CMP FL N. 107.08
18" RCP FL E. 107.36

1030
MES
15" CMP FL 101.19

1031
ENDWALL
36" RCP FL 101.14

1032
MES
36" CMP FL 101.15

1033
MES
30" RCP FL 100.91

1034
MES
30" RCP FL 101.10

1035
ENDWALL
15" CMP FL 102.94

1036
INLET
GRATE EL. 135.71
15" CMP FL W. 131.85

1037
ENDWALL
48" RCP FL 100.92

1038
MES
48" RCP FL 100.71

DRAFT

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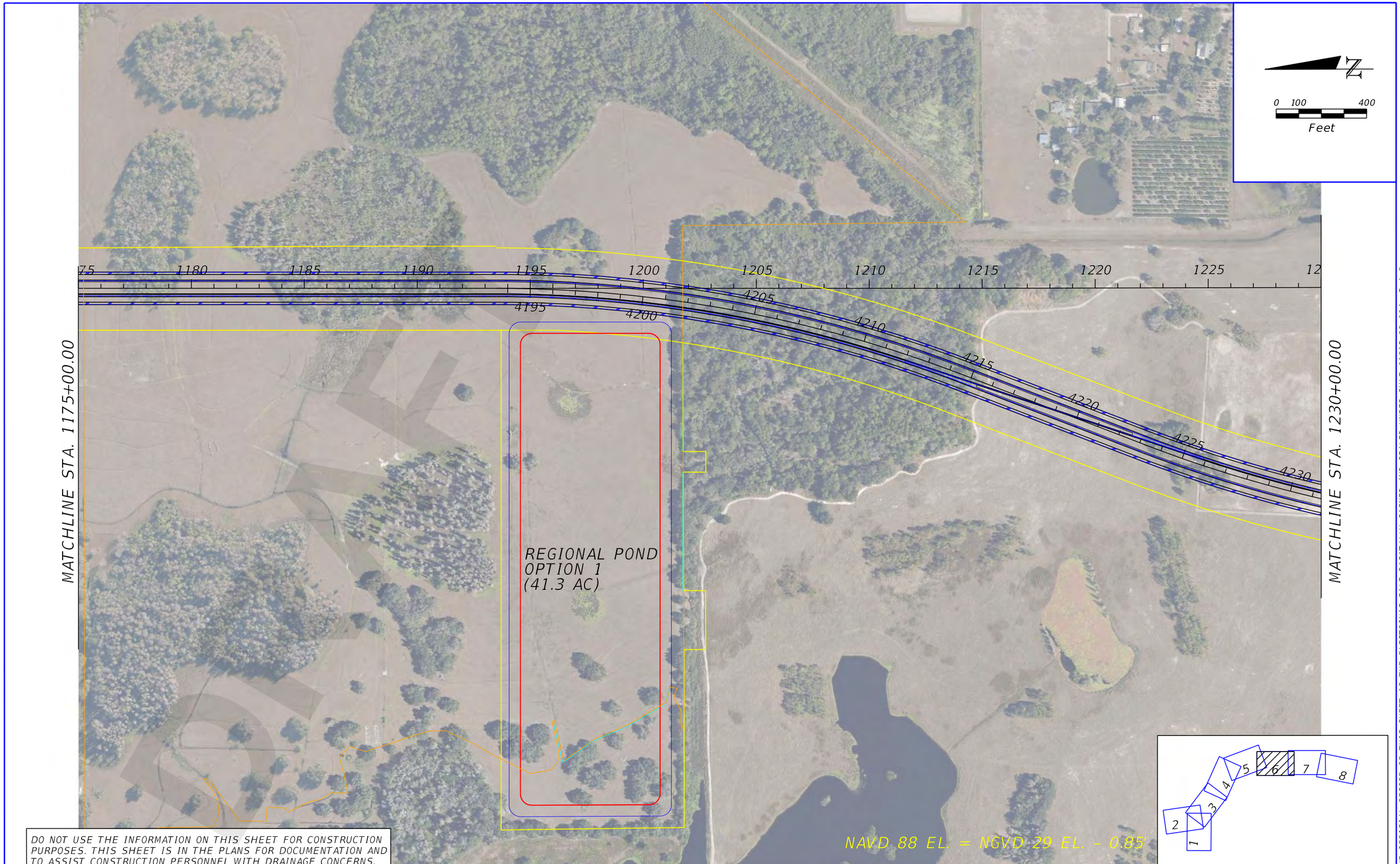
Florida Certificate of Authorization No. 02317
Engineer of Record: Ali Tayebnejad, P.E.
P.E. No.: 42775

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

EXISTING DRAINAGE STRUCTURE (2)

SHEET NO.
I - 12



NAVD 88 EL. = NGVD 29 EL. - 0.85

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REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

REGIONAL STORMWATER MANAGEMENT OPTION 1

SHEET NO.
I-13

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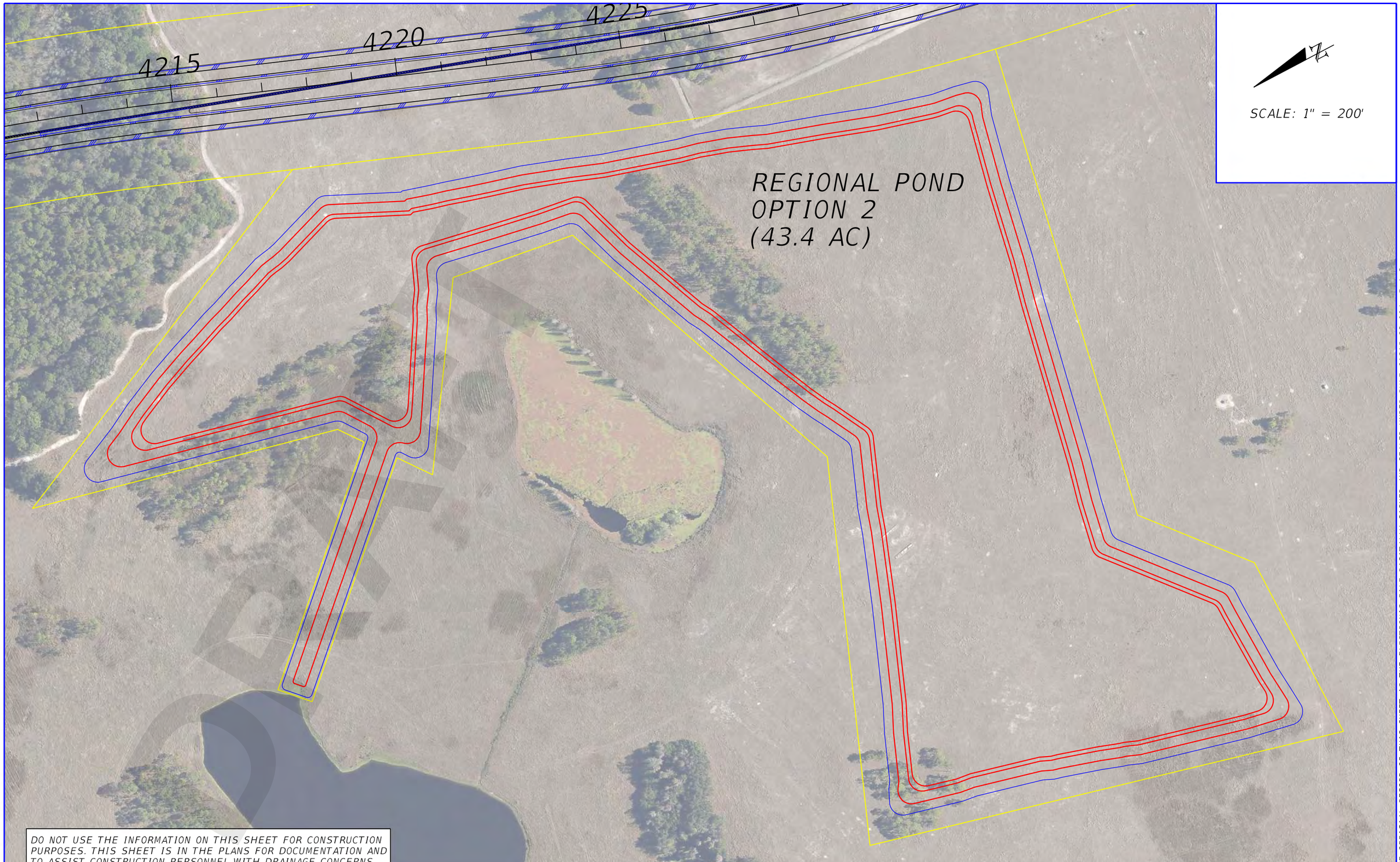

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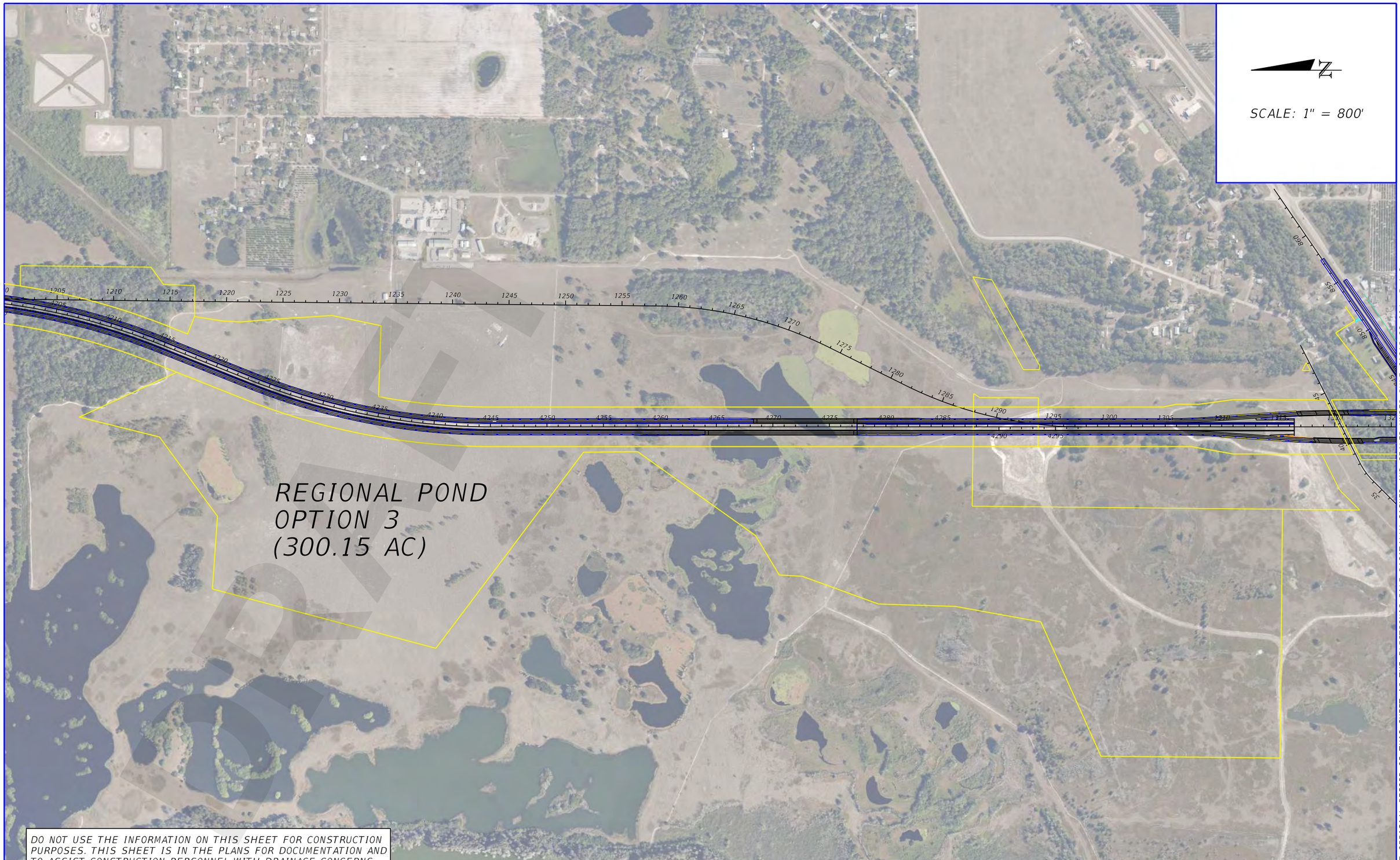
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

REGIONAL STORMWATER MANAGEMENT OPTION 2

SHEET NO.
I-14

$USER$ $DATE$ $TIME$ $FILE$



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REVISIONS			
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Kisinger Campo & Associates Corp.
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Tampa, Florida 33602
Florida Certificate of Authorization No. 02317
Engineer of Record: Ali Tayebnejad, P.E.
P.E. No.: 42775

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 570B	POLK	440897-2-52-01

REGIONAL STORMWATER MANAGEMENT OPTION 3

SHEET NO.
I-15

$USER$ $DATE$ $TIME$ $FILE$

APPENDIX J

IMPAIRED WATERBODY CALCULATIONS

DRAFT

Cycle	Group	OGC Case Number	Group Name	Planning Unit	County (-ies)	WBID	Water Segment Name	Water-body Type	Water-body Class[1]	1998 303(d) Parameters of Concern	Parameters Assessed Using the Impaired Waters Rule (IWR)	Dissolved Oxygen/Biology Pollutant of Concern	Concentration of Criterion or Threshold Not Met	Priority for TMDL Development[3]	Projected Year For TMDL Development[3]	Verified Period Assessment Data[8]	Comments[7,8]
1	2	03-2280	Tampa Bay Tributaries	Hillsborough River	Hillsborough, Polk	1495B	Itchepackesassa Creek	Stream	3F		Fecal Coliform		> 400 colonies per 100 ml	Medium	2008		PP - 4/8 Insufficient data; VP - 13/20 Verified impaired.
2	3	10-0229	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497	Saddle Creek	Stream	3F	Coliforms	Fecal Coliform		≤ 400 Counts / 100 mL	High		10/20	Impaired based on the number of exceedances.
3	3	16-0564	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497	Saddle Creek	Stream	3F		Nutrients (Macrophytes)		LVS C of C ≥ 2.5 and LVS FLEPPC ≤ 25%	Medium		02/20/2013: Avg CofC - 0.67, FLEPPC - 50% 11/25/2013: Avg CofC - 0.55, FLEPPC - 51.85%	This waterbody is impaired for this parameter based on failing linear vegetation survey results. This parameter is being added to the 303(d) List.
3	3	16-0568	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497B	Lake Parker	Lake	3F		Biology	Nutrients	Average score of at least two temporally independent LVI scores ≥ 43.			LVI 21FLGW 37017 (23JUL2009: 34) 21FLGW 41633 (21MAY2012: 43)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the 303(d) List.
3	3	16-0569	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497B	Lake Parker	Lake	3F	Nutrients	Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		Annual Geometric Mean(s) 2008 (161 µg/L) 2009 (47 µg/L) 2010 (47 µg/L) 2011 (86 µg/L) 2012 (80 µg/L) 2013 (60 µg/L) 2014 (44 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously assessed as impaired for Nutrients (TSI), however that parameter is no longer assessed to determine impairment per Rule 62-303, F.A.C.
3	3	16-0570	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497B	Lake Parker	Lake	3F	Nutrients	Nutrients (Total Nitrogen)		Chl-a AGM ≤ 20 µg/L, TN AGM ≤ 1.91 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TN AGM ≤ 1.05 mg/L	Medium		Annual Geometric Mean(s) 2008 (4.74 mg/L) 2009 (3.26 mg/L) 2010 (2.15 mg/L) 2011 (2.30 mg/L) 2012 (1.98 mg/L) 2013 (2.02 mg/L) 2014 (1.93 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously impaired for Nutrients (TSI), however that parameter is no longer being assessed to determine impairment.
3	3	16-0571	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497B	Lake Parker	Lake	3F	Nutrients	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.09 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.03 mg/L	Medium		Annual Geometric Mean(s) 2008 (0.11 mg/L) 2009 (0.07 mg/L) 2010 (0.06 mg/L) 2011 (0.05 mg/L) 2012 (0.05 mg/L) 2013 (0.04 mg/L) 2014 (0.05 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously impaired for Nutrients (TSI), however that parameter is no longer being assessed to determine impairment.
3	3	16-0572	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497D1	Lake Crago	Lake	3F		Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		Annual Geometric Mean(s) 2010 (77 µg/L) 2011 (67 µg/L) 2012 (76 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0573	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497D1	Lake Crago	Lake	3F		Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.09 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.03 mg/L	Medium		Annual Geometric Mean(s) 2010 (0.14 mg/L) 2011 (0.14 mg/L) 2012 (0.13 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0574	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497G	Lake Mirror	Lake	3F		Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		Annual Geometric Mean(s) 2010 (44 µg/L) 2011 (43 µg/L) 2012 (43 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0575	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497G	Lake Mirror	Lake	3F		Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.09 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.03 mg/L	Medium		Annual Geometric Mean(s) 2009 (0.10 mg/L) 2011 (0.08 mg/L) 2012 (0.09 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0576	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497H	Lake Morton	Lake	3F		Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		Annual Geometric Mean(s) 2010 (62 µg/L) 2011 (64 µg/L) 2012 (52 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0577	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497H	Lake Morton	Lake	3F		Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.09 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.03 mg/L	Medium		Annual Geometric Mean(s) 2009 (0.08 mg/L) 2010 (0.10 mg/L) 2011 (0.09 mg/L) 2012 (0.08 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.

DRAFT

Cycle	Group	OGC Case Number	Group Name	Planning Unit	County (-ies)	WBID	Water Segment Name	Water-body Type	Water-body Class[1]	1998 303(d) Parameters of Concern	Parameters Assessed Using the Impaired Waters Rule (IWR)	Dissolved Oxygen/Biology Pollutant of Concern	Concentration of Criterion or Threshold Not Met	Priority for TMDL Development[3]	Projected Year For TMDL Development[3]	Verified Period Assessment Data[8]	Comments[7,8]
3	3	16-0578	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497J	Saddle Creek Lakes	Lake	3F		Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		Annual Geometric Mean(s) 2008 (43 µg/L) 2009 (38 µg/L) 2010 (49 µg/L) 2011 (44 µg/L) 2012 (40 µg/L) 2013 (46 µg/L) 2014 (43 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0579	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497J	Saddle Creek Lakes	Lake	3F		Nutrients (Total Nitrogen)		Chl-a AGM ≤ 20 µg/L, TN AGM ≤ 1.91 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TN AGM ≤ 1.05 mg/L	Medium		Annual Geometric Mean(s) 2008 (1.53 mg/L) 2009 (1.49 mg/L) 2010 (1.69 mg/L) 2011 (1.62 mg/L) 2012 (1.49 mg/L) 2013 (1.47 mg/L) 2014 (1.37 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. Through correspondence with Polk County, It was determined that the TKN and TP samples collected at station 21FLPOLKSADDLE CRK PK Y on 10/07/2010 are not considered to be representative of the waterbody as a whole. Polk County has informed the department that they will remove these samples from Florida STORET. Because data had already been extracted for IWR Run 52 upon which Group 3 Cycle 3 assessments are based, the department manually excluded the unrepresentative data for the time being and recalculated the TN and TP AGM's for WBID 1497J. This exclusion did not change the assessment status of TN or TP for Cycle 3.
3	3	16-0580	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1497J	Saddle Creek Lakes	Lake	3F		Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.09 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.03 mg/L	Medium		Annual Geometric Mean(s) 2008 (0.10 mg/L) 2009 (0.10 mg/L) 2010 (0.17 mg/L) 2011 (0.11 mg/L) 2012 (0.12 mg/L) 2013 (0.13 mg/L) 2014 (0.11 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. Through correspondence with Polk County, It was determined that the TKN and TP samples collected at station 21FLPOLKSADDLE CRK PK Y on 10/07/2010 are not considered to be representative of the waterbody as a whole. Polk County has informed the department that they will remove these samples from Florida STORET. Because data had already been extracted for IWR Run 52 upon which Group 3 Cycle 3 assessments are based, the department manually excluded the unrepresentative data for the time being and recalculated the TN and TP AGM's for WBID 1497J. This exclusion did not change the assessment status of TN or TP for Cycle 3.
3	1	13-0175	Tampa Bay	Coastal Old Tampa Bay Tributary	Hillsborough	1498Z	Dosson Lake	Lake	3F		Dissolved Oxygen	Biochemical Oxygen Demand	≥ 5.0 mg/L	Medium		12/23	This parameter is impaired for this waterbody based on the number of exceedances for the sample size. Median total nitrogen and total phosphorus values were not elevated relative to comparable waters and biochemical oxygen demand was identified as the causative pollutant because it was elevated relative to comparable waters (exceeded 2.9 mg/L). This parameter is being added to the 303(d) list.
3	1	13-0176	Tampa Bay	Coastal Old Tampa Bay Tributary	Hillsborough	1498Z	Dosson Lake	Lake	3F		Nutrients (TSI)		TSI ≤ 60, Color ≥ 40	Medium		2011 (63; Color: 123)	This parameter is impaired for this waterbody because the annual average TSI values exceeded the IWR threshold for colored lakes of 60 TSI units in 2011. Based on the median TN/TP ratio of 21, total nitrogen and total phosphorus are co-limiting nutrients. This parameter is being added to the 303(d) list.
3	2	15-0835	Tampa Bay Tributaries	Hillsborough River	Hillsborough	1499	Thirteen Mile Creek	Stream	3F		Fecal Coliform		≤ 400 Counts / 100 mL	Low		16/19	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. Fewer than twenty samples can be used to identify a waterbody as impaired if there are at least five exceedances, per Rule 62-303.420(7)(a) F.A.C. This parameter is being added to the 303(d) List.
3	3	16-0581	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	15002	Middle Lake Hamilton	Lake	3F		Biology		Average score of at least two temporally independent LVI scores ≥ 43.			LVI 21FLTPA TPMHAML01L (20JUN2013: 31) 21FLTPA TPMHAML01L (24JUN2015: 20)	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the 303(d) List.
3	3	16-0582	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	15002	Middle Lake Hamilton	Lake	3F		Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		Annual Geometric Mean(s) 2011 (51 µg/L) 2013 (37 µg/L) 2014 (28 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0583	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	15002	Middle Lake Hamilton	Lake	3F		Nutrients (Total Nitrogen)		Chl-a AGM ≤ 20 µg/L, TN AGM ≤ 2.23 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TN AGM ≤ 1.27 mg/L	Medium		Annual Geometric Mean(s) 2011 (2.16 mg/L) 2013 (2.07 mg/L) 2014 (1.73 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient threshold more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0584	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	15002	Middle Lake Hamilton	Lake	3F		Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.16 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.05 mg/L	Medium		Annual Geometric Mean(s) 2011 (0.07 mg/L) 2013 (0.07 mg/L) 2014 (0.06 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient threshold more than once in a three year period. This parameter is being added to the 303(d) List.
2	3	10-0235	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1501A	Lake Lena Run	Stream	3F	Coliforms	Fecal Coliform		≤ 400 Counts / 100 mL	High		24/43	Impaired based on the number of exceedances.

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Cycle	Group	OGC Case Number	Group Name	Planning Unit	County (-ies)	WBID	Water Segment Name	Water-body Type	Water-body Class[1]	1998 303(d) Parameters of Concern	Parameters Assessed Using the Impaired Waters Rule (IWR)	Dissolved Oxygen/Biology Pollutant of Concern	Concentration of Criterion or Threshold Not Met	Priority for TMDL Development[3]	Projected Year For TMDL Development[3]	Verified Period Assessment Data[8]	Comments[7,8]
3	4	17-0312	Kissimmee River	Lake Istokpoga Planning Unit	Polk	1619D	Lake Moody	Lake	3F		Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		AGM 2013 (21 µg/L) 2014 (28 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three-year period. This parameter is being added to the 303(d) List.
2	2	09-2283	Tampa Bay Tributaries	Alafia River	Hillsborough	1621A	Alafia River Above Hillsborough Bay	Stream	3F		Fecal Coliform		≤ 400 Counts / 100 mL	Low		22/149	
3	2	15-0866	Tampa Bay Tributaries	Alafia River	Hillsborough	1621B	Alafia River above Fishhawk Creek	Stream	3F		Fecal Coliform		≤ 400 Counts / 100 mL	Low		27/173	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and is being added to the 303(d) List.
2	2	09-2286	Tampa Bay Tributaries	Alafia River	Hillsborough	1621F	Lithia Springs	Spring	3F		Dissolved Oxygen	Total Nitrogen	≥ 5.0 mg/L	Medium		24/35	Groundwater Report provides additional information on total nitrogen and dissolved oxygen impairment.
3	2	15-0867	Tampa Bay Tributaries	Alafia River	Hillsborough	1621F	Lithia Springs	Spring	3F		Nutrients (Nitrate-Nitrite)		≤ 0.35 mg/L	Medium		Annual Geometric Mean(s) 2007 (2.65 mg/L) 2008 (2.57 mg/L) 2009 (2.00 mg/L)	This waterbody is impaired for this parameter based on the annual geometric means exceeding the criterion more than once in a three year period. This parameter is being added to the 303(d) List.
2	3	10-0151	Sarasota Bay - Peace - Myakka	Middle Peace River	DeSoto	1623C	Peace River Above Joshua Creek	Stream	3F		Fecal Coliform		≤ 400 Counts / 100 mL	Low		15/95	Impaired based on the number of exceedances.
3	3	16-0631	Sarasota Bay - Peace - Myakka	Middle Peace River	Hardee	1623E	Peace River above Oak Creek	Stream	3F		Nutrients (Macrophytes)		LVS C of C ≥ 2.5 and LVS FLEPPC ≤ 25%	Medium		04/25/2013: Avg CofC - 0, FLEPPC - 50% 12/17/2013: Avg CofC - 1.5, FLEPPC - 50%	This waterbody is impaired for this parameter based on failing linear vegetation survey results. This parameter is being added to the 303(d) List.
3	3	16-0632	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623J	Peace River above Bowlegs Creek	Stream	3F		Nutrients (Algal Mats)		RPS ≤ 25%, or when between 20% - 25% Evaluation of Algal Autoecological Data Indicates No	Medium		01/30/2008: 0% 04/10/2013: 94.95% 12/09/2013: 30.3%	This waterbody is impaired for this parameter based on failing rapid periphyton survey results. There are at least two temporally independent samples greater than 25% and this parameter is being added to the Verified List.
3	3	16-0633	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623J	Peace River above Bowlegs Creek	Stream	3F		Nutrients (Macrophytes)		LVS C of C ≥ 2.5 and LVS FLEPPC ≤ 25%	Medium		04/10/2013: Avg CofC - 0.9, FLEPPC - 51.09% 12/09/2013: Avg CofC - 1.11, FLEPPC - 49.09%	This waterbody is impaired for this parameter based on failing linear vegetation survey results. This parameter is being added to the 303(d) List.
1	3	05-1243	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623K	Saddle Creek Below Lake Hancock	Stream	3F	Dissolved Oxygen	Dissolved Oxygen	Nutrients (added from comments)	< 5.0 mg/L	High	2004		PP - 32 / 117 Potentially impaired; VP - 39 / 119 Verified impaired. Nutrients were identified as a causative pollutant based on chlorophyll data/nutrient impairment verification (verified period total phosphorus median = 0.473 mg/l). (verified period total Nitrogen median = 2.565 mg/L). 4 BOD values (median = 6.5 mg/L) Co-limited by nitrogen and phosphorus.
1	3	05-1244	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623K	Saddle Creek Below Lake Hancock	Stream	3F	Nutrients	Nutrients (Chlorophyll-a)		Median TN = 2.4 mg/L	High	2004		PP - Potentially impaired; VP - Verified Impaired. VP - Annual average chl(a) values exceeded 20 µg/L in 1997-2003. Nitrogen is the limiting nutrient based on a TN/TP ratio median of 7.22. 130 TN values, median 2.4 mg/L. 133 TP values, median 0.401 mg/L.
2	3	10-0268	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623K	Saddle Creek Below Lake Hancock	Stream	3F	Coliforms	Fecal Coliform		≤ 400 Counts / 100 mL	High		5/22	Impaired based on the number of exceedances.
3	3	16-0634	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623K	Saddle Creek below Lake Hancock	Stream	3F		Nutrients (Total Nitrogen)		AGM ≤ 1.65 mg/L	Medium		Annual Geometric Mean(s) 2008 (9.98 mg/L) 2010 (3.29 mg/L) 2011 (3.60 mg/L) 2012 (3.84 mg/L) 2013 (2.52 mg/L) 2014 (1.37 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient threshold more than once in a three year period, and there is floral evidence indicating non attainment of designated use. This parameter is being added to the 303(d) List.
3	3	16-0635	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623K	Saddle Creek below Lake Hancock	Stream	3F	Un-ionized Ammonia	Un-ionized Ammonia		≤ 0.02 mg/L as NH3	Medium		16/58	This waterbody is impaired for this parameter based on the number of exceedances for the sample size and is being added to the 303(d) List.
3	3	16-0636	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623L	Lake Hancock	Lake	3F	Nutrients	Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		Annual Geometric Mean(s) 2009 (575 µg/L) 2010 (139 µg/L) 2011 (424 µg/L) 2012 (537 µg/L) 2013 (501 µg/L) 2014 (85 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously assessed as impaired for Nutrients (TSI), however that parameter is no longer assessed to determine impairment per Rule 62-303, F.A.C.
3	3	16-0637	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623L	Lake Hancock	Lake	3F	Nutrients	Nutrients (Total Nitrogen)		Chl-a AGM ≤ 20 µg/L, TN AGM ≤ 2.23 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TN AGM ≤ 1.27 mg/L	Medium		Annual Geometric Mean(s) 2009 (12.15 mg/L) 2010 (5.43 mg/L) 2011 (8.14 mg/L) 2012 (10.42 mg/L) 2013 (9.92 mg/L) 2014 (4.27 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously impaired for Nutrients (TSI), however that parameter is no longer being assessed to determine impairment.
3	3	16-0638	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623L	Lake Hancock	Lake	3F	Nutrients	Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.16 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.05 mg/L	Medium		Annual Geometric Mean(s) 2009 (0.29 mg/L) 2010 (0.22 mg/L) 2011 (0.23 mg/L) 2012 (0.32 mg/L) 2013 (0.36 mg/L) 2014 (0.15 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously impaired for Nutrients (TSI), however that parameter is no longer being assessed to determine impairment.
3	3	16-0639	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623M	Eagle Lake	Lake	3F		Nutrients (Chlorophyll-a)		≤ 6 µg/L	Medium		Annual Geometric Mean(s) 2008 (10 µg/L) 2009 (8 µg/L) 2010 (7 µg/L) 2011 (8 µg/L) 2012 (9 µg/L) 2013 (10 µg/L) 2014 (13 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously assessed as impaired for Nutrients (TSI), however that parameter is no longer assessed to determine impairment per Rule 62-303, F.A.C.

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Cycle	Group	OGC Case Number	Group Name	Planning Unit	County (-ies)	WBID	Water Segment Name	Water-body Type	Water-body Class[1]	1998 303(d) Parameters of Concern	Parameters Assessed Using the Impaired Waters Rule (IWR)	Dissolved Oxygen/Biology Pollutant of Concern	Concentration of Criterion or Threshold Not Met	Priority for TMDL Development[3]	Projected Year For TMDL Development[3]	Verified Period Assessment Data[8]	Comments[7,8]
3	3	16-0640	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623M	Eagle Lake	Lake	3F		Nutrients (Total Nitrogen)		Chl-a AGM ≤ 6 µg/L, TN AGM ≤ 0.93 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TN AGM ≤ 0.51 mg/L	Medium		Annual Geometric Mean(s) 2008 (0.58 mg/L) 2009 (0.43 mg/L) 2010 (0.40 mg/L) 2011 (0.60 mg/L) 2012 (0.65 mg/L) 2013 (0.62 mg/L) 2014 (0.75 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously impaired for Nutrients (TSI), however that parameter is no longer being assessed to determine impairment.
3	3	16-0641	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623M	Eagle Lake	Lake	3F		Nutrients (Total Phosphorus)		Chl-a AGM ≤ 6 µg/L, TP AGM ≤ 0.03 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 6 µg/L, TP AGM ≤ 0.01 mg/L	Medium		Annual Geometric Mean(s) 2008 (0.01 mg/L) 2009 (0.02 mg/L) 2010 (0.02 mg/L) 2011 (0.02 mg/L) 2012 (0.02 mg/L) 2013 (0.02 mg/L) 2014 (0.02 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List. This waterbody was previously impaired for Nutrients (TSI), however that parameter is no longer being assessed to determine impairment.
3	3	16-0642	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623T	Engle Lake	Lake	3F		Nutrients (Chlorophyll-a)		≤ 20 µg/L	Medium		Annual Geometric Mean(s) 2008 (56 µg/L) 2009 (57 µg/L) 2010 (63 µg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0643	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623T	Engle Lake	Lake	3F		Nutrients (Total Nitrogen)		Chl-a AGM ≤ 20 µg/L, TN AGM ≤ 1.91 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TN AGM ≤ 1.05 mg/L	Medium		Annual Geometric Mean(s) 2008 (1.73 mg/L) 2009 (1.95 mg/L) 2010 (1.86 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
3	3	16-0644	Sarasota Bay - Peace - Myakka	Upper Peace River	Polk	1623T	Engle Lake	Lake	3F		Nutrients (Total Phosphorus)		Chl-a AGM ≤ 20 µg/L, TP AGM ≤ 0.09 mg/L; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM > 20 µg/L, TP AGM ≤ 0.03 mg/L	Medium		Annual Geometric Mean(s) 2008 (0.12 mg/L) 2009 (0.13 mg/L) 2010 (0.12 mg/L)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.

[1] Florida's waterbody classifications are defined as:
1 - Potable water supplies
2 - Shellfish propagation or harvesting
3F - Recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife in fresh water
3M - Recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife in marine water
4 - Agricultural water supplies
5 - Navigation, utility, and industrial use

[2] n is equal to the number of samples. When samples are collected at the same location less than 4 days apart, the median of those results represents a single sample for the purpose of determining n.

[3] Where a parameter was identified as impaired under the IWR, a priority of "medium" was assigned. Exceptions are waters where the impairment poses a threat to potable water or human health, which have been assigned a "high" priority, and fecal coliform impairments, which have been assigned a "low" priority. All other listings are prioritized based on the following: it is our intent that listings with a "High" priority be addressed within the next 5 years, listings with a "Medium" priority be addressed within 5-10 years as resources allow, and listings with a "Low" priority be addressed within the next 10 years.

[7] **PP** - Planning Period (10 year period; beginning and ending date vary by group/cycle combination); Where data are presented as x/y, x represents the number of exceedances and y represents the total number of samples.

[8] **VP** - Verified Period (7.5 year period; beginning and ending date vary by group/cycle combination); Where data are presented as x/y, x represents the number of exceedances and y represents the total number of samples
A statewide TMDL for mercury, that will address this waterbody, is scheduled to be completed in 2012.

N/A = Not Applicable, does not apply, or was not assessed in the previous cycle (i.e. it's a new WBID, waterbody type change, etc.).

^ Beach advisories are based on FL Dept of Health Enterococcus criterion of >103 CFU/100mL.

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Regional Pond Option 3

TOTAL CONTRIBUTING AREA CPP1(BASINS 3-18) = 240 AC

TOTAL CONTRIBUTING AREA CPP2 (BASIN 1) = 40 AC

GRAND TOTAL = 280 AC

PRE-DEVELOPED DCIA = 1.9%

POST-DEVELOPED DCIA = 32% (BASED ON FUTURE 6-LANE CONDITION)

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Complete Report (not including cost) Ver 4.1.0

Project: CPP
Date: 10/14/2020 4:55:09 PM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	CPP	Regional Pond
Rainfall Zone	Florida Zone 2	Florida Zone 2
Annual Mean Rainfall	50.00	50.00

Pre-Condition Landuse Information

Landuse	Agricultural - Pasture: TN=3.510TP=0.686	Agricultural - Pasture: TN=3.510TP=0.686
Area (acres)	280.00	300.00
Rational Coefficient (0-1)	0.06	0.04
Non DCIA Curve Number	65.00	65.00
DCIA Percent (0-100)	1.90	0.00
Nitrogen EMC (mg/l)	3.510	3.510
Phosphorus EMC (mg/l)	0.686	0.686
Runoff Volume (ac-ft/yr)	65.847	52.500
Nitrogen Loading (kg/yr)	284.973	227.211
Phosphorus Loading (kg/yr)	55.696	44.406

Post-Condition Landuse Information

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Landuse	User Defined Values	Undeveloped - Marl Prairie: TN=0.684 TP=0.012
Area (acres)	280.00	300.00
Rational Coefficient (0-1)	0.29	0.04
Non DCIA Curve Number	65.00	65.00
DCIA Percent (0-100)	32.00	0.00
Wet Pond Area (ac)	0.00	0.00
Nitrogen EMC (mg/l)	1.119	0.684
Phosphorus EMC (mg/l)	0.155	0.012
Runoff Volume (ac-ft/yr)	335.533	52.500
Nitrogen Loading (kg/yr)	462.944	44.277
Phosphorus Loading (kg/yr)	64.125	0.777

Catchment Number: 1 Name: CPP

Project: CPP
Date: 10/14/2020

None Design

Watershed Characteristics

Catchment Area (acres)	280.00
Contributing Area (acres)	280.000
Non-DCIA Curve Number	65.00
DCIA Percent	32.00
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	38
Provided TN Treatment Efficiency (%)	
Required TP Treatment Efficiency (%)	13

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Provided TP Treatment Efficiency (%)

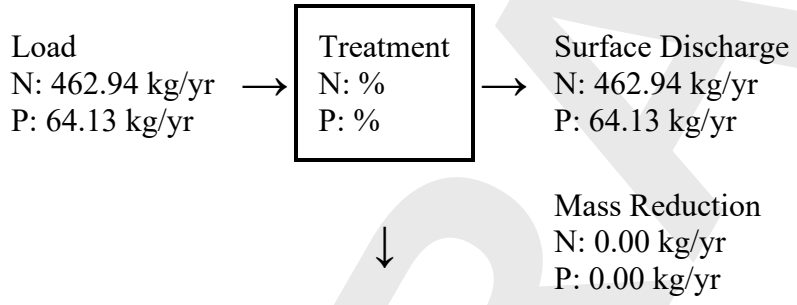
Media Mix Information

Type of Media Mix
Media N Reduction (%) 0.000
Media P Reduction (%) 0.000

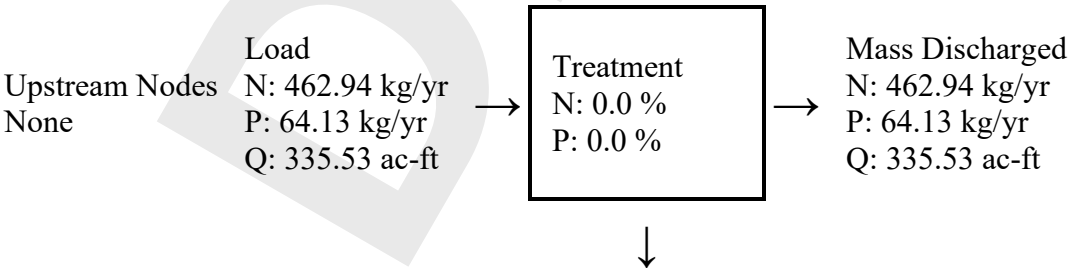
Groundwater Discharge (Stand-Alone)

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

Load Diagram for None (stand-alone)



Load Diagram for (As Used In Routing)



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Mass Removed
N: 0.00 kg/yr
P: 0.00 kg/yr

Catchment Number: 2 Name: Regional Pond

Project: CPP
Date: 10/14/2020

None Design

Watershed Characteristics

Catchment Area (acres)	300.00
Contributing Area (acres)	300.000
Non-DCIA Curve Number	65.00
DCIA Percent	0.00
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

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

Media Mix Information

Type of Media Mix
Media N Reduction (%) 0.000
Media P Reduction (%) 0.000

Groundwater Discharge (Stand-Alone)

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

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Load Diagram for None (stand-alone)

Load
N: 44.28 kg/yr
P: 0.78 kg/yr

→

Treatment
N: %
P: %

→

Surface Discharge
N: 44.28 kg/yr
P: 0.78 kg/yr

↓

Mass Reduction
N: 0.00 kg/yr
P: 0.00 kg/yr

Load Diagram for (As Used In Routing)

Upstream Nodes
None

Load
N: 44.28 kg/yr
P: 0.78 kg/yr
Q: 52.50 ac-ft

→

Treatment
N: 0.0 %
P: 0.0 %

→

Mass Discharged
N: 44.28 kg/yr
P: 0.78 kg/yr
Q: 52.50 ac-ft

↓

Mass Removed
N: 0.00 kg/yr
P: 0.00 kg/yr

Summary Treatment Report Version: 4.1.0

Project: CPP

Analysis Type: Net Improvement

Date:10/14/2020

BMP Types:

Catchment 1 - (CPP) None

Catchment 2 - (Regional Pond) None

Based on % removal values to the nearest percent

Routing Summary

Catchment 1 Routed to Outlet

Catchment 2 Routed to Outlet

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Total nitrogen target removal met? **Yes**
Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	512.18 kg/yr	
Total N post load	507.22 kg/yr	
Target N load reduction	%	
Target N discharge load	512.18 kg/yr	
Percent N load reduction	%	
Provided N discharge load	507.22 kg/yr	1118.42 lb/yr
Provided N load removed	kg/yr	lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	100.102 kg/yr	
Total P post load	64.902 kg/yr	
Target P load reduction	%	
Target P discharge load	100.102 kg/yr	
Percent P load reduction	%	
Provided P discharge load	64.902 kg/yr	143.11 lb/yr
Provided P load removed	kg/yr	lb/yr

From Pre-Condition Loads

Existing N Discharge	512.18 (kg/yr)
Existing P Discharge	100.102 (kg/yr)

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APPENDIX K

CONCEPTUAL POND SITING REPORT

& LOCATION HYDRAULICS REPORT

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CONCEPTUAL
LOCATION HYDRAULICS REPORT

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
CENTRAL POLK PARKWAY
FROM S.R. 60 TO POLK PARKWAY (S.R. 570) and
FROM S.R. 60 to I-4 (S.R. 400)

FINANCIAL PROJECT ID NO. 423601 1 22 01
POLK COUNTY, FLORIDA

Prepared for:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT ONE
801 North Broadway
Bartow, Florida 33830

DECEMBER 2010
(Revised March 2011)

DRAFT

CONCEPTUAL
LOCATION HYDRAULICS REPORT

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FLORIDA DEPARTMENT OF TRANSPORTATION
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Professional Engineer Certificate

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Inwood Consulting Engineers, Inc., a corporation authorized to operate as an engineering business, FEID No. 59-3216593, by the State of Florida, Department of Professional Regulation, and Board of Professional Engineers. I have reviewed or approved the evaluation, findings, opinions and conclusions as reported in this Conceptual Location Hydraulics Report.

The Location Hydraulics Report includes a summary of data collection efforts and design analysis for the Floodplain Impacts, for the Central Polk Parkway PD&E Study. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of civil engineering as applied through design standards and criteria set forth by the federal, state, and local regulatory agencies as well as professional judgment and experience.

RENATO E. CHUW
LICENSE
No 56050
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Signature: _____

Name: Renato E. Chuw, P.E.

P.E. Number: 56050

Date: March 14, 2011

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) study to determine the engineering and environmental effects of the proposed Central Polk Parkway. The Central Polk Parkway is proposed as a new multi-lane limited access facility in Polk County, Florida, that will serve as an additional north-south route in the central Polk County regional transportation network. The study limits extend from State Road (S.R.) 60 east of Bartow, northwesterly to the Polk Parkway (S.R. 570) and from S.R. 60 east of Bartow, northerly to Interstate 4 (I-4) (S.R. 400) near the Polk/Osceola County line**.** The western portion of the study area from S.R. 60 northwesterly to Polk Parkway (S.R. 570) and the eastern portion from S.R. 60 east of Bartow, northerly to I-4 serve a separate unique purpose and function from one another within the context of the regional transportation system. Therefore, it is important to distinguish between the two legs in the study analysis and they will be referred to as the western leg and the eastern leg, respectively, throughout this document.

The Central Polk Parkway has not been identified as part of the Strategic Intermodal System (SIS). However, it would provide a direct connection between the Polk Parkway (S.R. 570), S.R 60, U.S. 27, and I-4, four SIS highways.

The western leg starts at S.R. 60 and ends at the Polk Parkway (S.R. 570). The eastern leg starts at S.R. 60 and ends at I-4. Both the eastern and western legs of the Central Polk Parkway include a spur to connect to the Pollard Road Extension, which serves the future Integrated Logistics Center and Intermodal Terminal Facility near the intersection of County Road (C.R.) 655 and S.R. 60. The western leg will include interchanges at S.R. 60, Central Polk Parkway/Pollard Road West Spur, Pollard Road Extension, Bartow Northern Connector, U.S. 17, S.R. 540 and the Polk Parkway (S.R. 570). The eastern leg will include interchanges at S.R. 60, Central Polk Parkway/Pollard Road East Spur, Pollard Road Extension, U.S. 27, C.R. 580, U.S. 17/92, and I-4. The eastern leg will also include one additional interchange option at either C.R. 542 or C.R. 544.

Existing Drainage Conditions

The project area is located within the Peace River Basin and the Kissimmee River Basin within the jurisdiction of the Southwest Florida Water Management District (SWFWMD). The project has been split between the eastern and western legs.

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In the western leg, the project area is located under the Peace River Basin. The general flow pattern in the area is from east to west that is collected to a series of unnamed creeks that drains to the Peace Creek Canal, which ultimately drains to the Peace River. The Peace River drains south to Charlotte Harbor and ultimately to the Gulf of Mexico. Please refer to the SWFWMD Overall Drainage Basin Map shown in **Figure 2, Appendix A**.

The East segment is located within two basins: Peace River Basin and Kissimmee River Basin. In the area located under the Peace River Basin, the general flow pattern is from north to south and is collected by the Peace Creek Canal. The Peace Creek Canal drains to the Peace River, which drains south to Charlotte Harbor and ultimately to the Gulf of Mexico. For the area located under the Kissimmee River Basin, the general flow pattern flows from north to southeast and is collected by a series of creeks such as Snell Creek and Horseshoe Creek. These creeks drain to the Kissimmee River which ultimately outfalls to Lake Okeechobee. According to the Florida Department of Environmental Protection (FDEP), both of these basins are not considered Outstanding Florida Water (OFW's). Furthermore, Horseshoe creek, Wahneta Farms Drainage Canal, West Wales Drainage Canal, Lake Lena Run, and Peace Creek Drainage Canal are considered impaired water bodies with the following pollutants per FDEP:

- Horseshoe Creek: Fecal Coliforms
- Wahneta Farms Drainage Canal: Nutrients (Historic Chlorophyll-a)
- West Wales Drainage Canal: Fecal Coliforms
- Lake Lena Run: Fecal Coliforms
- Peace Creek Drainage Canal: Fecal Coliforms, Dissolved Oxygen (Nutrients), Nutrients (Historic Clorophyll-a), Mercury (In fish tissue)

Since the project consists of a new proposed roadway corridor, there are no existing cross drains or existing roadway basins in the area. However, there are 2 existing cross drains in the western leg that run along State Road 60 that fall within the project corridor. In the existing condition, runoff is collected by a series of lakes, local depressions, wetlands, and canals. These water bodies ultimately flow to the Peace River and Kissimmee River which ultimately drains south to Charlotte Harbor and Lake Okeechobee, respectively.

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Future Drainage Conditions

The stormwater runoff will be routed to proposed stormwater ponds for water quality treatment and attenuation purposes. For the eastern leg, there are a total of sixty six (66) roadway drainage basins. For the western leg, there are a total of twenty seven (27) roadway drainage basins. One (1) pond alternative for each basin has been analyzed to determine the preferred pond sites. The ponds were sized to accommodate the six-laning and on the assumption that offsite runoff would be drained through separate bypass systems.

For the west segment, the project extends for approximately 10 miles traversing nineteen (19) proposed cross drain locations and thirty one (31) bridges/ bridge culverts which were added in order to avoid existing rivers/canals. For the eastern leg, the project extends for approximately 30 miles traversing twenty nine (29) proposed cross drain locations and one hundred one (101) bridges/ bridge culverts which were added in order to avoid existing rivers/canals. Cross drains and bridges have been shown along the alignment alternatives, and will be sized to minimize floodplain impacts to the proposed encroachments in the design phase. Cursory calculations, that are more commensurate with the project, have been utilized in this PD&E Study to estimate the cross drain and bridge lengths.

The project will have no adverse impact to the area's water quality. Water quality treatment will be provided as required by the rules set forth by the SWFWMD

Floodplain Impacts

The FEMA FIRM for Polk County shows that the majority of the western leg is within Zone X of the FEMA floodplain designation, areas are determined to be outside the 500-year floodplain. Interspersed throughout the west alignment are floodplain areas associated with isolated wetlands, which are designated as Zone A, areas where no base flood elevations are determined. The west alignment of Central Polk Parkway also passes through zones designated as Zone AE, areas where base flood elevations are determined. Please refer to the Floodplain Impacts Calculations, **Appendix B** that summarizes the floodplain encroachments and compensation for the western leg of the project. Throughout the eastern leg of the proposed Central Polk Parkway alignment, the majority of the roadway traverses Zone X of the FEMA floodplain designation, areas are determined to be outside the 500-year floodplain. In several areas however, the proposed alignment traverses Zone A of the FEMA floodplain designation, areas where no base flood elevations are determined.

These floodplain areas are associated with isolated wetlands. Similar to the western portion of the proposed Central Polk Parkway Alignment, the Eastern portion does traverses through FEMA floodplain areas designated as Zone AE, areas where base flood elevations are determined. Please refer to the Floodplain Impacts Calculations, **Appendix B** that summarizes the floodplain encroachments and compensation for the western leg of the project.

Since many of the floodplain boundaries are classified as Zone A, during final design a review of the floodplain boundaries in conjunction with the USGS Quad Maps, field investigations and culvert analysis should be performed to establish an estimated 100-year floodplain elevation at these locations.

There are regulated floodways within the project limits such as the Peace Creek Drainage Canal, Horseshoe Creek, and Snell Creek. This project will impact the 100-year floodplain in two different ways:

1) Longitudinal roadway impacts resulting from filling the floodplain areas associated with Peace Creek, Snell Creek, Horseshoe Creek, Wahneta Farms Creek, Gaskin Branch, and several unnamed canals.

2) Transverse impacts resulting from construction of bridges and bridge culvert structures. These impacts occur at two (2) existing cross drains at S.R. 60. The floodplain areas associated with these cross drains are Gaskin Creek and Wahneta Farms Creek.

The longitudinal roadway impacts cannot be avoided since the floodplain associated with the water bodies extend both sides of the proposed alignment. It is anticipated that the proposed west alignment will impact approximately 310.02 Ac-ft of floodplain volume and the proposed eastern leg alignment will impact approximately 298.22 Ac-ft of floodplain volume. Floodplain impacts for each proposed alignment are outlined in **Appendix B**, Floodplain Impact Calculations. During the final design phase of the project, every effort should be made to minimize the floodplain impacts.

The floodplain impacts resulting from the construction of bridges/bridge culverts are not considered and analyzed during the PD&E phase of the project. During the design phase of the project, a Bridge Hydraulic Report (BHR) will be prepared to document the hydraulic impacts of the widening.

Floodway impacts resulting from longitudinal roadway impacts occur on the western leg at the Peace Creek Canal and several other locations throughout the project corridor. During the design phase of

the project, alternatives should be evaluated to minimize these floodway impacts. If the effective base flood elevations (BFE) are proposed to be modified by determination of hydraulic and hydrologic analysis, the designer should proceed in the letter of map revision (LOMR) process with FEMA. A conditional letter of map revision (CLOMR) may be appropriate as well. For regulated floodway areas where there will be no change proposed to effective base flood elevations (BFE), No-Rise Certifications will be required for work in FEMA Floodways.

No adverse impacts are anticipated to the floodplain. The SWFWMD and FDOT criteria require replacement of floodplain storage lost as a result of encroachments. There is no change in flood "Risk" associated with this project. The floodplain is located in a low density, non-urbanized area, and the encroachments are classified as "minimal." Minimal encroachments on a floodplain occur when there is a floodplain involvement, but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Normally, these minimal efforts to address the impacts will consist of applying the FDOT drainage design standards and following the Water Management District's procedures to achieve results that will not increase or significantly change the flood elevations and/or limits.

The following floodplain statement is a slightly modified version of statement No. 6 in the FDOT PD&E Manual, tailored for this project:

This is a project on a new alignment with transverse and longitudinal encroachments into the floodplain and floodways, but where the floodplain compensation areas, cross drains, and bridges will perform hydraulically in a manner equal to or greater than the existing condition, and backwater surface elevations are not expected to increase. As a result, there will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or in emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant.

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SECTION 1 - INTRODUCTION

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) study to determine the engineering and environmental effects of the proposed Central Polk Parkway. The Central Polk Parkway is proposed as a new multi-lane limited access facility in Polk County, Florida, that will serve as an additional north-south route in the central Polk County regional transportation network. The study limits extend from State Road (S.R.) 60 east of Bartow, northwesterly to the Polk Parkway (S.R. 570) and from S.R. 60 east of Bartow, northerly to Interstate 4 (I-4) (S.R. 400) near the Polk/Osceola County line**.** The Project Location Map is shown in **Figure 1**, **Appendix A**. The western portion of the study area from S.R. 60 northwesterly to Polk Parkway (S.R. 570) and the eastern portion from S.R. 60 east of Bartow, northerly to I-4 serve a separate unique purpose and function from one another within the context of the regional transportation system. Therefore, it is important to distinguish between the two legs in the study analysis and they will be referred to as the western leg and the eastern leg, respectively, throughout this document.

The total length of the proposed roadway in the western leg is approximately 10 miles (mi.), while the eastern leg is approximately 30 mi. long. The study area covers the following United States Geological Survey (USGS) quadrangle maps: Intercession City, Lake Louisa SW, Davenport Gum Lake, Dundee, Winter Haven, Auburndale, Lakeland, Lake Wales, Eloise, Bartow, and Mulberry. **Table 1** lists the County, Townships, Ranges, and Sections covering the study area.

Table 1 – Township, Range, and Section

County	Township	Range	Sections
OSCEOLA	25 South	27 East	33 - 36
		28 East	31
	26 South	28 East	6, 7
POLK		26 East	13, 24, 25, 35, 36
		27 East	1 - 5, 7 - 36
		28 East	18, 19, 30, 31
	27 South	26 East	1, 2, 10 - 15, 22 - 28, 33 - 36
		27 East	1 - 36
		28 East	6, 7, 18, 19, 30

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	28 South	24 East	35, 36
		25 East	8, 9, 14 - 17, 20 - 29, 31 - 36
		26 East	1 - 4, 8 - 17, 19 - 28, 30 - 36
		27 East	1 - 17, 19 - 36
		28 East	6, 7, 18, 19, 30, 31
	29 South	24 East	1, 2, 12
		25 East	1 - 7, 9 - 16, 20 - 29, 33 - 36
		26 East	1 - 36
		27 East	1 - 24, 26 - 34
	30 South	25 East	2, 3
		26 East	1, 2
		27 East	3, 4, 5, 6

The Central Polk Parkway has not been identified as part of the Strategic Intermodal System (SIS). However, it would provide a direct connection between the Polk Parkway (S.R. 570), S.R 60, U.S. 27, and I-4, four SIS highways.

The western leg starts at S.R. 60 and ends at the Polk Parkway (S.R. 570). The eastern leg starts at S.R. 60 and ends at I-4. Both the eastern and western legs of the Central Polk Parkway include a spur to connect to the Pollard Road Extension, which serves the future Integrated Logistics Center and Intermodal Terminal Facility near the intersection of County Road (C.R.) 655 and S.R. 60. The western leg will include interchanges at S.R. 60, Central Polk Parkway/Pollard Road West Spur, Pollard Road Extension, Bartow Northern Connector, U.S. 17, S.R. 540 and the Polk Parkway (S.R. 570). The eastern leg will include interchanges at S.R. 60, Central Polk Parkway/Pollard Road East Spur, Pollard Road Extension, U.S. 27, C.R. 580, U.S. 17/92, and I-4. The eastern leg will also include one additional interchange option at either C.R. 542 or C.R. 544.

The project is located within the Peace River and Kissimmee River drainage basins as defined by the Southwest Florida Water Management District (SWFWMD). The project has been split into the East and West segment. Please refer to Section 2 for a more detailed description of the limits of each segment. Within the East segment, the project is located within the Peace Creek sub-basin of the Peace River Drainage Basin and the Kissimmee River Basin. Within the West segment, the project is located within the Peace Creek sub-basin of the Peace River Drainage Basin. A reproduction of the

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United States Geological Survey (USGS) Quadrangle Maps for the project vicinity is shown in **Figure 3-1, 3-2, and 3-3** in **Appendix A**.

The purpose of this Location Hydraulic Report is to address base floodplain encroachments resulting from the roadway construction evaluated in the Project Development and Environmental (PD&E) Study. In accordance with Executive Order 11988 "Floodplain Management," USDOT Order 5650.2, Floodplain Management Protection," and Federal-Aid Policy Guide 23 CFR 650A, floodplains must be protected. The intent of these regulations is to avoid or minimize highway encroachments within the 100-year (base) floodplains and to avoid supporting land use development incompatible with floodplain values. All exhibits for this report are included in **Appendix A**. For the ease of review, Floodplain Impact Calculations are included in **Appendix B**. The datum used for all calculations are NAVD 1988 unless otherwise specified. Other supporting information and data is included in the remaining appendices.

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SECTION 2 - PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) proposes to add a new rural 6 lane divided facility in Polk County from the existing Polk Parkway (S.R. 570) to Pollard Road for the West segment; then from Pollard Road to Interstate 4 for the East segment. For the West segment, the project extends for approximately 10 miles traversing nineteen (19) proposed cross drain locations and thirty one (31) bridges/ bridge culverts which were added in order to maintain conveyance for the existing rivers/canals. For the East segment, the project extends for approximately 30 miles traversing twenty nine (29) proposed cross drain locations and one hundred one (101) bridges/ bridge culverts which were added in order to maintain conveyance for the existing rivers/canals. Cross drains and bridges have been shown along the alignment alternatives, and will be sized to minimize floodplain impacts to the proposed encroachments in the design phase. Cursory calculations, that are more commensurate with the project, have been utilized in this PD&E Study to estimate the cross drain and bridge lengths. The limits of the project are shown on the Project Location Map as shown in **Figure 1, Appendix A**.

The proposed roadway is divided into two (2) segments. The West segment is from the existing Polk Parkway (S.R. 570) to Pollard Road whereas the East segment is from Pollard Road to Interstate 4. Please refer to **Figure 1** in **Appendix A** for project segments. The typical section for both segments consists of a high speed rural roadway with a design speed of 65 mph. This six-lane divided rural roadway consists of a 44-foot depressed median, three (3) 12-foot travel lanes in each direction, a 12-foot multi use trail, 10-foot inside shoulder, 12-foot outside shoulder and roadside ditches for stormwater conveyance. The proposed right-of-way for the rural roadway will be 350 feet. Please refer to **Figure 4**, **Appendix A** for proposed typical sections.

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SECTION 3 - DATA COLLECTION

The design team collected and reviewed data from the following sources:

- FDOT Drainage Manual Standards, March 2010
- SWFWMD Environmental Resources Permitting Manual
- Federal Emergency Management Agency (FEMA), Polk County, Florida dated December 20, 2000
- US Department of Agriculture (USDA) Soil Conservation Service (SCS) Soil Survey of Polk County, Florida, October 1990
- USDA Detailed Soils (SSURGO) from SWFWMD
- USGS Quadrangle Maps (Bartow, Haines City, Winter Haven, Auburndale, Dundee, Wahneta, and Davenport)
- 1' Contours converted from the SWFWMD Light Detection and Ranging (LiDAR) data for Peace River South Project
- Polk County Property Appraiser's Website (GIS parcel lines)
- National Wetland Inventory (NWI) from US Fish and Wildlife Service (USFWS), May 2006 (GIS data)
- FDOT Straight Line Diagram (SLD) of Road Inventory for S.R. 60
- Peace River Cumulative Impact Study Final Report (2007)
- *Project Development and Environment Manual*; Florida Department of Transportation; Tallahassee, Florida; Multiple Publish Dates. http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm

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SECTION 4 - EXISTING SITE INFORMATION

4.1 TOPOGRAPHY & HYDROLOGIC FEATURES

4.1.1 Eastern Leg

The topography of the project area varies greatly with elevations ranging from a high of 226 feet to a low of 80 feet NAVD 88. Please refer to USGS Quadrangle Map and **Figures 3-1, 3-2,** and **3-3** in **Appendix A**. Since this is a new proposed road, there are no existing cross drains and bridges/bridge culverts.

4.1.2 Western Leg

The topography of the project area varies with elevations ranging from a high of 152 feet to a low of 101 feet NAVD 88. Please refer to USGS Quadrangle Map and **Figures 3-1, 3-2,** and **3-3** in **Appendix A**. Since this is a new proposed road, there are no existing cross drains and bridges/bridge culverts. However, there are 2 existing cross drains that run along State Road 60 that fall within the project corridor. The size and geometry of all cross drains have been verified from straight line diagrams provided by the FDOT. Please refer to **Table 2** for a Summary of Existing Bridge Culverts.

Table 2 – Summary of Existing Bridge Culverts

Structure Number	Approximate Location	FDOT Milepost	Description	Geometry
Bridge Culvert 1	S.R. 60 Align	20.045	21' Bridge Culvert	Box
Bridge Culvert 2	S.R. 60 Align	20.965	31' Bridge Culvert	Box

4.2 SOILS DATA & GEOTECHNICAL INVESTIGATIONS

The Soil Survey of Polk County, Florida, published by the USDA SCS (dated July 1989) has been reviewed for the project vicinity. USDA SSURGO was also obtained from SWFWMD to create soils map in the project area using GIS ArcMap. SSURGO data was compared to the Soil Survey by USDA SCS and found no deviation. The soil survey map for the project vicinity is illustrated in **Figures 5-1, 5-2,** and **5-3** of **Appendix A** on the Soils Map.

4.2.1 Eastern Leg

Several types of soils were encountered along the project limits because of the extensive project coverage. The soil types range from Hydrological Soil Groups A through D soils. Type A soils are

well drained soils with low water tables whereas Type D soils are very poorly or poorly drained soils with high water tables. According to the Soil Survey, there are thirty three (33) different soil types located along the eastern leg. **Table 3** – USDA SCS Soil Survey Information (Eastern Leg) summarizes and lists the soil types and relevant information.

Table 3 – USDA NRCS Soil Survey Information (Eastern Leg)

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
2	APOPKA FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-51	SP, SP-SM	A-3
							51-80	SM-SC, SC	A-2-4, A-2-6, A-4, A-6
3	CANDLER FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-80	SP, SP-SM	A-3
4	CANDLER FINE SAND, 5 TO 8 PCT SLOPES	NA	NA	6	6	A	0-81	SP, SP-SM	A-3
7	POMONA FINE SAND	JUN	SEP	0.5	1.5	D	0-6	SP, SP-SM	A-3, A-2-4
							6-21	SP, SP-SM	A-3, A-2-4
							21-26	SP-SM, SM	A-3, A-2-4
							26-48	SP, SP-SM, SM	A-3, A-2-4
							48-73	SC, SM-SC, SM	A-3, A-2-4, A-6
13	SAMSULA MUCK	JUN	APR	-2	0	D	0-31	PT	N/A
							31-80	SP-SM, SM, SP	A-3, A-2-4
14	SPARR SAND, 0 TO 5 PCT SLOPES	JUL	OCT	1.5	3.5	C	0-8	SP-SM, SM	A-3, A-2-4
							8-57	SP-SM, SM	A-3, A-2-4
							57-80	SM-SC, SC, SM	A-2-4, A-6
15	TAVARES FINE SAND, 0 TO 5 PCT SLOPES	JUN	DEC	3.5	6	A	0-80	SP, SP-SM	A-3
17	SMYRNA AND MYAKKA FINE SANDS	JUN	SEP	0.5	1.5	D	0-12	SP-SP-SM	A-3, A-2-4
							12-25	SM, SP-SM	A-3, A-2-4
							25-42	SP, SP-SM	A-3
							42-48	SM, SP-SM	A-3, A-2-4
							48-80	SP, SP-SM	A-3
19	FLORIDANA MUCKY FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-25	SP-SM, SM	A-3, A-2-4
							25-36	SP, SP-SM	A-3
							36-80	SM-SC, SC	A-2-4, A-2-6
20	FORT MEADE FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-80	SM	A-2-4
21	IMMOKALEE SAND	JUN	SEP	0.5	1.5	D	0-7	SP, SP-SM	A-3
							7-39	SP, SP-SM	A-3
							39-58	SP-SM, SM	A-3, A-2-4
							58-66	SP, SP-SM	A-3
							66-80	SP-SM, SM	A-3, A-2-

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Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
									4
22	POMELLO FINE SAND	JUL	NOV	2	3.5	C	0-48	SP, SP-SM	A-3
							48-63	SP-SM, SM	A-3, A-2-4
							63-80	SP, SP-SM	A-3
23	ONA FINE SAND	JUN	SEP	0.5	1.5	D	0-10	SP-SM, SP	A-3
							10-19	SP-SM, SM	A-3, A-2-4
							19-50	SP-SM, SP	A-3
							50-80	SP-SM, SM	A-3, A-2-4
25	PLACID AND MYAKKAFINE SANDS, DEPRESSIONAL	JUN	MAR	-2	1	D	0-18	SP, SP-SM, SM	A-3, A-2-4
25	PLACID AND MYAKKAFINE SANDS, DEPRESSIONAL (Cont.)	JUN	MAR	-2	1	D	18-80	SP, SP-SM, SM	A-3, A-2-4
30	POMPANO	JUN	OCT	0	0.5	D	0-80	SP, SP-SM	A-3, A-2-4
31	ADAMSVILLE FINE SAND	JUN	NOV	2	3.5	C	0-6	SP-SM	A-3, A-2-4
							6-80	SP-SM, SP	A-3, A-2-4
32	KALIGA MUCK	JUN	APR	-2	0	D	0-30	PT	N/A
							30-75	SM, SM-SC, SC, ML	A-2, A-4, A-6
							75-80	SP, SP-SM	A-3, A-2-4
33	HOLOPAW FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-41	SP, SP-SM	A-3
							41-65	SM, SM-SC	A-2-4
							65-80	SM, SP-SM	A-2-4
35	HONTOON MUCK	JUN	APR	-2	0	D	0-75	PT	A-8
36	BASINGER MUCKY FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-7	SP, SP-SM	A-3, A-2-4
							7-80	SP, SP-SM	A-3, A-2-4
37	PLACID FINE SAND, FREQUENTLY FLOODED	JUN	NOV	0	1	D	0-18	SP, SP-SM, SM	A-3, A-2-4
							18-80	SP, SP-SM, SM	A-3, A-2-4
40	WAUCHULA FINE SAND	JUN	SEP	0.5	1.5	D	0-7	SP-SM	A-3, A-2-4
							7-18	SP-SM	A-3, A-2-4
							18-26	SP-SM, SM	A-3, A-2-4
							26-33	SP-SM, SM	A-3, A-2-4
							33-80	SM, SM-SC, SC	A-2-4, A-2-6, A-4, A-6
42	FELDA FINE SAND	JUL	MAR	0	1	D	0-22	SP, SP-SM	A-3
							22-80	SM, SM-SC, SC	A-2-4, A-2-6
46	ASTATULA FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-7	SP, SP-SM	A-3
							7-80	SP, SP-SM	A-3
47	ZOLFO FINE SAND	JUN	NOV	2	3.5	C	0-7	SP-SM	A-3, A-2-4
							7-80	SP-SM, SM	A-3, A-2-4

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Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
53	MYAKKA - IMMOKALEE - URBAN LAND COMPLEX	JUN	SEP	0.5	1.5	NA	0-25	SP, SP-SM	A-3
							25-36	SM, SP-SM	A-3, A-2-4
							36-80	SP, SP-SM	A-3
58	PITS	NA	NA	0	6	NA	N/A	N/A	N/A
70	DUETTE FINE SAND	JUN	OCT	4	6	A	0-7	SP	A-3
							7-59	SP	A-3
							59-80	SP, SP-SM	A-3, A-2-4
74	NARCOOSSEE SAND	JUN	NOV	2	3.5	C	0-5	SP-SM	A-3
							5-17	SP, SP-SM	A-3
							17-22	SP-SM	A-3, A-2-4
							22-80	SP, SP-SM	A-3
77	SATELLITE SAND	JUN	NOV	1.5	3.5	C	0-80	SP	A-3
83	ARCHBOLD SAND, 0 TO 5 PCT SLOPES	JUN	NOV	3.5	6	A	0-80	SP	A-3
86	FELDA FINE SAND, DEPRESSIONAL	JUN	DEC	-2	1	D	0-6	SP, SP-SM	A-3
							6-27	SP, SP-SM	A-3
							27-45	SM, SM-SC, SC	A-2-4, A-2-6
							45-80	SP, SP-SM	A-3, A-2-4
87	BASINGER FINE SAND	JUN	FEB	0	1	D	0-19	SP	A-3
							19-80	SP, SP-SM	A-3, A-2-4

*Seasonal High Groundwater Table: Depth is referenced below existing grade, except where indicated as "-".

4.2.2 Western Leg

Several types of soils were encountered along the project limits because of the projects extensive coverage. The soils range from Hydrological Soil Groups A through D soils. Type A soils are well drained soils with low water tables whereas Type D soils are very poorly or poorly drained soils with high water tables. According to the Soil Survey, there are thirty (30) different soil types located along the project limits. **Table 4** – USDA SCS Soil Survey Information (Western Leg) summarizes and lists the soil types and relevant information.

Table 4 – USDA NRCS Soil Survey Information (Western leg)

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
6	EATON MUCKY FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-6	SP-SM	A-3, A-2-4
							6-29	SM, SP-SM	A-2-4, A-3
							29-33	SC	A-7, A-4, A-6
							33-80	SC, CL, CH	A-7

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
7	POMONA FINE SAND	JUN	SEP	0.5	1.5	D	0-6	SP, SP-SM	A-3, A-2-4
							6-21	SP, SP-SM	A-3, A-2-4
							21-26	SP-SM, SM	A-3, A-2-4
							26-48	SP, SP-SM, SM	A-3, A-2-4
							48-73	SC, SM-SC, SM	A-3, A-2-4, A-6
8	SLICKENS	JAN	DEC	0	2	NA	0-80	CH	A-7
9	LYNNE SAND	JUL	SEP	0.5	1.5	D	0-5	SP, SP-SM	A-3
							5-21	SP, SP-SM	A-3
							21-28	SP-SM, SM	A-3, A-2-4
							28-33	SP-SM	A-3, A-2-4
							33-80	SC, CH, CL	A-6, A-7
12	NEILHURST SAND, 1 TO 5 PCT SLOPES	NA	NA	6	6	A	0-80	SP, SP-SM	A-3, A-2-4
13	SAMSULA MUCK	JUN	APR	-2	0	D	0-31	PT	N/A
							31-80	SP-SM, SM, SP	A-3, A-2-4
14	SPARR SAND, 0 TO 5 PCT SLOPES	JUL	OCT	1.5	3.5	C	0-8	SP-SM, SM	A-3, A-2-4
							8-57	SP-SM, SM	A-3, A-2-4
							57-80	SM-SC, SC, SM	A-2-4, A-6
15	TAVARES FINE SAND, 0 TO 5 PCT SLOPES	JUN	DEC	3.5	6	A	0-80	SP, SP-SM	A-3
17	SMYRNA AND MYAKKA FINE SANDS	JUN	SEP	0.5	1.5	D	0-12	SP-SP-SM	A-3, A-2-4
							12-25	SM, SP-SM	A-3, A-2-4
							25-42	SP, SP-SM	A-3
							42-48	SM, SP-SM	A-3, A-2-4
							48-80	SP, SP-SM	A-3
							7-39	SP, SP-SM	A-3
							39-58	SP-SM, SM	A-3, A-2-4
							58-66	SP, SP-SM	A-3
21	IMMOKALEE SAND	JUN	SEP	0.5	1.5	D	0-7	SP, SP-SM	A-3
							7-39	SP, SP-SM	A-3
							39-58	SP-SM, SM	A-3, A-2-4
							58-66	SP, SP-SM	A-3
							66-80	SP-SM, SM	A-3, A-2-4
22	POMELLO FINE SAND	JUL	NOV	2	3.5	C	0-48	SP, SP-SM	A-3
							48-63	SP-SM, SM	A-3, A-2-4
							63-80	SP, SP-SM	A-3
23	ONA FINE SAND	JUN	SEP	0.5	1.5	D	0-10	SP-SM, SP	A-3
							10-19	SP-SM, SM	A-3, A-2-4
							19-50	SP-SM, SP	A-3
							50-80	SP-SM, SM	A-3, A-2-4
25	PLACID AND MYAKKAFINE	JUN	MAR	-2	1	D	0-18	SP, SP-SM,	A-3, A-2-

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Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
	SANDS, DEPRESSIONAL							SM	4
							18-80	SP, SP-SM, SM	A-3, A-2-4
29	ST. LUCIE FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-80	SP	A-3
30	POMPANO	JUN	OCT	0	0.5	D	0-80	SP, SP-SM	A-3, A-2-4
31	ADAMSVILLE FINE SAND	JUN	NOV	2	3.5	C	0-6	SP-SM	A-3, A-2-4
							6-80	SP-SM, SP	A-3, A-2-4
32	KALIGA MUCK	JUN	APR	-2	0	D	0-30	PT	N/A
							30-75	SM, SM-SC, SC, ML	A-2, A-4, A-6
							75-80	SP, SP-SM	A-3, A-2-4
33	HOLOPAW FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-41	SP, SP-SM	A-3
							41-65	SM, SM-SC	A-2-4
							65-80	SM, SP-SM	A-2-4
35	HONTOON MUCK	JUN	APR	-2	0	D	0-75	PT	A-8
36	BASINGER MUCKY FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-7	SP, SP-SM	A-3, A-2-4
							7-80	SP, SP-SM	A-3, A-2-4
37	PLACID FINE SAND, FREQUENTLY FLOODED	JUN	NOV	0	1	D	0-18	SP, SP-SM, SM	A-3, A-2-4
							18-80	SP, SP-SM, SM	A-3, A-2-4
40	WAUCHULA FINE SAND	JUN	SEP	0.5	1.5	D	0-7	SP-SM	A-3, A-2-4
							7-18	SP-SM	A-3, A-2-4
							18-26	SP-SM, SM	A-3, A-2-4
							26-33	SP-SM, SM	A-3, A-2-4
							33-80	SM, SM-SC, SC	A-2-4, A-2-6, A-4, A-6
42	FELDA FINE SAND	JUL	MAR	0	1	D	0-22	SP, SP-SM	A-3
							22-80	SM, SM-SC, SC	A-2-4, A-2-6
47	ZOLFO FINE SAND	JUN	NOV	2	3.5	C	0-7	SP-SM	A-3, A-2-4
							7-80	SP-SM, SM	A-3, A-2-4
51	POMONA - URBAN LAND COMPLEX	JUN	SEP	0.5	1.5	NA	0-6	SP, SP-SM	A-3, A-2-4
							6-21	SP, SP-SM	A-3, A-2-4
							21-26	SP-SM, SM	A-3, A-2-4
							26-48	SP, SP-SM	A-3, A-2-4
							48-73	SC, SM-SC, SM	A-2, A-4, A-6
58	PITS	NA	NA	0	6	NA	N/A	N/A	N/A
59	ARENTS - URBAN LAND COMPLEX, , 0 TO 5 PCT SLOPES	JUN	NOV	1.5	3	NA	0-80	SP, SP-SM	A-3, A-2-4
68	ARENTS, 0 TO 5 PCT SLOPES	JUN	NOV	1.5	3	NA	N/A	N/A	N/A

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Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
77	SATELLITE SAND	JUN	NOV	1.5	3.5	C	0-80	SP	A-3
85	WINDER FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-16	SP, SP-SM	A-3, A-2-4
							16-50	SC	A-2-4, A-2-6
							50-80	SM, SM-SC, SC, GM-GC	A-2-4, A-2-6, A-1-B

*Seasonal High Groundwater Table: Depth is referenced below existing grade, except where indicated as "-".

4.3 ENVIRONMENTAL CHARACTERISTICS

4.3.1 Land Use Data

4.3.1.1 Eastern Leg

The eastern leg begins at S.R. 60 and ends at Interstate 4, including a spur to Pollard Road. The predominant land use within the project limits is agricultural lands with some areas of residential homes, wetlands, and channelized canals and creeks that flow from east to west. The proposed roadway will cross and impact existing utility easements, Peace Creek Canal, existing roads such as US 17, and an active CSX Railroad track that runs along US 17 on the north end of the segment.

With the addition of the new rural roadway, the future land uses of the agricultural and undeveloped land will be altered. The proposed interchanges at the existing roads will also impact the future land use in the surrounding area. Future land uses for the project limits will include agricultural/ undeveloped lands and urban residential lands. Please see **Figures 6-1, 6-2, 6-3, 7-1, 7-2,** and **7-3** for Existing and Future Land Use Maps in **Appendix A**.

4.3.1.2 Western Leg

The western leg begins at S.R. 60 and continues to the existing Polk Parkway (S.R. 570), including a spur to Pollard Road. The predominant land use within the project limits is undeveloped land with some areas of pasture lands, agricultural lands, residential homes, pocketed wetlands, and channelized canals and creeks that flow from east to west. At the proposed interchange of Central Polk Parkway and US 17, there is also an old phosphate mining facility.

With the addition of the new rural roadway, the future land uses will be consistent with the local comprehensive plan, and the potential for incompatible floodplain development is significantly

reduced by the existing local, regional, and state policies and rules on floodplains. Also, the existing interchange at the Polk Parkway and Winter Lake Road will be altered due to the new interchanges to the proposed project. Another proposed interchange is located at US 17 which will alter the future land use in the area. Future land uses for the project limits will include agricultural/ undeveloped lands and urban residential lands. Please see **Figures 6-1, 6-2, 6-3, 7-1, 7-2,** and **7-3** for Existing and Future Land Use Maps in **Appendix A**.

4.3.2 Cultural Features

Cultural features preserve and enhance the cultural nature of a community and include parks, schools, churches and other religious institutions. Also included are historic sites, archaeologically significant sites and neighborhood gathering places. Community services include facilities that provide necessary services such as fire stations, police stations, public and private schools, hospitals, cemeteries, public buildings, and civic facilities. All of these resources represent commonly occurring types of architecture for the locale, and available data did not indicate any significant historical associations.

4.3.2.1 Eastern Leg

In the eastern leg of the project, it was found that at station 5510+00, Parcel No. 272902000000041000 is owned by the School Board of Polk County. After contacting school officials, it was found that the County is not planning any future school sites at this location. Other findings and potential conflicts can be found in the Cultural Resource Assessment Survey provided by ACI in **Appendix E** of the Central Polk Parkway Pond Siting Report.

4.3.2.2 Western Leg

Preliminary findings for the western leg can be found in the Cultural Resource Assessment Survey provided by ACI in **Appendix E** of the Central Polk Parkway Pond Siting Report.

4.3.3 Natural and Biological Features

For both the western and eastern legs of the project, several species have been observed within the project area or could potentially occur within the project area based on the literature and database review as stated in the Wetlands and Protected Species Assessment Report. Please refer to the executive summary of the Wetland and Protected Species Assessment Report in **Appendix F** of the Central Polk Parkway Pond Siting Report. In addition, it is anticipated that wetland systems, as well

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as isolated wetlands, will be impacted by the new roadway. Pond alternative recommendations will be based on avoidance of wetland impacts whenever possible.

4.4 EXISTING DRAINAGE CONDITIONS

The project area is located within the Peace River Basin and the Kissimmee River Basin within the jurisdiction of the Southwest Florida Water Management District (SWFWMD). The project is split between the east and west segment.

4.4.1 Eastern Leg

The eastern leg is located within the Peace Creek sub-basins of the Peace River Basin and the Kissimmee River Basin. In the area located within the Peace Creek sub-basin, the general flow pattern is from north to south towards the Peace Creek Canal. For the area located within the Kissimmee River Basin, the general flow pattern flows from north to southeast towards a series of canals such as Snell Creek and Horseshoe Creek. These creeks drain to Kissimmee River which ultimately outfalls to Lake Okeechobee.

Within the East segment, there are a total of sixty six (66) roadway drainage basins. The limits of the basins are shown in **Table 5** for Summary of Existing and Proposed Drainage Basins – Eastern Leg. The existing runoff is collected in various ways such as lakes, local depressions, wetlands, and canals. Since there is no existing road, no water quality treatment is currently being provided with the exception of I-4 at the northern terminus. A brief description of the existing drainage basins is provided in the following sections.

Table 5 – Summary of Existing and Proposed Drainage Basins – Eastern Leg

Basin Name	From Station	To Station	Outfall Location
EASTERN LEG			
E-101A	5000+00	5013+71	Peace Creek
E-102A	5013+71	5032+69	CDE-01
E-103A	5032+69	5078+18	CDE-02
E-104A	5078+18	5094+89	CDE-02
E-105A	5094+89	5111+89	CDE-03
E-106A	5111+89	5130+39	CDE-03
E-107A	5130+39	5160+89	Wetlands
E-101B	Existing S.R. 60	Existing S.R. 60	Wetlands
E-102B	Existing S.R. 60	Existing S.R. 60	Wetlands
E-103B	8000+00	8012+19	Wetlands

Basin Name	From Station	To Station	Outfall Location
EASTERN LEG			
E-104B	8000+00	8012+19	Wetlands
E-105B	8012+19	8030+54	Wetlands
E-106B	8030+54	8069+19	Wetlands
E-108	5160+89	5186+89	Peace Creek
E-109	5182+52	5207+72	Peace Creek
E-110	5207+72	5245+43	Peace Creek
E-111 (Existing)	5252+00	5267+53	CDE-06
E-111 (Proposed)	5245+43	5267+53	CDE-06
E-112 (Existing)	5273+30	5289+73	CDE-07
E-112 (Proposed)	5267+53	5289+73	CDE-07
E-113 (Existing)	5296+00	5301+53	CDE-07
E-113 (Proposed)	5289+73	5301+53	CDE-07
E-114	5301+53	5319+14	CDE-08
E-115	5319+14	5343+43	Wetlands
E-116	5343+43	5362+59	Peace Creek
E-117	5362+59	5416+50	CDE-09
E-118	5416+50	5458+00	CDE-10
E-119	5458+00	5483+69	Wetlands – Lake Annie
E-120	5483+69	5507+33	Wetlands – Lake Annie
E-121	5507+33	5534+00	CDE-12
E-122	5534+00	5560+00	Local Depression
E-123	5560+00	5598+60	CDE-13
E-124	5598+60	5638+83	Local Depression
E-125	5638+83	5679+58	Lake Trask
E-126	5679+58	5697+58	Local Depression
E-127	5697+58	5709+23	Local Depression
E-128	5709+23	5723+57	Local Depression
E-129	5723+57	5765+08	CDE-15
E-130	5765+08	5781+58	Local Depression
E-131	5781+58	5804+58	Local Depression
E-132	5804+58	5831+40	CDE-16
E-133	5831+40	5844+91	Wetlands
E-134	5844+91	5870+36	CDE-17
E-135	5870+36	5914+00	Wetlands
F-135	Frontage Road	Frontage Road	Wetlands
E-136	5914+00	5957+29	CDE-19
E-137	5957+29	5984+06	Wetlands
E-138	5984+06	5996+11	Wetlands
E-139	5996+11	6010+46	CDE-21
E-140	6010+46	6037+14	Wetlands
E-141	6037+14	6092+00	Local Depression
E-142	6092+00	6120+00	CDE-23
E-143	6120+00	6145+55	Snell Creek
E-144	6145+55	6159+02	Wetlands
E-145	6159+02	6186+00	Wetlands

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Basin Name	From Station	To Station	Outfall Location
EASTERN LEG			
E-146	6186+00	6212+00	Wetlands
E-147	6212+00	6246+60	Wetlands
E-148	6226+00	6246+60	Wetlands
E-149	6246+60	6282+00	CDE-25
E-150	6282+00	6306+00	CDE-26
E-151	6306+00	6345+67	CDE-26
E-152	6345+67	6375+67	CDE-28
E-153	6375+67	6385+67	CDE-28
E-154	6385+67	6412+17	Wetlands
E-155	6412+17	6433+47	CDE-29
E-156	6433+47	6490+27	Wetlands
E-157	6490+27	6550+38	Wetlands
E-158	6490+27	6550+38	Wetlands
E-159	6550+38	6597+95.72	Wetlands

4.4.2 Western Leg

In the West segment, the project area is located within the Peace Creek sub-basin. The general flow pattern in the area is from east to west towards a series of unnamed creeks that drains to the Peace Creek Canal, which ultimately drains to the Peace River.

Within the western leg, there are a total of twenty seven (27) roadway drainage basins. The limits of the basins are shown in **Table 6** for Summary of Existing and Proposed Drainage Basins – Western Leg. The existing runoff is collected in various ways such as lakes, local depressions, wetlands, and canals. Since there is no existing road, no water quality treatment is currently being provided. A brief description of the existing drainage basins is provided in the following sections.

Table 6 – Summary of Existing and Proposed Drainage Basins – Western Leg

Basin Name	From Station	To Station	Outfall Location
WESTERN LEG			
W-101A	Existing S.R. 60	Existing S.R. 60	Wetlands
W-102A	Existing S.R. 60	Existing S.R. 60	Lake Garfield
W-103A	9000+00	9011+00	Wetlands
W-104A	9011+00	9026+65	CDW-03A
F-101A	Frontage Road	Frontage Road	Wetlands
W-101B	2000+00	2017+34	Peace Creek
W-102B	2000+00	2017+34	Peace Creek
W-103B	2017+34	2056+38	CDW-02B
W-104B	2056+38	2082+48	Peace Creek
W-105B	2082+48	2101+88	CDW-04B

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Basin Name	From Station	To Station	Outfall Location
WESTERN LEG			
W-106	2101+88	2117+11	CDW-04B
W-107	2117+11	2153+68	Wetlands
W-108	2153+68	2185+83	Wetlands
W-109	2185+83	2230+00	Wetlands
W-110	2230+00	2270+00	Wetlands
W-111	2270+00	2304+14	CDW-09
W-112	BNC Alignment	2280+00	Wetlands
W-113	2304+14	2344+00	CDW-10
W-114	2344+00	2363+07	CDW-11
W-115	2363+07	2408+70	Wetlands
W-116	2408+70	2450+48	Wetlands
W-117	2450+48	2476+67	CDW-13
W-118	2476+67	2523+85	Wetlands
W-119	2523+85	2542+70	CDW-13
W-120	2542+70	2594+40	CDW-14
W-121	2594+40	2658+75	CDW-15
W-122	2658+75	Existing CPP	Wetlands

4.5 CROSS DRAINS & BRIDGE CULVERTS

Through the West segment, the project traverses seventeen (17) proposed cross drain locations, one of which is proposed as a bridge culvert (CDW-15). These cross drains are proposed in order to maintain conveyance for existing rivers/canals. Two existing bridge culverts exist along S.R. 60. Throughout the East segment the project traverses twenty nine (29) proposed cross drain locations, one of which is proposed as a bridge (CDE-24). These cross drains are proposed in order to maintain conveyance for existing rivers/canals. Several of the proposed cross drains will serve as a discharge point for the Central Polk Parkway runoff and offsite contributing areas along the project corridor. These cross drains drain to the east, west, north or south to the proposed cross drains listed in **Table 7** – Summary of Proposed Cross Drains: Western Leg and **Table 8** – Summary of Proposed Cross Drains: Eastern Leg which also briefly describes and lists the location of all proposed cross drains. Proposed cross drain sizing can be found in **Appendix C**.

Table 7 – Summary of Proposed Cross Drains: Western Leg

CD Name	Approximate Location	Description	Basin
CDW-01B	Pollard Road	3 – 48” Pipes	W-101B
CDW-02B	2044+00	2 – 9’x9’ CBC	W-103B
CDW-03A	9011+00	18” Pipe	W-103A

CD Name	Approximate Location	Description	Basin
CDW-03B	2075+50	2 – 7'x7' CBC	W-104B
CDW-04B	2102+00	2 - 29" X 45" Pipes	W-105B
CDW-05	2154+00	3 – 48" Pipes	W-107
CDW-06	2188+00	2 – 10'x10' CBC	W-109
CDW-07	2216+00	3 – 48" Pipes	W-109
CDW-08	2267+00	2 – 10'x10' CBC	W-110
CDW-09	2276+00	3 – 42" Pipes	W-111
CDW-10	2315+50	2 – 42" Pipes	W-113
CDW-11	2363+00	2 – 24" X 38" Pipes	W-114
CDW-12	2409+00	2 – 5'x6' CBC	W-115
CDW-13	2456+00	2 – 42" Pipes	W-117
CDW-14	2521+00	10'x10' CBC	W-118
CDW-15	2596+00	2 – 12'x12' CBC	W-120
CDW-16	2649+00	1 – 42" Pipe	W-121

Table 8 – Summary of Proposed Cross Drains: Eastern Leg

CD Name	Approximate Location	Description	Basin
CDE-01	5032+00	30" Pipe	E-102A
CDE-02	5078+00	2 – 9'x9' CBC	E-104A
CDE-03	5112+00	3 – 34" X 53" Pipes	E-106A
CDE-04	5230+00	2 – 48" Pipes	E-110
CDE-05	5246+00	2 – 5'x6' CBC	E-111
CDE-06	5268+00	2 – 30" Pipes	E-111
CDE-07	5290+00	2 – 42" Pipes	E-113
CDE-08	5302+00	2 – 48" Pipes	E-114
CDE-09	5380+00	2 – 42" Pipes	E-117
CDE-10	5426+00	3 – 34" X 53" Pipes	E-118
CDE-11	5476+00	3 – 38" X 60" Pipes	E-119
CDE-12	5519+00	3 – 42" Pipes	E-121
CDE-13	5532+00	3 – 48" Pipes	E-121
CDE-14	5585+00	3 – 34" X 53" Pipes	E-123
CDE-15	5608+00	1 – 48" Pipe	E-124
CDE-16	5753+50	3 – 48" Pipes	E-129
CDE-17	5856+00	3 – 48" Pipes	E-134
CDE-18	5883+50	4 – 38" X 60" Pipes	E-135
CDE-19	5932+00	1 - 24" Pipe	E-136
CDE-20	5956+00	2 – 6'x7' CBC	E-136
CDE-21	5996+00	2 – 24" Pipes	E-138
CDE-22	6100+00	1 - 42" Pipe	E-141
CDE-23	6120+00	4 – 38" X 60" Pipes	E-142

CD Name	Approximate Location	Description	Basin
CDE-24	6186+00	Bridge	E-145
CDE-25	6258+00	1 - 24" Pipe	E-148
CDE-26	6306+00	4 – 34"x53" Pipes	E-150
CDE-27	6353+00	2 – 19" X 30" Pipes	E-152
CDE-28	6376+00	1 – 34" X 53" Pipe	E-153
CDE-29	6412+00	4 – 48" Pipes	E-155

4.5.1 Tailwater Conditions

Flow rates were determined for each proposed cross drain to determine the required size of the cross drains. The flow rate (Q) for each cross drain was estimated using either the Rational Equation or the USGS Regression Equation. The Rational Equation $Q=CiA$ is based on FDOT's Drainage Handbook where C is the runoff coefficient, i is the rainfall intensity and A is the drainage area for return periods of 50-year, 100-year and 500-year storm events (Drainage Handbook – Culvert Design by FDOT, January 2004). The USGS Regression Equation is based on FDOT's Drainage Handbook where it is applied to natural flow conditions in Region A of Florida. Please refer to **Appendix C**, Hydrologic Analysis for flow rate determination calculations. Since a very limited amount of information was readily available during the time of this PD&E Study, Culvert Hydraulic Analysis was not performed on the proposed cross drains. Proposed cross drain required cross sectional areas (A) were determined using the Continuity Equation $A=Q/V$ based on FDOT's Drainage Handbook where Q is the 50-year flow rate and V is the average velocity of 4 feet per second (ft/s). Trial cross drain sizes are located in **Appendix C**. During final design, a detailed Culvert Hydraulic Analysis should be performed to determine the appropriate cross drain sizes and establish design high water (DHW) elevations for the Design Storm (50-year) Base Flood (100-year) and Greatest Flood (500-Year).

4.6 FLOODPLAINS/FLOODWAYS

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Polk County shows that the majority of the western leg is within Zone X of the FEMA floodplain designation, which are areas determined to be outside the 500-year floodplain. Interspersed throughout the West alignment are floodplain areas associated with isolated wetlands, which are designated as Zone A, which are areas where no base flood elevations are determined. The west alignment of Central Polk Parkway passes through 5 Zones designated as Zone AE, which are areas where base flood elevations are determined. Please refer to the Floodplain Impact Calculations,

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Appendix B that summarizes the floodplain encroachments and compensation for the western leg of the project.

Throughout the eastern portion of the proposed Central Polk Parkway alignment, the majority of the roadway traverses Zone X of the FEMA floodplain designation, which are areas determined to be outside the 500-year floodplain. In several areas however, the proposed alignment traverses Zone A of the FEMA floodplain designation, which are areas where no base flood elevations are determined. These floodplain areas are associated with isolated wetlands. Similar to the western portion of the proposed Central Polk Parkway Alignment, the Eastern portion does traverse through FEMA floodplain areas designated as Zone AE, areas where base flood elevations are determined. Please refer to the Floodplain Impact Calculations, **Appendix B** that summarizes the floodplain encroachments and compensation for the western leg of the project.

Since many of the floodplain boundaries are classified as Zone A, during final design, a review of the floodplain boundaries in conjunction with the USGS Quad Maps, field investigations, floodplain studies and culvert analysis should be performed to establish an estimated 100-year floodplain elevation at these locations.

There are regulated floodways within the project limits such as the Peace Creek Drainage Canal, Horseshoe Creek, and Snell Creek. There will be floodplain involvement with these floodways. A FEMA no-rise certification will be required for these regulated floodways. FEMA Floodplain Maps are located in **Appendix A**, **Figures 8-1**, **8-2** and **8-3**.

4.6.1 Establishing Floodplain Impacts

During the PD&E Study, the project was divided into two (2) segments, West and East. Both segments were analyzed separately for floodplain impacts. Since much of the proposed alignment extends through both Zone A and Zone AE of the 100-year floodplain in Polk County, it was assumed that the base flood elevation was the average of all the base flood elevations established by Zone AE. In the East segment, it was calculated that the base flood elevation was 1.30 feet above the existing ground. For the West segment, the base flood elevation was calculated to be 1.60 feet above the existing ground. Floodplain impacts were determined by multiplying the amount of roadway area impacted derived from the typical section within the flood zone with the calculated floodplain depth to the existing ground, which conservatively is assumed as the seasonal high water elevation. It is anticipated that some degree of floodplain compensation can be accomplished within the stormwater

treatment ponds and roadside swales. However, most of the floodplain compensation will be accomplished through floodplain compensation pond sites located throughout the project corridor.

Refer to **Appendix B**, Floodplain Impact Calculations, for the Floodplain Impacts summary tables for each segment.

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SECTION 5 - PROPOSED DRAINAGE CONDITIONS

The stormwater runoff from the project limits will be collected in roadside ditches and conveyed through these ditches to the proposed off-site wet detention or dry retention ponds. The ponds will discharge at or near an existing wetland, canal, local depression or proposed cross drain carrying the water similar to the existing condition, thus maintaining existing drainage patterns. The water quality treatment and water quantity attenuation will be achieved through the construction of offsite wet detention and dry retention ponds, which will require the acquisition of additional right-of-way.

5.1 PROPOSED TYPICAL SECTION IMPROVEMENTS

The proposed roadway is divided into two (2) segments. The West segment is from the existing Polk Parkway (S.R. 570) to Pollard Road where the East segment is from Pollard Road to Interstate 4. Please refer to **Figure 1**, **Appendix A** for project segments. The typical section for both segments consists of a high speed rural roadway with a design speed of 65 mph. This six-lane divided rural roadway consists of a 44-foot depressed median, three (3) 12-foot travel lanes in each direction, a 12-foot multi use trail, 10-foot inside shoulder, 12-foot outside shoulder and roadside ditches for stormwater conveyance. The proposed right-of-way for the rural roadway will be 350 feet, respectively. Please refer to **Figure 4**, **Appendix A** for proposed typical sections.

5.2 LONGITUDINAL & TRANSVERSE FLOODPLAIN IMPACTS

This project will impact the 100-year floodplain in two different ways:

1) Longitudinal roadway impacts resulting from filling the floodplain and floodway areas associated with Peace Creek, Snell Creek, Horseshoe Creek, Wahneta Farms Creek, Gaskin Branch, and several unnamed canals.

2) Transverse impacts resulting from widening of bridges and bridge culvert structures. These impacts occur at two (2) existing cross drains at S.R. 60. The floodplain areas associated with these cross drains are Gaskin Creek and Wahneta Farms Creek.

The longitudinal roadway impacts cannot be avoided since the floodplain associated with the water bodies extend both sides of the proposed alignment. It is anticipated that the proposed west alignment will impact approximately 310.02 Ac-ft of floodplain volume and the proposed east alignment will

impact approximately 298.22 Ac-ft of floodplain volume. Floodplain impacts for each proposed alignment are outlined in **Appendix B**, Floodplain Impact Calculations. During the final design phase of the project, every effort should be made to minimize the floodplain impacts.

The floodplain impacts resulting from the construction of bridges/bridge culverts are not considered and analyzed during the PD&E phase of the project. During the design phase of the project, a Bridge Hydraulic Report (BHR) will be prepared to document the hydraulic impacts of the widening.

Floodway impacts resulting from longitudinal roadway impacts occur on the western leg at the Peace Creek Canal and several other locations throughout the project corridor. During the design phase of the project, alternatives should be evaluated to minimize these floodway impacts. If the effective base flood elevations (BFE) are proposed to be modified by determination of hydraulic and hydrologic analysis, the designer should proceed in the letter of map revision (LOMR) process with FEMA. A conditional letter of map revision (CLOMR) may be appropriate as well. For regulated floodway areas where there will be no change proposed to effective base flood elevations (BFE), No-Rise Certifications will be required for work in FEMA Floodways.

5.3 PROJECT CLASSIFICATION

The floodplain is located in a low density, non-urbanized area, and the encroachments are classified as "minimal." Minimal encroachments on a floodplain occur when there is a floodplain involvement, but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Normally, these minimal efforts to address the impacts will consist of applying the FDOT drainage design standards and following the Water Management District's procedures to achieve results that will not increase or significantly change the flood elevations and/or limits.

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SECTION 6 - CONCLUSIONS

The construction of the Central Polk Parkway and any drainage structures included in the project is on a new alignment with transverse and longitudinal encroachments into the floodplain and floodways, but where the floodplain compensation areas, cross drains, and bridges will perform hydraulically in a manner equal to or greater than the existing condition, and backwater surface elevations are not expected to increase. As a result, there will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or in emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant.

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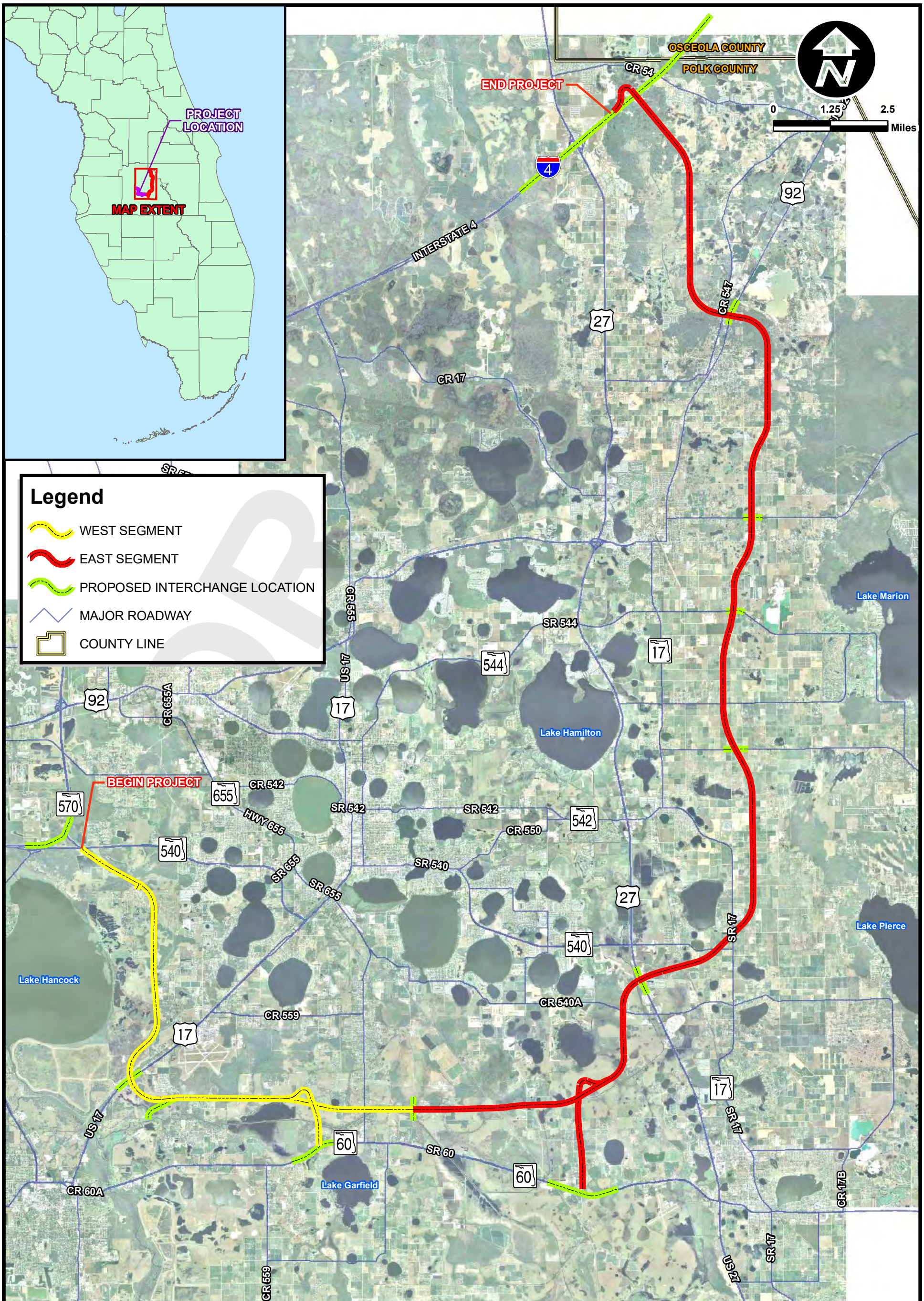
APPENDIX A

Figures



FPID: 423601-1-22-01

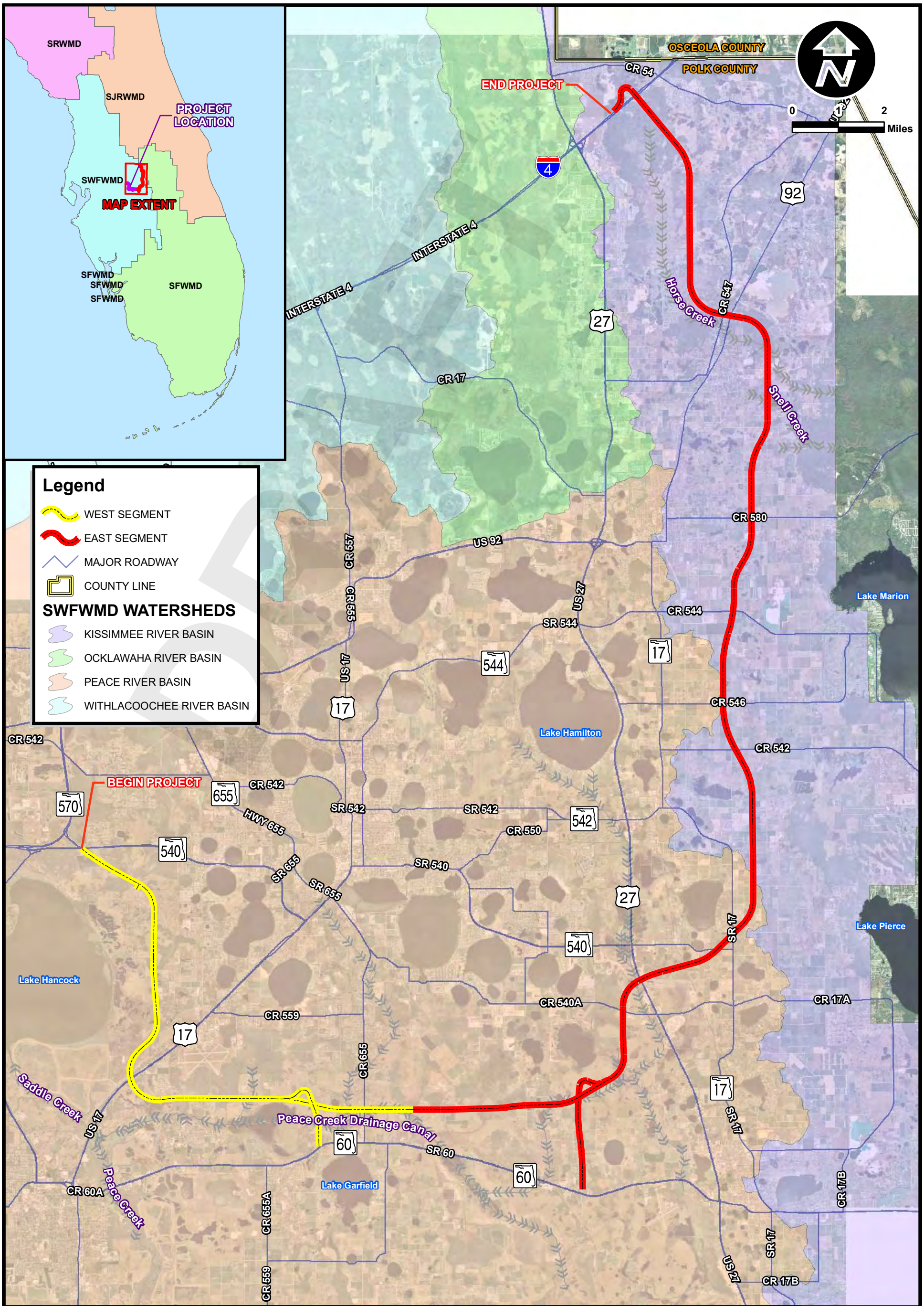
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
PROJECT LOCATION MAP

FIGURE

1



FPID: 423601-1-22-01

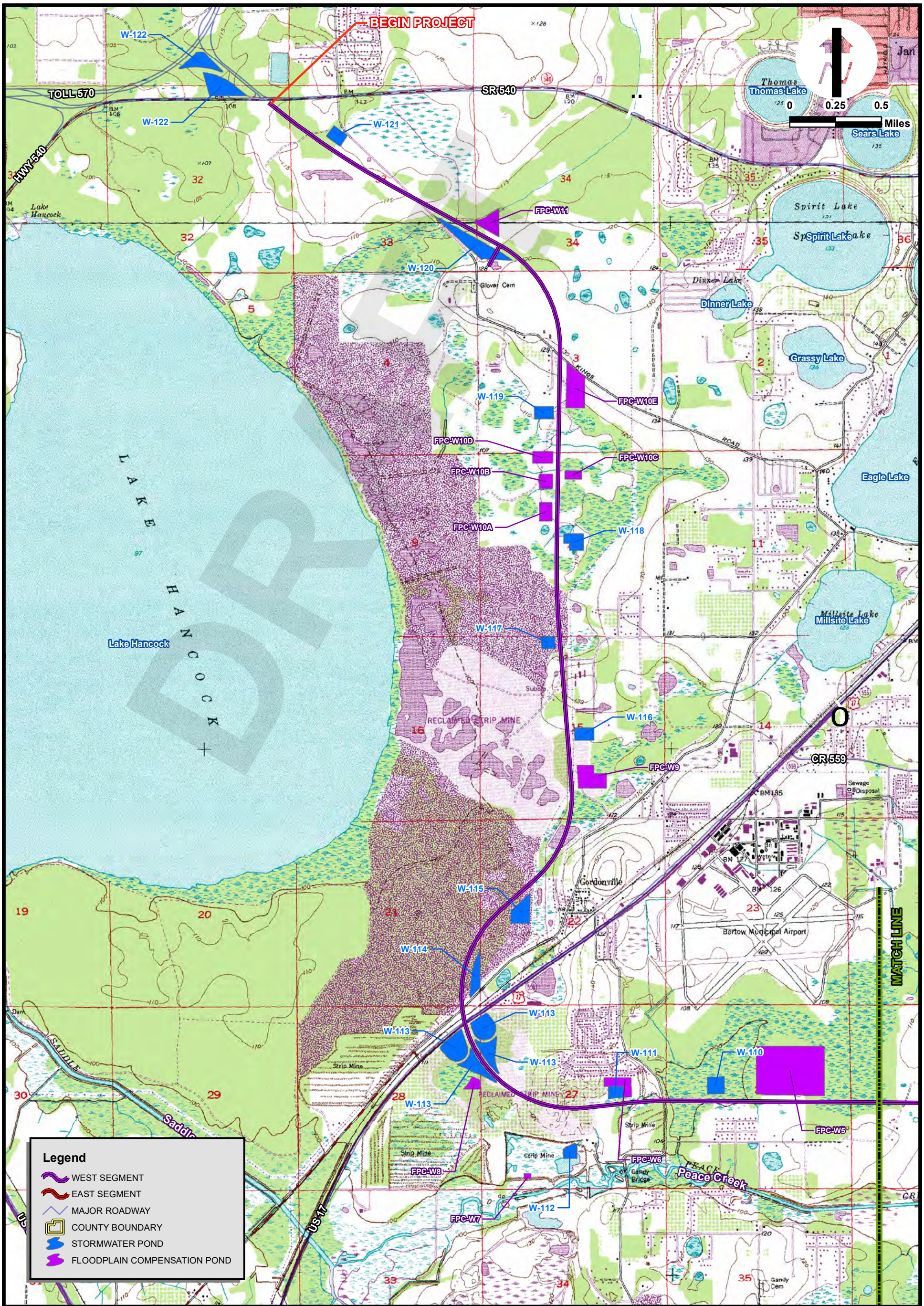
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
DRAINAGE BASIN MAP

FIGURE

2



FPID: 423601-1-22-01

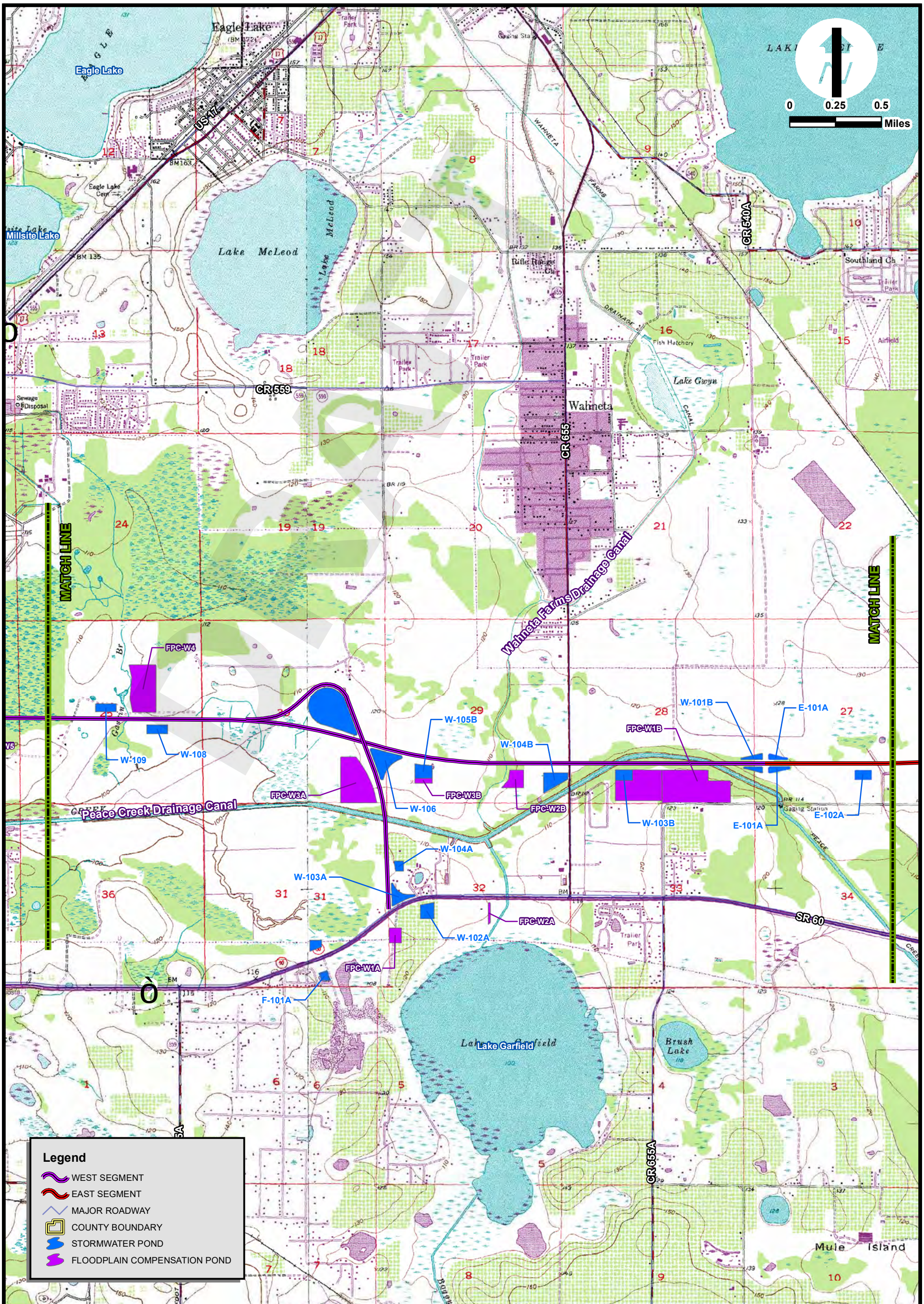
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-1A



FPID: 423601-1-22-01

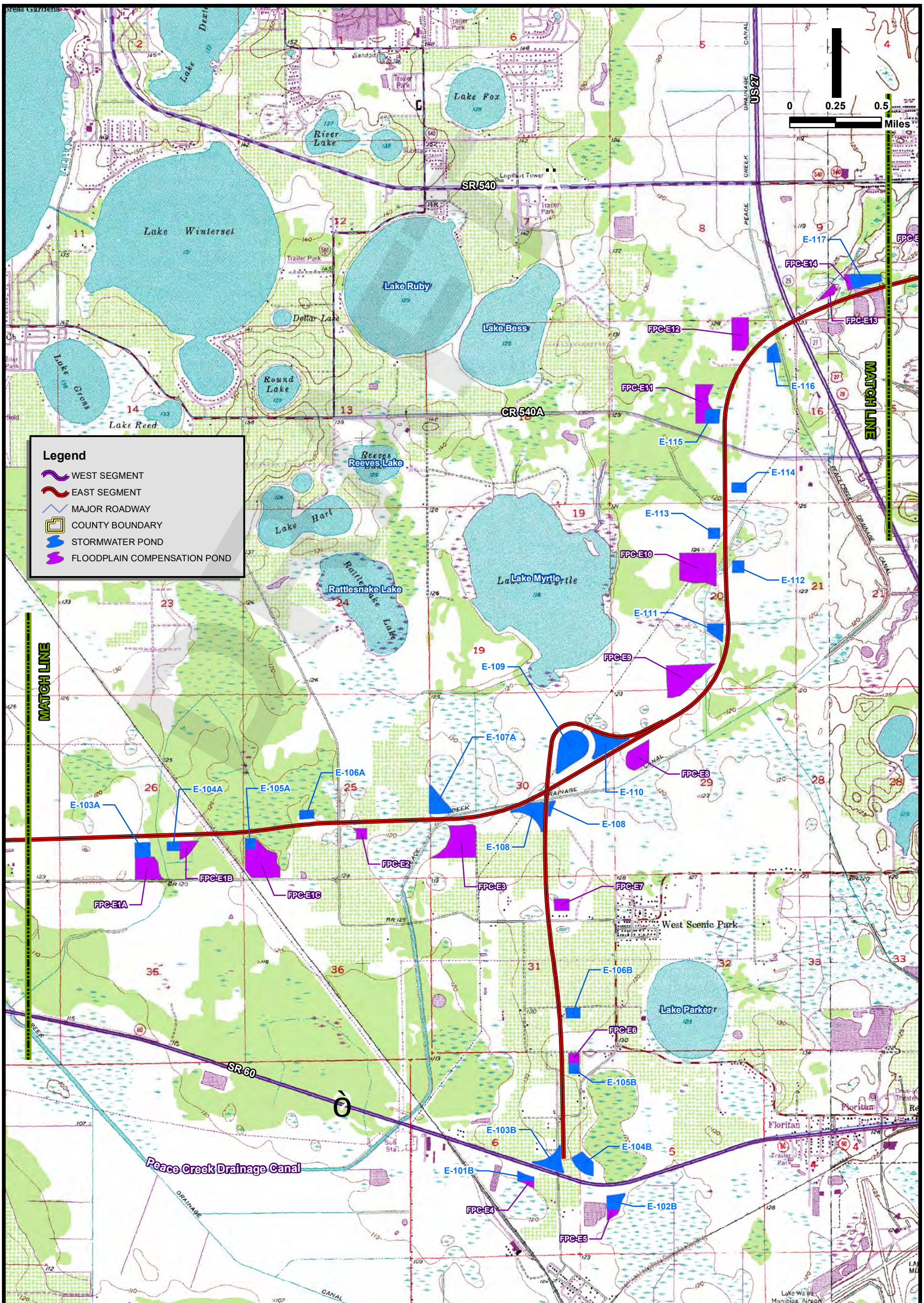
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-1B



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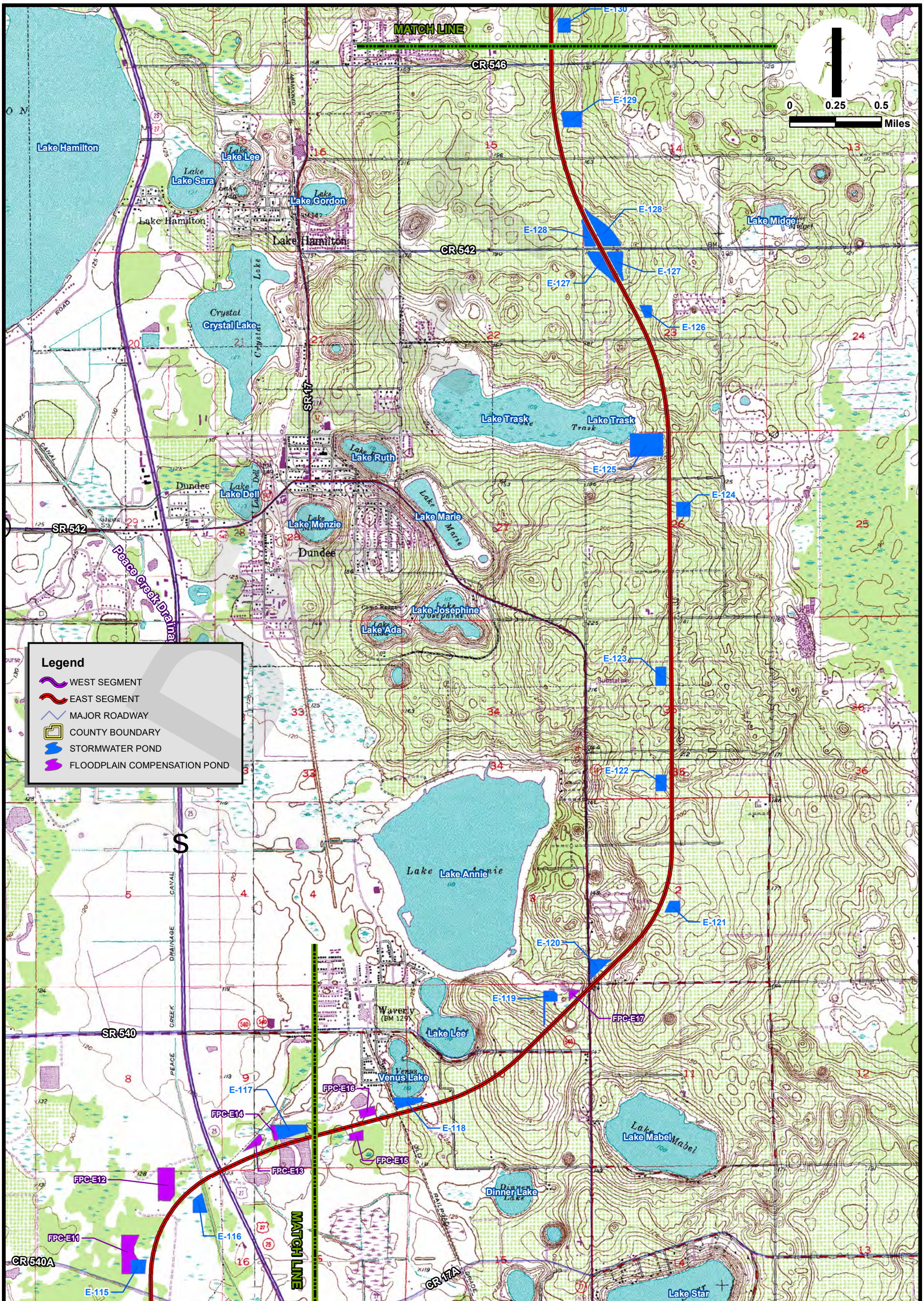
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-2A



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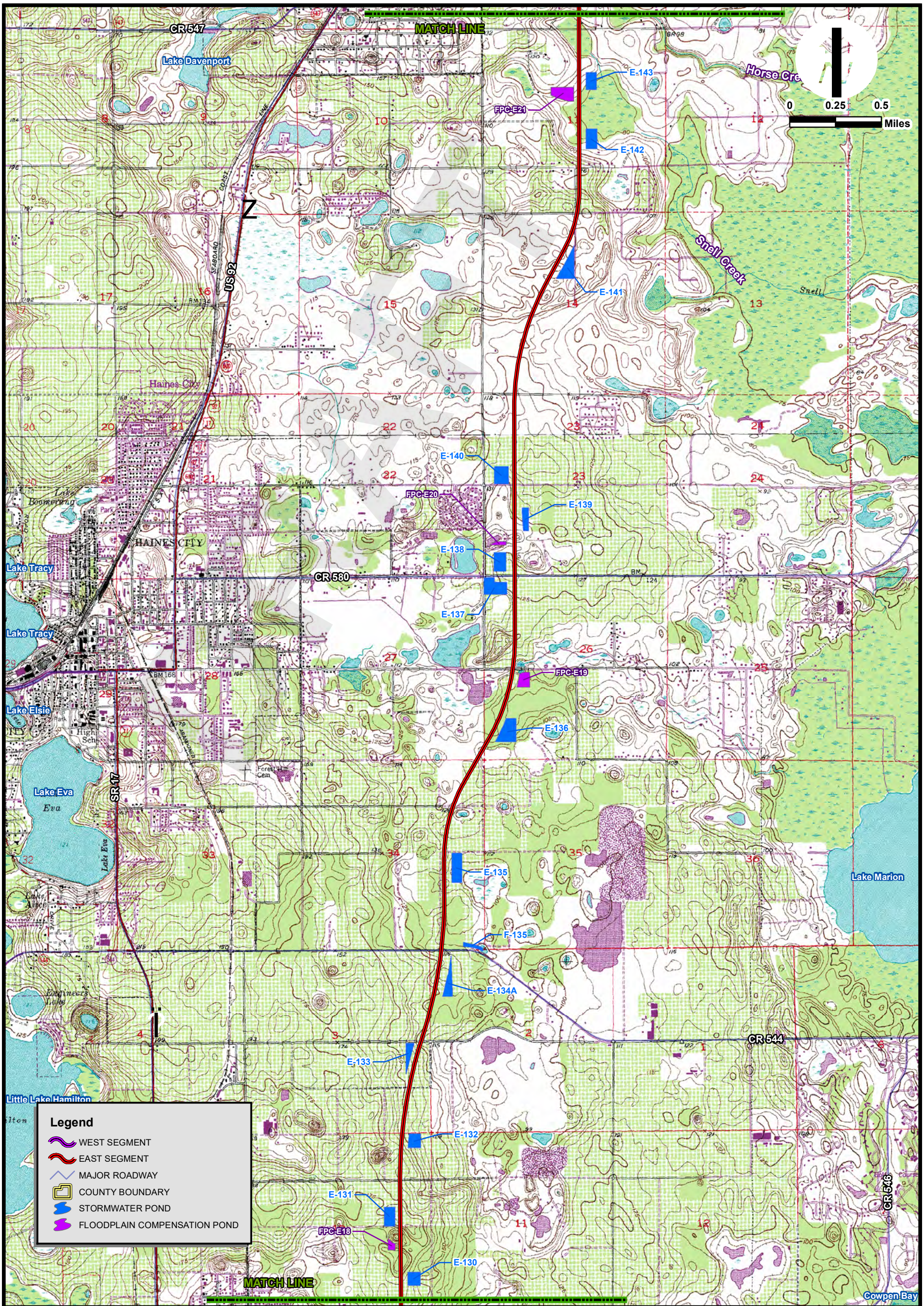
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-2B



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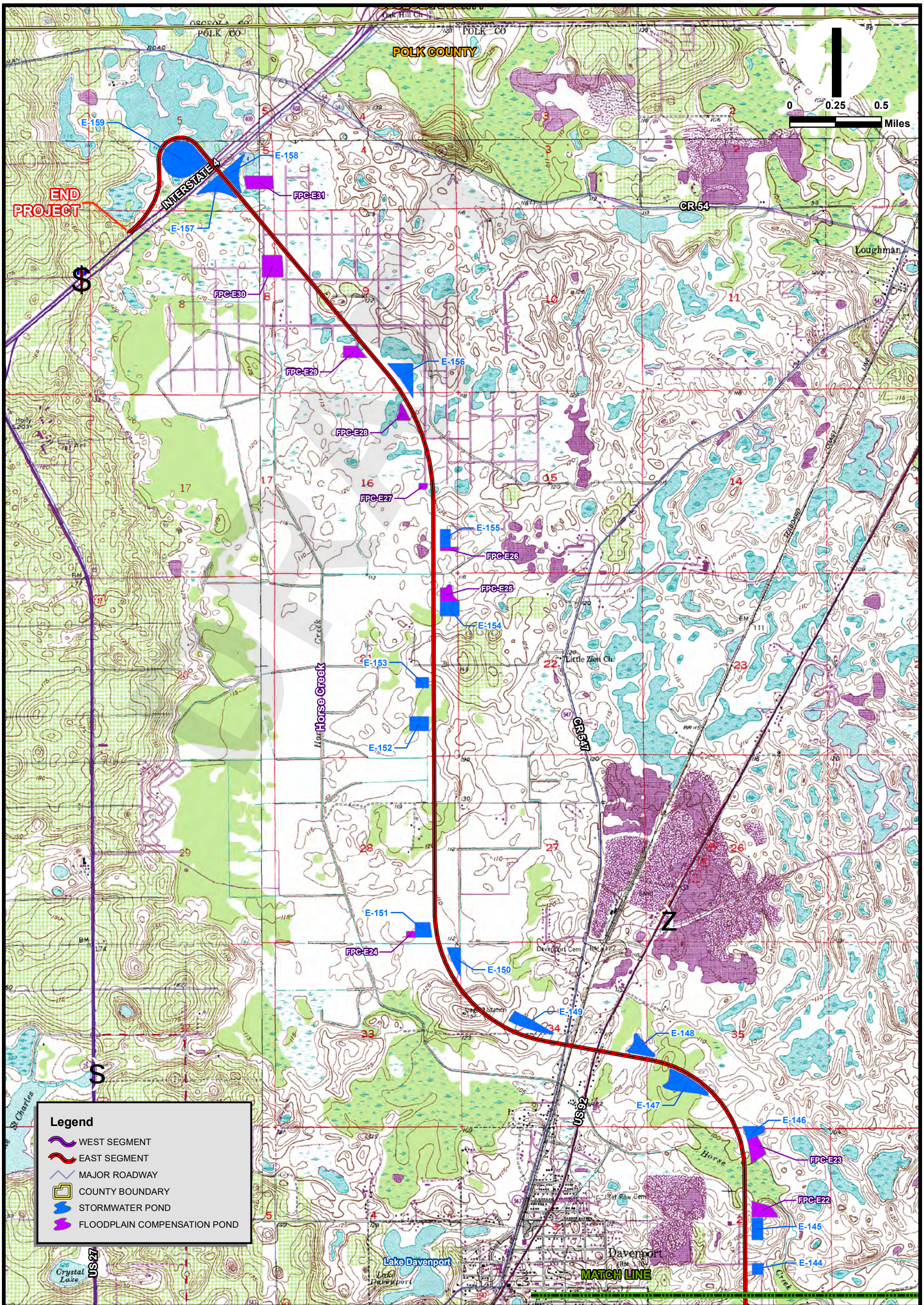
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-3A



FPID: 423601-1-22-01

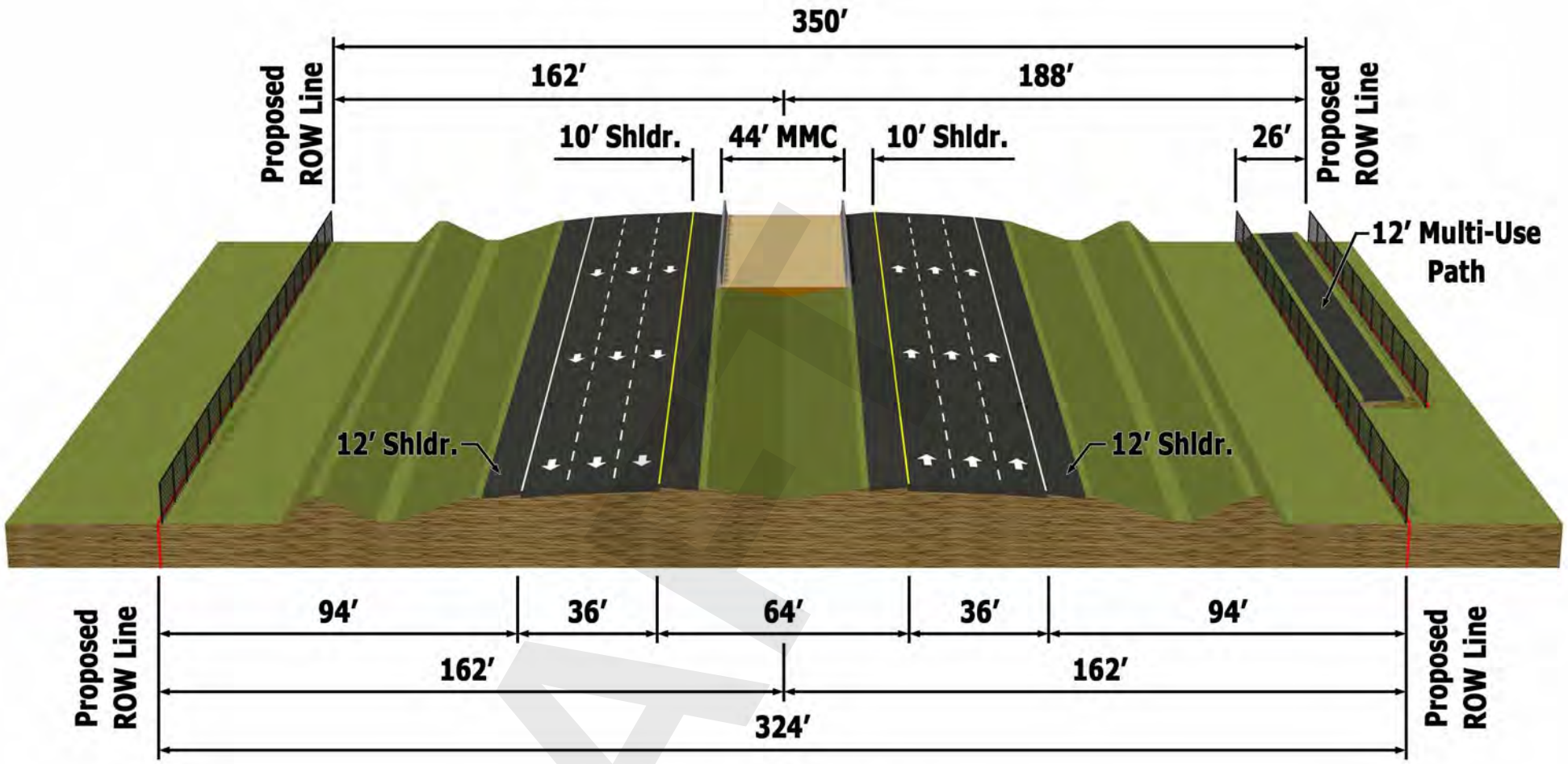
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-3B



Central Polk Parkway
Six-Lane Typical Section
Design Speed = 65 mph

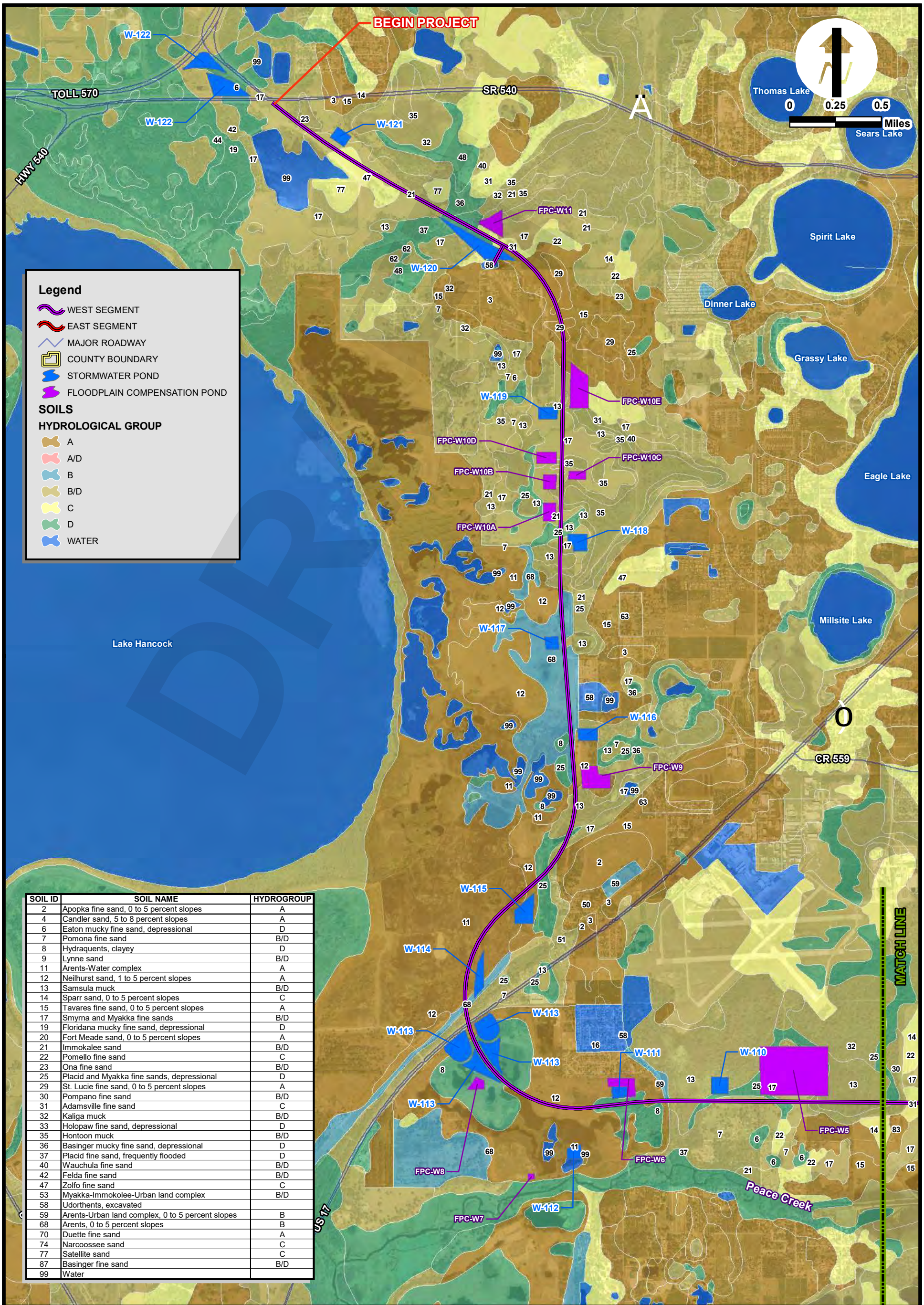
FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
TYPICAL SECTION

FIGURE
4



SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
47	Zolfo fine sand	C
53	Myakka-Immokolee-Urban land complex	B/D
58	Udorthents, excavated	
59	Arents-Urban land complex, 0 to 5 percent slopes	B
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	

FPID: 423601-1-22-01

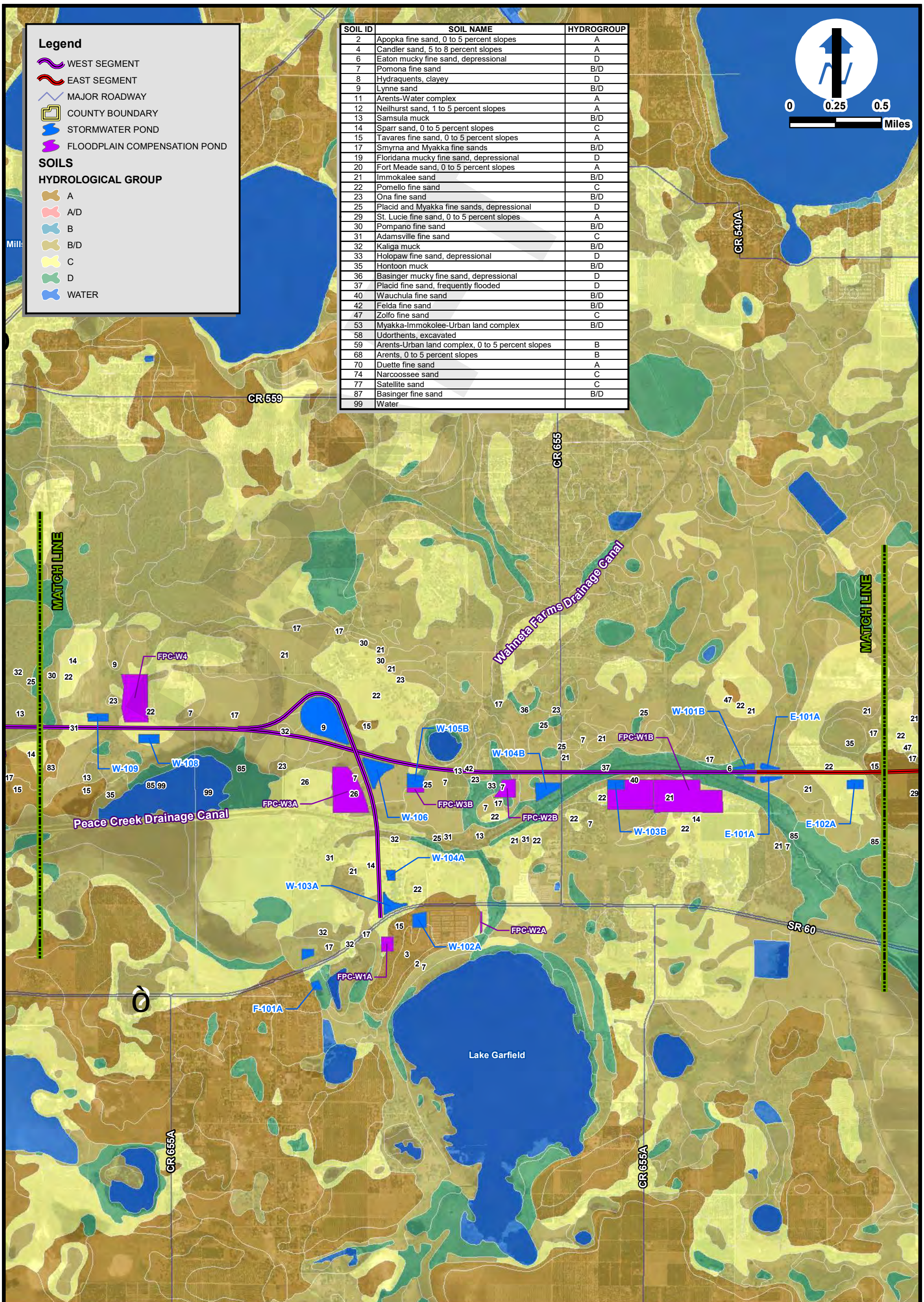
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-1A



SOIL ID	SOIL NAME	HYDROGROUP
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7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
47	Zolfo fine sand	C
53	Myakka-Immokolee-Urban land complex	B/D
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59	Arents-Urban land complex, 0 to 5 percent slopes	B
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	

FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-1B

SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
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35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
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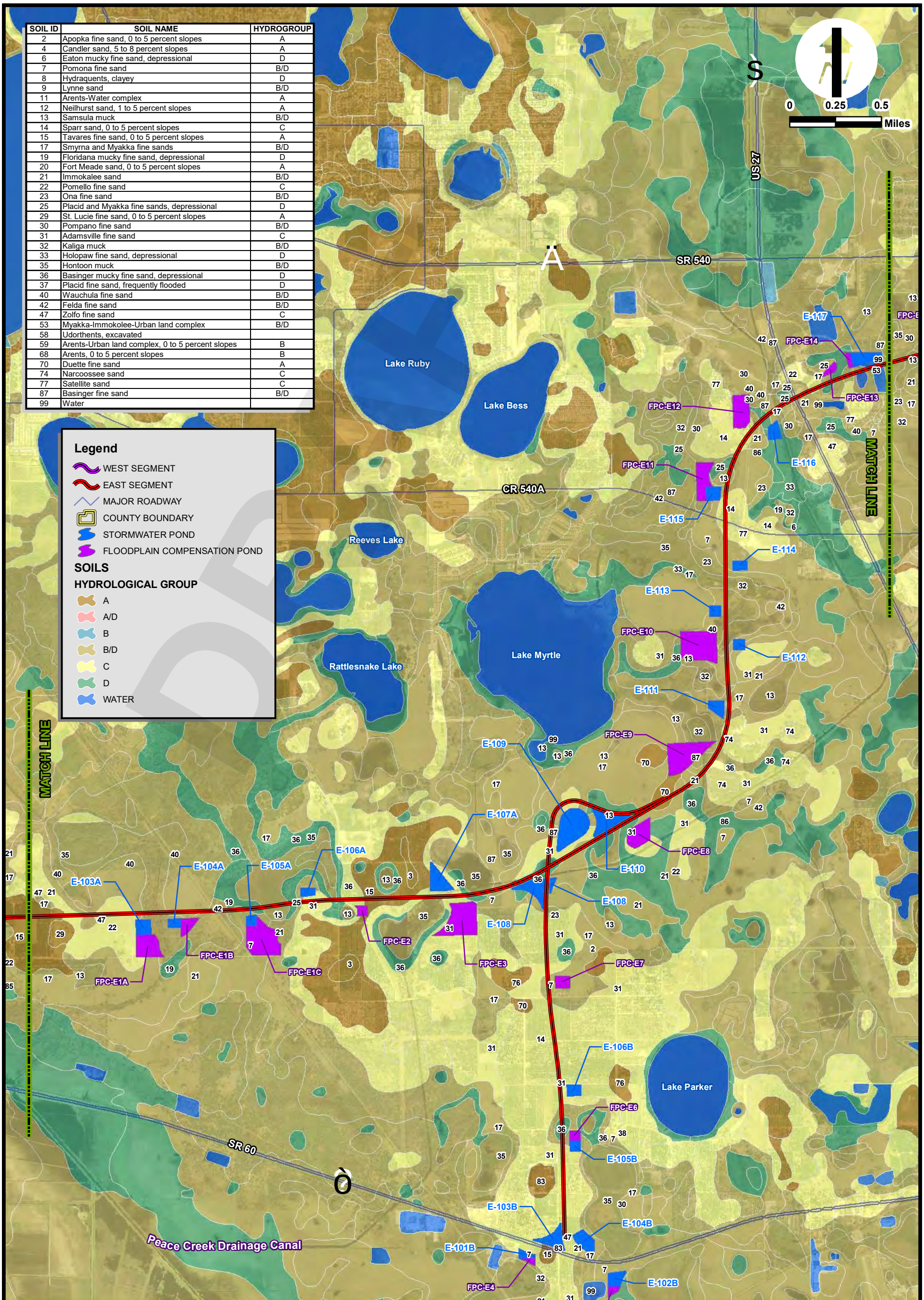
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	



FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

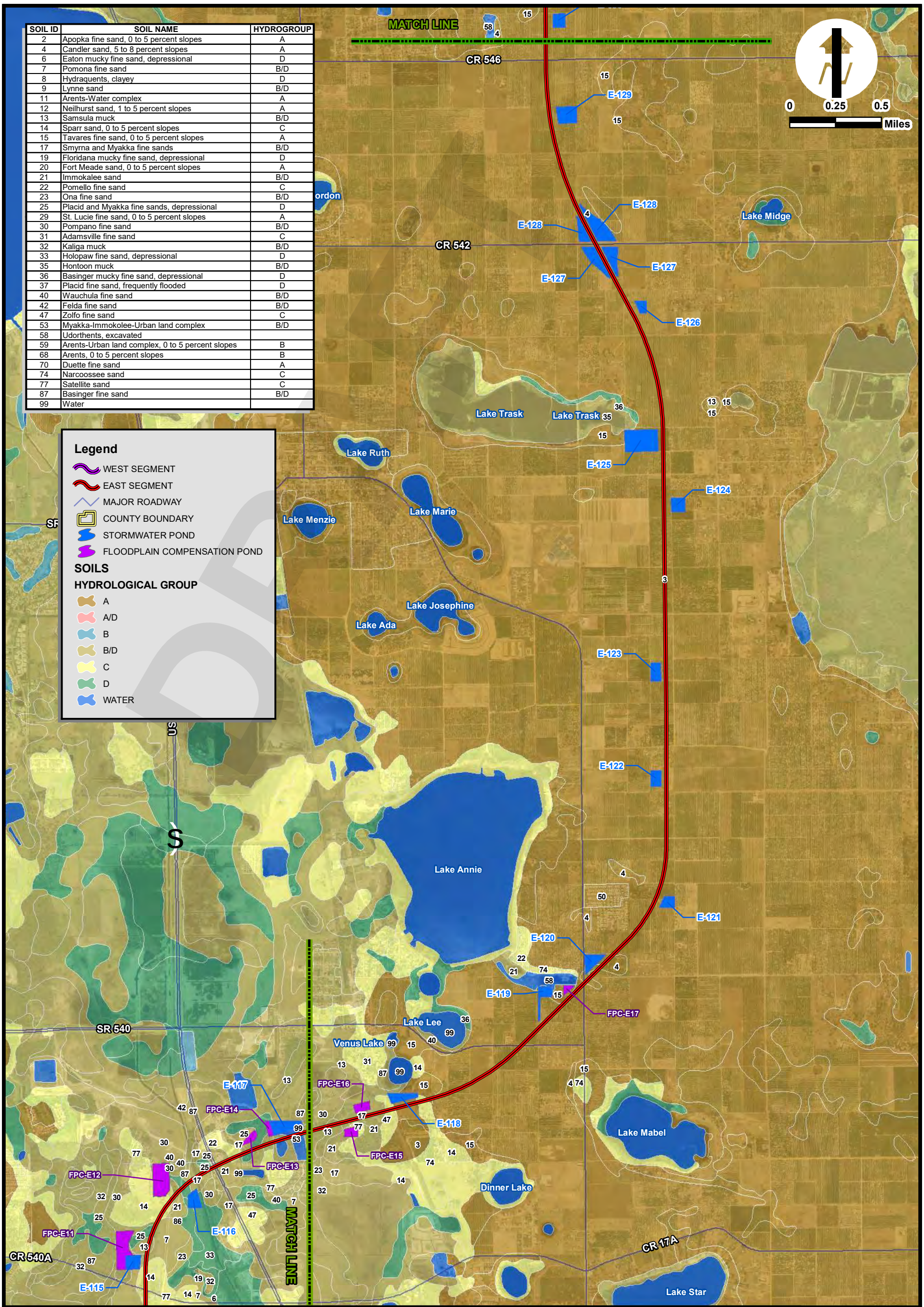
POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-2A

SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
47	Zolfo fine sand	C
53	Myakka-Immokolee-Urban land complex	B/D
58	Udorthents, excavated	
59	Arents-Urban land complex, 0 to 5 percent slopes	B
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	



FPID: 423601-1-22-01

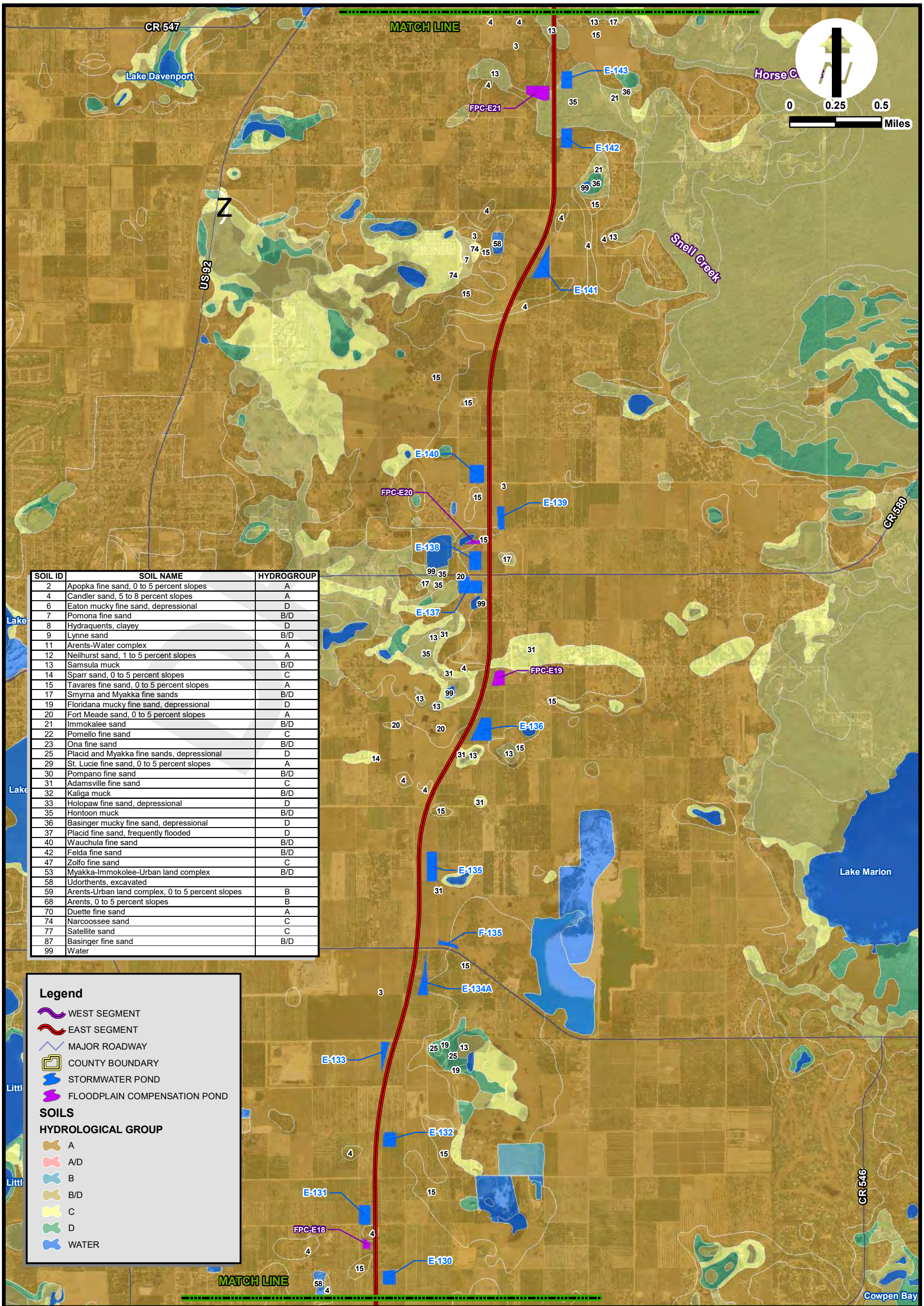
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-2B



SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
47	Zolfo fine sand	C
53	Myakka-Immokolee-Urban land complex	B/D
58	Udorthents, excavated	
59	Arents-Urban land complex, 0 to 5 percent slopes	B
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	

FPID: 423601-1-22-01

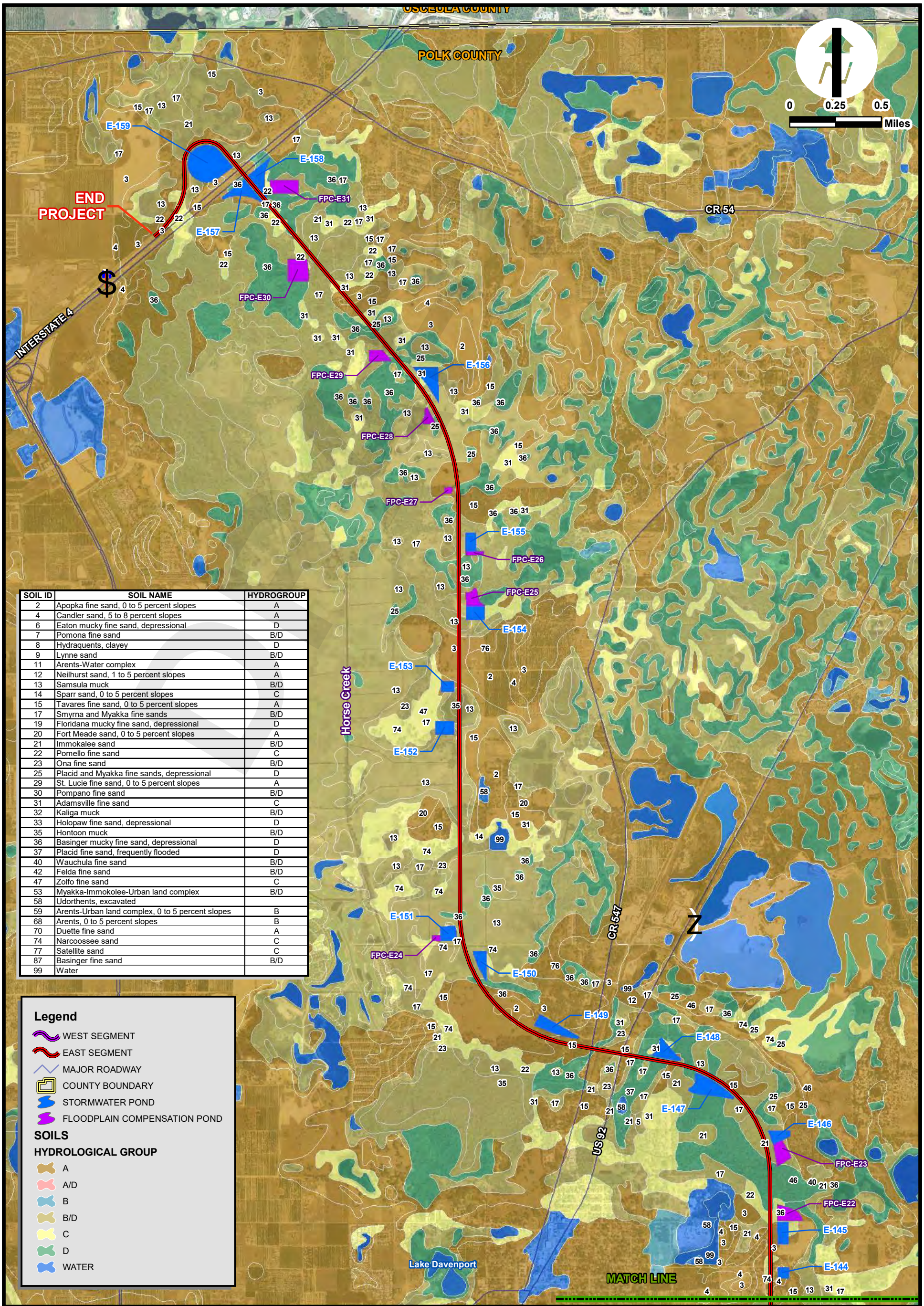
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-3A



SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
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6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
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9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
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53	Myakka-Immokolee-Urban land complex	B/D
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68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	

FPID: 423601-1-22-01

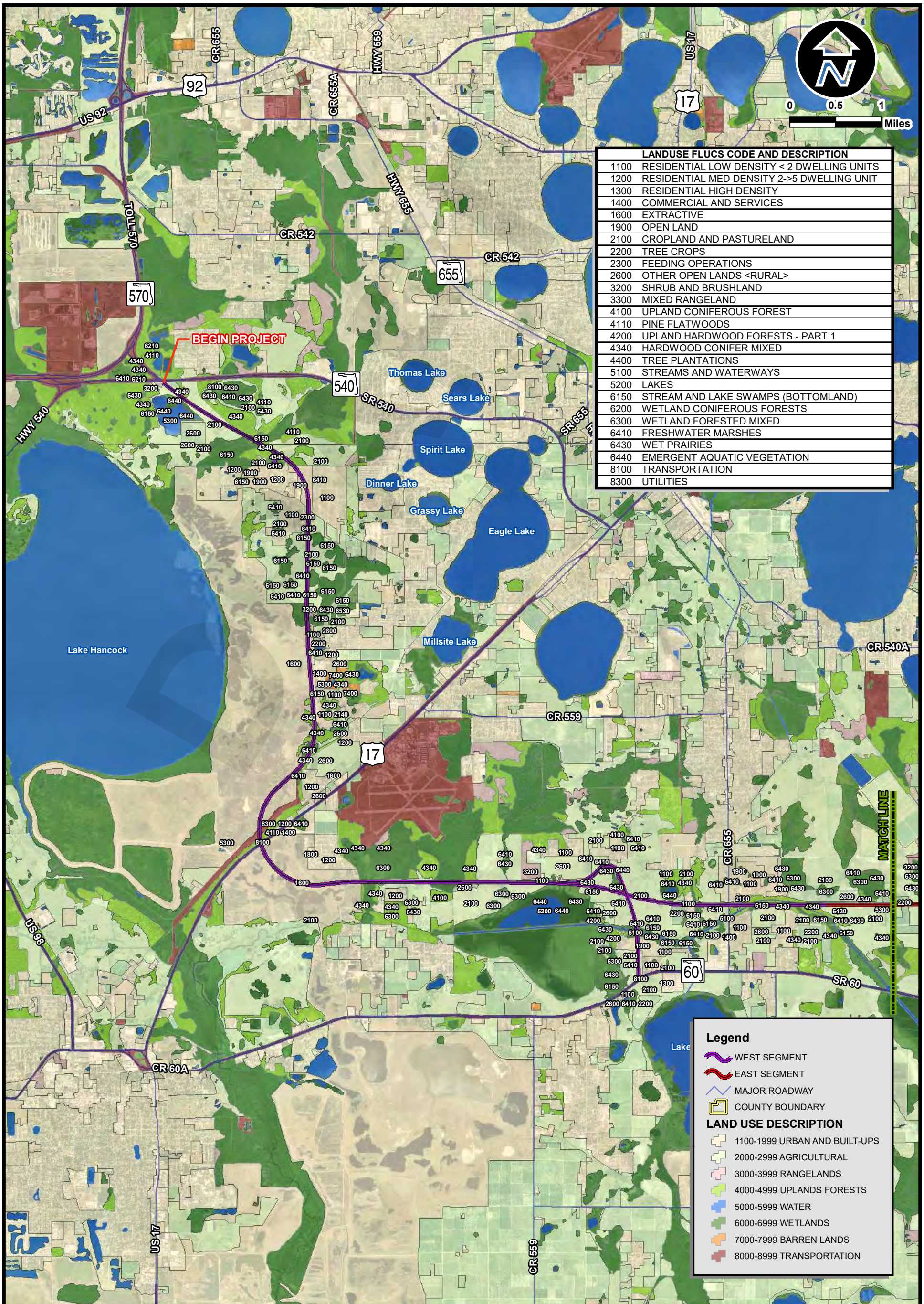
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-3B



FPID: 423601-1-22-01

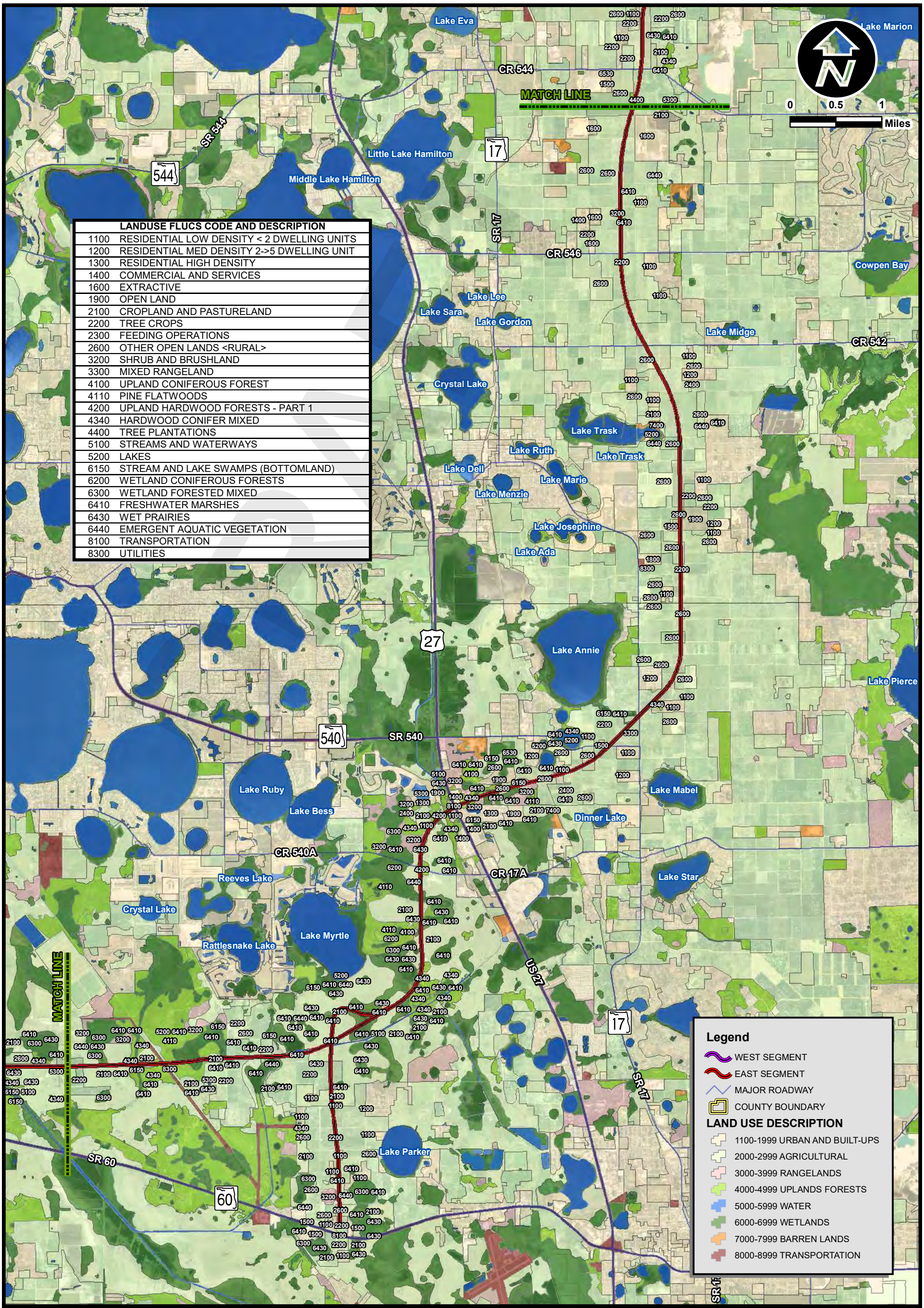
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
EXISTING LAND USE MAP

FIGURE

6-1



FPID: 423601-1-22-01

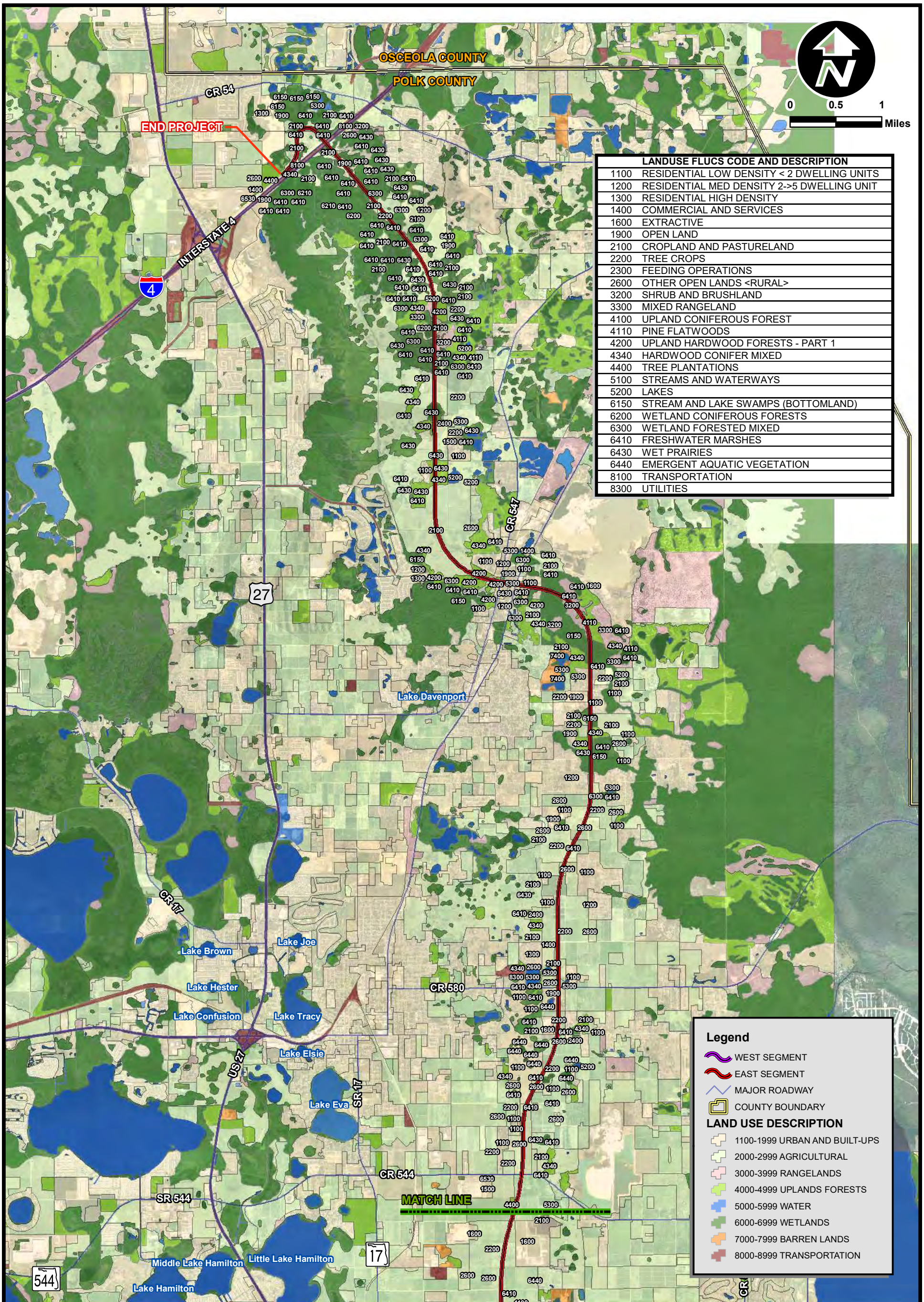
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
EXISTING LAND USE MAP

FIGURE

6-2



LANDUSE FLUCS CODE AND DESCRIPTION	
1100	RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS
1200	RESIDENTIAL MED DENSITY 2->5 DWELLING UNIT
1300	RESIDENTIAL HIGH DENSITY
1400	COMMERCIAL AND SERVICES
1600	EXTRACTIVE
1900	OPEN LAND
2100	CROPLAND AND PASTURELAND
2200	TREE CROPS
2300	FEEDING OPERATIONS
2600	OTHER OPEN LANDS <RURAL>
3200	SHRUB AND BRUSHLAND
3300	MIXED RANGELAND
4100	UPLAND CONIFEROUS FOREST
4110	PINE FLATWOODS
4200	UPLAND HARDWOOD FORESTS - PART 1
4340	HARDWOOD CONIFER MIXED
4400	TREE PLANTATIONS
5100	STREAMS AND WATERWAYS
5200	LAKES
6150	STREAM AND LAKE SWAMPS (BOTTOMLAND)
6200	WETLAND CONIFEROUS FORESTS
6300	WETLAND FORESTED MIXED
6410	FRESHWATER MARSHES
6430	WET PRAIRIES
6440	EMERGENT AQUATIC VEGETATION
8100	TRANSPORTATION
8300	UTILITIES

FPID: 423601-1-22-01

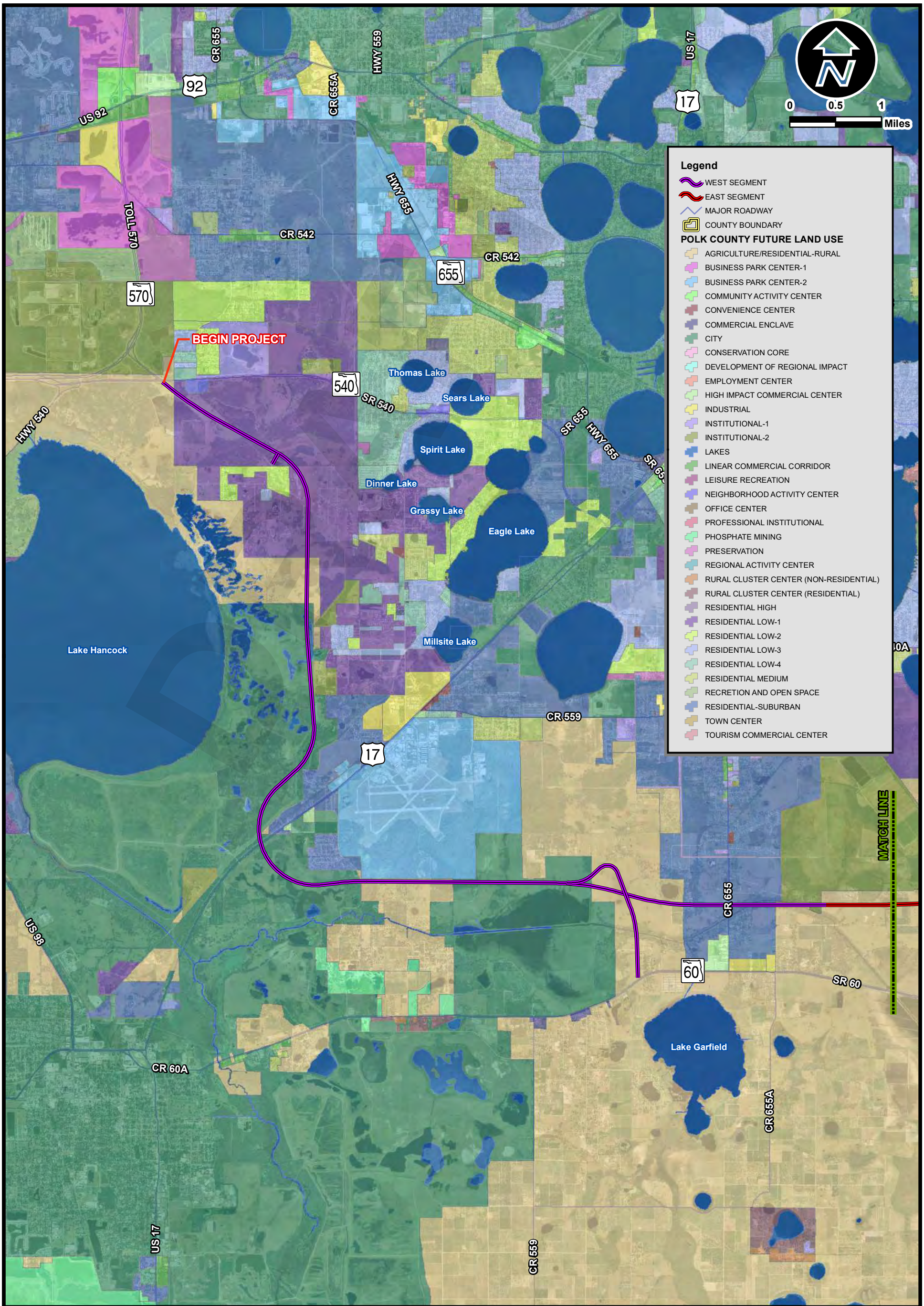
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
EXISTING LAND USE MAP

FIGURE

6-3



FPID: 423601-1-22-01

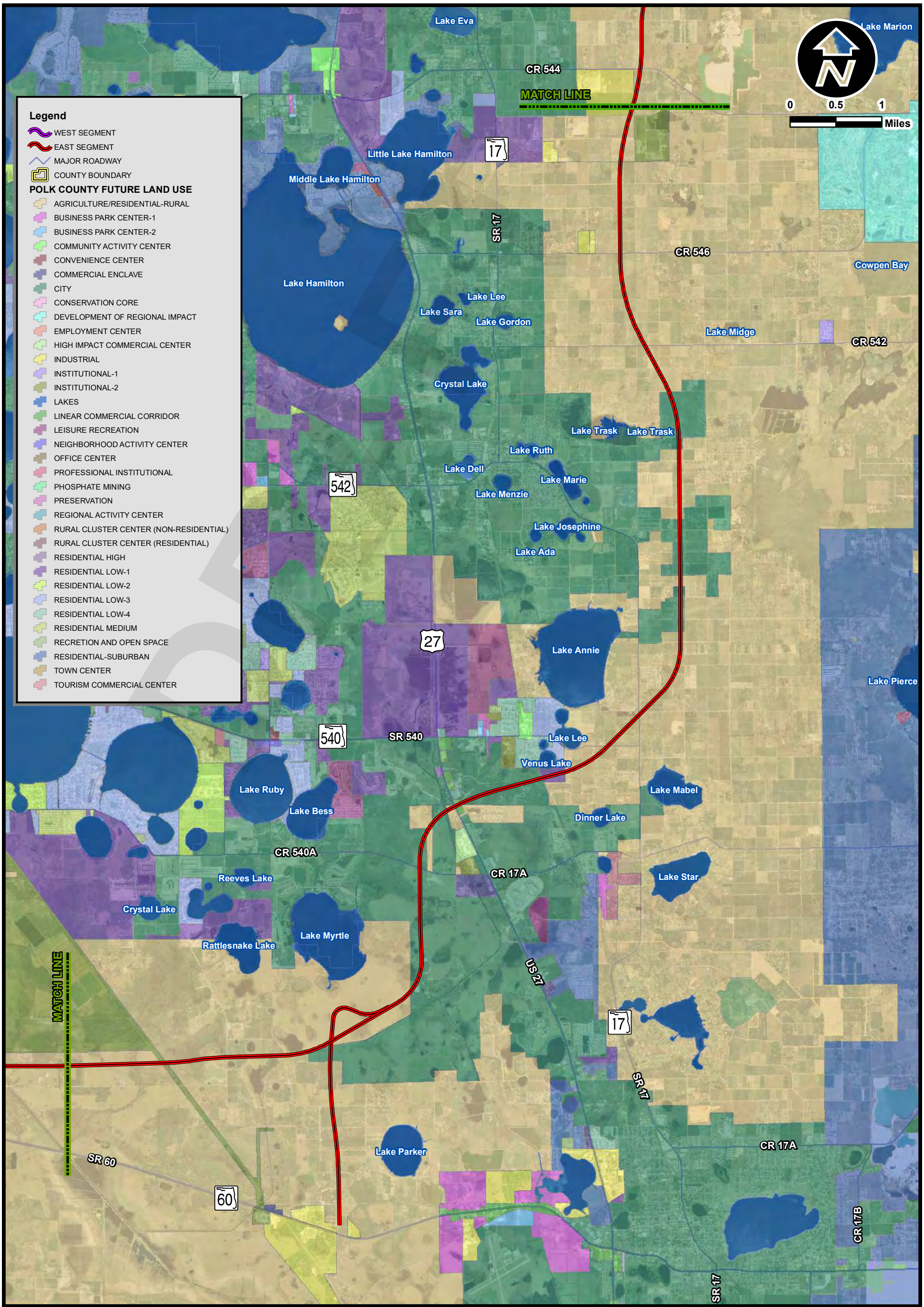
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FUTURE LAND USE MAP

FIGURE

7-1



FPID: 423601-1-22-01

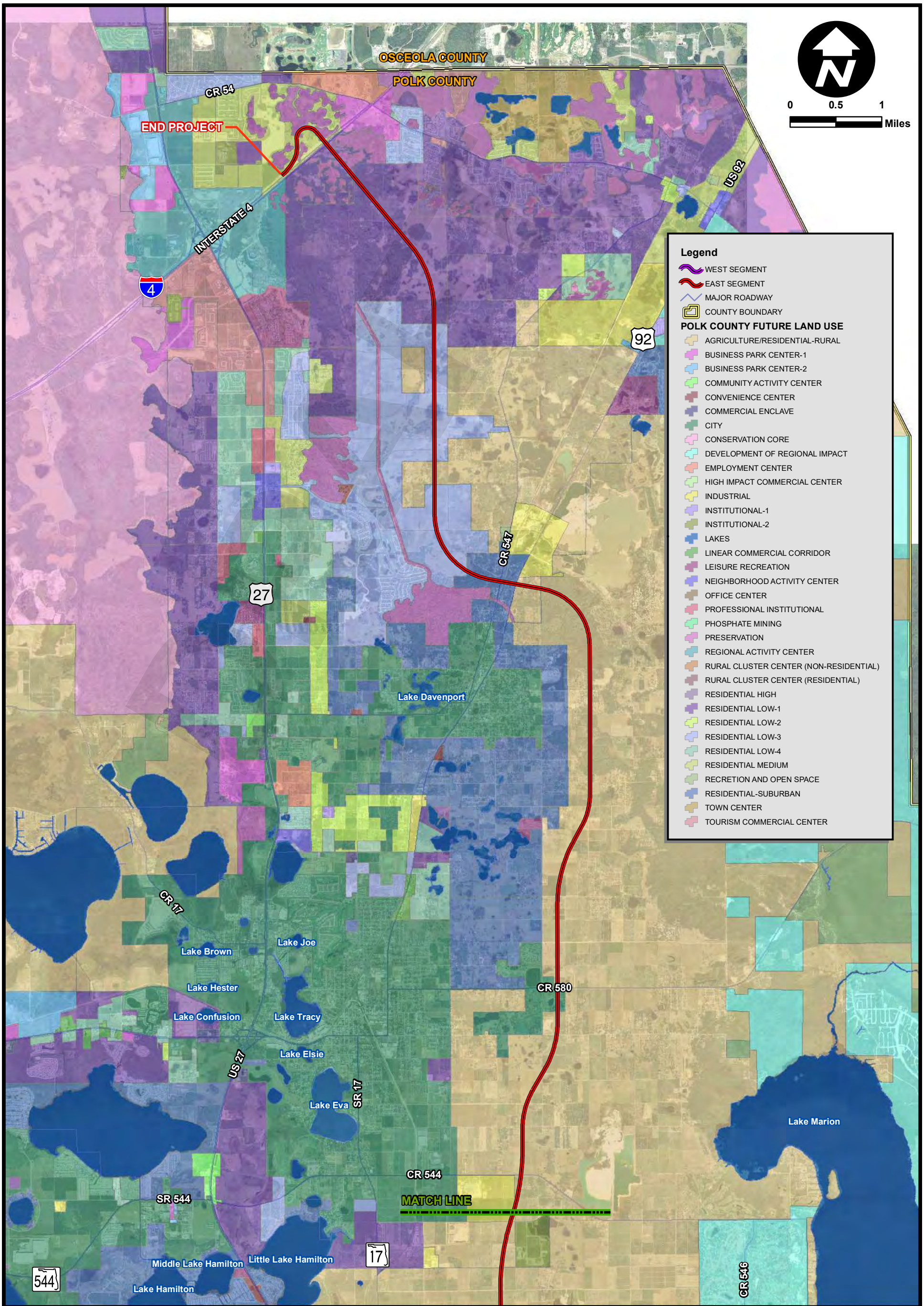
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FUTURE LAND USE MAP

FIGURE

7-2



FPID: 423601-1-22-01

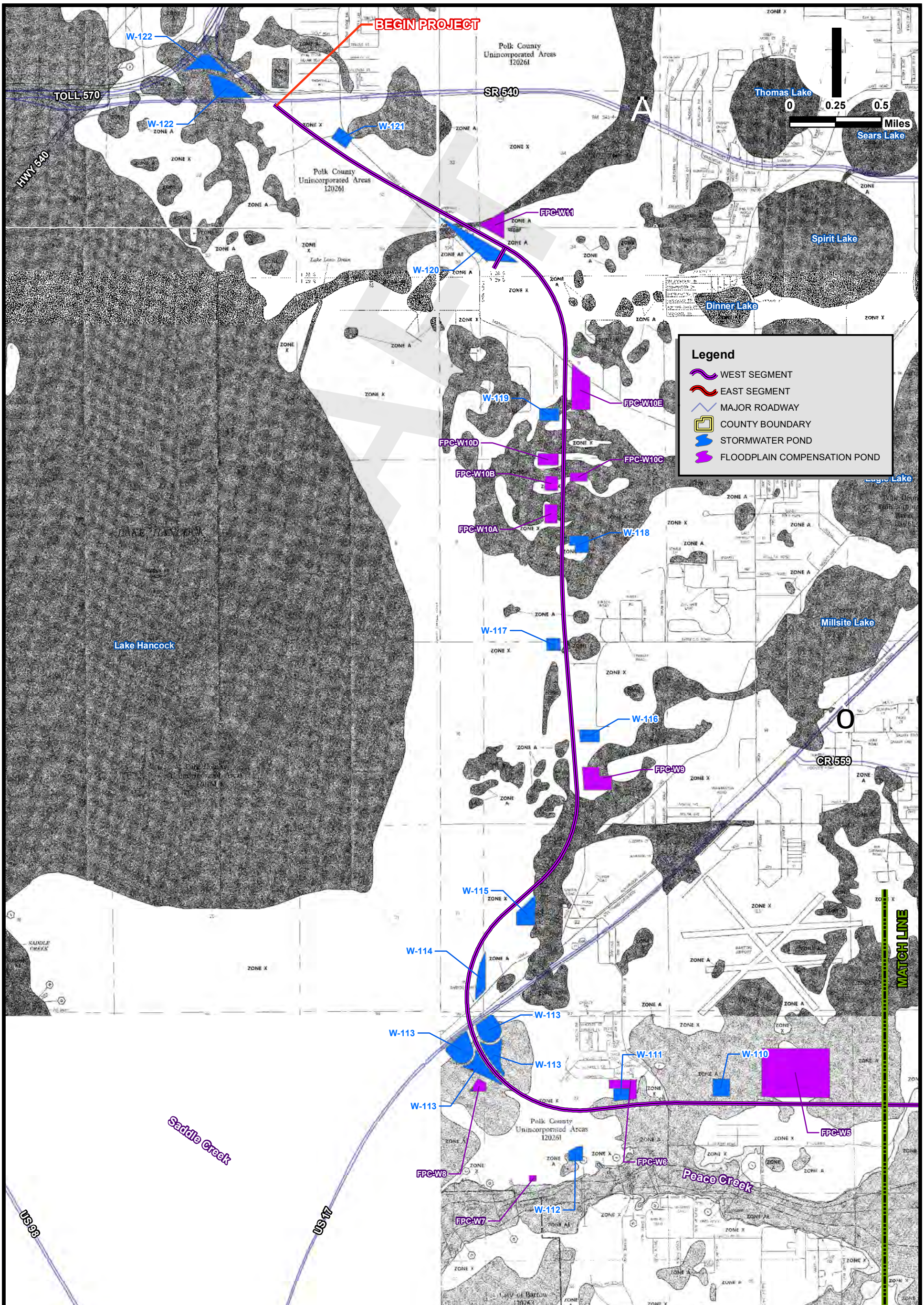
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FUTURE LAND USE MAP

FIGURE

7-3



FPID: 423601-1-22-01

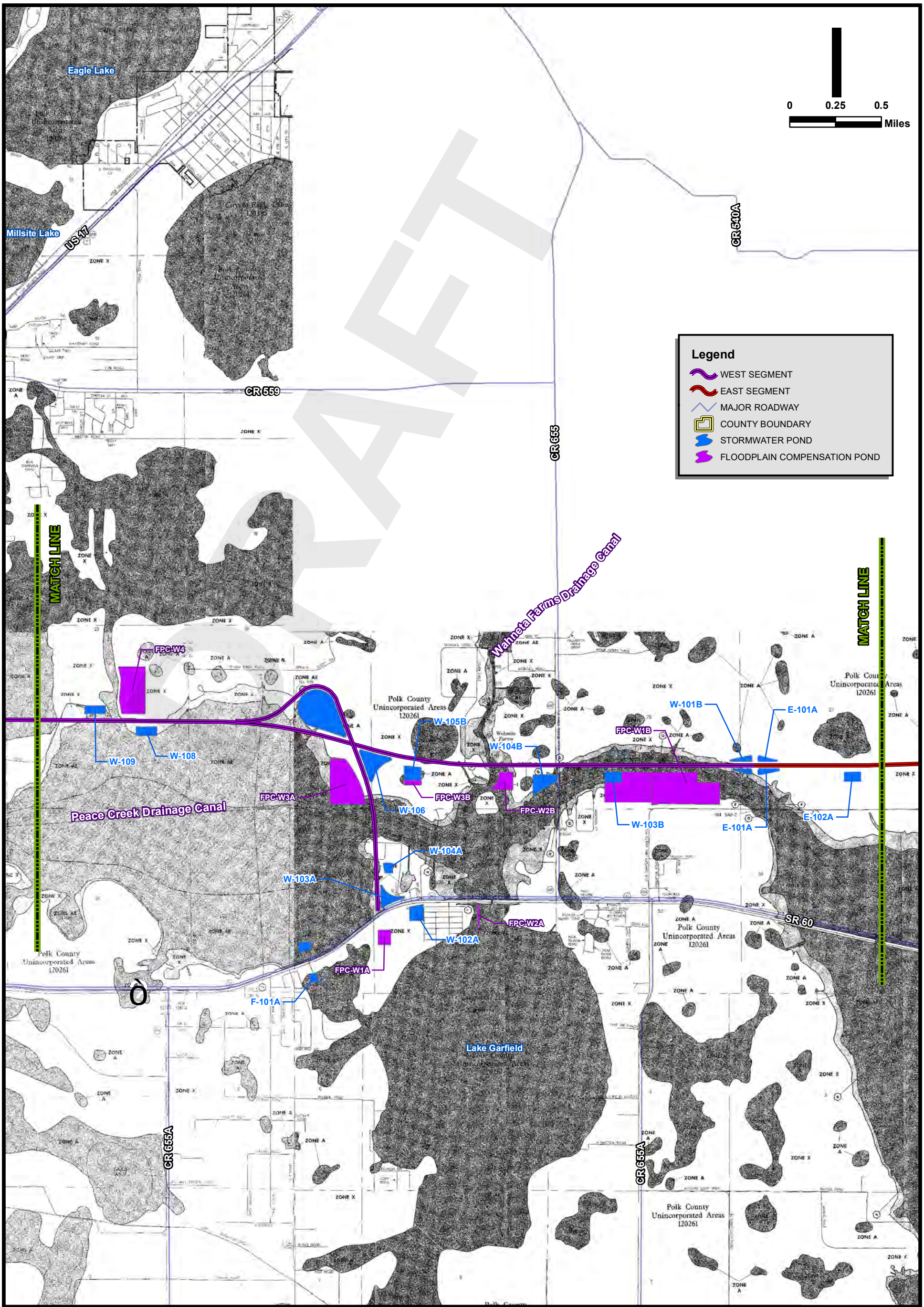
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-1A



FPID: 423601-1-22-01

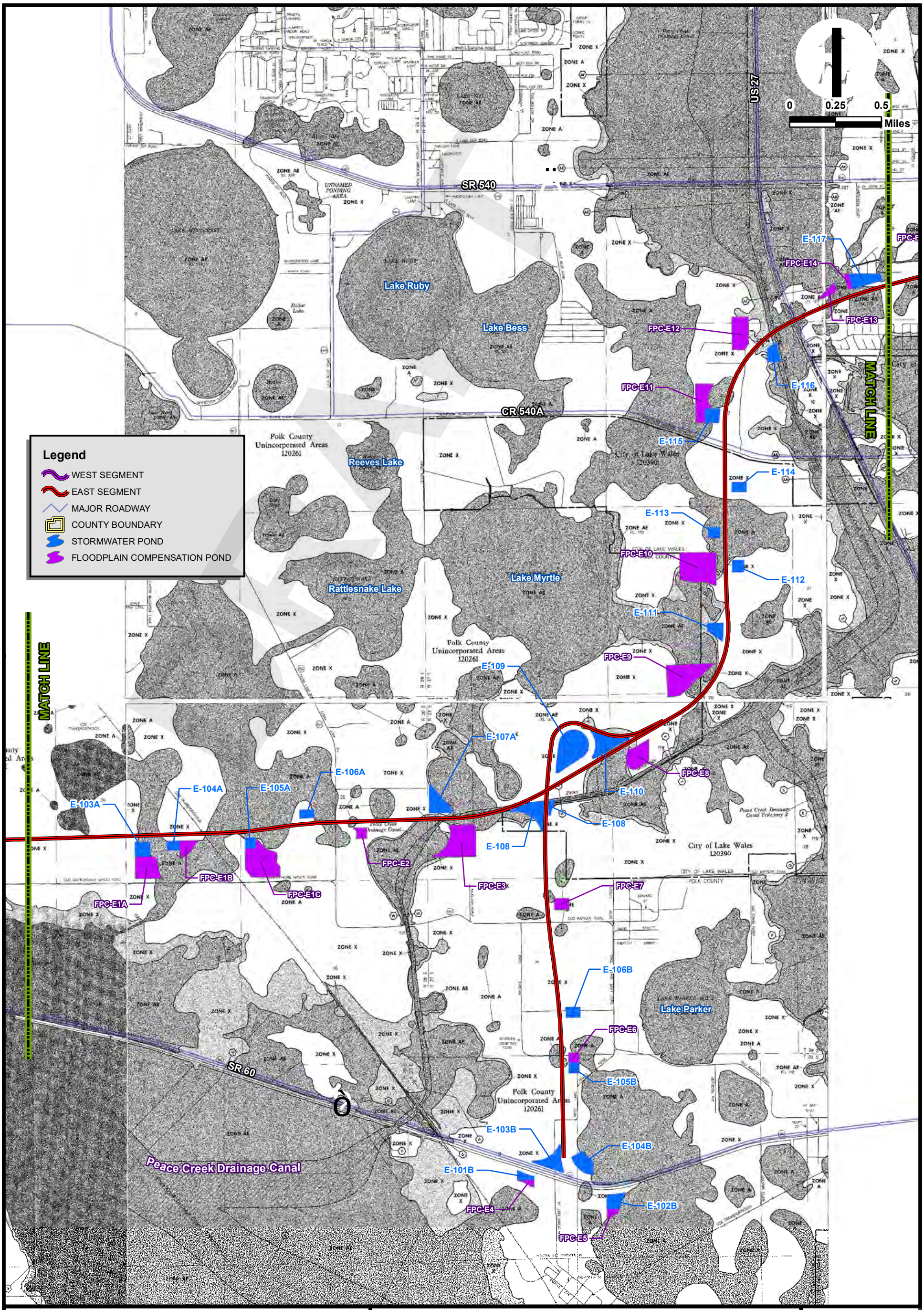
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-1B



FPID: 423601-1-22-01

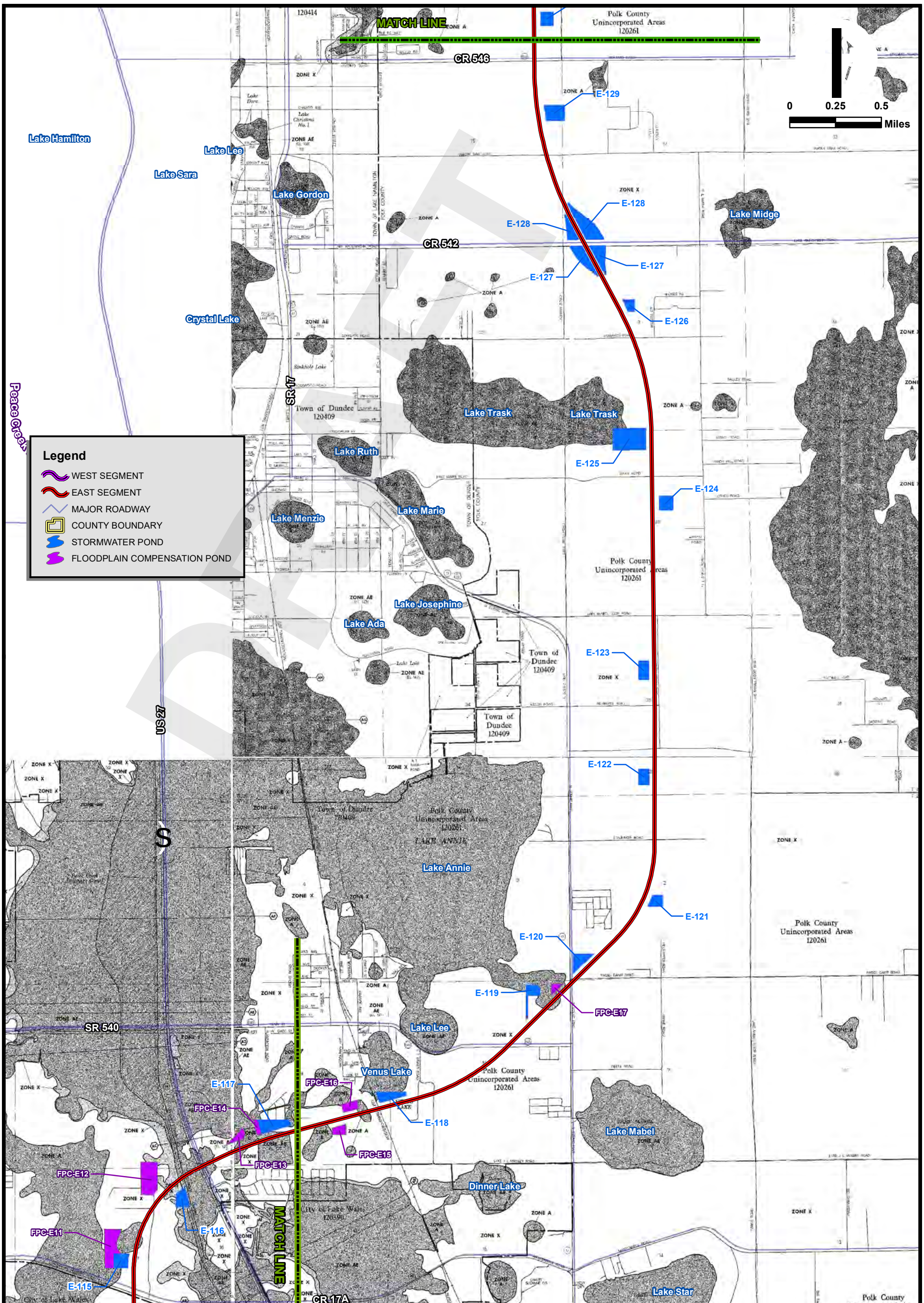
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-2A



FPID: 423601-1-22-01

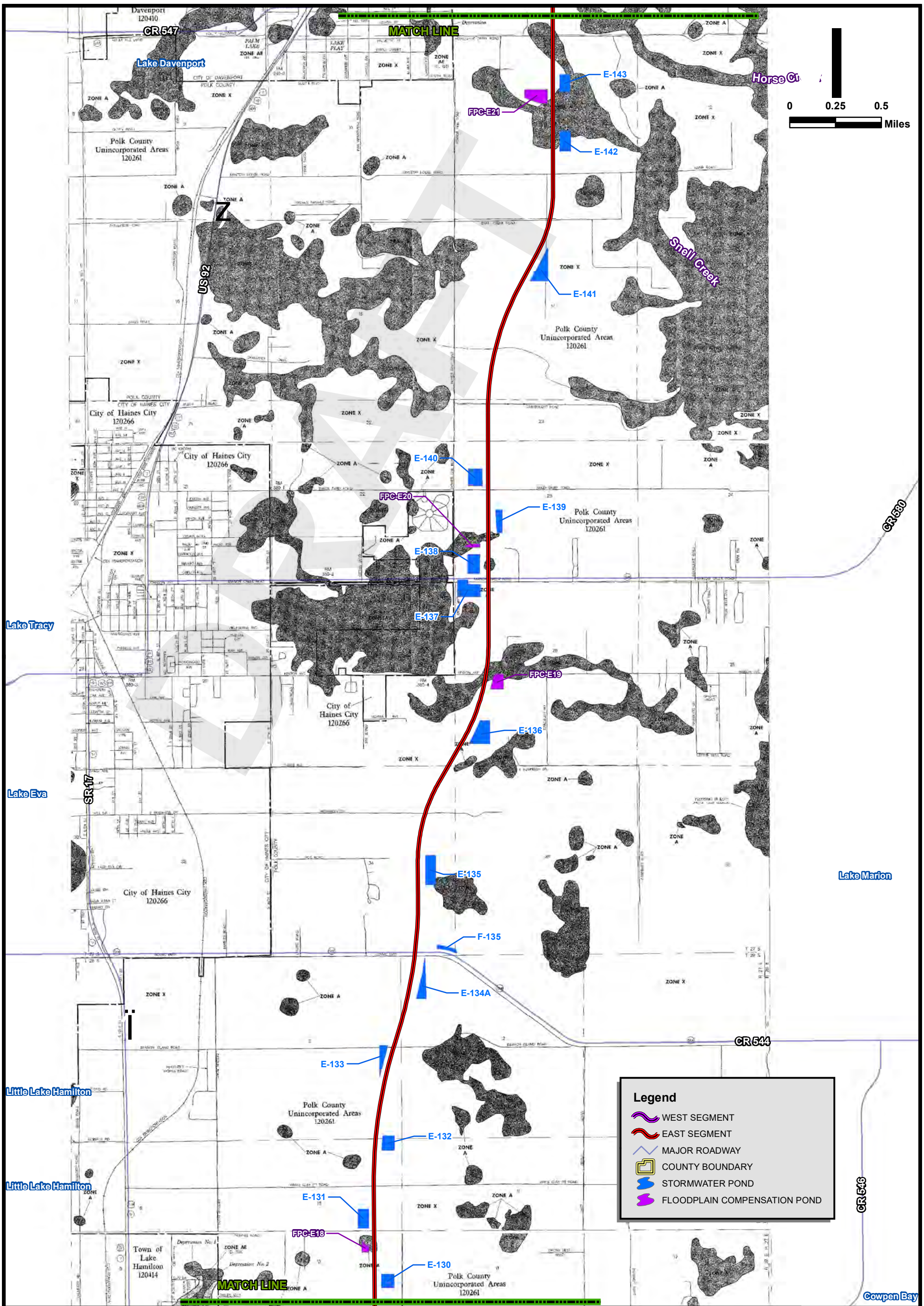
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-2B



FPID: 423601-1-22-01

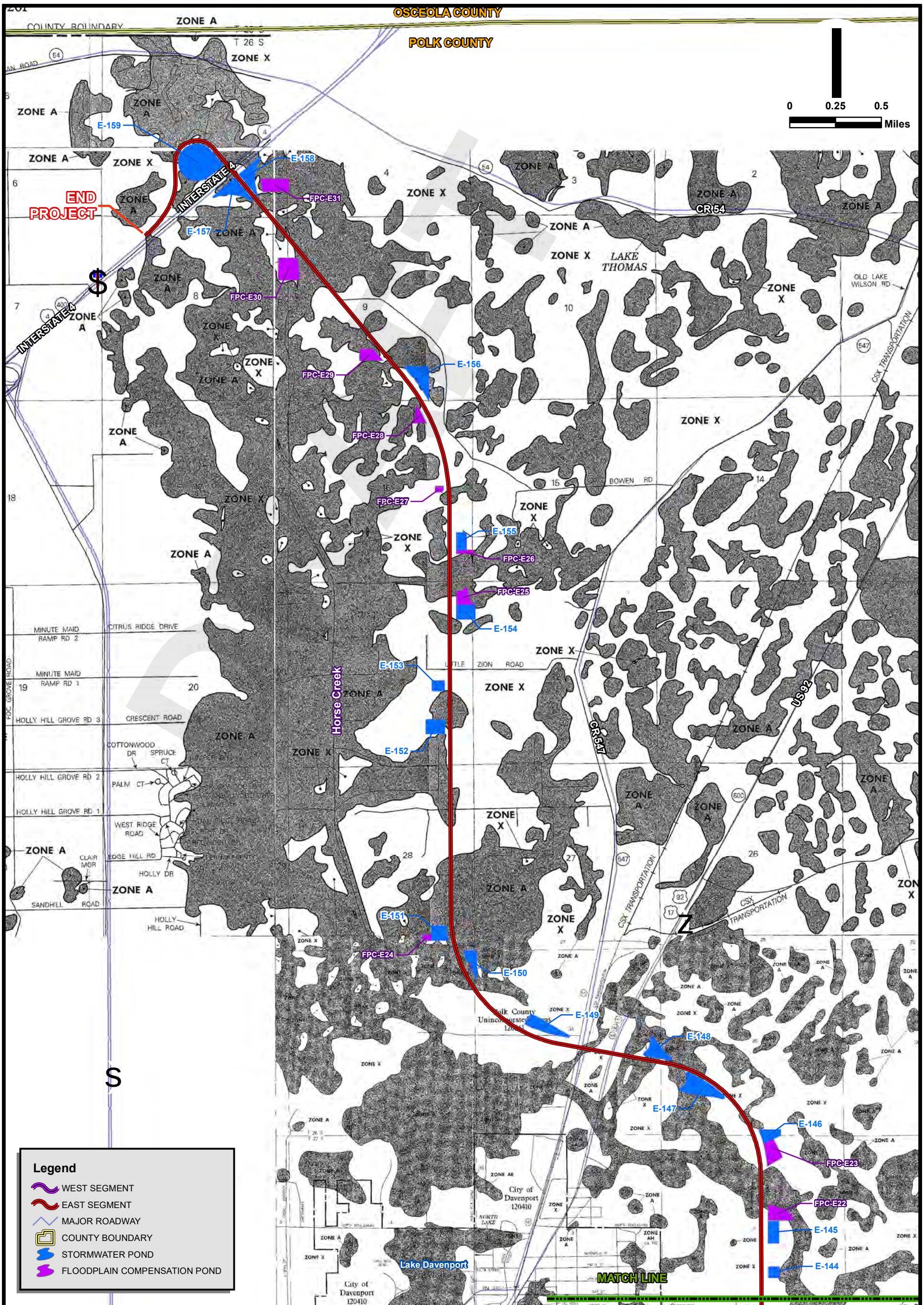
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-3A



FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-3B

DRAFT

APPENDIX B

Floodplain Impact Calculations

Made by: SF
Checked by: REC

Date: December 28, 2010
Time: 9:59 PM
Project Number: PBS-001-01

PROJECT: Central Polk Parkway PD&E Study

FLOODPLAIN SUMMARY - EASTERN LEG

Floodplain Impact Calculations Eastern Leg										Floodplain Compensation Calculations Eastern Leg					
Begin Station	End Station	SIDE	Floodplain impact area	Floodplain Elevation* (ft)	Roadway Length (Ft)	Impact Area (Ac)	Cross-Section Area (ft^2)	Impact Volume = (Ac-Ft)	Floodplain Impact Volume Total (Ac-Ft)	FPC Pond Name	Type Soil (HSG)	Assumed Compensation Depth (ft)	Pond Size (acre)	Volume Compensation (acre-ft)	Floodplain Compensation Volume Total (Ac-Ft)
5000 + 00.00	5002 + 80.00	RT	Peace Creek Drainage Canal	Varies (109-112	280		330.20	2.122	2.122	FPC-W1B	Compensation provided on the western leg - See Western Leg Table			2.140	2.140
5075 + 50.00	5080 + 75.00	RT/LT			525		330.20	3.980							
										FPC-E1A	D	1	9.89	9.890	
5089 + 94.00	5117 + 40.00	RT/LT	Zone A	N/A	2746		330.20	20.816	29.078	FPC-E1B	D	1	4.06	4.060	32.370
										FPC-E1C	D	1	18.42	18.420	
5123 + 68.00	5129 + 33.00	LT			565		330.20	4.283							
5129 + 08.00	5134 + 63.00	RT	Zone A	N/A	555		330.20	4.207							
5133 + 80.00	5136 + 45.00	RT/LT	Zone A	N/A	265		330.20	2.009	8.043	FPC-E2	C	2	4.27	8.540	8.540
5142 + 10.00	5144 + 51.00	LT	Zone A	N/A	241		330.20	1.827							
5151 + 72.00	5200 + 78.00	RT/LT	Peace Creek Drainage Canal	Varies (116-117	4906		330.20	37.189	37.189	FPC-E3	C	2	18.97	37.940	37.940
										FPC-E4	C	2	1.2	2.400	
8000 + 00.00	8007 + 43.00	RT/LT	Zone A	N/A	743		330.20	5.632	5.632	FPC-E5	C	2	1.66	3.320	5.720
8027 + 19.00	8029 + 99.00	RT/LT	Zone A	N/A	280		330.20	2.122	2.122	FPC-E6	D	1	2.07	2.100	2.100
8070 + 06.00	8071 + 61.00	LT			155		330.20	1.175							
			Zone A	N/A					3.608	FPC-E7	D	1	3.6	3.600	3.600
8074 + 49.00	8077 + 70.00	RT/LT			321		330.20	2.433							
5203 + 52.00	5226 + 98.00	RT/LT	Peace Creek Drainage Canal	Varies (117-118	2346		330.20	17.783	17.783	FPC-E8	C	2	9.1	18.200	18.200
Pond E-111		LT			3.00	1.534		4.602							
			Zone A	N/A					35.886	FPC-E9	C	2	18.08	36.160	36.160
5234 + 70.00	5275 + 97.00	RT/LT			4127		330.20	31.284							
5282 + 27.00	5304 + 56.00	RT/LT			2229		330.20	16.897							
			Zone A	N/A					20.353	FPC-E10	D	1	20.5	20.500	20.500
Pond E-113		LT			3.00	1.152		3.456							
5327 + 75.00	5338 + 43.00	RT/LT			1068		330.20	8.096							
			Zone A	N/A					9.236	FPC-E11	D	1	9.3	9.300	9.300
Pond E-115		LT			4.00	0.285		1.140							
5342 + 14.00	5346 + 92.00	RT			478		330.20	3.623							
5349 + 21.00	5361 + 46.00	RT/LT			1225		330.20	9.286							
			Peace Creek Drainage Canal	121					20.575	FPC-E12	C	2	10.3	20.600	20.600
5364 + 33.00	5366 + 97.00	LT			264		330.20	2.001							
Pond E-116		RT			3.70	1.531		5.665							
										FPC-E13	D	1	2.08	2.080	
5374 + 50.00	5379 + 67.00	RT/LT	Zone A	N/A	517		330.20	3.919	3.919	FPC-E14	D	1	1.47	1.470	4.090
										Compensation provided in Pond E-117				0.540	
5395 + 28.00	5401 + 30.00	RT/LT	Zone A	N/A	602		330.20	4.563	4.563	FPC-E15	C	2	2.36	4.720	4.720
5410 + 21.00	5413 + 57.00	RT/LT	Zone A	N/A	336		330.20	2.547	2.547	FPC-E16	D	1	2.6	2.600	2.600
5474 + 03.00	5477 + 49.00	RT/LT	Lake Anne (AE)	124	346		330.20	2.623	2.623	FPC-E17	A	3	1.1	3.300	3.300
5785 + 62.00	5790 + 33.00	RT/LT	Zone A	N/A	471		330.20	3.570	3.570	FPC-E18	A	3	1.2	3.600	3.600
5948 + 68.00	5961 + 10.00	RT/LT	Zone A	N/A	1242		330.20	9.415	9.415	FPC-E19	A	3	3.16	9.480	9.480
5974 + 65.00	5977 + 83.00	LT	Zone AE	110	318		330.20	2.411	2.411	Will be compensated in Pond E-137**				5.540	5.540
5987 + 44.00	5990 + 95.00	RT/LT	Zone A	N/A	351		330.20	2.661	2.661	FPC-E20	A	3	1	3.000	3.000
6117 + 44.00	6125 + 74.00	RT/LT			830		330.20	6.292							
Pond E-142		RT			6.00	0.085		0.510							
			Zone A	N/A					15.043	FPC-E21	A	3	5.31	15.930	15.930
Pond E-143		RT			0.50	0.155		0.078							
6137 + 45.00	6148 + 22.00	RT/LT			1077		330.20	8.164							
										FPC-E22	D	1	5.68	5.680	
6176 + 94.00	6189 + 79.00	RT/LT	Zone A (Horse Creek)	N/A	1285		330.20	9.741	9.741	FPC-E23	D	1	5.05	5.050	10.730
6303 + 92.00	6307 + 67.00	RT/LT	Zone A	N/A	375		330.20	2.843	2.843	FPC-E24	A	3	0.98	2.940	2.940

Made by: SF
Checked by: REC

Date: December 28, 2010
Time: 9:59 PM
Project Number: PBS-001-01

PROJECT: Central Polk Parkway PD&E Study

FLOODPLAIN SUMMARY - EASTERN LEG

Floodplain Impact Calculations Eastern Leg										Floodplain Compensation Calculations Eastern Leg					
Begin Station	End Station	SIDE	Floodplain impact area	Floodplain Elevation* (ft)	Roadway Length (Ft)	Impact Area (Ac)	Cross-Section Area (ft^2)	Impact Volume = (Ac-Ft)	Floodplain Impact Volume Total (Ac-Ft)	FPC Pond Name	Type Soil (HSG)	Assumed Compensation Depth (ft)	Pond Size (acre)	Volume Compensation (acre-ft)	Floodplain Compensation Volume Total (Ac-Ft)
										FPC-E25	D	1	4.07	4.070	
6411 + 06.00	6417 + 79.00	RT/LT	Zone A	N/A	673		330.20	5.102	5.102	FPC-E26	D	1	1.33	1.330	5.400
6434 + 33.00	6437 + 89.00	RT/LT	Zone A	N/A	356		330.20	2.699	2.699	FPC-E27	A	3	0.95	2.850	2.850
6463 + 75.00	6467 + 22.00	RT/LT			347		330.20	2.630							
			Zone A	N/A					3.491	FPC-E28	C	2	2.55	5.100	5.100
Pond E-156		RT			3.00	0.287		0.861							
6482 + 55.00	6489 + 65.00	LT	Zone A	N/A	710		330.20	5.382	5.382	FPC-E29	C	2	4.06	8.120	8.120
6494 + 91.00	6496 + 01.00	LT	Zone A	N/A	110		330.20	0.834	0.834	Will be compensated in Pond E-158**				1.770	1.770
6504 + 78.00	6525 + 45.00	RT/LT	Zone A	N/A	2067		330.20	15.669	15.669	FPC-E30	C	2	8.93	17.860	17.860
6535 + 15.00	6540 + 73.00	RT/LT	Zone A	N/A	558		330.20	4.230	4.230	FPC-E31	D	1	7.06	7.060	7.060
6546 + 88.00	6597 + 96.00	RT/LT	Zone A	N/A	1300		330.20	9.854	9.854	Will be compensated in Pond E-159**				9.960	9.960
								Eastern Leg Impact Total	298.22					Eastern Leg Compensation Total	321.22

*Elevations are NGVD 1929.
**Refer to Pond Calculations in the Central Polk Parkway Pond Siting Report

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Made by: SF
Checked by: REC

Date: December 28, 2010
Time: 9:59 PM
Project Number: PBS-001-01

PROJECT: Central Polk Parkway PD&E Study

FLOODPLAIN SUMMARY - WESTERN LEG

Floodplain Impact Calculations Western Leg										Floodplain Compensation Calculations Western Leg					
Begin Station	End Station	SIDE	Floodplain impact area	Floodplain Elevation* (ft)	Roadway Length (Ft)	Impact Area (Ac)	Cross-Section Area (ft^2)	Impact Volume (Ac-Ft)	Floodplain Impact Volume Total (Ac-Ft)	FPC Pond Name	Type Soil (HSG)	Assumed Compensation Depth (ft)	Pond Size (acre)	Volume Compensation (acre-ft)	Floodplain Compensation Volume Total (Ac-Ft)
2000 + 00.00	2053 + 21.00	RT/LT			5321		406.40	49.643							
			Peace Creek Drainage Canal	Varies (109-112)					54.183	FPC-W1B	D	1	56.32	56.320	56.320
Pond W-103B		LT			5.00	0.908		4.540							
2073 + 73.00	2079 + 53.00	RT/LT	Wahneta Farms Canal	110	580		406.40	5.411	5.411	FPC-W2B	D	1	5.49	5.490	5.490
2094 + 35.00	2095 + 53.00	LT			118		406.40	1.101							
			Zone A	N/A					1.563	FPC-W3B	D	1	1.61	1.610	1.610
Pond W-105B		LT			2.70	0.171		0.462							
Frontage Road			Zone A	N/A		4.270		6.832		FPC-W1A	C	2	3.42	6.840	
									7.952						8.440
Frontage Road			Lake Garfield (Zone A)	N/A		0.700		1.120		FPC-W2A	C	2	0.8	1.600	
9008 + 31.00	9031 + 30.00	RT/LT			2299		406.40	21.449							
			Zone AE	106					23.847	FPC-W3A	D	1	24.76	24.760	24.760
2117 + 35.00	2119 + 92.00	LT			257		406.40	2.398							
Pond W-107		LT	Zone A	N/A		1.878		1.690	1.690	Compensation is provided in Pond W-107**				1.720	1.720
2128 + 84.00	2167 + 47.00	RT/LT			3863		406.40	36.040							
			Zone AE	106					44.754	FPC-W4	C	2	22.68	45.360	45.360
2182 + 35.00	2191 + 69.00	RT/LT			934		406.40	8.714							
2203 + 34.00	2226 + 27.00	RT/LT			2293		406.40	21.393							
2234 + 52.00	2237 + 63.00	LT			311		406.40	2.902							
			Zone A	N/A					62.658	FPC-W5	D	1	63	63.000	63.000
2244 + 01.00	2269 + 96.00	RT/LT			2265		406.40	21.132							
Pond W-110		RT			6.50	2.651		17.232							
2271 + 98.00	2291 + 13.00	RT/LT			1915		406.40	17.866							
			Zone A	N/A					18.188	FPC-W6	A	3	6.1	18.300	18.300
Pond W-111		RT			0.50	0.644		0.322							
2301 + 82.00	2303 + 42.00	LT	Peace Creek Drainage Canal	101	160		406.40	1.493	1.493	FPC-W7	C	2	0.76	1.520	1.520
2325 + 15.00	2330 + 95.00	LT	Zone A	N/A	580		406.40	5.411	5.411	FPC-W8	C	2	2.74	5.480	5.480
2384 + 84.00	2417 + 93.00	RT/LT	Zone A	N/A	3309		406.40	30.872	30.872	FPC-W9	A	3	10.4	31.200	31.200
2479 + 26.00	2494 + 48.00	RT/LT			1522		406.40	14.200							
2495 + 98.00	2505 + 83.00	RT/LT			985		406.40	9.190		FPC-W10A	D	1	4.45	4.450	
										FPC-W10B	D	1	3.7	3.700	
2508 + 06.00	2513 + 20.00	RT/LT	Zone A	N/A	514		406.40	4.795	41.495	FPC-W10C	D	1	2.85	2.850	42.590
										FPC-W10D	D	1	4.47	4.470	
2515 + 47.00	2522 + 54.00	RT/LT			707		406.40	6.596		FPC-W10E	C	2	13.56	27.120	
2526 + 34.00	2530 + 82.00	RT/LT			448		406.40	4.180							
Pond W-119		LT			3.50	0.724		2.534							
2591 + 50.00	2598 + 78.00	RT/LT	Lake Lena Drain	105	728		406.40	6.792	6.792	FPC-W11	D	1	6.8	6.800	6.800
2658 + 70.00	2658 + 74.00	RT/LT	Zone A	N/A	4		406.40	0.037	0.037	Compensation is provided in Pond W-122**				2.280	2.280
Pond W-118		RT	Zone A	N/A		0.340		1.135	1.135	Compensation is provided in Pond W-118**				2.060	2.060
2582 + 96.00	2585 + 61.00	RT/LT			265		406.40	2.472							
			Zone A	N/A					2.538	Compensation is provided in Pond W-120**				4.820	4.820
Pond W-120		LT			0.50	0.132		0.066							
								Western Leg Impact Total	**310.02**					**Western Leg Compensation Total**	**321.75**

*Elevations are NGVD 1929.
**Refer to Pond Calculations in the Central Polk Parkway Pond Siting Report

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APPENDIX C

Hydrologic Analysis

CROSSDRAIN SIZE DETERMINATION

Stucture Number	Station	Cross Drains		Contributing Area (ac)	Time of Concetration[2] (hr)	C coefficient	Intensity (in/hr)	Assumed V[1] (fps)	Q_{25} (cfs)	Q_{50} (cfs)	Area (sf)	Recommended Size (in)
		Type	Barrel									
CDE-01	5032+00	RCP	1	134.79	9.00	0.14	0.71	4.00	13.69	16.35	4.09	30"
***CDE-02**	5078+00	RCP	2	2131.48	N/A	N/A	N/A	4.00	479.19	601.41	150.35	9'X9' CBC
CDE-03	5112+00	RCP	3	45.87	0.87	0.44	4.20	4.00	83.91	100.27	25.07	34"X53"
CDE-04	5230+00	RCP	2	89.30	1.72	0.22	3.55	4.00	69.74	83.34	20.84	48"
***CDE-05**	5246+00	RCP	2	2611.97	N/A	N/A	N/A	4.00	184.23	235.37	58.84	5'X6' CBC
CDE-06	5268+00	RCP	2	23.64	0.67	0.22	4.85	4.00	24.93	29.79	7.45	30"
CDE-07	5290+00	RCP	2	78.83	1.36	0.20	3.35	4.00	53.06	63.40	15.85	42"
CDE-08	5302+00	RCP	2	96.01	1.23	0.23	3.30	4.00	71.44	85.38	21.34	48"
CDE-09	5380+00	RCP	2	61.78	2.15	0.46	2.10	4.00	60.14	71.87	17.97	42"
CDE-10	5426+00	RCP	3	38.61	0.91	0.50	4.10	4.00	78.36	93.64	23.41	34"X53"
CDE-11	5476+00	RCP	3	93.64	0.82	0.28	4.40	4.00	115.65	138.20	34.55	38"X60"
CDE-12	5519+00	RCP	3	107.00	0.98	0.22	3.80	4.00	89.45	106.90	26.72	42"
CDE-13	5532+00	RCP	1	42.00	0.84	0.22	4.30	4.00	39.73	47.48	11.87	48"
CDE-14	5585+00	RCP	3	70.34	0.51	0.22	5.60	4.00	86.66	103.56	25.89	34"X53"
CDE-15	5608+00	RCP	1	29.59	0.55	0.22	5.60	4.00	36.45	43.56	10.89	48"
CDE-16	5753+50	RCP	3	161.90	1.32	0.22	3.10	4.00	110.42	131.95	32.99	48"
CDE-17	5856+00	RCP	3	211.55	1.32	0.22	2.40	4.00	111.70	133.48	33.37	48"
CDE-18	5883+50	RCP	4	171.80	0.94	0.22	4.00	4.00	151.18	180.66	45.17	38"X60"
CDE-19	5932+00	RCP	1	6.13	0.37	0.22	6.10	4.00	10.28	12.29	3.07	24"
***CDE-20**	5956+00	RCP	2	2362.90	N/A	N/A	N/A	4.00	247.24	314.45	78.61	6'X7' CBC
CDE-21	5996+00	RCP	2	20.72	0.99	0.22	3.80	4.00	17.32	20.70	5.17	24"
CDE-22	6100+00	RCP	1	19.54	0.79	0.35	4.50	4.00	30.44	36.38	9.10	42"
CDE-23	6120+00	RCP	4	263.60	1.98	0.26	2.30	4.00	160.06	191.27	47.82	38"X60"
***CDE-24**	6186+00	RCP	1	10377.35	N/A	N/A	N/A	4.00	1491.92	1853.19	463.30	Bridge
CDE-25	6258+00	RCP	1	5.54	0.77	0.28	4.60	4.00	7.01	8.37	2.09	24"
***CDE-26**	6306+00	RCP	4	731.72	N/A	N/A	N/A	4.00	127.26	162.25	40.56	34"X53"
CDE-27	6353+00	RCP	2	15.18	0.58	0.28	5.10	4.00	21.29	25.44	6.36	19"X30"
CDE-28	6376+00	RCP	1	37.84	1.23	0.27	3.25	4.00	33.20	39.67	9.92	34"X53"
***CDE-29**	6412+00	RCP	4	386.59	N/A	N/A	N/A	4.00	139.32	176.96	44.24	48"

1 - From FDOT Culvert Handbook
2 - Tc determined through WinTR-55 (see attached)
* - USGS Regression Equation for Natural Flow Conditions in Florida - Region A was used

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Ch'd by:

DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - East Segment

CDE-01: (Sta. 5032+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 540.12

USE TOTAL TIME of CONCENTRATION = 540.10

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 0.71 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

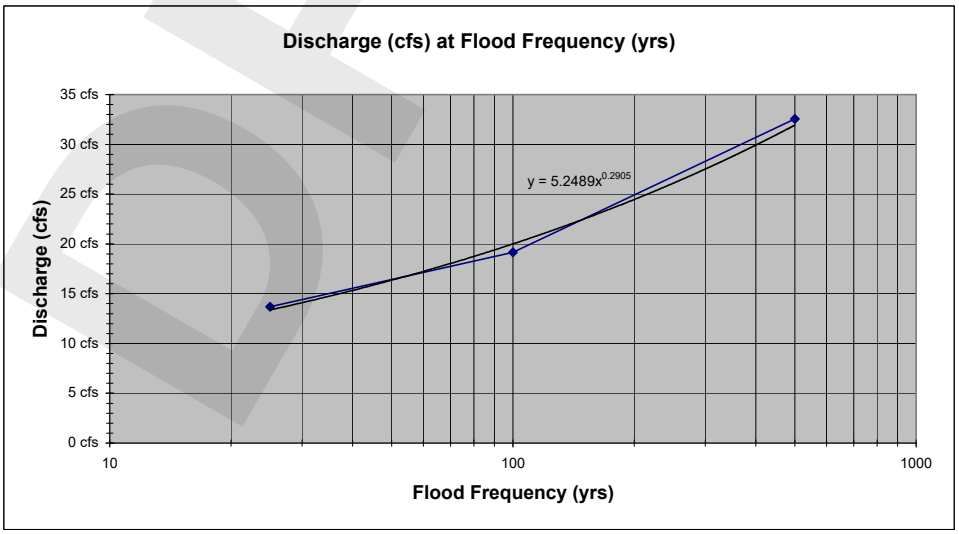
A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 0.00 ac	C_2 = 0.45	Woods
A_3= 134.79 ac	C_3 = 0.13	Natural Range

A_T = 134.79 ac
C_T = 0.13

X_{25} = 1.10
C_{25} = 0.14

25 yr Q = 1.0
50 yr Q = $5.2489*(50)^{0.2905}$
100 yr Q = 1.4 x $Q_{25\ yr}$
500 yr Q = 1.7 x $Q_{100\ yr}$

$Q_{25\ yr}$ = 13.69 cfs
$Q_{50\ yr}$ = 16.35 cfs
$Q_{100\ yr}$ = 19.16 cfs
$Q_{500\ yr}$ = 32.57 cfs



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PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - East Segment

CDE-02: (Sta. 5078+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

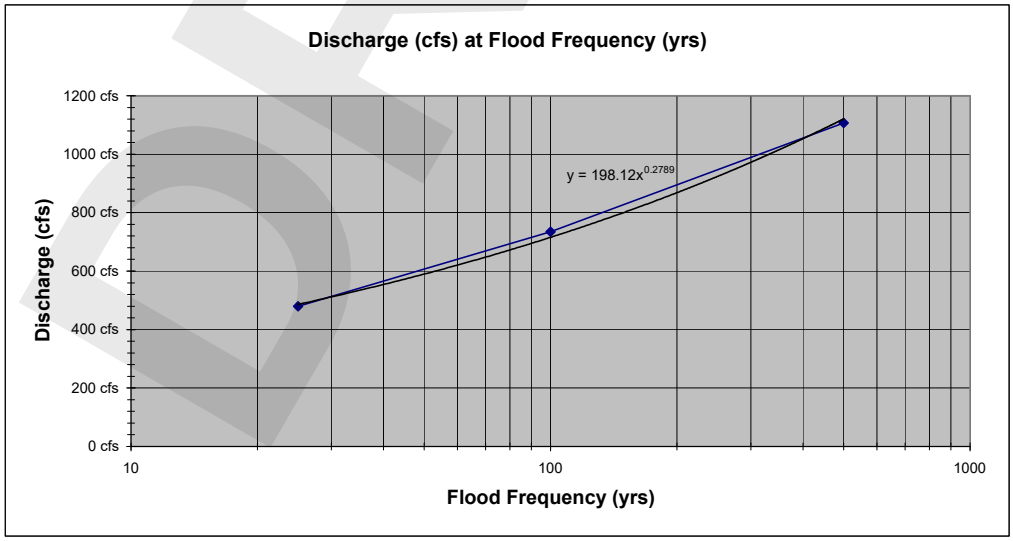
Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 2131.48 ac
DA= 3.33 sq mi
SL= 7.76 ft/mi
LK= 1.88%

Depth = 18.00 ft
Length = 2.32 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$

$Q_{25\ yr}$ = 479.19 cfs
$Q_{50\ yr}$ = 601.41 cfs
$Q_{100\ yr}$ = 735.10 cfs
$Q_{500\ yr}$ = 1107.12 cfs



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PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - East Segment

CDE-03: (Sta. 5112+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 52.02

USE TOTAL TIME of CONCENTRATION = 52.00

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.20 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

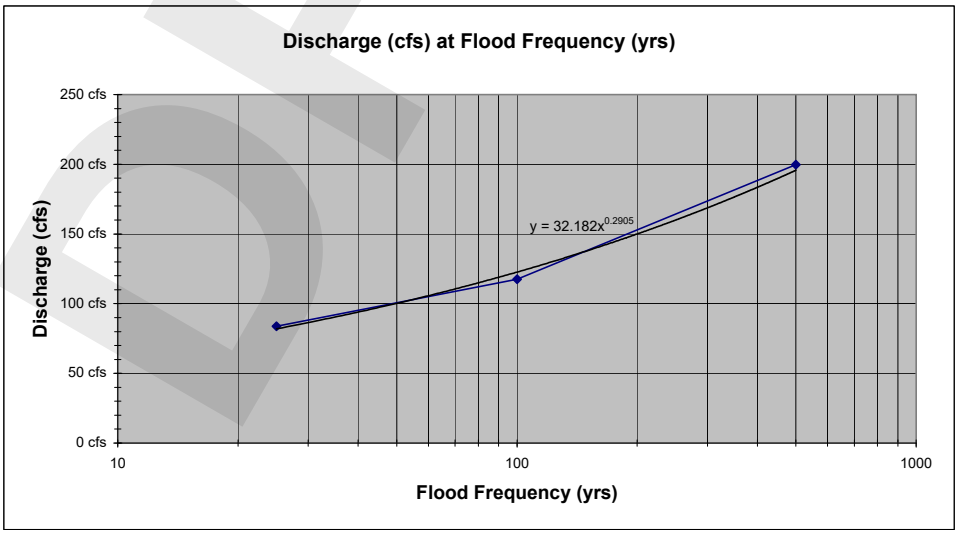
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 38.12 ac	C_2 = 0.45	Woods
A_3= 7.75 ac	C_3 = 0.13	Natural Range

A_T = 45.87 ac
C_T = 0.40

X_{25} = 1.10
C_{25} = 0.44

25 yr Q = 1.0	**$Q_{25\ yr}$ = 83.91 cfs**
50 yr Q = $32.182*(50)^{0.2905}$	**$Q_{50\ yr}$ = 100.27 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 117.47 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 199.70 cfs**



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PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - East Segment

CDE-04: (Sta. 5230+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 103.26

USE TOTAL TIME of CONCENTRATION = 103.30

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 3.55 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

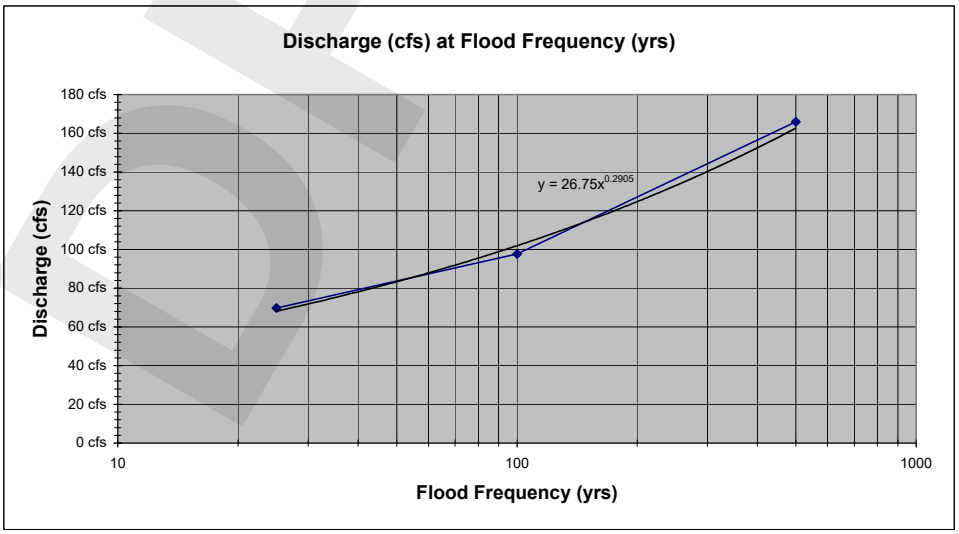
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 89.30 ac	C_1 = 0.20	Grass
A_2= 0.00 ac	C_2 = 0.45	Woods
A_3= 0.00 ac	C_3 = 0.13	Natural Range

A_T = 89.30 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 69.74 cfs**
50 yr Q = $26.75*(50)^{0.2905}$	**$Q_{50\ yr}$ = 83.34 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 97.64 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 165.99 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-05: (Sta. 5246+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

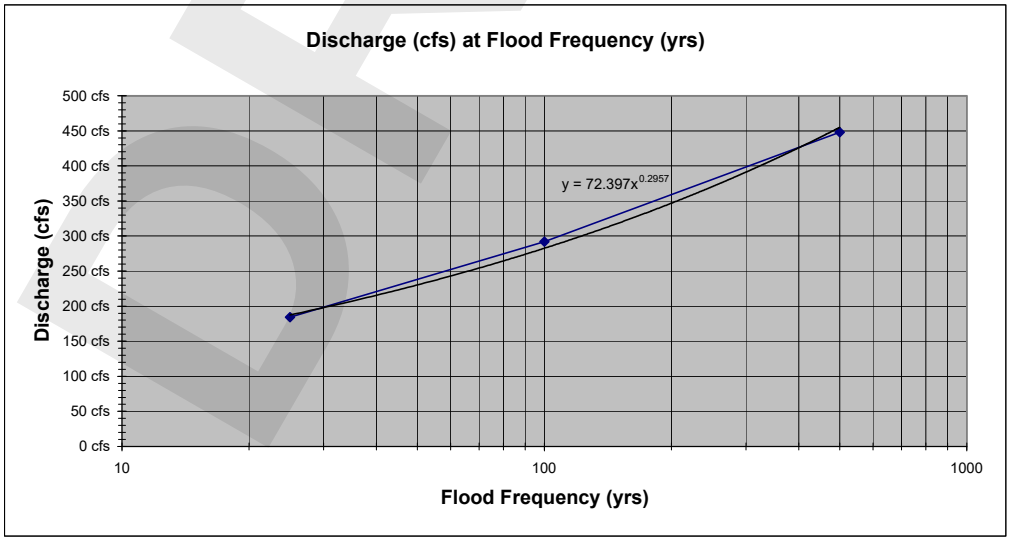
Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 2611.97 ac
DA= 4.08 sq mi
SL= 5.66 ft/mi
LK= 17.27%

Depth = 17.00 ft
Length = 3.01 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$

$Q_{25\ yr}$ = 184.23 cfs
$Q_{50\ yr}$ = 235.37 cfs
$Q_{100\ yr}$ = 292.17 cfs
$Q_{500\ yr}$ = 447.91 cfs



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Central Polk Parkway PD&E Study - East Segment

CDE-06: (Sta. 5268+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 40.08

USE TOTAL TIME of CONCENTRATION = 40.10

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.85 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

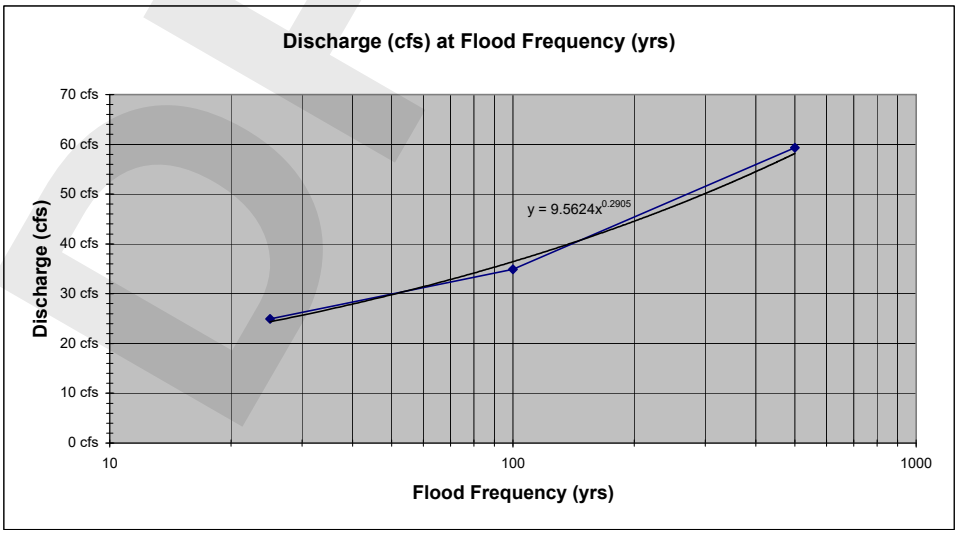
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 5.00 ac	C_2 = 0.45	Woods
A_3= 18.64 ac	C_3 = 0.13	Natural Range

A_T = 23.64 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 24.93 cfs**
50 yr Q = $9.5624*(50)^{0.2905}$	**$Q_{50\ yr}$ = 29.79 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 34.90 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 59.34 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - East Segment

CDE-07: (Sta. 5290+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 81.78

USE TOTAL TIME of CONCENTRATION = 81.80

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 3.35 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

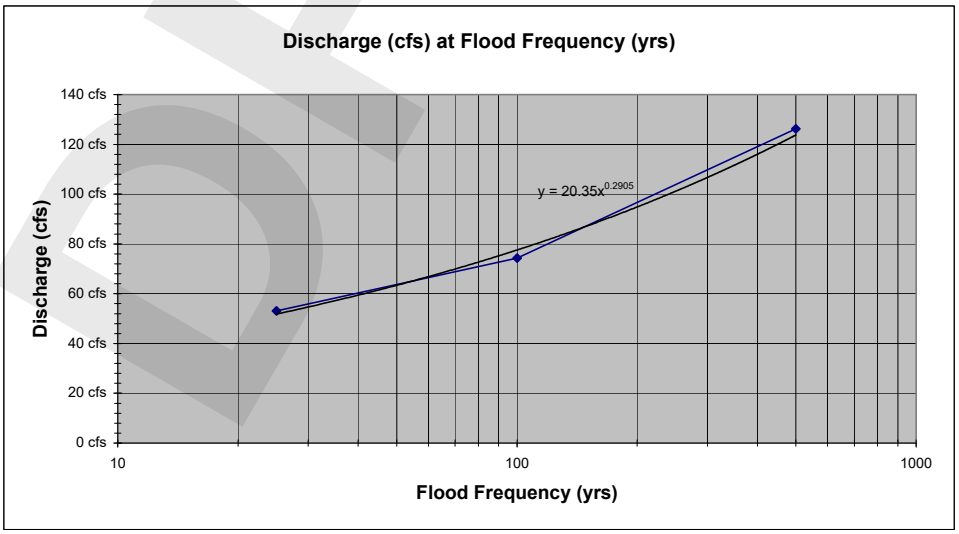
A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 12.97 ac	C_2 = 0.45	Woods
A_3= 65.86 ac	C_3 = 0.13	Natural Range

A_T = 78.83 ac
C_T = 0.18

X_{25} = 1.10
C_{25} = 0.20

25 yr Q = 1.0
50 yr Q = $20.35*(50)^{0.2905}$
100 yr Q = 1.4 x $Q_{25\ yr}$
500 yr Q = 1.7 x $Q_{100\ yr}$

$Q_{25\ yr}$ = 53.06 cfs
$Q_{50\ yr}$ = 63.40 cfs
$Q_{100\ yr}$ = 74.28 cfs
$Q_{500\ yr}$ = 126.28 cfs



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Central Polk Parkway PD&E Study - East Segment

CDE-08: (Sta. 5302+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 73.68

USE TOTAL TIME of CONCENTRATION = 73.70

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 3.30 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

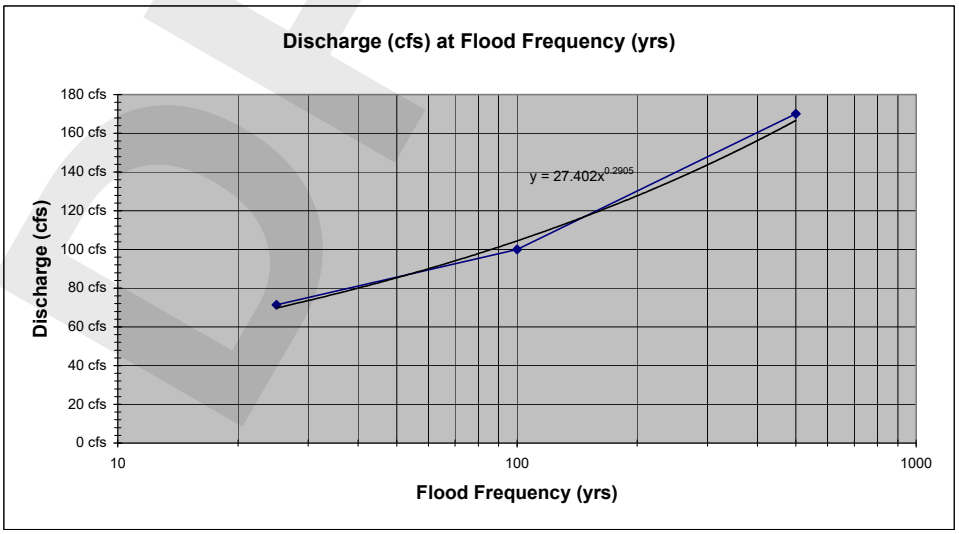
A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 22.50 ac	C_2 = 0.45	Woods
A_3= 73.51 ac	C_3 = 0.13	Natural Range

A_T = 96.01 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.23

25 yr Q = 1.0
50 yr Q = $27.402*(50)^{0.2905}$
100 yr Q = 1.4 x $Q_{25\ yr}$
500 yr Q = 1.7 x $Q_{100\ yr}$

$Q_{25\ yr}$ = 71.44 cfs
$Q_{50\ yr}$ = 85.38 cfs
$Q_{100\ yr}$ = 100.02 cfs
$Q_{500\ yr}$ = 170.03 cfs



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Central Polk Parkway PD&E Study - East Segment

CDE-09: (Sta. 5380+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 128.88

USE TOTAL TIME of CONCENTRATION = 128.90

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 2.10 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

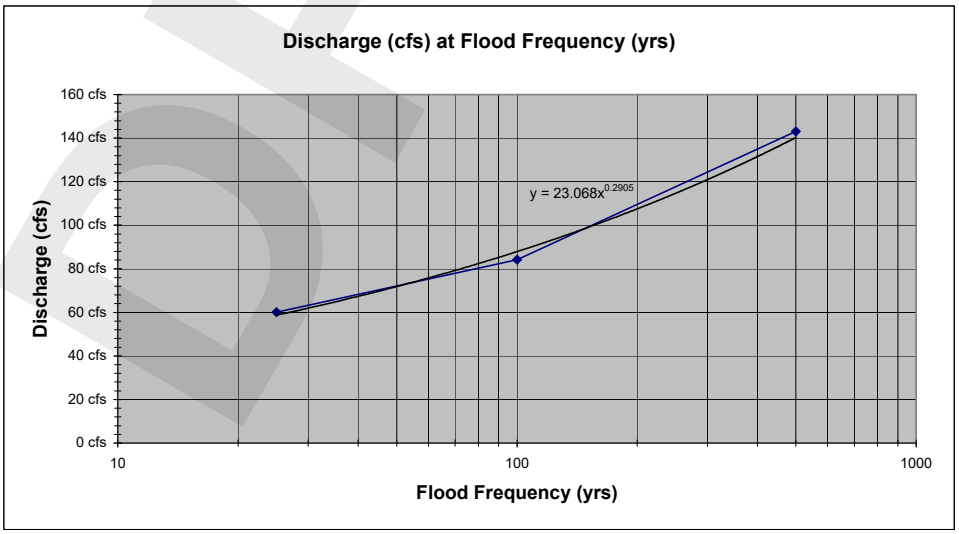
A_1= 7.06 ac	C_1 = 0.20	Grass
A_2= 54.72 ac	C_2 = 0.45	Woods
A_3= 0.00 ac	C_3 = 0.13	Natural Range

A_T = 61.78 ac
C_T = 0.42

X_{25} = 1.10
C_{25} = 0.46

25 yr Q = 1.0
50 yr Q = $23.068*(50)^{0.2905}$
100 yr Q = 1.4 x $Q_{25\ yr}$
500 yr Q = 1.7 x $Q_{100\ yr}$

$Q_{25\ yr}$ = 60.14 cfs
$Q_{50\ yr}$ = 71.87 cfs
$Q_{100\ yr}$ = 84.20 cfs
$Q_{500\ yr}$ = 143.14 cfs



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Central Polk Parkway PD&E Study - East Segment

CDE-10: (Sta. 5426+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 54.42

USE TOTAL TIME of CONCENTRATION = 54.40

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.10 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

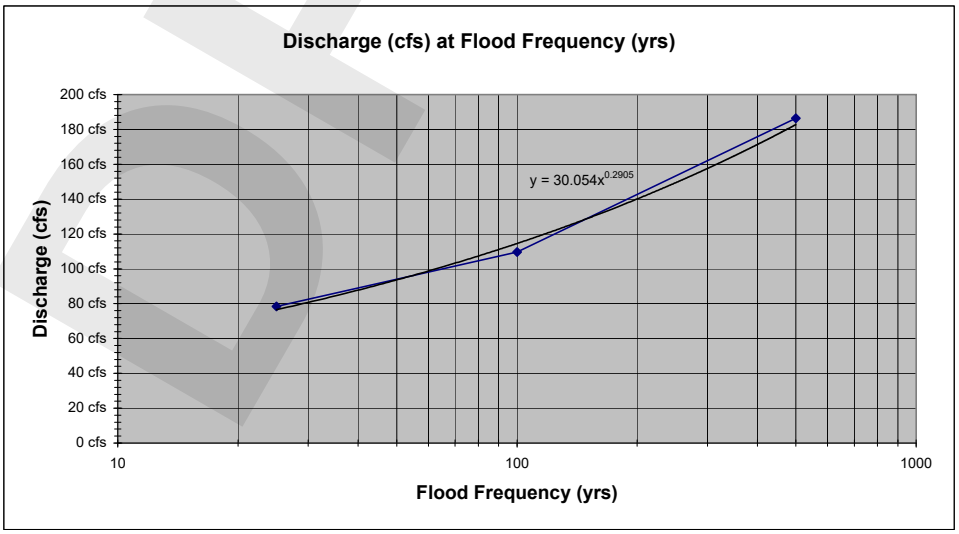
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 38.61 ac	C_2 = 0.45	Woods
A_3= 0.00 ac	C_3 = 0.13	Natural Range

A_T = 38.61 ac
C_T = 0.45

X_{25} = 1.10
C_{25} = 0.50

25 yr Q = 1.0	**$Q_{25\ yr}$ = 78.36 cfs**
50 yr Q = $30.054*(50)^{0.2905}$	**$Q_{50\ yr}$ = 93.64 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 109.70 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 186.49 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-11: (Sta. 5476+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 48.90

USE TOTAL TIME of CONCENTRATION = 48.90

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.40 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

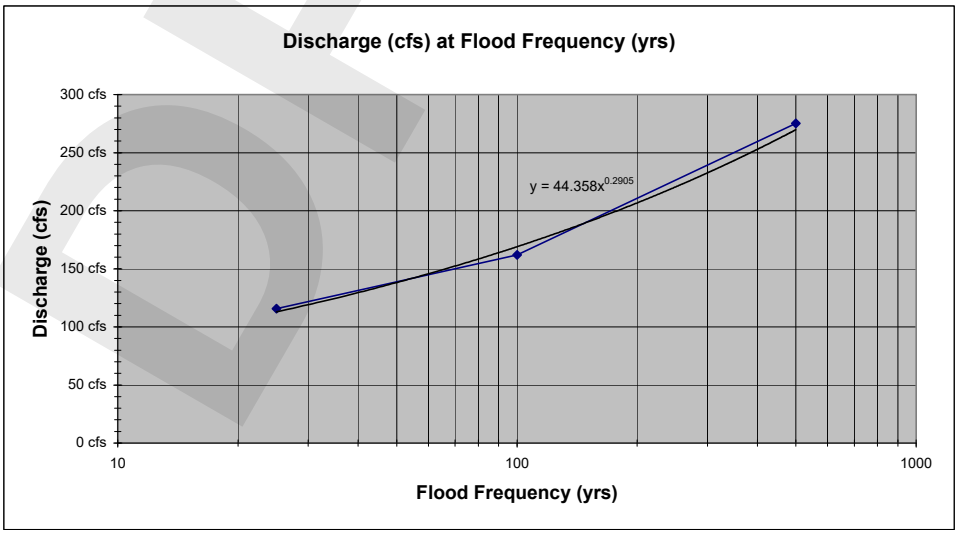
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 77.82 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 9.44 ac	C_2 = 0.20	Woods
A_3= 6.38 ac	C_3 = 0.40	Single Family Residential

A_T = 93.64 ac
C_T = 0.26

X_{25} = 1.10
C_{25} = 0.28

25 yr Q = 1.0	**$Q_{25\ yr}$ = 115.65 cfs**
50 yr Q = $44.358*(50)^{0.2905}$	**$Q_{50\ yr}$ = 138.20 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 161.91 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 275.25 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-12: (Sta. 5519+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 58.98

USE TOTAL TIME of CONCENTRATION = 59.00

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 3.80 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

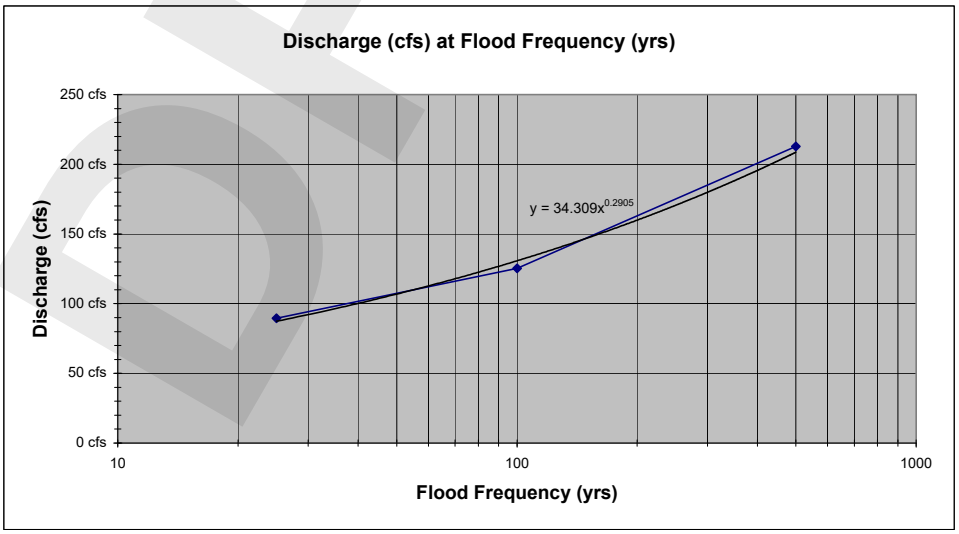
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 107.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 107.00 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 89.45 cfs**
50 yr Q = $34.309*(50)^{0.2905}$	**$Q_{50\ yr}$ = 106.90 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 125.23 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 212.90 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-13: (Sta. 5532+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 50.34

USE TOTAL TIME of CONCENTRATION = 50.30

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.30 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

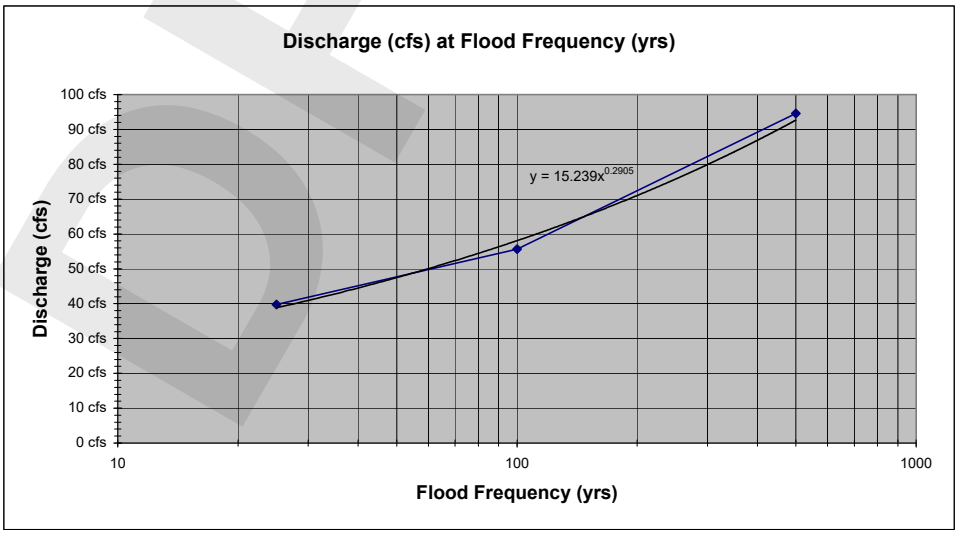
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 42.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 42.00 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 39.73 cfs**
50 yr Q = $15.239*(50)^{0.2905}$	**$Q_{50\ yr}$ = 47.48 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 55.62 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 94.56 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-14: (Sta. 5585+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 30.36

USE TOTAL TIME of CONCENTRATION = 30.40

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 5.60 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

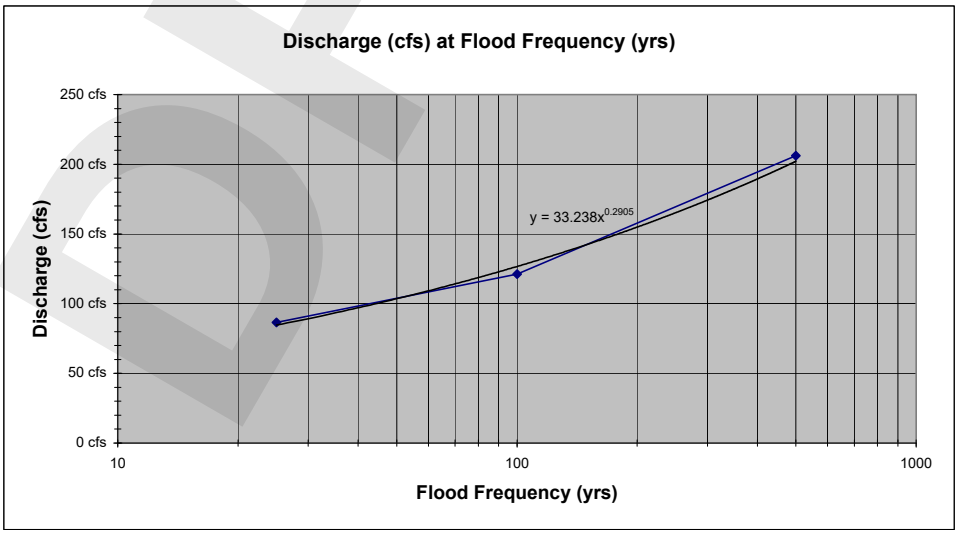
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 70.34 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 70.34 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 86.66 cfs**
50 yr Q = $33.238*(50)^{0.2905}$	**$Q_{50\ yr}$ = 103.56 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 121.32 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 206.25 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-15: (Sta. 5608+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 33.12

USE TOTAL TIME of CONCENTRATION = 33.10

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 5.60 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

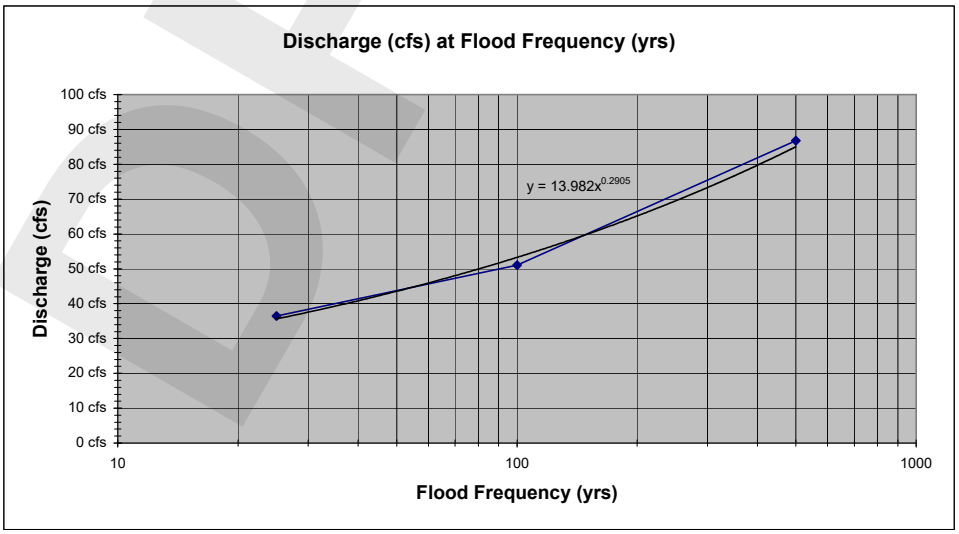
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 29.59 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 29.59 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 36.45 cfs**
50 yr Q = $13.982*(50)^{0.2905}$	**$Q_{50\ yr}$ = 43.56 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 51.04 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 86.76 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-16: (Sta. 5753+50)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 79.20

USE TOTAL TIME of CONCENTRATION = 79.20

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 3.10 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

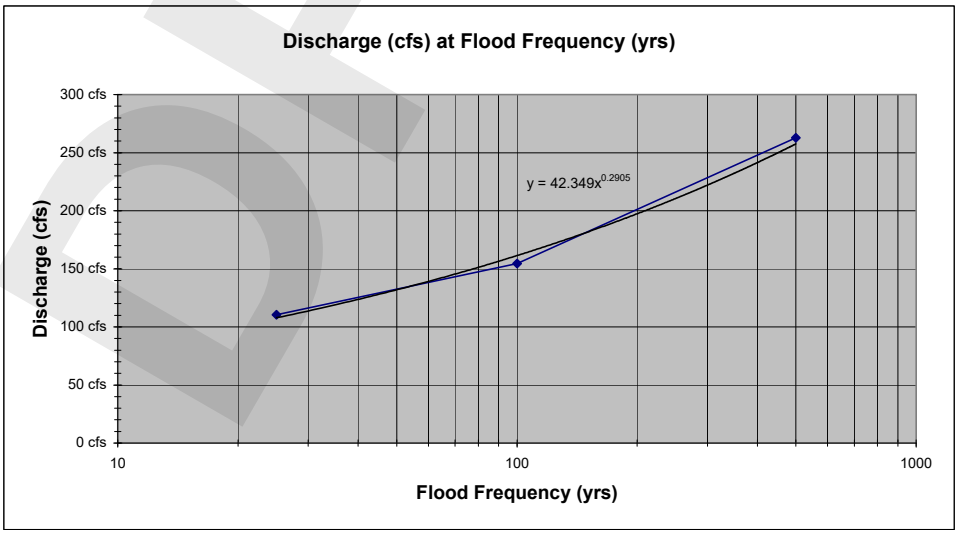
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 161.90 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 161.90 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 110.42 cfs**
50 yr Q = $42.349*(50)^{0.2905}$	**$Q_{50\ yr}$ = 131.95 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 154.58 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 262.79 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-17: (Sta. 5856+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 79.20

USE TOTAL TIME of CONCENTRATION = 79.20

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 2.40 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

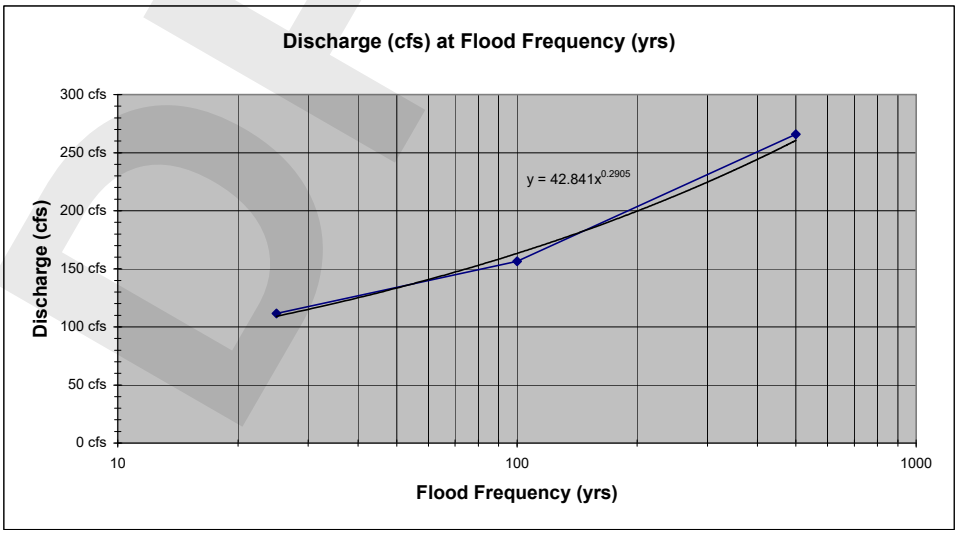
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 211.55 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 211.55 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 111.70 cfs**
50 yr Q = $42.841*(50)^{0.2905}$	**$Q_{50\ yr}$ = 133.48 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 156.38 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 265.84 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - East Segment

CDE-18: (Sta. 5883+50)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 56.52

USE TOTAL TIME of CONCENTRATION = 56.50

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.00 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

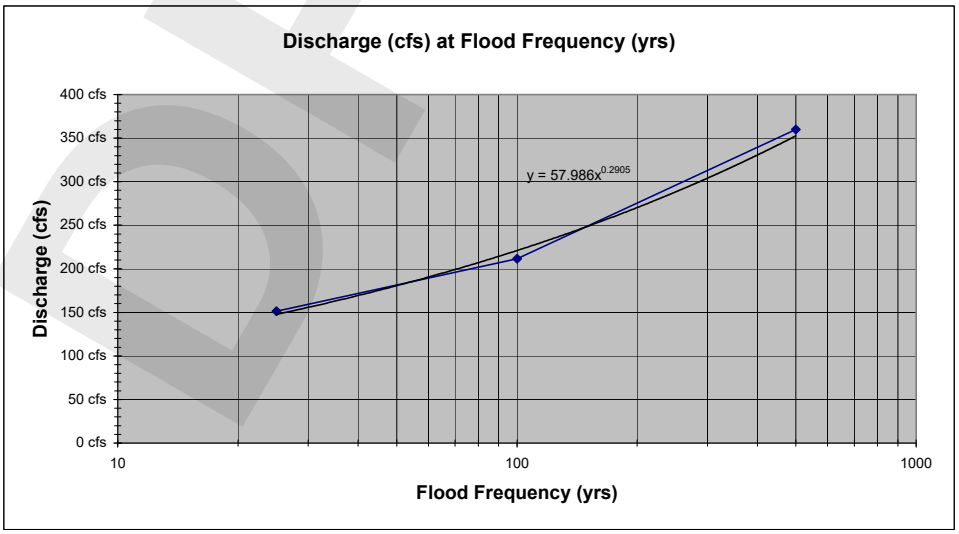
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 171.80 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 171.80 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 151.18 cfs**
50 yr Q = $57.986*(50)^{0.2905}$	**$Q_{50\ yr}$ = 180.66 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 211.66 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 359.82 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-19: (Sta. 5932+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 22.20

USE TOTAL TIME of CONCENTRATION = 22.20

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 6.10 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

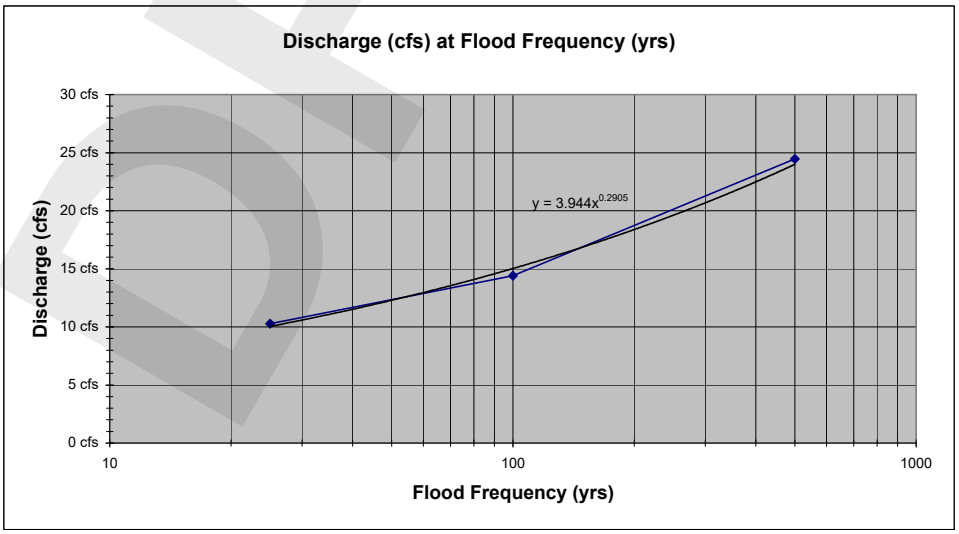
A_1= 6.13 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 0.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 6.13 ac
C_T = 0.25

X_{25} = 1.10
C_{25} = 0.28

25 yr Q = 1.0
50 yr Q = $3.944*(50)^{0.2905}$
100 yr Q = 1.4 x $Q_{25\ yr}$
500 yr Q = 1.7 x $Q_{100\ yr}$

$Q_{25\ yr}$ = 10.28 cfs
$Q_{50\ yr}$ = 12.29 cfs
$Q_{100\ yr}$ = 14.40 cfs
$Q_{500\ yr}$ = 24.47 cfs



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Central Polk Parkway PD&E Study - East Segment

CDE-20: (Sta. 5956+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 2362.90 ac
DA= 3.69 sq mi
SL= 3.41 ft/mi
LK= 7.30%

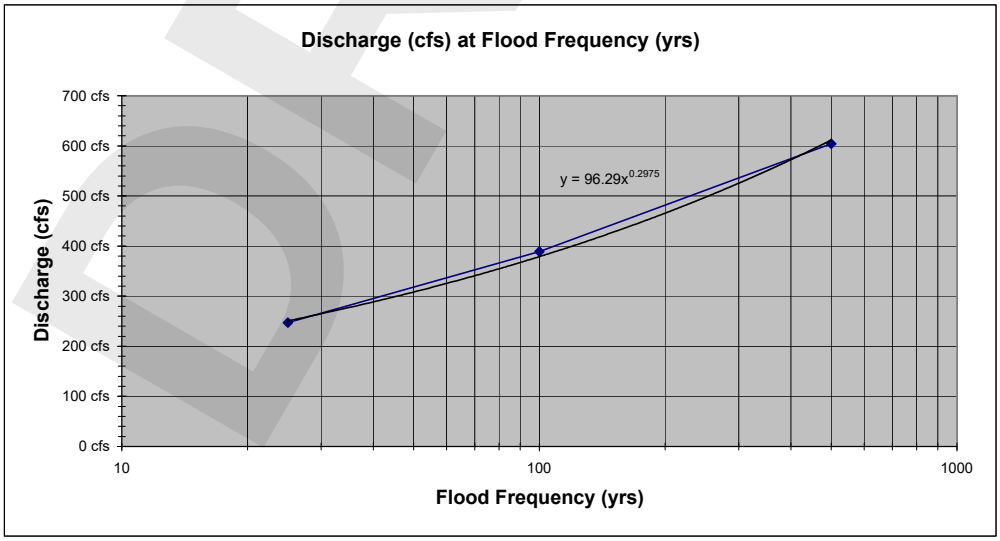
Depth = 14.00 ft
Length = 4.10 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$ — **$Q_{25\ yr}$ = 247.24 cfs**

50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$ — **$Q_{50\ yr}$ = 314.45 cfs**

100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$ — **$Q_{100\ yr}$ = 389.27 cfs**

500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$ — **$Q_{500\ yr}$ = 603.96 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-21: (Sta. 5996+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 59.10

USE TOTAL TIME of CONCENTRATION = 59.10

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 3.80 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

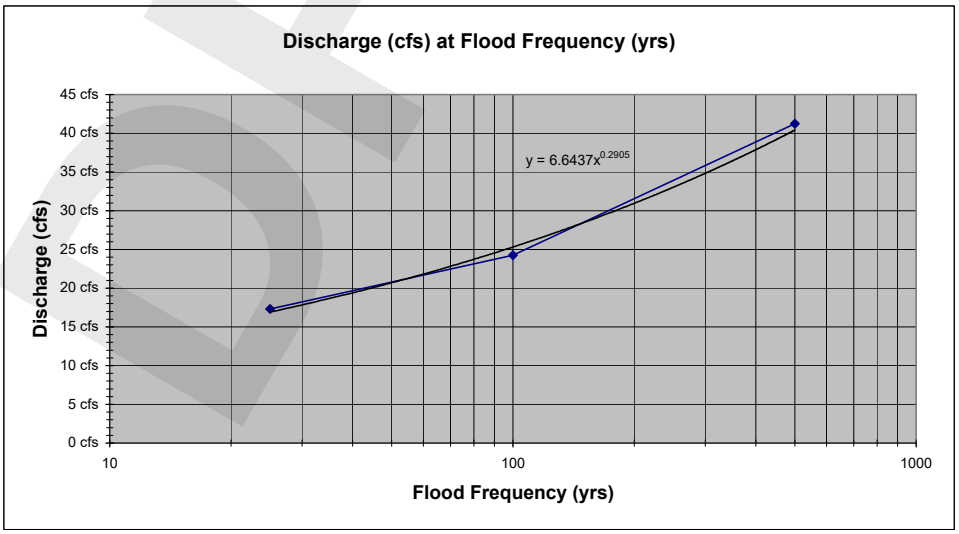
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 20.72 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 20.72 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 17.32 cfs**
50 yr Q = $6.6437*(50)^{0.2905}$	**$Q_{50\ yr}$ = 20.70 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 24.25 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 41.23 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-22: (Sta. 6100+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 47.40

USE TOTAL TIME of CONCENTRATION = 47.40

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.50 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

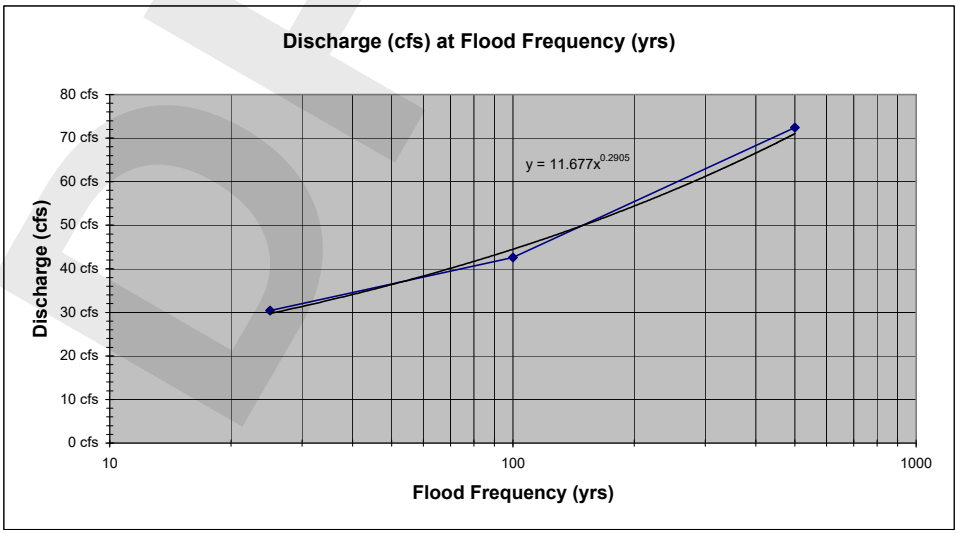
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 5.77 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 4.00 ac	C_2 = 0.20	Woods
A_3= 9.77 ac	C_3 = 0.40	Single Family Residential

A_T = 19.54 ac
C_T = 0.31

X_{25} = 1.10
C_{25} = 0.35

25 yr Q = 1.0	**$Q_{25\ yr}$ = 30.44 cfs**
50 yr Q = $11.677*(50)^{0.2905}$	**$Q_{50\ yr}$ = 36.38 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 42.62 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 72.46 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-23: (Sta. 6120+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 118.62

USE TOTAL TIME of CONCENTRATION = 118.60

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 2.30 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

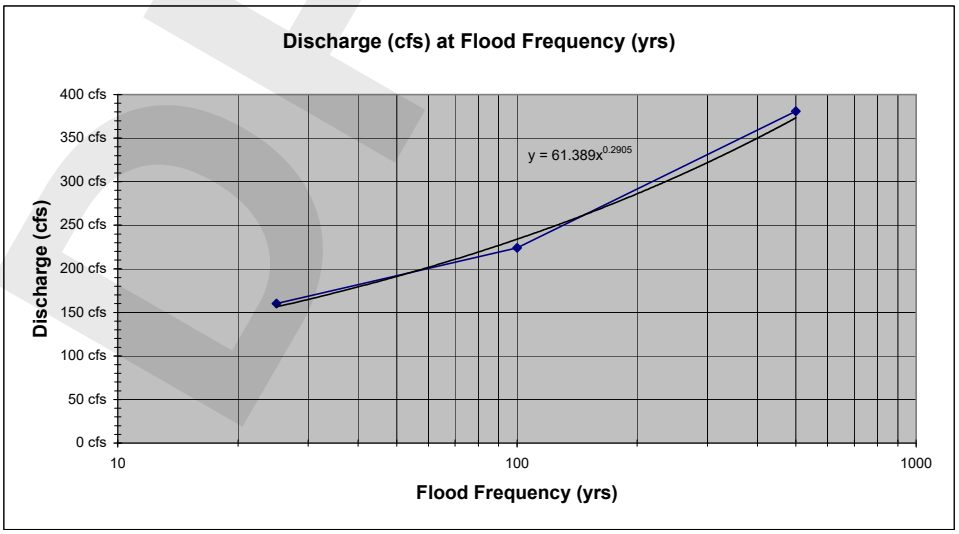
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 105.44 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 131.80 ac	C_2 = 0.20	Woods
A_3= 26.36 ac	C_3 = 0.40	Single Family Residential

A_T = 263.60 ac
C_T = 0.24

X_{25} = 1.10
C_{25} = 0.26

25 yr Q = 1.0	**$Q_{25\ yr}$ = 160.06 cfs**
50 yr Q = $61.389*(50)^{0.2905}$	**$Q_{50\ yr}$ = 191.27 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 224.08 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 380.94 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - East Segment

CDE-24: (Sta. 6186+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

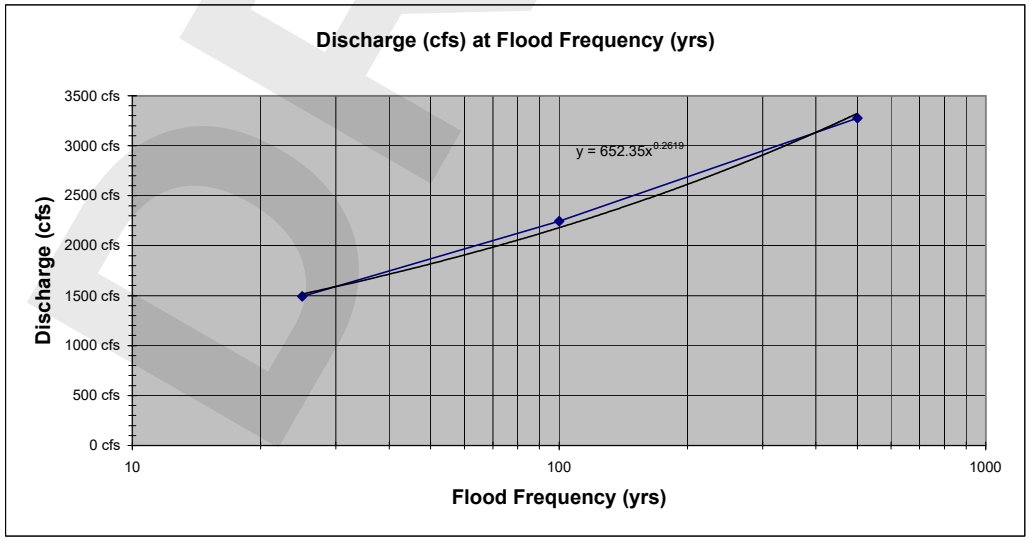
USGS Regression Equation For Natural Flow Conditions in Florida - Region A

Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 10377.35 ac
DA= 16.21 sq mi
SL= 8.93 ft/mi
LK= 1.87%

Depth = 73.00 ft
Length = 8.17 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$ — **$Q_{25\ yr}$ = 1491.92 cfs**
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$ — **$Q_{50\ yr}$ = 1853.19 cfs**
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$ — **$Q_{100\ yr}$ = 2245.06 cfs**
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$ — **$Q_{500\ yr}$ = 3277.18 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-25: (Sta. 6258+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 46.32

USE TOTAL TIME of CONCENTRATION = 46.30

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.60 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

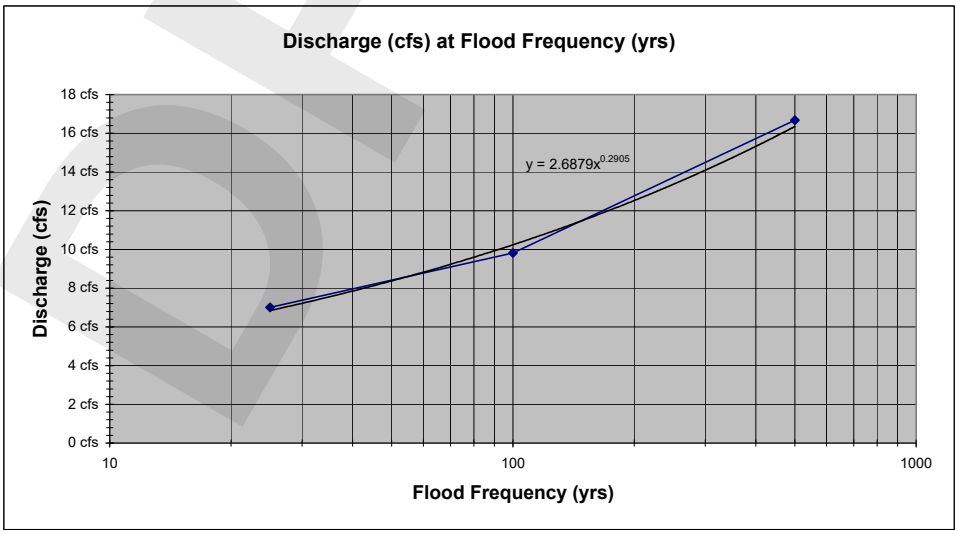
A_1= 5.54 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 0.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 5.54 ac
C_T = 0.25

X_{25} = 1.10
C_{25} = 0.28

25 yr Q = 1.0
50 yr Q = $2.6879*(50)^{0.2905}$
100 yr Q = 1.4 x $Q_{25\ yr}$
500 yr Q = 1.7 x $Q_{100\ yr}$

$Q_{25\ yr}$ = 7.01 cfs
$Q_{50\ yr}$ = 8.37 cfs
$Q_{100\ yr}$ = 9.81 cfs
$Q_{500\ yr}$ = 16.68 cfs



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Central Polk Parkway PD&E Study - East Segment

CDE-26: (Sta. 6306+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

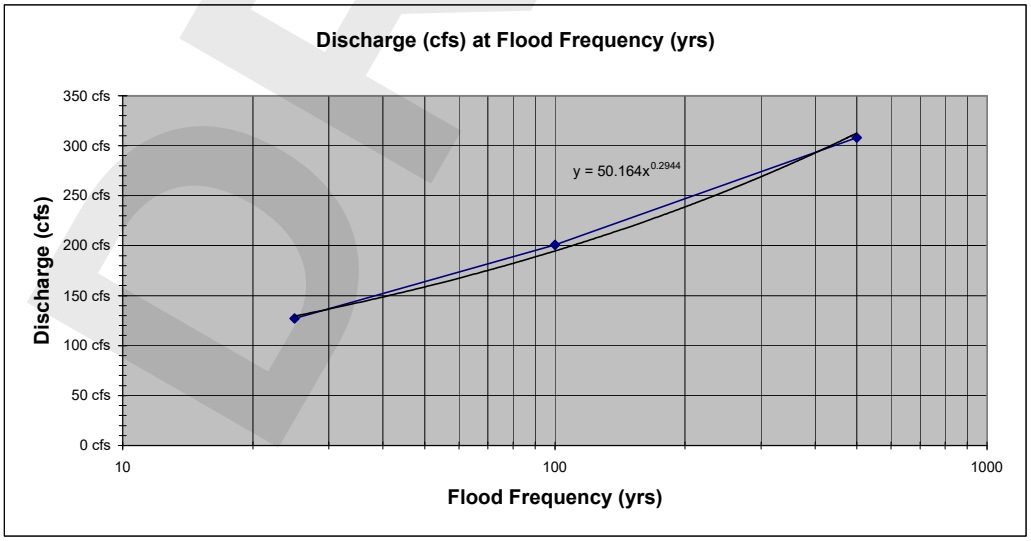
Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 731.72 ac
DA= 1.14 sq mi
SL= 9.63 ft/mi
LK= 8.80%

Depth = 14.00 ft
Length = 1.45 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$

$Q_{25\ yr}$ = 127.26 cfs
$Q_{50\ yr}$ = 162.25 cfs
$Q_{100\ yr}$ = 200.85 cfs
$Q_{500\ yr}$ = 308.17 cfs



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Central Polk Parkway PD&E Study - East Segment

CDE-27: (Sta. 6353+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 34.80

USE TOTAL TIME of CONCENTRATION = 34.80

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 5.10 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

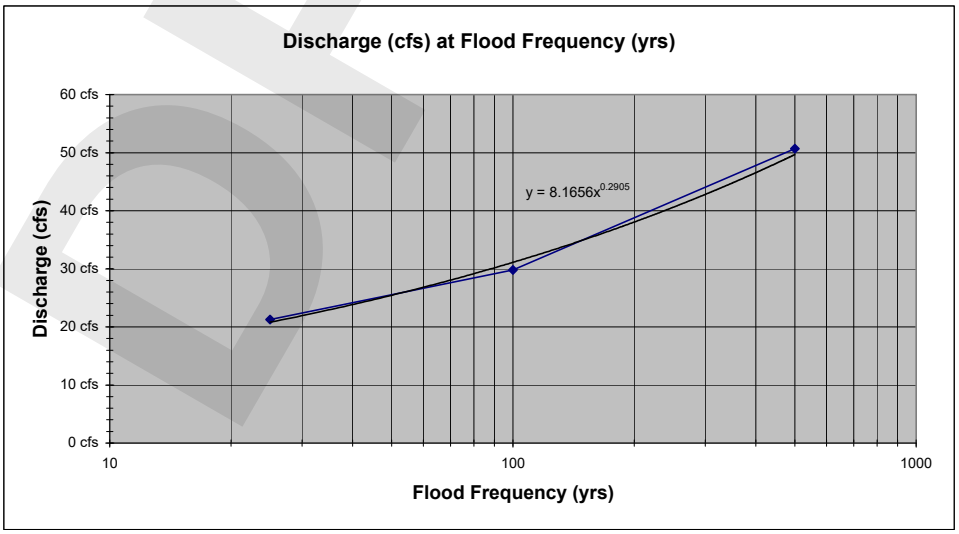
A_1= 15.18 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 0.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 15.18 ac
C_T = 0.25

X_{25} = 1.10
C_{25} = 0.28

25 yr Q = 1.0
50 yr Q = $8.1656*(50)^{0.2905}$
100 yr Q = 1.4 x $Q_{25\ yr}$
500 yr Q = 1.7 x $Q_{100\ yr}$

$Q_{25\ yr}$ = 21.29 cfs
$Q_{50\ yr}$ = 25.44 cfs
$Q_{100\ yr}$ = 29.81 cfs
$Q_{500\ yr}$ = 50.67 cfs



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Central Polk Parkway PD&E Study - East Segment

CDE-28: (Sta. 6376+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 73.68

USE TOTAL TIME of CONCENTRATION = 73.70

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 3.25 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

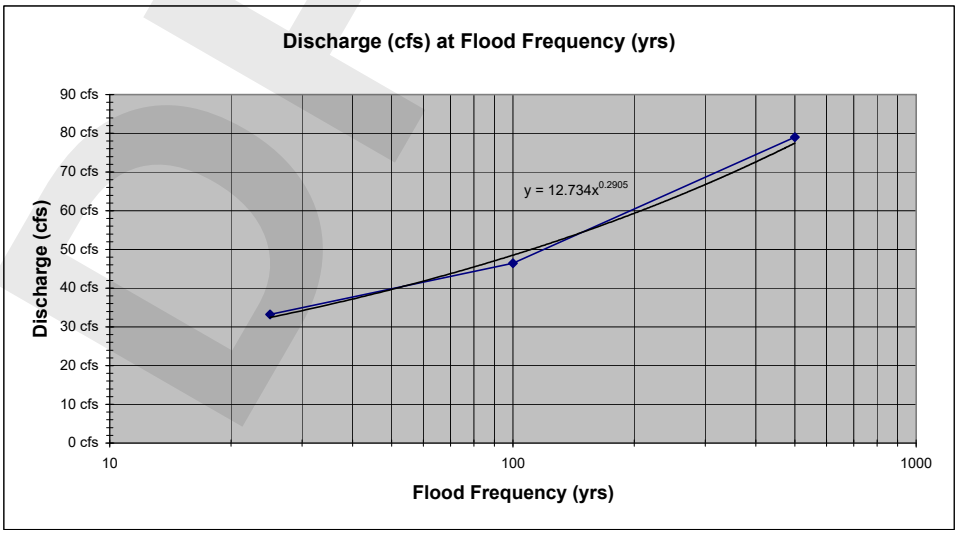
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 34.38 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 3.46 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 37.84 ac
C_T = 0.25

X_{25} = 1.10
C_{25} = 0.27

25 yr Q = 1.0	**$Q_{25\ yr}$ = 33.20 cfs**
50 yr Q = $12.734*(50)^{0.2905}$	**$Q_{50\ yr}$ = 39.67 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 46.48 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 79.02 cfs**



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Central Polk Parkway PD&E Study - East Segment

CDE-29: (Sta. 6412+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

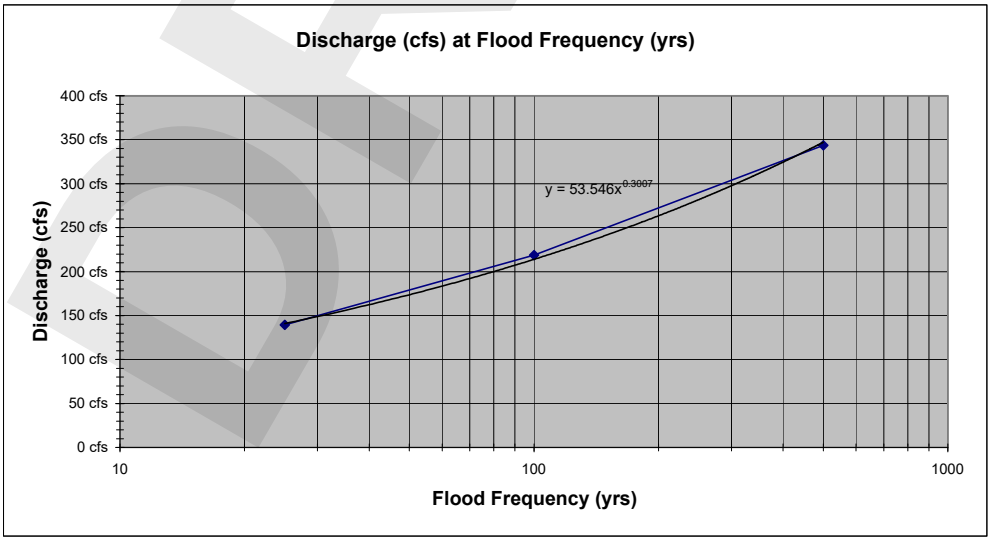
Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 386.59 ac
DA= 0.60 sq mi
SL= 4.93 ft/mi
LK= 1.47%

Depth = 5.00 ft
Length = 1.01 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$

$Q_{25\ yr}$ = 139.32 cfs
$Q_{50\ yr}$ = 176.96 cfs
$Q_{100\ yr}$ = 218.65 cfs
$Q_{500\ yr}$ = 343.57 cfs



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Central Polk Parkway
PD&E Study - East Segement
Polk County, Florida

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
CDE-01							
SHEET	100	0.0050	0.150				0.227
SHALLOW	5097	0.0001	0.050				8.775
					Time of Concentration		9.002
CDE-06							
SHEET	100	0.0025	0.150				0.300
SHALLOW	1238	0.0040	0.050				0.337
CHANNEL	158	0.0016	0.060	51.00	29.74	1.416	0.031
					Time of Concentration		0.668
CDE-07							
SHEET	100	0.0050	0.150				0.227
SHALLOW	2800	0.0018	0.050				1.136
					Time of Concentration		1.363
CDE-08							
SHEET	100	0.0040	0.150				0.249
SHALLOW	2542	0.0020	0.050				0.979
					Time of Concentration		1.228

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Central Polk Parkway
East Segement
Polk County, Florida

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
CDE-03							
SHEET	12	0.0200	0.011				0.003
SHALLOW	2245	0.0020	0.050				0.864
					Time of Concentration		0.867
CDE-04							
SHEET	100	0.0010	0.130				0.386
SHALLOW	3094	0.0034	0.050				0.914
CHANNEL	1206	0.0005	0.060	51.00	29.74	0.796	0.421
					Time of Concentration		1.721
CDE-09							
SHEET	100	0.0050	0.240				0.331
SHALLOW	1728	0.0098	0.050				0.301
SHALLOW	2490	0.0008	0.050				1.516
					Time of Concentration		2.148
CDE-10							
SHEET	100	0.0050	0.400				0.499
SHALLOW	3455	0.0213	0.050				0.408
					Time of Concentration		0.907
CDE-11							
SHEET	100	0.0050	0.400				0.499
SHALLOW	3043	0.0274	0.050				0.316
					Time of Concentration		0.815
CDE-12							
SHEET	100	0.0050	0.400				0.499
SHALLOW	2742	0.0094	0.050				0.487
					Time of Concentration		0.986
CDE-13							
SHEET	100	0.0050	0.400				0.499
SHALLOW	2368	0.0144	0.050				0.340
					Time of Concentration		0.839
CDE-14							
SHEET	100	0.0400	0.400				0.217
SHALLOW	2033	0.0221	0.050				0.235
CHANNEL	491	0.0050	0.060	51.00	29.74	2.526	0.054

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Central Polk Parkway
East Segement
Polk County, Florida

Sub-Area Time of Concentration Details (continued)

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
					Time of Concentration		0.506
CDE-15							
SHEET	100	0.0300	0.400				0.243
SHALLOW	1376	0.0189	0.050				0.172
SHALLOW	682	0.0073	0.050				0.137
					Time of Concentration		0.552
CDE-16							
SHEET	100	0.0300	0.400				0.243
SHALLOW	5852	0.0118	0.050				0.927
CHANNEL	431	0.0005	0.060	51.00	29.74	0.798	0.150
					Time of Concentration		1.320

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Central Polk Parkway
PD&E Study - East Segement
Polk County, Florida

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
CDE-17							
SHEET	100	0.0100	0.400				0.378
SHALLOW	1311	0.0289	0.050				0.133
CHANNEL	3834	0.0005	0.060	51.00	29.74	0.795	1.339
					Time of Concentration		1.850
CDE-18							
SHEET	100	0.0300	0.400				0.243
SHALLOW	4547	0.0169	0.050				0.602
CHANNEL	277	0.0005	0.060	51.00	29.74	0.793	0.097
					Time of Concentration		0.942
CDE-19							
SHEET	100	0.0025	0.130				0.268
SHALLOW	561	0.0089	0.050				0.102
					Time of Concentration		0.370
CDE-21							
SHEET	100	0.0050	0.400				0.499
SHALLOW	862	0.0046	0.050				0.219
CHANNEL	3006	0.0077	0.060	51.00	29.74	3.127	0.267
					Time of Concentration		0.985
CDE-22							
SHEET	100	0.0030	0.400				0.612
SHALLOW	1326	0.0177	0.050				0.172
					Time of Concentration		0.784
CDE-23							
SHEET	100	0.0025	0.400				0.658
SHALLOW	6896	0.0081	0.050				1.319
					Time of Concentration		1.977
CDE-25							
SHEET	100	0.0400	0.130				0.088
SHALLOW	905	0.0204	0.050				0.109
CHANNEL	1646	0.0005	0.060	51.00	29.74	0.795	0.575
					Time of Concentration		0.772

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Central Polk Parkway
PD&E Study - East Segement
Polk County, Florida

Sub-Area Time of Concentration Details (continued)

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
CDE-27							
SHEET	100	0.0050	0.130				0.203
SHALLOW	1185	0.0118	0.050				0.188
CHANNEL	540	0.0005	0.060	51.00	29.74	0.794	0.189
					Time of Concentration		0.580
CDE-28							
SHEET	100	0.0050	0.400				0.499
SHALLOW	1010	0.0218	0.050				0.118
CHANNEL	1751	0.0005	0.060	51.00	29.74	0.796	0.611
					Time of Concentration		1.228

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CROSSDRAIN SIZE DETERMINATION

Stucture Number	Station	Cross Drains		Contributing Area (ac)	Time of Concetration[2] (hr)	C coefficient	Intensity (in/hr)	Assumed V[1] (fps)	Q_{25} (cfs)	Q_{50} (cfs)	Area (sf)	Recommended Size (in)
		Type	Barrel									
CDW-01B	Pollard Road	RCP	3	185.15	1.67	0.26	2.40	4.00	114.33	136.63	34.16	48"
***CDW-02B**	2044+00	RCP	2	24289.53	N/A	N/A	N/A	4.00	547.37	698.32	174.58	9'x9' CBC
CDW-03A	9011+00	RCP	1	5.04	2.00	0.14	2.30	4.00	1.66	1.98	0.50	18"
***CDW-03B**	2075+50	RCP	2	8855.72	N/A	N/A	N/A	4.00	277.73	355.84	88.96	7'x7' CBC
CDW-04B	2102+00	RCP	2	74.95	1.97	0.28	2.30	4.00	47.41	56.65	14.16	29"X45"
CDW-05	2154+00	RCP	3	217.66	2.20	0.26	2.20	4.00	125.10	149.49	37.37	48"
***CDW-06**	2188+00	RCP	2	1970.46	N/A	N/A	N/A	4.00	602.74	752.82	188.20	10'x10' CBC
CDW-07	2216+00	RCP	3	58.27	0.54	0.37	5.70	4.00	124.28	148.51	37.13	48"
***CDW-08**	2267+00	RCP	2	2245.60	N/A	N/A	N/A	4.00	582.55	729.40	182.35	10'x10' CBC
CDW-09	2276+00	RCP	3	92.36	1.66	0.40	2.60	4.00	95.75	114.43	28.61	42"
CDW-10	2315+50	RCP	2	48.12	1.46	0.28	3.00	4.00	39.70	47.44	11.86	36"
CDW-11	2363+00	RCP	2	24.65	0.67	0.28	4.90	4.00	33.22	39.69	9.92	24"X38"
***CDW-12**	2409+00	RCP	2	1315.16	N/A	N/A	N/A	4.00	165.71	211.27	52.82	5'x6' CBC
CDW-13	2456+00	RCP	2	65.80	0.90	0.22	4.05	4.00	58.63	69.79	17.45	42"
***CDW-14**	2521+00	RCP	1	915.37	N/A	N/A	N/A	4.00	311.53	391.55	97.89	10'x10' CBC
***CDW-15**	2596+00	RCP	2	7472.34	N/A	N/A	N/A	4.00	835.21	1047.52	261.88	12'x12' CBC
CDW-16	2649+00	RCP	1	22.65	0.66	0.28	4.90	4.00	30.52	36.47	9.12	42"

1 - From FDOT Culvert Handbook
2 - Tc determined through WinTR-55 (see attached)
* - USGS Regression Equation for Natural Flow Conditions in Florida - Region A was used

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Made by: SVC
Ch'd by: REC

DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-01B: (Pollard Road)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 100.10

USE TOTAL TIME of CONCENTRATION = 100.10

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 2.40 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

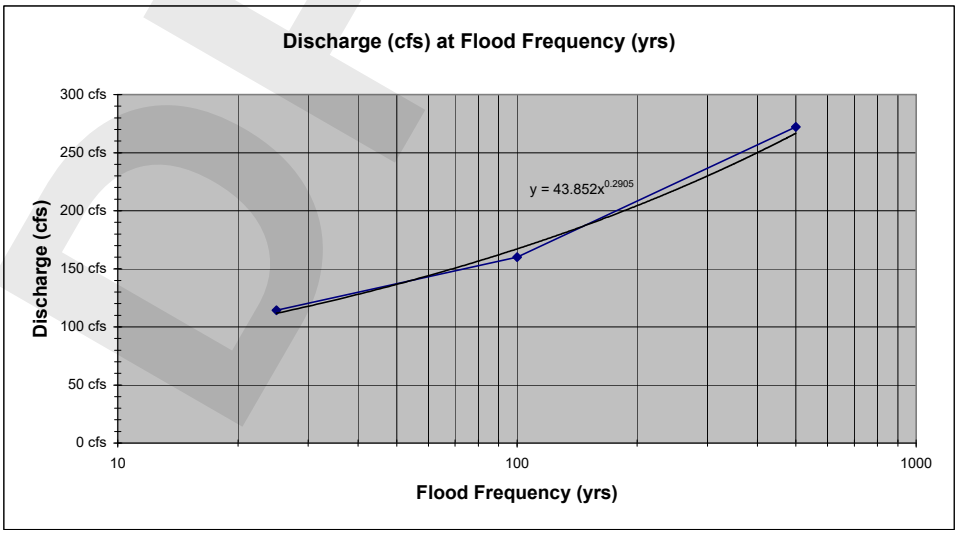
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 60.12 ac	C_2 = 0.45	Woods
A_3= 125.03 ac	C_3 = 0.13	Natural Range

A_T = 185.15 ac
C_T = 0.23

X_{25} = 1.10
C_{25} = 0.26

25 yr Q = 1.0	**$Q_{25\ yr}$ = 114.33 cfs**
50 yr Q = $43.852*(50)^{0.2905}$	**$Q_{50\ yr}$ = 136.63 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 160.07 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 272.11 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-02B: (Sta. 2044+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

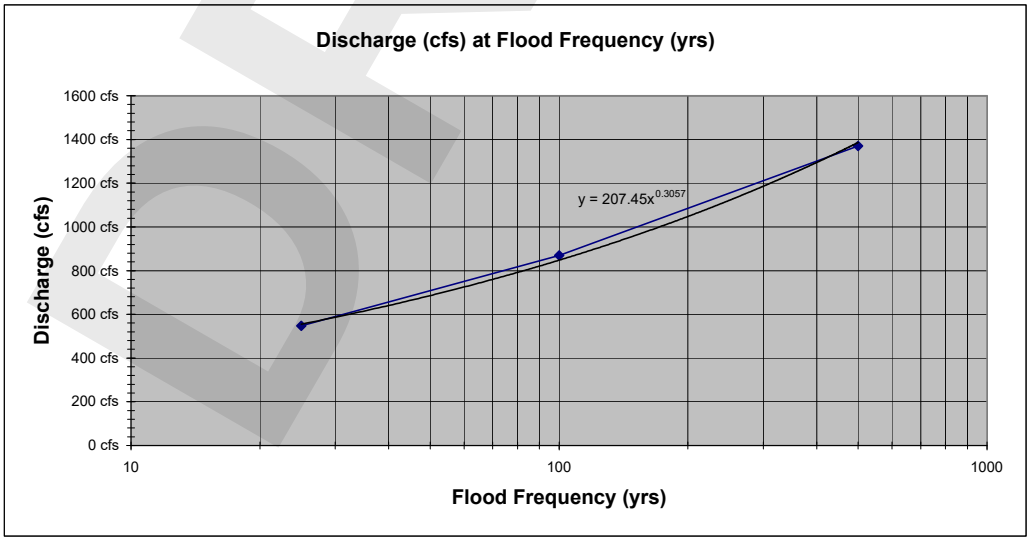
Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 24289.53 ac
DA= 37.95 sq mi
SL= 0.67 ft/mi
LK= 15.97%

Depth = 13.00 ft
Length = 19.29 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$

$Q_{25\ yr}$ = 547.37 cfs
$Q_{50\ yr}$ = 698.32 cfs
$Q_{100\ yr}$ = 869.51 cfs
$Q_{500\ yr}$ = 1370.19 cfs



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-03A: (Sta. 9011+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 120.00

USE TOTAL TIME of CONCENTRATION = 120.00

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 2.30 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

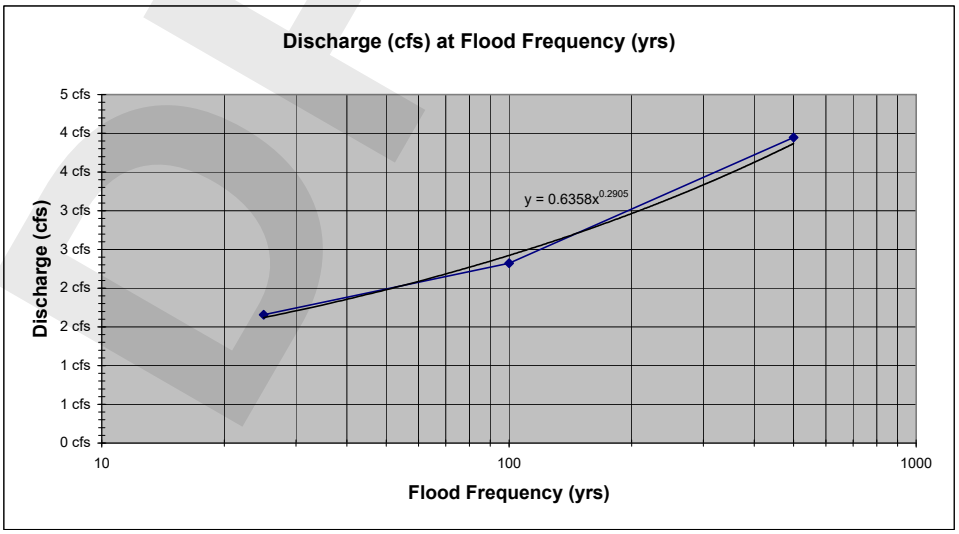
A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 0.00 ac	C_2 = 0.45	Woods
A_3= 5.04 ac	C_3 = 0.13	Natural Range

A_T = 5.04 ac
C_T = 0.13

X_{25} = 1.10
C_{25} = 0.14

25 yr Q = 1.0
50 yr Q = $0.6358*(50)^{0.2905}$
100 yr Q = 1.4 x $Q_{25\ yr}$
500 yr Q = 1.7 x $Q_{100\ yr}$

$Q_{25\ yr}$ = 1.66 cfs
$Q_{50\ yr}$ = 1.98 cfs
$Q_{100\ yr}$ = 2.32 cfs
$Q_{500\ yr}$ = 3.95 cfs



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-03B: (Sta. 2075+50)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

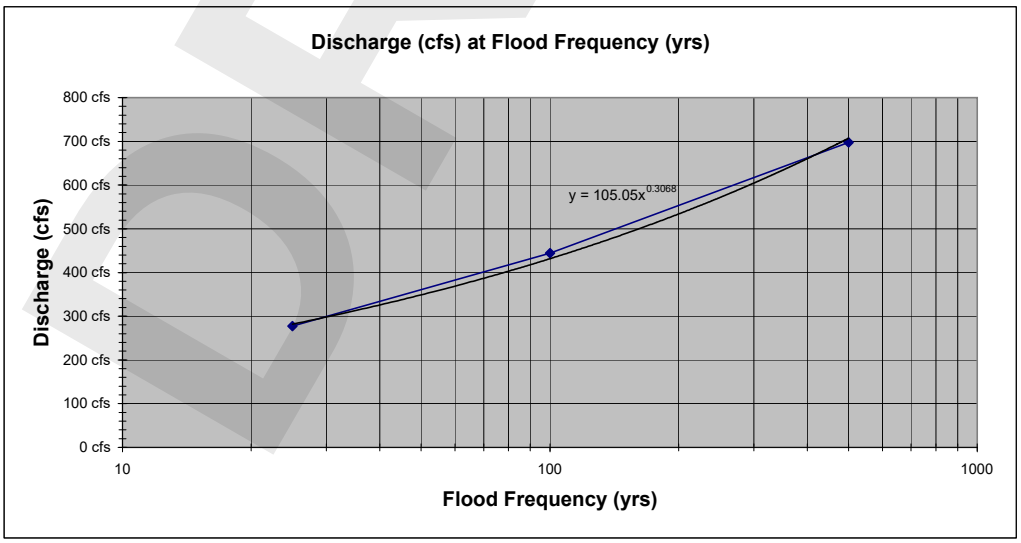
USGS Regression Equation For Natural Flow Conditions in Florida - Region A

Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 8855.72 ac
DA= 13.84 sq mi
SL= 1.35 ft/mi
LK= 20.15%

Depth = 11.00 ft
Length = 8.15 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$ — **$Q_{25\ yr}$ = 277.73 cfs**
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$ — **$Q_{50\ yr}$ = 355.84 cfs**
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$ — **$Q_{100\ yr}$ = 444.04 cfs**
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$ — **$Q_{500\ yr}$ = 697.80 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-04B: (Sta. 2102+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 118.02

USE TOTAL TIME of CONCENTRATION = 118.00

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 2.30 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

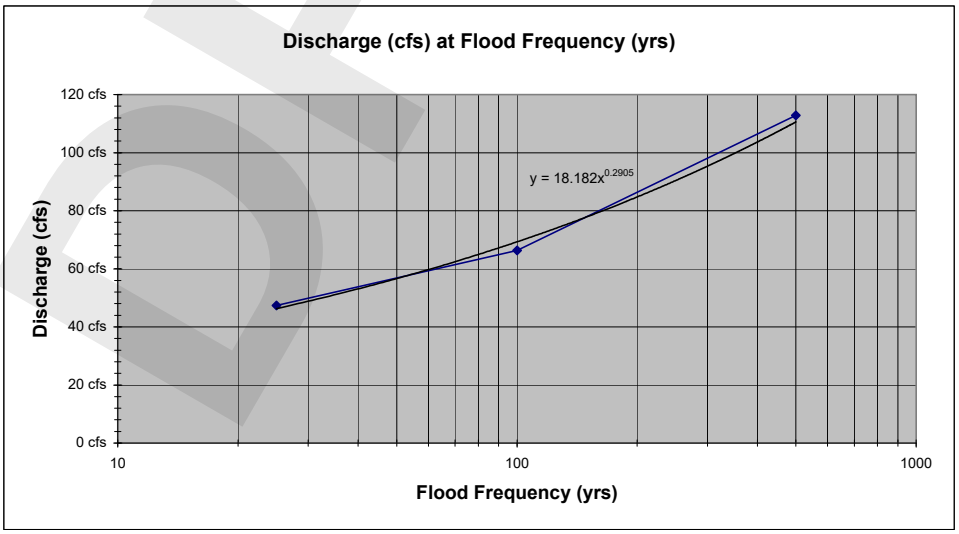
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 74.95 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 0.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 74.95 ac
C_T = 0.25

X_{25} = 1.10
C_{25} = 0.28

25 yr Q = 1.0	**$Q_{25\ yr}$ = 47.41 cfs**
50 yr Q = $18.182*(50)^{0.2905}$	**$Q_{50\ yr}$ = 56.65 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 66.37 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 112.83 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-05: (Sta. 2154+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 131.76

USE TOTAL TIME of CONCENTRATION = 131.80

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 2.20 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

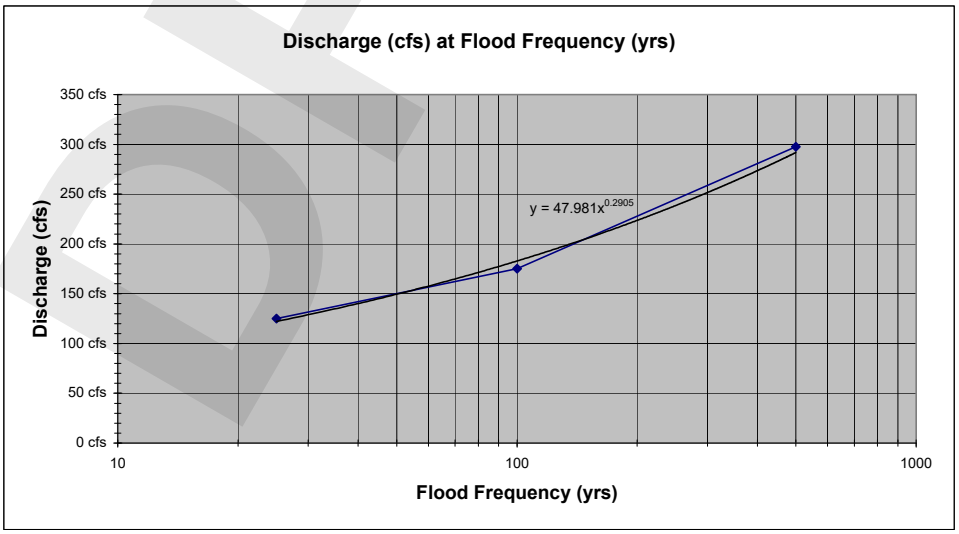
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 163.25 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 54.42 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 217.66 ac
C_T = 0.24

X_{25} = 1.10
C_{25} = 0.26

25 yr Q = 1.0	**$Q_{25\ yr}$ = 125.10 cfs**
50 yr Q = $47.981*(50)^{0.2905}$	**$Q_{50\ yr}$ = 149.49 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 175.14 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 297.74 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-06: (Sta. 2188+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 1970.46 ac
DA= 3.08 sq mi
SL= 10.32 ft/mi
LK= 0.61%

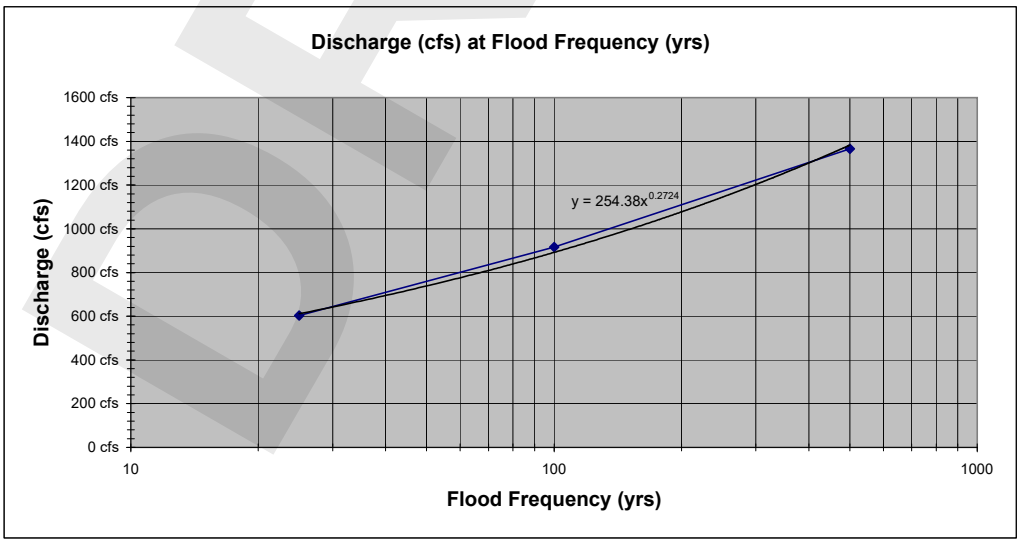
Depth = 35.00 ft
Length = 3.39 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$ — **$Q_{25\ yr}$ = 602.74 cfs**

50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$ — **$Q_{50\ yr}$ = 752.82 cfs**

100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$ — **$Q_{100\ yr}$ = 915.93 cfs**

500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$ — **$Q_{500\ yr}$ = 1365.89 cfs**



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Made by: SVC
Ch'd by:

DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-07: (Sta. 2216+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 32.58

USE TOTAL TIME of CONCENTRATION = 32.60

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 5.70 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

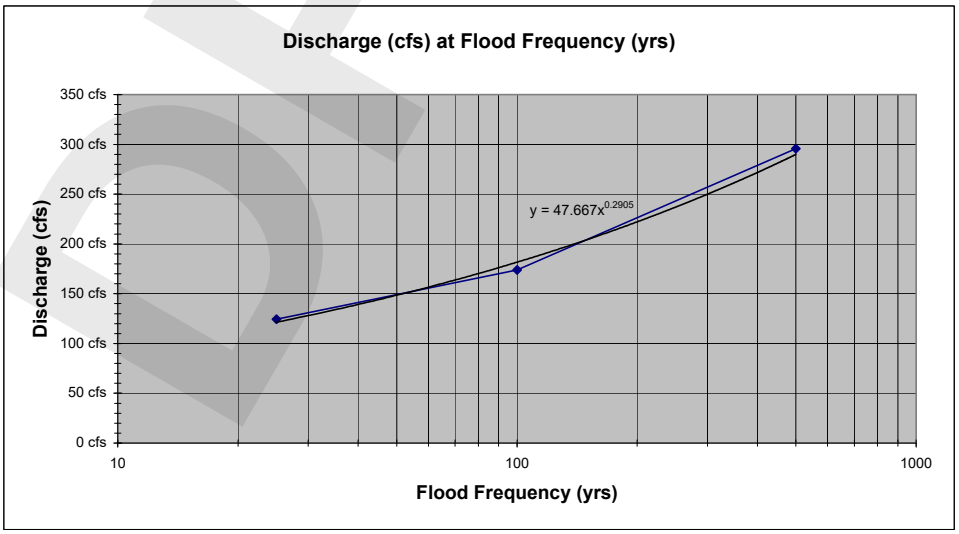
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.20	Grass
A_2= 38.27 ac	C_2 = 0.45	Woods
A_3= 20.00 ac	C_3 = 0.13	Natural Range

A_T = 58.27 ac
C_T = 0.34

X_{25} = 1.10
C_{25} = 0.37

25 yr Q = 1.0	**$Q_{25\ yr}$ = 124.28 cfs**
50 yr Q = $47.667*(50)^{0.2905}$	**$Q_{50\ yr}$ = 148.51 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 173.99 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 295.79 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-08: (Sta. 2267+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

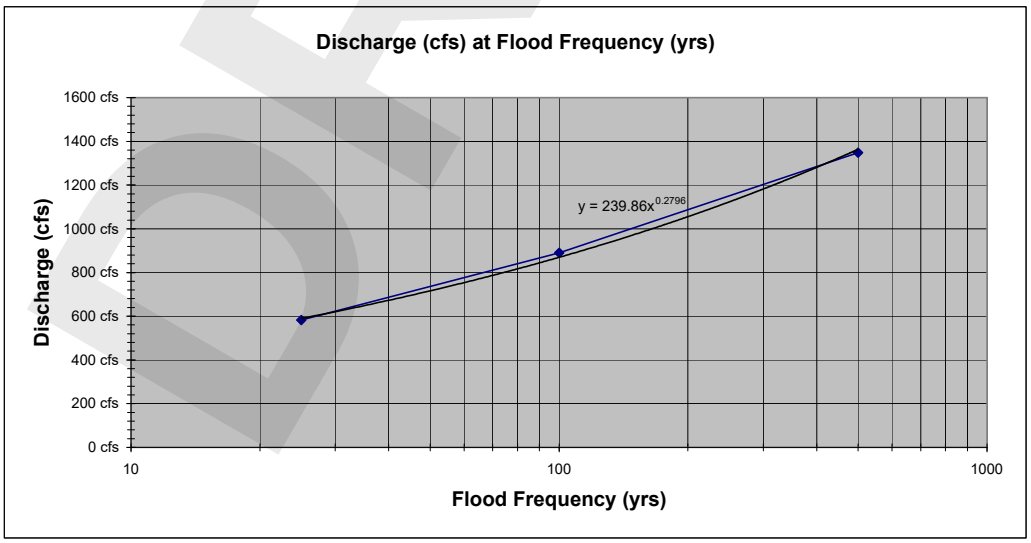
Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 2245.60 ac
DA= 3.51 sq mi
SL= 5.76 ft/mi
LK= 0.53%

Depth = 24.00 ft
Length = 4.17 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$

$Q_{25\ yr}$ = 582.55 cfs
$Q_{50\ yr}$ = 729.40 cfs
$Q_{100\ yr}$ = 890.30 cfs
$Q_{500\ yr}$ = 1348.67 cfs



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-09: (Sta. 2276+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 99.84

USE TOTAL TIME of CONCENTRATION = 99.80

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 2.60 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

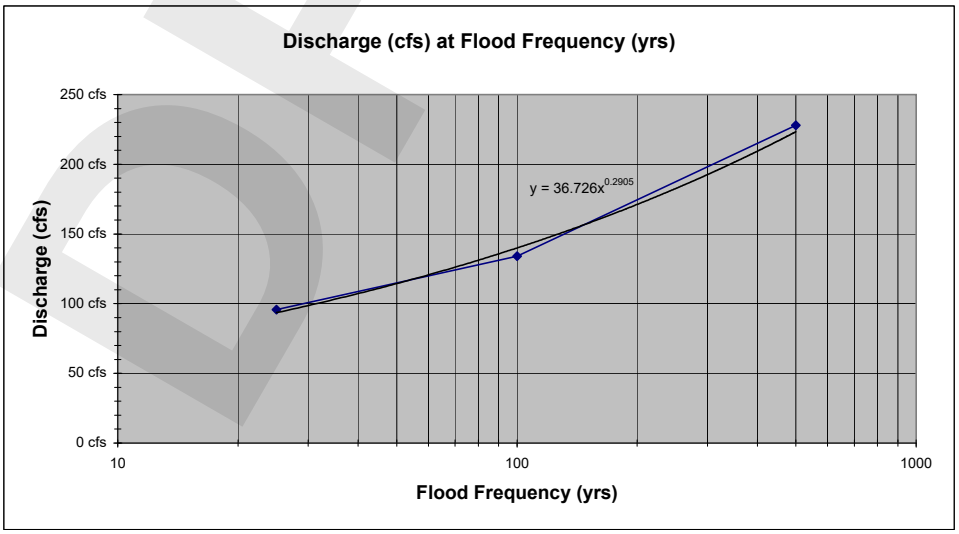
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 23.09 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 0.00 ac	C_2 = 0.20	Woods
A_3= 69.27 ac	C_3 = 0.40	Single Family Residential

A_T = 92.36 ac
C_T = 0.36

X_{25} = 1.10
C_{25} = 0.40

25 yr Q = 1.0	**$Q_{25\ yr}$ = 95.75 cfs**
50 yr Q = $36.726*(50)^{0.2905}$	**$Q_{50\ yr}$ = 114.43 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 134.06 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 227.90 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-10: (Sta. 5519+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 87.84

USE TOTAL TIME of CONCENTRATION = 87.80

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 3.00 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

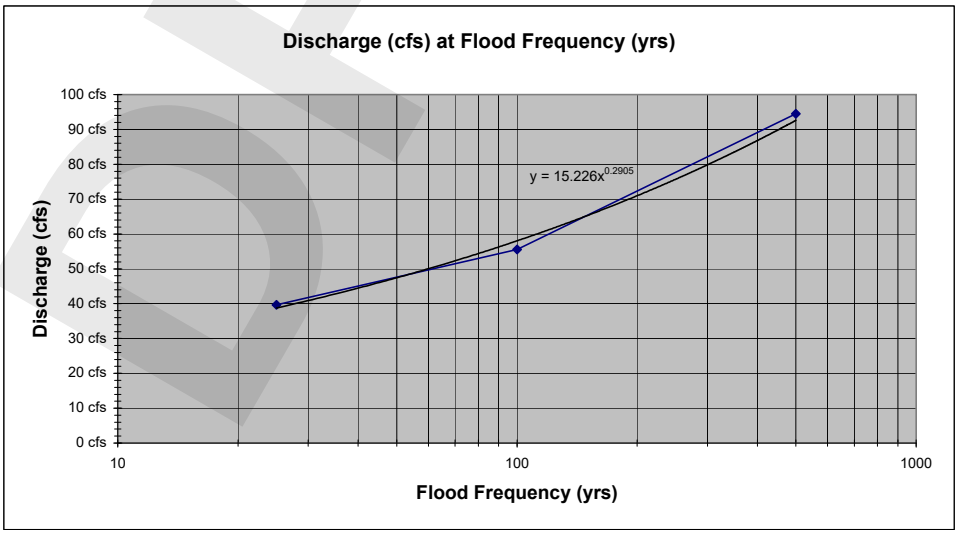
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 48.12 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 0.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 48.12 ac
C_T = 0.25

X_{25} = 1.10
C_{25} = 0.28

25 yr Q = 1.0	**$Q_{25\ yr}$ = 39.70 cfs**
50 yr Q = $15.226*(50)^{0.2905}$	**$Q_{50\ yr}$ = 47.44 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 55.58 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 94.48 cfs**



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Ch'd by:

DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-11: (Sta. 2363+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 40.20

USE TOTAL TIME of CONCENTRATION = 40.20

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.90 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

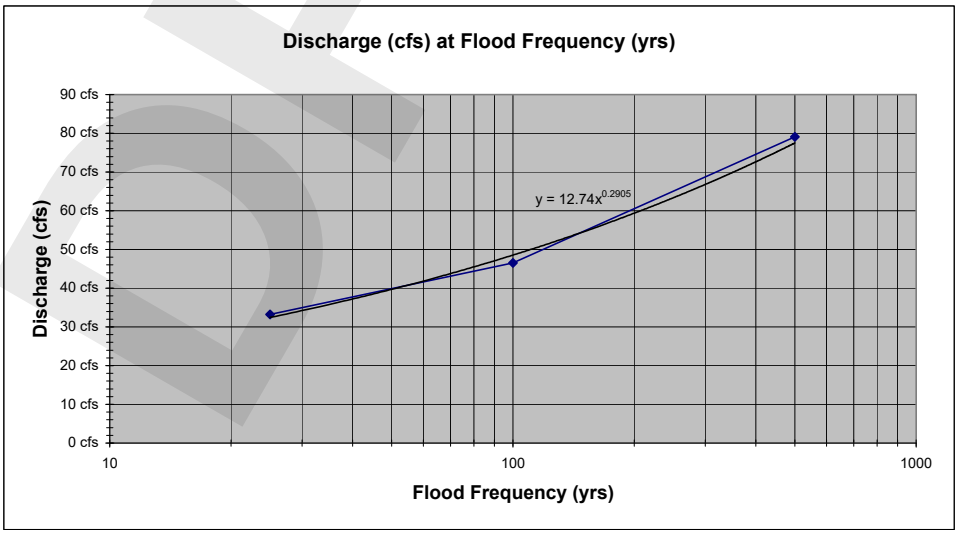
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 24.65 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 0.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 24.65 ac
C_T = 0.25

X_{25} = 1.10
C_{25} = 0.28

25 yr Q = 1.0	**$Q_{25\ yr}$ = 33.22 cfs**
50 yr Q = $12.74*(50)^{0.2905}$	**$Q_{50\ yr}$ = 39.69 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 46.50 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 79.05 cfs**



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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-12: (Sta. 2409+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

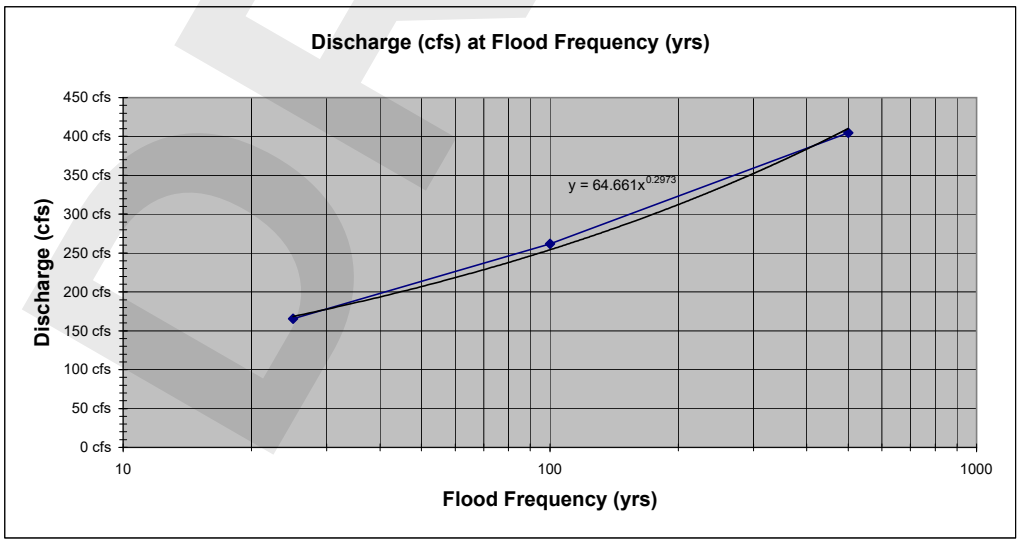
Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 1315.16 ac
DA= 2.05 sq mi
SL= 5.54 ft/mi
LK= 8.99%

Depth = 18.00 ft
Length = 3.25 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$

$Q_{25\ yr}$ = 165.71 cfs
$Q_{50\ yr}$ = 211.27 cfs
$Q_{100\ yr}$ = 261.81 cfs
$Q_{500\ yr}$ = 404.63 cfs



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Made by: SVC
Ch'd by:

DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-13: (Sta. 2456+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 54.24

USE TOTAL TIME of CONCENTRATION = 54.20

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.05 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

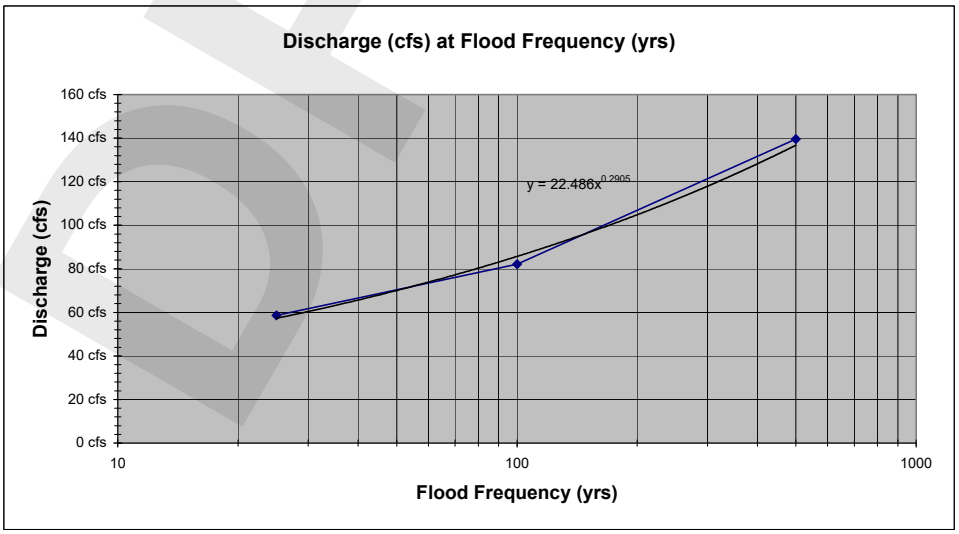
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 0.00 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 65.80 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 65.80 ac
C_T = 0.20

X_{25} = 1.10
C_{25} = 0.22

25 yr Q = 1.0	**$Q_{25\ yr}$ = 58.63 cfs**
50 yr Q = $22.400*(50)^{0.2905}$	**$Q_{50\ yr}$ = 69.79 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 82.08 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 139.53 cfs**



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Made by: SVC
Ch'd by:

DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-14: (Sta. 2521+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 915.37 ac
DA= 1.43 sq mi
SL= 12.90 ft/mi
LK= 1.64%

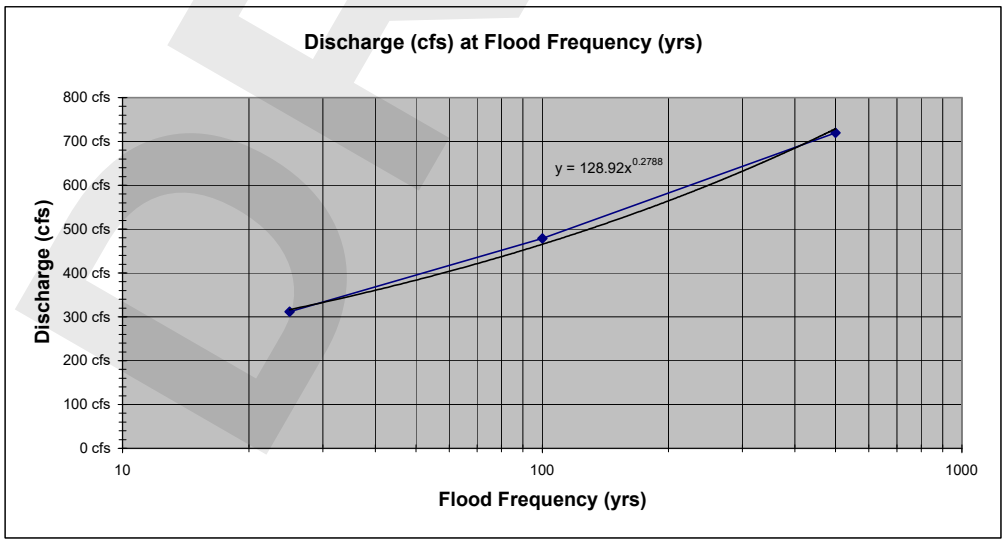
Depth = 25.00 ft
Length = 1.94 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$ — **$Q_{25\ yr}$ = 311.53 cfs**

50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$ — **$Q_{50\ yr}$ = 391.55 cfs**

100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$ — **$Q_{100\ yr}$ = 478.67 cfs**

500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$ — **$Q_{500\ yr}$ = 719.64 cfs**



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Made by: SVC
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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-15: (Sta. 2596+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

HYDROLOGIC ANALYSIS

Discharge Calculations : (New Cross Drain)

USGS Regression Equation For Natural Flow Conditions in Florida - Region A

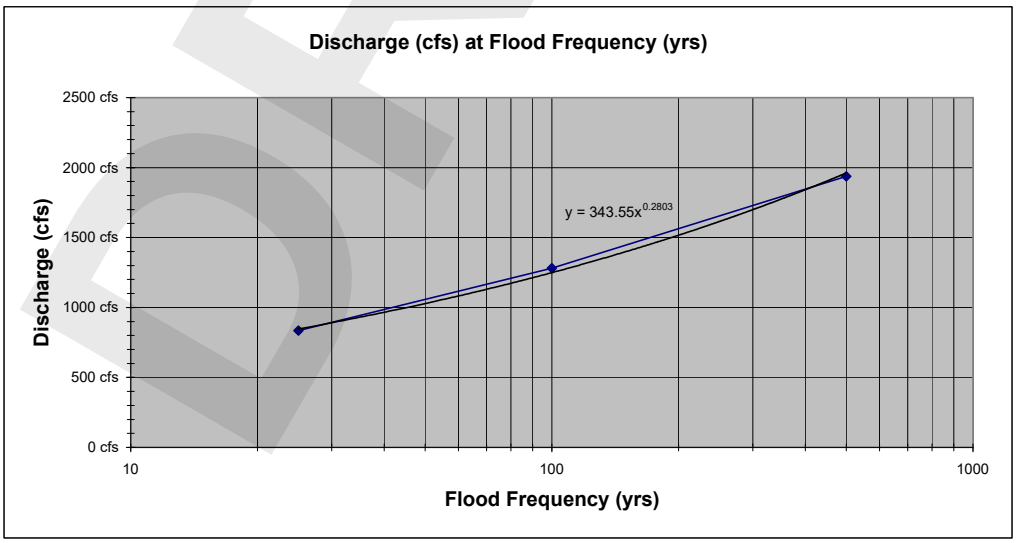
Q_T = Peak Runoff for Return Period T (cfs).
DA = Drainage Area, in miles^2
SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile
LK = Lake area, in percent of total

A_T = 7472.34 ac
DA= 11.68 sq mi
SL= 3.61 ft/mi
LK= 2.88%

Depth = 26.00 ft
Length = 7.20 mi

25 yr Q = $395*(DA)^{0.696}*(SL)^{0.240}*(LK+3)^{-0.717}$
50 yr Q = $496*(DA)^{0.690}*(SL)^{0.234}*(LK+3)^{-0.705}$
100 yr Q = $609*(DA)^{0.685}*(SL)^{0.227}*(LK+3)^{-0.695}$
500 yr Q = $985*(DA)^{0.668}*(SL)^{0.196}*(LK+3)^{-0.687}$

$Q_{25\ yr}$ = 835.21 cfs
$Q_{50\ yr}$ = 1047.52 cfs
$Q_{100\ yr}$ = 1281.59 cfs
$Q_{500\ yr}$ = 1937.69 cfs



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Made by: SVC
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DATE: 12/10/10
PROJECT #: PBS-001-01

Central Polk Parkway PD&E Study - West Segment

CDW-16: (Sta. 2649+00)

TIME OF CONCENTRATION

TC determined through WinTR-55 (see attached)

TOTAL TIME of CONCENTRATION = 39.36

USE TOTAL TIME of CONCENTRATION = 39.40

FROM THE IDF CURVES FOR ZONE 8:

$i_{25\ yr}$ = 4.90 in/hr

HYDROLOGIC ANALYSIS

Discharge Calculations :
(New Cross Drain)

$$Q_T = X_T * C_T * i_{tc} * A_T$$

Q_T = Peak Runoff for Return Period T (cfs).
X_T = Frequency Factor for Return Period T.
C_T = Average Runoff Coefficient for Return Period T.
i_{tc} = Average Rainfall Intensity for Return Period T (in/hr).
A_T = Total Watershed Drainage Area (ac).

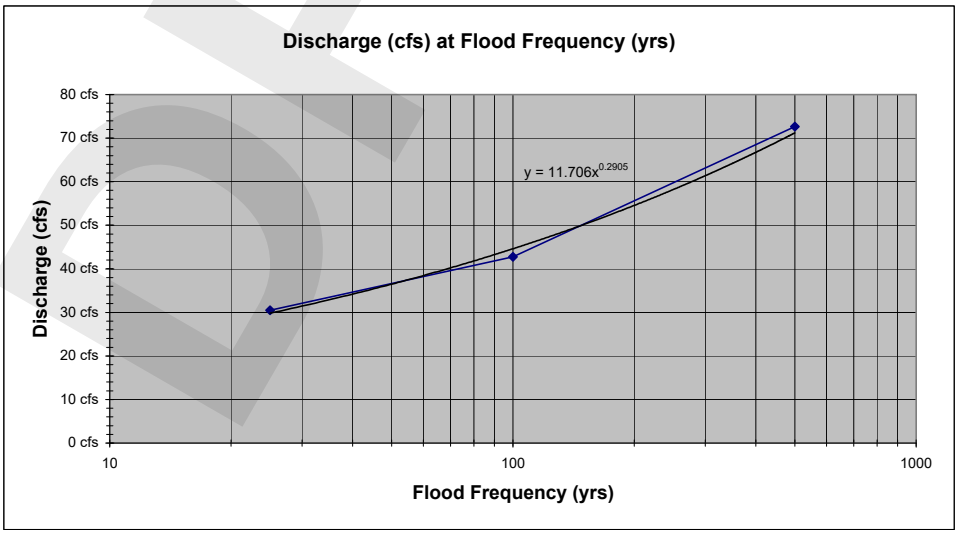
$$C_T = \frac{C_1*A_1 + C_2*A_2 + C_3*A_3}{A_T}$$

A_1= 22.65 ac	C_1 = 0.25	Pasture, Grass, Farmland
A_2= 0.00 ac	C_2 = 0.20	Woods
A_3= 0.00 ac	C_3 = 0.40	Single Family Residential

A_T = 22.65 ac
C_T = 0.25

X_{25} = 1.10
C_{25} = 0.28

25 yr Q = 1.0	**$Q_{25\ yr}$ = 30.52 cfs**
50 yr Q = $11.706*(50)^{0.2905}$	**$Q_{50\ yr}$ = 36.47 cfs**
100 yr Q = 1.4 x $Q_{25\ yr}$	**$Q_{100\ yr}$ = 42.73 cfs**
500 yr Q = 1.7 x $Q_{100\ yr}$	**$Q_{500\ yr}$ = 72.64 cfs**



DRAFT

SVC

Central Polk Parkway
East Segement
Polk County, Florida

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
CDW-01B							
SHEET	100	0.0005	0.150				0.571
SHALLOW	1332	0.0008	0.050				0.811
CHANNEL	4967	0.0181	0.060	51.00	29.74	4.791	0.288
					Time of Concentration		1.670
CDW-02B							
SHEET	100	0.0005	0.150				0.571
SHALLOW	18121	0.0005	0.050				13.952
CHANNEL	83617	0.0002	0.060	51.00	29.74	0.503	46.162
					Time of Concentration		~~10.000~~ 60.685
CDW-03A							
SHEET	100	0.0002	0.400				1.807
SHALLOW	545	0.0037	0.050				0.154
CHANNEL	549	0.0109	0.060	51.00	29.74	3.720	0.041
					Time of Concentration		2.002
CDW-03B							
SHEET	100	0.0005	0.150				0.571
SHALLOW	13227	0.0005	0.050				10.184
CHANNEL	29717	0.0004	0.060	51.00	29.74	0.712	11.601
					Time of Concentration		~~10.000~~ 22.356
CDW-04B							
SHEET	100	0.0005	0.130				0.510
SHALLOW	1545	0.0052	0.050				0.369
CHANNEL	3116	0.0005	0.060	51.00	29.74	0.796	1.088
					Time of Concentration		1.967
CDW-05							
SHEET	100	0.0005	0.150				0.571
SHALLOW	5084	0.0029	0.050				1.625
					Time of Concentration		2.196
CDW-06							
SHEET	100	0.0005	0.150				0.571
SHALLOW	17811	0.0020	0.050				6.857
					Time of Concentration		7.428

DRAFT

Central Polk Parkway
East Segement
Polk County, Florida

Sub-Area Time of Concentration Details (continued)

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
CDW-07							
SHEET	100	0.0100	0.150				0.172
SHALLOW	1725	0.0064	0.050				0.371
						Time of Concentration	0.543
CDW-08							
SHEET	100	0.0005	0.150				0.571
SHALLOW	21911	0.0032	0.050				6.669
						Time of Concentration	7.240
CDW-09							
SHEET	100	0.0025	0.800				1.145
SHALLOW	3343	0.0123	0.050				0.519
						Time of Concentration	1.664

DRAFT

SVC

Central Polk Parkway
East Segement
Polk County, Florida

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
CDW-10							
SHEET	100	0.0275	0.130				0.103
SHALLOW	2739	0.0012	0.050				1.361
					Time of Concentration		1.464
CDW-11							
SHEET	100	0.0025	0.150				0.300
SHALLOW	850	0.0082	0.050				0.162
CHANNEL	597	0.0005	0.060	51.00	29.74	0.797	0.208
					Time of Concentration		0.670
CDW-12							
SHEET	100	0.0100	0.150				0.172
SHALLOW	6013	0.0077	0.050				1.180
CHANNEL	11032	0.0021	0.060	51.00	29.74	1.630	1.880
					Time of Concentration		3.232
CDW-13							
SHEET	100	0.0080	0.150				0.188
SHALLOW	2222	0.0032	0.050				0.676
CHANNEL	568	0.0123	0.060	51.00	29.74	3.944	0.040
					Time of Concentration		0.904
CDW-14							
SHEET	100	0.0050	0.150				0.227
SHALLOW	7230	0.0035	0.050				2.104
CHANNEL	2903	0.0010	0.060	51.00	29.74	1.125	0.717
					Time of Concentration		3.048
CDW-15							
SHEET	100	0.0050	0.150				0.227
SHALLOW	31049	0.0050	0.050				7.560
CHANNEL	6852	0.0004	0.060	51.00	29.74	0.712	2.675
					Time of Concentration		~~10.000~~ 10.462
CDW-16							
SHEET	100	0.0100	0.150				0.172
SHALLOW	1687	0.0036	0.050				0.484
					Time of Concentration		0.656

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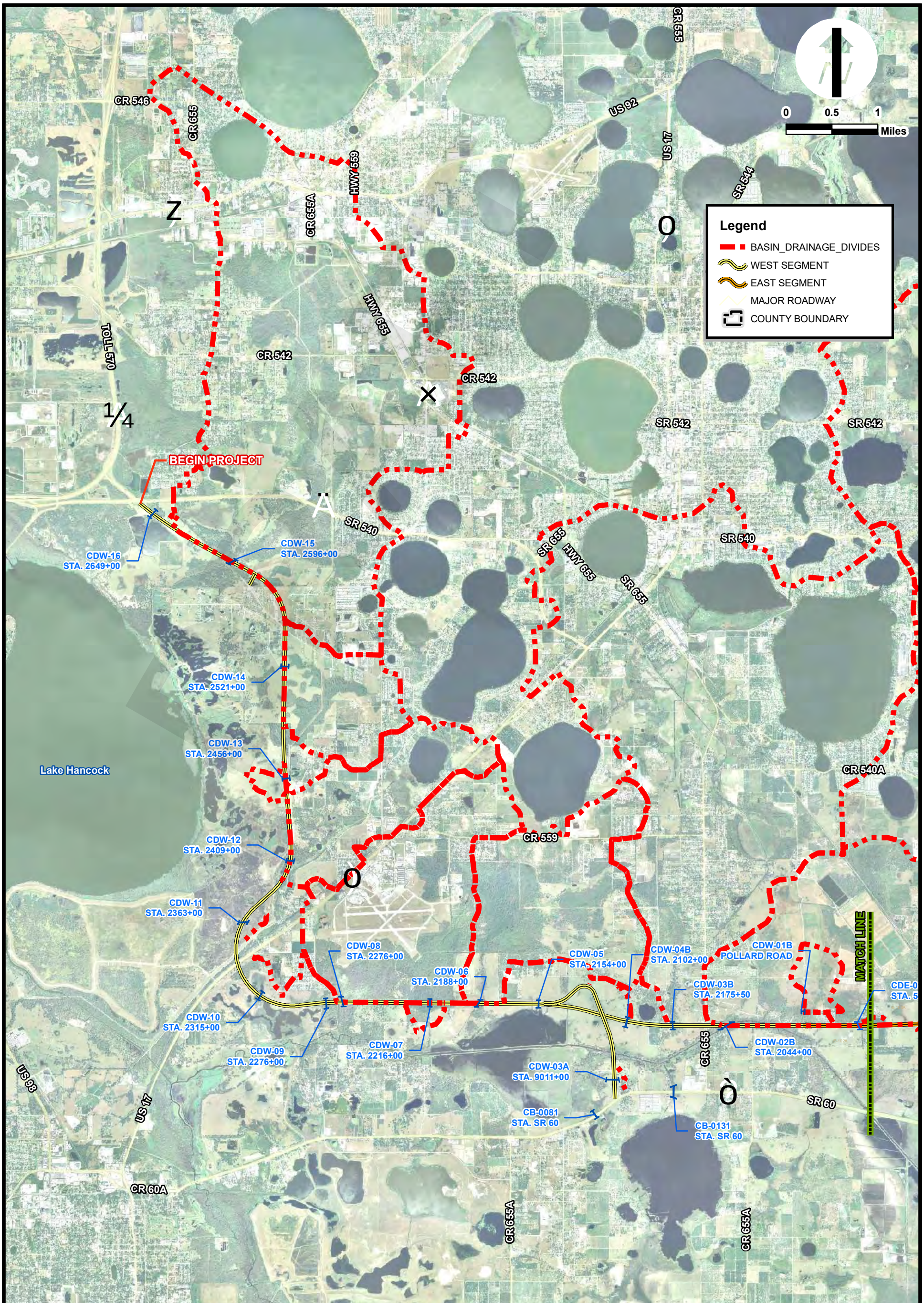
APPENDIX D

Cross Drain Contributing Area Map



FPID: 423601-1-22-01

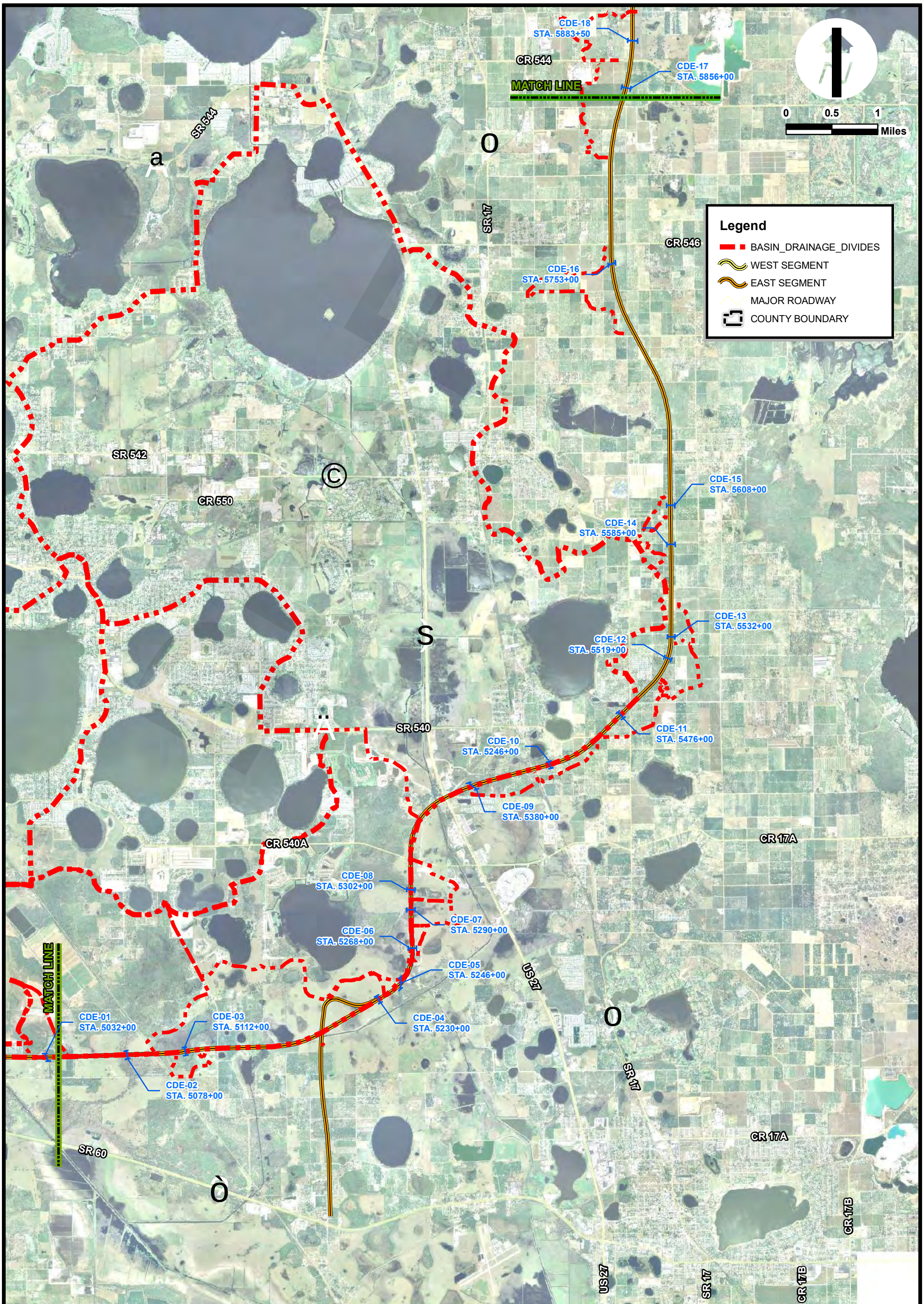
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
CROSS DRAIN CONTRIBUTING AREA MAP

FIGURE

10-1



FPID: 423601-1-22-01

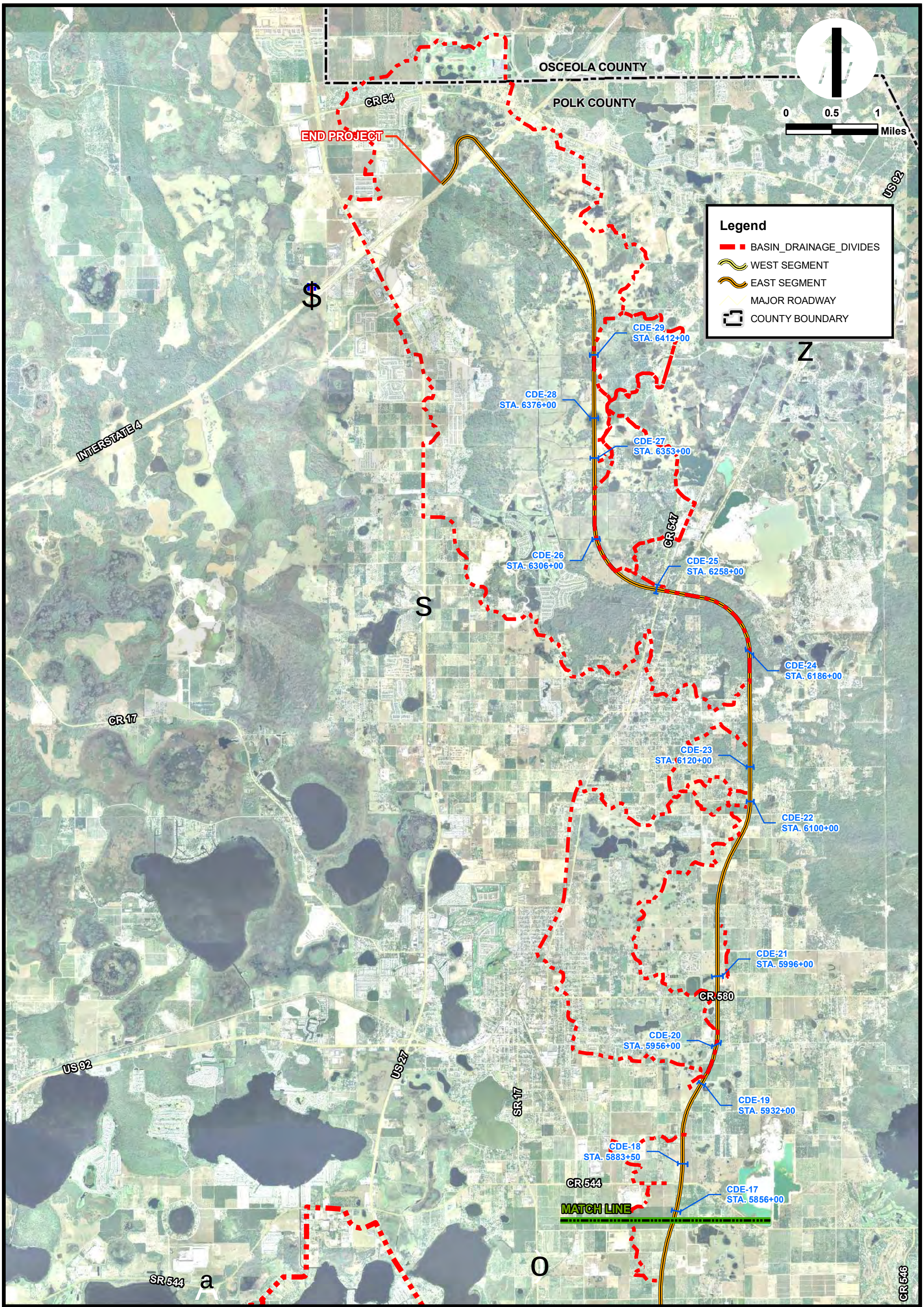
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
CROSS DRAIN CONTRIBUTING AREA MAP

FIGURE

10-2



FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
CROSS DRAIN CONTRIBUTING AREA MAP

FIGURE

10-3

DRAFT

APPENDIX E

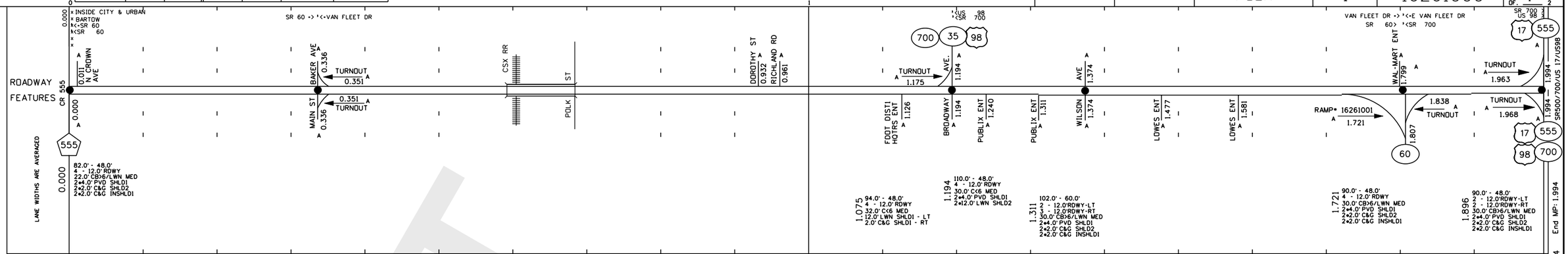
S.R. 60 Straight Line Diagrams

	5 YR INV	SLD REV	INTERIM REVISIONS BMP	EMP	INV	SLD REV
DATE	06/01/09	06/15/09				
BY	FTE	RWG				

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE MAINTENANCE STATISTICS OFFICE

INT. or US ROUTE NO	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET
US 98	SR 60/700	POLK	1	16261000	NO. 1 OF. 1



ROADWAY COMPOSITION	28/FC-6
	28/FC-6
HORIZONTAL ALIGNMENT	CURVE DATA IS NOT FIELD VERIFIED; Δ=57° 06'36" D=8° 15'00.00"; PC=0.271 PI=0.331 PT=0.391; B=S87° 03'00"E; B=N35° 50'24"E; PC=0.872 PI=0.981 PT=1.074; D=5° 00'00.00" Δ=50° 16'48"; B=N86° 07'12"E; PC=1.116 PI=1.140 PT=1.164; D=2° 00'00.00" Δ=6° 01'13"; Δ=1° 31'25"; PI=1.194; B=S88° 51'35"E; B=N89° 37'00"E
STRUCTURE DESCRIPTION	0.112 2-30" X 125' CC; 0.224 1-18" X 126' CC; 0.265 1-18" X 65' CC; 0.592 0.684 485' BR *0285; 0.878 1-24" X 120' CC
DISTRICT USE	
SIS	SIS HIGHWAY FACILITY; SIS HIGHWAY FACILITY
FUN CLASS	URBAN OTHER PRINCIPAL ARTERIAL

DRAFT

DATE	5 YR INV	SLD REV	INTERIM REVISIONS BMP	EMP	INV	SLD REV
04/20/07	05/14/07					
BY	FTE	RWG				

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE MAINTENANCE STATISTICS OFFICE

INT. or US ROUTE NO	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO. / OF.
	SR 60	POLK	1	16110000	2 / 4

8 9 10 11 12 13

ROADWAY FEATURES (LANE WIDTHS ARE AVERAGED)

- 112.0' - 48.0'; 4 - 12.0' RDWY; 40.0' LWN MED; 2*5.0' PVD SHLD1; 2*7.0' LWN SHLD2
- BONNIE MINE RD @ 8.825
- MOSAIC FERT ENT @ 9.104
- RR* 908367 H @ 9.198
- MOSAIC FERT ENT @ 9.454
- MORE TRENCH ENT @ 10.124
- DOT MT YD ENT @ 10.499
- DOT MT YD ENT @ 10.659
- ARMOUR RD @ 11.145
- USS AGRI CHEM @ 11.626
- RR* 624507 V @ 11.711
- 12.370 *INSIDE URBAN, OUTSIDE CITY *BARTOW
- 12.867 *INSIDE CITY *& URBAN *BARTOW,BARTOW
- AMERICAN WAY @ 12.461
- CENTURY BLVD @ 12.635
- ARGICOLA RD @ 12.896 (555)
- 12.784 112.0' - 48.0'; 4 - 12.0' RDWY; 40.0' LWN MED; 2*4.0' PVD SHLD1; 2*8.0' LWN SHLD2

ROADWAY COMPOSITION

- 28/FC-2
- 28/FC-2

HORIZONTAL ALIGNMENT

- Δ=0°17'00" D=0°02'00" 00 — CURVE DATA IS NOT FIELD VERIFIED — PC=8.033 PI=8.114 PT=8.199 — B=N89°44'00"E
- Δ=27°07'00" D=2°32'00" 00 — PC=9.237 PI=9.340 PT=9.440
- PC=9.833 PI=9.924 PT=10.010 — D=2°57'00" 00 Δ=27°29'00" — B=S89°54'00"E
- Δ=7°06'00" D=1°00'00" 00 — PC=11.122 PI=11.189 PT=11.257 — B=S82°48'00"E

STRUCTURE DESCRIPTION

8.095 2-48" X 150' CC; 8.211 1-15" X 60' CC; 8.311 1-15" X 70' CC; 8.477 1-15" X 70' CC; 8.691 2-48" X 150' CC; 8.854 1-15" X 70' CC; 8.928 1-24" X 130' CC; 9.174 1-36" X 185' CC; 9.490 1-15" X 70' CC; 9.882 1-15" X 85' CC; 10.003 1-48" X 75' CC, 10.017 1-48" X 90' CC; 10.086 1-15" X 85' CC; 10.286 1-48" X 75' CC, 1-48" X 75' CC; 10.543 1-15" X 75' CC; 10.613 1-24" X 145' CC, 10.650 1-24" X 50' CM; 10.762 1-15" X 70' CC; 10.800 1-15" X 70' CC; 10.899 1-15" X 70' CC; 11.118 1-15" X 70' CC; 11.221 1-48" X 160' CC; 11.553 1-24" X 125' CC, 11.592 1-15" X 125' CC; 11.924 1-36" X 160' CC; 12.117 1-18" X 125' CC; 12.251 1-15" X 70' CC; 12.437 1-15" X 85' CC; 12.605 1-15" X 70' CC; 12.687 1-24" X 125' CC

DISTRICT USE

SIS

- SIS HIGHWAY FACILITY
- 12.896 SIS HIGHWAY FACILITY

FUN CLASS

- RURAL PRINCIPAL ARTERIAL -- OTHER
- 12.370 URBAN OTHER PRINCIPAL ARTERIAL

13 16

ROADWAY FEATURES (LANE WIDTHS ARE AVERAGED)

- DELETED REALIGNMENT SEE SECTION 16261000
- 13.213 <- MAIN ST
- <- FLAMINGO DR
- TRANSFERRED TO THE CITY OF BARTOW DEC 16, 2004
- FLAMINGO DR-> (60) VAN FLEET DR @ 15.388
- <-SR 60 <SR 60
- 15.508 *INSIDE URBAN, OUTSIDE CITY *BARTOW
- PEACE RIVER OVERFLOW
- 15.633 PEACE RIVER CANOE EN
- PEACE RIVER VLG ENT @ 15.955
- 15.388: 94.0' - 48.0'; 4 - 12.0' RDWY; 38.0' CB36/LWN MED; 4.0' PVD SHLD1 - LT; 2.0' C&G SHLD2 - LT; 2.0' C&G SHLD1 - RT; 2*2.0' C&G INSHLD1
- 15.586: 110.0' - 44.0'; 4 - 11.0' RDWY; 42.0' LWN MED; 2*5.0' PVD SHLD1; 2*7.0' LWN SHLD2

ROADWAY COMPOSITION

- 15.388 28/FC-4
- 28/FC-4

HORIZONTAL ALIGNMENT

- CURVE DATA IS NOT FIELD VERIFIED
- PC=15.388 PI=15.458 PT=15.527 — D=4°41' Δ=34°30'00"

STRUCTURE DESCRIPTION

15.487 15.586 522" BR *0042; 580' BR *0129; 15.481 15.591
15.693 15.722 153' BR *0043; 195' BR *0130; 15.688 15.725
15.840 1-18" X 85' CC
15.945 1-15" X 70' CC

DISTRICT USE

SIS

- 15.416 SIS HIGHWAY FACILITY

FUN CLASS

- 13.213 URBAN COLLECTOR
- 15.388 URBAN OTHER PRINCIPAL ARTERIAL

DRAFT

	5 YR INV	SLD REV	INTERIM REVISIONS BMP	EMP	INV	SLD REV
DATE	04/20/07	05/14/07				
BY	FTE	RWG				

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE MAINTENANCE STATISTICS OFFICE

INT. or US ROUTE NO	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO. / OF.
	SR 60	POLK	1	16110000	3 / 4

16 17 18 19 20

ROADWAY FEATURES

LAURENT RANCH RD 16.092 A; 16.801 *INSIDE CITY & URBAN *BARTOW, BARTOW; 91 MINE RD 17.036 A; 17.064 *INSIDE CITY, NOT URBAN *BARTOW.; 17.343 OUTSIDE CITY & URBAN; GANDY CEMETERY RD 17.697 A; GULCH; DRY; 18.174 *INSIDE CITY, NOT URBAN *BARTOW.; 19.980 OUTSIDE CITY & URBAN

MOOSE LODGE RD 16.191 A; PEACE RIVER PK RD 16.410 A; FL SHERIFF RANCH ENT 16.565 A; CONNERSVILLE RD 17.036 A; OLD CONNERSVILLE RD 17.536 A; 80 FT RD 19.069 A; 655 A; HANKIN RD 19.652 A

LANE WIDTHS ARE AVERAGED

110.0' - 44.0'
4 - 11.0' RDWY
42.0' LWN MED
2*5.0' PVD SHLD1
2*7.0' LWN SHLD2

17.036 94.0' - 48.0'
4 - 12.0' RDWY
22.0' CB>6/LWN MED
2*5.0' PVD SHLD1
2*7.0' LWN SHLD2
2.0' CRG INSHLD1 - LT
3.0' PVD INSHLD1 - RT
2.0' CRG INSHLD2 - RT

17.182 78.0' - 48.0'
4 - 12.0' RDWY
22.0' CB>6/LWN MED
2.0' C&G SHLD1 - LT
4.0' PVD SHLD1 - RT
2.0' C&G SHLD2 - RT
2.0' CRG INSHLD1 - LT
3.0' PVD INSHLD1 - RT
2.0' CRG INSHLD2 - RT

17.536 94.0' - 48.0'
4 - 12.0' RDWY
22.0' CB>6/LWN MED
2*5.0' PVD SHLD1
2*7.0' LWN SHLD2
2.0' CRG INSHLD1 - LT
3.0' PVD INSHLD1 - RT
2.0' CRG INSHLD2 - RT

17.697 113.0' - 48.0'
4 - 12.0' RDWY
41.0' LWN MED
2*5.0' PVD SHLD1
2*7.0' LWN SHLD2

ROADWAY COMPOSITION

28/FC-0
28/FC-0
17.209
28/FC-2
28/FC-2

HORIZONTAL ALIGNMENT

Δ=4° 02'00" D=0° 30'00" 00 — CURVE DATA IS NOT FIELD VERIFIED — PC=16.122 PI=16.198 PT=16.275

PC=16.898 PI=17.033 PT=17.164 — D=1° 30'00" 00 Δ=21° 07'00"

PC=18.203 PI=18.269 PT=18.316 — D=1° 00'00" 00 Δ=7° 00'00"

Δ=5° 59'00" D=1° 00'00" 00 — PC=18.378 PI=18.435 PT=18.492

Δ=19° 35'00" D=2° 00'00" 00 — PC=19.343 PI=19.436 PT=19.528

Δ=18° 20'00" D=1° 16'00" 00 — PC=19.882 PI=20.019 PT=20.149

STRUCTURE DESCRIPTION

16.066 1-36" X 161' CC; 16.108 1-15" X 70' CC; 16.221 1-15" X 70' CC; 16.315 1-15" X 70' CC; 16.443 1-15" X 65' CC; 16.519 1-15" X 70' CC; 16.695 1-15" X 65' CC; 16.832 2-30" X 160' CC; 17.106 1-24" X 150' CC; 17.803 1-24" X 150' CC; 17.953 17.957 21' CB *0080; 18.076 1-15" X 70' CC; 18.286 1-24" X 160' CC; 18.440 1-30" X 140' CC; 18.572 1-15" X 70' CC; 18.697 1-15" X 70' CC; 18.829 1-15" X 70' CC; 18.904 3-30" X 160' CC; 19.162 3-30" X 155' CC; 19.491 2-30" X 155' CC; 19.776 1-15" X 70' CC

DISTRICT USE

SIS

SIS HIGHWAY FACILITY

FUN CLASS

URBAN OTHER PRINCIPAL ARTERIAL — 17.064 RURAL PRINCIPAL ARTERIAL -- OTHER

20 21 22 23 24

ROADWAY FEATURES

CREEK; GASKIN; HADDON LN 20.381; WINGATE RD 20.512; ALAN LOOP 20.561; GOOD LIFE RV RESORT 20.731; CREEK; WAHNETA FARMS; 655 A; RIFLE RANGE RD 21.318; PAUL REVERE RD 21.552; OLD BARTOW/LK WALES 21.826; GARDENIA RD 21.879; ALTURAS RD N 21.826; 655 A; CANEL; DRAINAGE

LANE WIDTHS ARE AVERAGED

ROADWAY COMPOSITION

28/FC-2
28/FC-2
20.639
28/FC-4
28/FC-4

HORIZONTAL ALIGNMENT

CURVE DATA IS NOT FIELD VERIFIED — Δ=37° 04'00" D=2° 34'00" 00 — PC=20.348 PI=20.490 PT=20.625 — B=N89° 00'00"E

PC=21.990 PI=22.135 PT=22.280 — D=0° 45'00" 00 Δ=11° 28'00"

PC=23.765 PI=23.880 PT=23.995 — D=0° 30'00" 00 Δ=6° 04'00" — B=S73° 28'00"E

STRUCTURE DESCRIPTION

20.043 20.047 21' CB *0081; 20.217 1-15" X 70' CC; 20.401 1-15" X 65' CC; 20.812 1-15" X 65' CC; 20.963 20.969 54' CB *0131; 21.114 1-15" X 70' CC; 21.399 1-24" X 125' CC; 21.607 1-15" X 70' CC; 21.928 1-15" X 70' CC; 22.321 1-18" X 65' CC; 22.587 1-18" X 65' CC; 23.070 23.115 237' BR *0221; 23.070 23.115 237' BR *0316; 23.354 1-15" X 90' CC; 23.780 1-18" X 75' CC

DISTRICT USE

SIS

SIS HIGHWAY FACILITY

FUN CLASS

RURAL PRINCIPAL ARTERIAL -- OTHER

DRAFT

DATE	5 YR INV	SLD REV	INTERIM REVISIONS BMP	EMP	INV	SLD REV
04/20/07	05/14/07					
BY	FTE	RWG				

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE MAINTENANCE STATISTICS OFFICE

INT. or US ROUTE NO	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO. / OF.
	SR 60	POLK	1	16110000	4 / 4

24 25 26 27 28

ROADWAY FEATURES

LANE WIDTHS ARE AVERAGED

113.0' - 48.0'
4 - 12.0' RDWY
41.0' LWN MED
2*5.0' PVD SHLD1
2*7.0' LWN SHLD2

PEACE CREEK
UNNAMED
RR* 625419 N 25.544
W LAKE WALES RD N 26.187
W LAKE WALES RD S 26.187
27.398 *INSIDE URBAN, OUTSIDE CITY *WINTER HAVEN
RD 27.609
W BAY BLVD N 27.672
E BAY BLVD N 27.734
RD 27.985
GODWIN RD 27.354
ACUFF 27.609
W BAY BLVD S 27.672
E BAY BLVD S 27.734
AIRPORT 27.985

27.489 93.0' - 48.0'
4 - 12.0' RDWY
41.0' LWN MED
2*2.0' C&G SHLD1

ROADWAY COMPOSITION

28/FC-4
28/FC-4
25.594
28/FC-2
28/FC-2

HORIZONTAL ALIGNMENT

CURVE DATA IS NOT FIELD VERIFIED

Δ=36°00'00"
D=1°59'
PC=26.334
PI=26.513
PT=26.679

PC=27.260
PI=27.371
PT=27.479
D=1°00'
Δ=11°32'00"

STRUCTURE DESCRIPTION

24.043 1-15" X 65' CC
24.158 1-15" X 65' CC
24.591 1-10" X 4" X 130' C&C
25.123 1-15" X 70' CC
25.276 25.298 *0045 136' BR 25.268 25.292 *0133 126' BR
25.378 1-15" X 65' CC
25.580 1-30" X 71' CC 25.588 1-30" X 70' CC
25.754 1-15" X 70' CC
25.936 1-15" X 60' CC
26.050 1-15" X 65' CC
26.207 1-15" X 80' CC
26.518 1-15" X 75' CC
26.730 1-15" X 80' CC
26.870 3-36" X 160' CM
27.044 1-15" X 70' CC
27.185 1-15" X 70' CC
27.380 3-30" X 155' CC

DISTRICT USE

SIS

SIS HIGHWAY FACILITY

FUN CLASS

RURAL PRINCIPAL ARTERIAL -- OTHER

27.398 URBAN OTHER PRINCIPAL ARTERIAL

28 29 30 31

ROADWAY FEATURES

LANE WIDTHS ARE AVERAGED

28.070 103.0' - 48.0'
4 - 12.0' RDWY
41.0' LWN MED
2.0' C&G SHLD1 - LT
5.0' PVD SHLD1 - RT
7.0' LWN SHLD2 - RT

S MARTIN RD 28.211
OLD BARTOW RD 28.260
RR* 625426 Y 28.668
CENTRAL AVE 28.696
LAKE WALES PLZ ENT 29.013
LAKE WALES PLZ ENT 29.104
29.134 *INSIDE CITY & URBAN *LAKE WALES, WINTER HAVEN
2 QUAD *CLOVER INTERCHG
RP* 16110009 29.236
RP* 16110012 29.336
RP* 16110010 29.447
TURN-OUT 29.481
TURN-OUT 29.891
RP* 16110011 29.505
27 25 25 27
HENRY ST 29.219
RP* 16110014 29.287
RP* 16110013 29.530
ST 29.653
SHARPE 29.653
POLK AVE 29.700
GIBSON AVE 29.700
JR DR 29.787
DR MLK 29.787
POLK AVE 29.881
WETMORE ST 29.917
ST S 30.076
FIRST 30.076
SECOND ST 30.215
S SECOND ST 30.215
ST 30.340
THIRD 30.340
ST 30.465
FOURTH 30.465
SR 60
17 17
30.632 158' BR *0038 30.632
W END RP* 1160038
End MP: 30.632
NET DN SYSTEM SECTION
LENGTH: 28.140

NET ROADWAY ID LENGTH:
30.368

28.372 113.0' - 48.0'
4 - 12.0' RDWY
41.0' LWN MED
2*5.0' PVD SHLD1
2*7.0' LWN SHLD2

29.219 91.0' - 48.0'
4 - 12.0' RDWY
23.0' CB>6/LWN MED
2*10.0' PVD SHLD1

29.530 70.0' - 48.0'
4 - 12.0' RDWY
18.0' CB>6/LWN MED
2*2.0' C&G SHLD1
2*2.0' CRG INSHLD1

ROADWAY COMPOSITION

28/FC-2
28/FC-2

HORIZONTAL ALIGNMENT

CURVE DATA IS NOT FIELD VERIFIED

PC=28.199
PI=28.295
PT=28.387
D=1°00'
Δ=9°54'00"

PC=28.481
PI=28.593
PT=28.694
D=3°30'
Δ=36°29'30"

PC=28.871
PI=28.971
PT=29.072
D=0°35'
Δ=6°11'30"

Δ=37°14'00"
D=4°00'
PC=29.122
PI=29.214
PT=29.299

PC=29.369
PI=29.451
PT=29.533
D=0°30'
Δ=4°21'00"

Δ=13°07'00"
D=2°00'
PC=29.715
PI=29.778
PT=29.839

PC=29.850
PI=29.961
PT=30.059
D=4°21'
Δ=48°00'00"

Δ=48°20'15"
D=5°00'00" 00
PC=30.066
PI=30.164
PT=30.249

Δ=9°15'13"
D=2°00'00" 00
PC=30.498
PI=30.572
PT=30.585

STRUCTURE DESCRIPTION

28.430 1-10" X 8" X 155' C&C
28.553 1-15" X 80' CC
28.848 1-15" X 80' CC
28.999 2-24" X 155' CC
29.102 1-15" X 85' CC
29.225 2-30" X 155' CC
29.381 29.420 205' BR *0018 221' BR *0134 29.382 29.424

DISTRICT USE

SIS

SIS HIGHWAY FACILITY

30.632 SIS HIGHWAY FACILITY

FUN CLASS

URBAN OTHER PRINCIPAL ARTERIAL

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APPENDIX F

Correspondence

CPP Meeting 2/9/11

Attendees

Karina Della Sera	FDOT - Drainage	519-2750
AL STEWART	ANALYTIC ENGINEERING	813/449-4358
Tim Polk	PBS:J	533-7000
Nicole Harris	FDOT	519 2373
Doug Reed	PBS+J	813-281-8310
GORDON GREENE	PBS&J	863-533-7000
Kim Warren	PBS&J	863-533-7000
Sergio Figueroa	Inwood	
Renato Chaw	Inwood	407-971-8850
Carl Spirio	FDOT	

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M E E T I N G
M I N U T E S

DATE: February 10, 2011 (February 9, 2011 meeting)

RE: **CENTRAL POLK PARKWAY PD&E STUDY FROM S.R. 60 TO POLK PARKWAY (S.R. 570) AND FROM S.R. 60 TO I-4 (S.R. 400) DRAINAGE MEETING**
FPID: 423601-1-22-01

ATTENDEES: Karina Della Sera, Nicole Harris, and Carl Spirio – FDOT

Al Stewart – Analytical Engineering

Tim Polk, Doug Reed, Gordon Greene, and Kim Warren – PBS&J

Renato Chuw and Sergio Figueroa – Inwood Consulting Engineers

LOCATION: FDOT District 1 (Bartow) – 1:00 pm

MEETING GOAL:

The goal of the February 9, 2011 Central Polk Parkway PD&E Study Drainage Meeting was to discuss the main issues for the comments and responses regarding to the Pond Siting Report and Location Hydraulics report. Comments were made by Tim Polk, Al Stewart, and Gordon Greene and responses were provided by Inwood Consulting Engineers. A meeting between PBS&J and Inwood Consulting Engineers was previously held to discuss each comment and response for both reports. After the meeting, it was in agreement between both parties that further discussion with the FDOT would be needed in order to make a final decision on some of the comments and responses to the reports.

The following is a brief description and resolution of the drainage meeting held between the FDOT, PBS&J, and Inwood.

DISCUSSION ITEMS:

- ✓ **Location Hydraulics Report**
  - Inwood started the meeting by stating that all of the comments provided by Al Stewart were addressed for the Draft Reports.
  - Tim Polk Comments
    - Comments 3, 4, and 12 were discussed in detail. Tim expressed concerns that there will be major longitudinal floodway impacts to the Peace Creek Canal and along the western alignment that longitudinally traverses the canal.
    - As a resolution, it was agreed upon between all parties that language will be added in the LHR to discuss the need to re-evaluate these floodway/floodplain impacts during the design phase of this segment.

- ✓ **Pond Siting Report**
  - o Future Statewide Storwater Rule
    - ▪ Comment 6 by Al Stewart and Comment 2 by Gordon Greene both expressed concerns of the upsize percentage used for the stormwater ponds in the report. Inwood had originally used a 25% increase factor based on previous conversations with FDOT. Carl Spirio indicated that at this time, to not consider the future statewide stormwater rule, per direction of the Governor and FDEP. However, TMDL for impaired water bodies will still need to be accounted for. It was agreed between all parties that the 25% increase in the pond sizes are acceptable at this stage of the PD&E study to account for the impaired water body status for this project. Inwood will update the PSR report to not mention the future statewide stormwater rule and instead, impaired water body requirements and the assumption of the 25% increase in the pond size.
  - o Comment 18 by Gordon Greene
    - ▪ In a previous meeting held between PBS&J and Inwood Consulting Engineers, Gordon Greene expressed concerns of using basin limits that were set from cross drain to cross drain. Inwood reviewed the roadway basin limits that were specifically set from cross drain to cross drain and determined that one basin would have to be split into two basins with a potential addition of a new pond. After discussions with FDOT and PBS&J, it was decided that because of the tight schedule to submit the final reports, no significant impacts to the overall estimate of the right of way costs for the corridor and the uncertainty in the final profile of the road, the pond locations as shown in the Draft Report will remain, with no additional ponds. Also, the ponds will be re-evaluated with further scrutiny during the design phase of the project. Inwood will update the Pond Siting Report that will recognize that pond sites will be re-evaluated with further detail during the design phase of the project.

ACTION ITEMS:

- ✓ Inwood will update the Pond Siting Report and Location Hydraulics Report based on discussions in this meeting and have it submitted to PBS&J by no later than February 22, 2011.

The above summary is Inwood's understanding of the main points of the meeting. If any one of the participants has any clarifications or additional information that may be useful, please reply to Inwood via email rchuw@inwoodinc.com.

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Evaluation Factors	No-Build	West Alternatives					East Links			
		Alternative W-E	Alternative W-H	Alternative W-I	Alternative W-J	Alternative W-K	Alternative E-I	Alternative E-K	Alternative E-M	Alternative E-O
		Links: W201, W205, W206, W207	Links: W202, W203, W206, W207	Links: W202, W203, W206, W208	Links: W202, W204, W205, W206, W207	Links: W202, W204, W205, W206, W208	Links: E201, E203, E204, E206	Links: E201, E203, E205, E206	Links: E202, E203, E204, E206	Links: E202, E203, E205, E206
Right-of-Way (ROW) Impacts										
Area of ROW to be Acquired for Roadway (in acres)	0	542	890	975	670	755	1608	1637	1471	1499
Area of ROW to be Acquired for Ponds (acres)	0	125.04	195.23	201.09	249.07	254.93	0.00	0.00	0.00	0.00
Business Impacts										
Number of Businesses Expected to be Relocated	0	0	0	0	0	0	0	0	0	0
Number of Businesses Impacted	0	0	0	0	0	0	0	0	0	0
Residential Impacts										
Number of Residences Expected to be Relocated	0	0	0	0	0	0	0	0	0	0
Number of Residences Impacted	0	0	0	0	0	0	0	0	0	0
Engineering Issues										
Number of New Bridges Required	0	27	29	29	38	38	73	71	67	65
Future Travel Demand - 2035 Annual Average Daily Traffic (AADT) Ranges	0	66,800-91,400	60,600-111,600	60,600-111,600	95,200-97,200	84,000-96,400	77,000-116,200	77,000-116,200	77,000-104,200	77,000-104,200
Diversion of Traffic from Existing Roads (US 17, US 98 & US 27)	0	51,800	52,200	52,200	52,300	52,300	52,300	52,300	51,800	51,800
Connectivity to Major Activity Centers (# Sites Within 5 Miles)	0	2	4	4	4	4	7	5	5	3
Natural Environment										
Area of Wetlands (ac)	0	0	0	0	0	0	0	0	0	0
Area of Floodplain Encroachment (ac)	0	132	234	304	275	345	261	274	230	243
Potential Threatened and Endangered Species Inpacts (none, low, medium, high)	none	high	medium	medium	high	high	high	high	high	high
Potential Contamination Sites										
Number of potential petroleum pollutant and hazardous materials contaminated sites ranked: High Risk	0	1	1	1	1	1	3	3	4	4
Medium Risk	0	7	9	9	10	10	26	27	24	25
Cultural/Historical Resources and Public Parks										
Number of Archaeological/Historic Sites Impacted (NHRP Listed/Eligible)	0	0	0	0	0	0	0	0	0	0
Number of Public Recreational Facilities Impacted	0	2	1	1	1	1	4	4	4	4
Number of Designated Conservation Areas Impacted	0	0	0	0	0	0	0	0	0	0
Potential Social Impacts										
Number of Social Resources Impacted	0	1	0	0	1	1	0	0	0	0
Estimated Cost (All costs are reported in 2010 dollars)*										
Design (15% of Construction)	$0	$7,993,500	$10,246,350	$10,767,450	$9,292,800	$9,813,750	$23,816,100	$24,103,950	$22,019,400	$22,307,100
Roadway Right-of-Way	$0	$64,376,600	$71,213,800	$75,438,800	$79,651,600	$83,876,600	$225,170,700	$229,630,900	$225,062,700	$229,522,900
SMF Right-of-Way	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Wetland Mitigation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Roadway Construction	$0	$53,290,000	$68,309,000	$71,783,000	$61,952,000	$65,425,000	$158,774,000	$160,693,000	$146,796,000	$148,714,000
CEI (15% of Construction)	$0	$7,993,500	$10,246,350	$10,767,450	$9,292,800	$9,813,750	$23,816,100	$24,103,950	$22,019,400	$22,307,100
Total Cost	$0	$133,653,600	$160,015,500	$168,756,700	$160,189,200	$168,929,100	$431,576,900	$438,531,800	$415,897,500	$422,851,100

* Subject To Change As Study Progresses

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CONCEPTUAL
POND SITING REPORT

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
CENTRAL POLK PARKWAY
FROM S.R. 60 TO POLK PARKWAY (S.R. 570) and
From S.R. 60 to I-4 (S.R. 400)

FINANCIAL PROJECT ID NO. 423601 1 22 01
POLK COUNTY, FLORIDA

Prepared for:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT ONE
801 North Broadway
Bartow, Florida 33830

DECEMBER 2010
(Revised March 2011)
Volume I of II

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CONCEPTUAL
POND SITING REPORT

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FINANCIAL PROJECT ID NO. 423601 1 22 01
POLK COUNTY, FLORIDA

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT ONE
801 North Broadway
Bartow, Florida 33830
And
PBS&J
600 North Broadway Avenue, Suite 310
Bartow, Florida 33830

Prepared by:

3000 Dovera Drive, Suite 200
Oviedo, Florida 32765

DECEMBER 2010
(Revised March 2011)
Volume I of II

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CONCEPTUAL
POND SITING REPORT

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
CENTRAL POLK PARKWAY
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Financial Project ID No. 423601 1 22 01
POLK COUNTY, FLORIDA

Professional Engineer Certificate

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Inwood Consulting Engineers, Inc., a corporation authorized to operate as an engineering business, FEID No. 59-3216593, by the State of Florida, Department of Professional Regulation, and Board of Professional Engineers. I have reviewed or approved the evaluation, findings, opinions and conclusions as reported in this Conceptual Pond Siting Report.

The Conceptual Pond Siting Report includes a summary of data collection efforts and design analysis for the pond sites, and other possible primary drainage system alternatives for the Central Polk Parkway PD&E Study. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of civil engineering as applied through design standards and criteria set forth by the federal, state, and local regulatory agencies as well as professional judgment and experience.

RENATO E. CHUW
LICENSE
No 56050
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Signature: _____

Name: Renato E. Chuw, P.E.

P.E. Number: 56050

Date: March 14, 2011

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) study to determine the engineering and environmental effects of the proposed Central Polk Parkway. The Central Polk Parkway is proposed as a new multi-lane limited access facility in Polk County, Florida, that will serve as an additional north-south route in the central Polk County regional transportation network. The study limits extend from State Road (S.R.) 60 east of Bartow, northwesterly to the Polk Parkway (S.R. 570) and from S.R. 60 east of Bartow, northerly to Interstate 4 (I-4) (S.R. 400) near the Polk/Osceola County line**.** The western portion of the study area from S.R. 60 northwesterly to Polk Parkway (S.R. 570) and the eastern portion from S.R. 60 east of Bartow, northerly to I-4 serve a separate unique purpose and function from one another within the context of the regional transportation system. Therefore, it is important to distinguish between the two legs in the study analysis and they will be referred to as the western leg and the eastern leg, respectively, throughout this document.

The Central Polk Parkway has not been identified as part of the Strategic Intermodal System (SIS). However, it would provide a direct connection between the Polk Parkway (S.R. 570), S.R 60, U.S. 27, and I-4, four SIS highways.

The western leg starts at S.R. 60 and ends at the Polk Parkway (S.R. 570). The eastern leg starts at S.R. 60 and ends at I-4. Both the western and eastern legs of the Central Polk Parkway include a spur to connect to the Pollard Road Extension, which serves the future Integrated Logistics Center and Intermodal Terminal Facility near the intersection of County Road (C.R.) 655 and S.R. 60. The western leg will include interchanges at S.R. 60, Central Polk Parkway/Pollard Road West Spur, Pollard Road Extension, Bartow Northern Connector, U.S. 17, S.R. 540 and the Polk Parkway (S.R. 570). The eastern leg will include interchanges at S.R. 60, Central Polk Parkway/Pollard Road East Spur, Pollard Road Extension, U.S. 27, C.R. 580, U.S. 17/92, and I-4. The eastern leg will also include one additional interchange option at either C.R. 542 or C.R. 544.

Existing Drainage Conditions

The project area is located within the Peace River Basin and the Kissimmee River Basin within the jurisdiction of the Southwest Florida Water Management District (SWFWMD). The project has been split between the western and eastern legs.

In the western leg, the project area is located under the Peace River Basin. The general flow pattern in the area is from east to west that is collected to a series of unnamed creeks that drains to the Peace Creek Canal, which ultimately drains to the Peace River. The Peace River drains south to Charlotte Harbor and ultimately to the Gulf of Mexico. Please refer to the SWFWMD Overall Drainage Basin Map shown in **Figure 2**, **Appendix A**.

The eastern leg is located within two basins: Peace River Basin and Kissimmee River Basin. In the area located under the Peace River Basin, the general flow pattern is from north to south and is collected by the Peace Creek Canal. The Peace Creek Canal drains to the Peace River, which drains south to Charlotte Harbor and ultimately to the Gulf of Mexico. For the area located under the Kissimmee River Basin, the general flow pattern flows from north to southeast and is collected by a series of creeks such as Snell Creek and Horseshoe Creek. These creeks drain to the Kissimmee River which ultimately outfalls to Lake Okeechobee. According to the Florida Department of Environmental Protection (FDEP), both of these basins are not considered Outstanding Florida Water (OFW's). Furthermore, Horseshoe creek, Wahneta Farms Drainage Canal, West Wales Drainage Canal, Lake Lena Run, and Peace Creek Drainage Canal are considered impaired water bodies with the following pollutants per FDEP:

- Horseshoe Creek: Fecal Coliforms
- Wahneta Farms Drainage Canal: Nutrients (Historic Chlorophyll-a)
- West Wales Drainage Canal: Fecal Coliforms
- Lake Lena Run: Fecal Coliforms
- Peace Creek Drainage Canal: Fecal Coliforms, Dissolved Oxygen (Nutrients), Nutrients (Historic Clorophyll-a), Mercury (In fish tissue)

Since the project consists of a new proposed roadway corridor, there are no existing cross drains or existing roadway basins in the area. However, there are two existing cross drains in the western leg that run along State Road 60 that fall within the project corridor. In the existing condition, runoff is collected by a series of lakes, local depressions, wetlands, and canals. These water bodies ultimately flow to the Peace River and Kissimmee River which ultimately drains south to Charlotte Harbor and Lake Okeechobee, respectively.

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Future Drainage Conditions

The proposed stormwater management consists of off-site wet detention and dry retention systems that will treat and attenuate the stormwater runoff from the new multi-lane roadway project. According to SWFWMD, treatment must be provided for one inch (1") of stormwater runoff from the contributing area for wet detention systems. Additionally, an orifice should be set at the seasonal high water level (SHWL) elevation and sized to drawdown no more than half of the required treatment volume in 60 hours. For dry retention systems, treatment must be provided for either one inch (1") of stormwater runoff from the impervious area or half an inch (½") of stormwater runoff from the contributing area. The SWFWMD also requires that the post development peak discharges shall be at or below pre-development peak discharges for the 25-year/24-hour storm event. FDOT critical duration analysis for 1-hour through 3-day storm events (open basin) shall also be analyzed to ensure that the post developed discharge rates and volumes do not exceed pre-developed discharge rates and volumes. For closed basins, up to the 100-year, 240-hour storm event should be analyzed.

The project is currently divided into western and eastern legs within the project limits. For the eastern leg, there are a total of sixty six (66) roadway drainage basins. For the western leg, there are a total of twenty seven (27) roadway drainage basins. One (1) pond alternative for each basin has been analyzed to determine the suitability of the pond sites. The ponds were sized to accommodate the proposed six-laning and on the assumption that offsite runoff would be drained through separate bypass systems. Also, in order to accommodate the TMDL (Total Maximum Daily Load) for Impaired Water Bodies, the ponds were upsized by twenty five percent (25%) as directed per the February 9, 2011 meeting with the FDOT.

Floodplain compensation will also be required for the floodplain impact areas located along the project corridor. Floodplain compensation ponds have been provided to compensate for the floodplain impacts. For those areas where the floodplain impacts are minor, it was assumed that floodplain compensation shall be achieved within the stormwater management systems. Because of the uncertainty of the proposed roadway profile elevations, it was assumed that the proposed roadway profile would be four (4) feet above the existing ground within the floodplain impact areas.

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The following parameters were considered in the selection of potential pond sites:

- Hydrologic and hydraulic factors such as existing ground elevation, soil types, estimated seasonal high water table (SHWT), stormwater conveyance feasibility, allowable hydraulic grade line (HGL);
- Environmental resource impacts including wetlands and threatened or endangered species;
- Floodplain impacts;
- Major utility conflict potential;
- Estimated right-of-way acquisition;
- Impacts to cultural resources; and
- Hazardous Materials Contamination

Summary

Potential pond sites have been identified along the project limits. The analysis estimates pond right-of-way needs using a volumetric analysis, which accounts for water quality treatment and water quantity for runoff attenuation. The Right of Way cost estimate found in this report is a budget tool used by the Department to estimate total acquisition costs associated with each pond site and to budget the appropriate funds for acquisition. Right of Way cost estimates are not real estate appraisals and do not reflect market value. In addition, the FDOT uses appraisals that comply with the Uniform Standards of Professional Appraisal Practice (USPAP) for acquisition purposes.

Please note that the recommendations were based on pond sizes and locations determined from preliminary data calculations, reasonable engineering judgment, environmental analysis, and assumptions. This is a conceptual document and pond sizes and locations may change during final design as more detailed information on SHWT, wetland hydrologic information, and final roadway profiles and alignments become available.

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SECTION 1 - INTRODUCTION

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) study to determine the engineering and environmental effects of the proposed Central Polk Parkway. The Central Polk Parkway is proposed as a new six-lane limited access facility in Polk County, Florida, that will serve as an additional north-south route in the central Polk County regional transportation network. The study limits extend from State Road (S.R.) 60 east of Bartow, northwesterly to the Polk Parkway (S.R. 570) and from S.R. 60 east of Bartow, northerly to Interstate 4 (I-4) (S.R. 400) near the Polk/Osceola County line**.** The Project Location Map is shown in **Figure 1**, **Appendix A**-Figures. The western portion of the study area from S.R. 60 northwesterly to Polk Parkway (S.R. 570) and the eastern portion from S.R. 60 east of Bartow, northerly to I-4 serve a separate unique purpose and function from one another within the context of the regional transportation system. Therefore, it is important to distinguish between the two legs in the study analysis and they will be referred to as the western leg and the eastern leg, respectively, throughout this document.

The total length of the proposed roadway in the western leg is approximately 10 miles (mi.), while the eastern leg is approximately 30 mi. long. The study area covers the following United States Geological Survey (USGS) quadrangle maps: Intercession City, Lake Louisa SW, Davenport Gum Lake, Dundee, Winter Haven, Auburndale, Lakeland, Lake Wales, Eloise, Bartow, and Mulberry. **Table 1** lists the County, Townships, Ranges, and Sections covering the study area.

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Table 1 – Township, Range, and Section

County	Township	Range	Sections
OSCEOLA	25 South	27 East	33 - 36
		28 East	31
	26 South	28 East	6, 7
POLK		26 East	13, 24, 25, 35, 36
		27 East	1 - 5, 7 - 36
		28 East	18, 19, 30, 31
	27 South	26 East	1, 2, 10 - 15, 22 - 28, 33 - 36
		27 East	1 - 36
		28 East	6, 7, 18, 19, 30
	28 South	24 East	35, 36
		25 East	8, 9, 14 - 17, 20 - 29, 31 - 36
		26 East	1 - 4, 8 - 17, 19 - 28, 30 - 36
		27 East	1 - 17, 19 - 36
		28 East	6, 7, 18, 19, 30, 31
	29 South	24 East	1, 2, 12
		25 East	1 - 7, 9 - 16, 20 - 29, 33 - 36
		26 East	1 - 36
		27 East	1 - 24, 26 - 34
	30 South	25 East	2, 3
		26 East	1, 2
		27 East	3, 4, 5, 6

The Central Polk Parkway has not been identified as part of the Strategic Intermodal System (SIS). However, it would provide a direct connection between the Polk Parkway (S.R. 570), S.R 60, U.S. 27, and I-4, four SIS highways.

The western leg starts at S.R. 60 and ends at the Polk Parkway (S.R. 570). The eastern leg starts at S.R. 60 and ends at I-4. Both the western and eastern legs of the Central Polk Parkway include a spur to connect to the Pollard Road Extension, which serves the future Integrated Logistics Center and Intermodal Terminal Facility near the intersection of County Road (C.R.) 655 and S.R. 60.

The western leg will include interchanges at S.R. 60, Central Polk Parkway/Pollard Road West Spur, Pollard Road Extension, Bartow Northern Connector, U.S. 17, S.R. 540 and the Polk Parkway (S.R. 570). The eastern leg will include interchanges at S.R. 60, Central Polk Parkway/Pollard Road East Spur, Pollard Road Extension, U.S. 27, C.R. 580, U.S. 17/92, and I-4. The eastern leg will also include one additional interchange option at either C.R. 542 or C.R. 544.

The project is located within the Peace River drainage basin as defined by the Southwest Florida Water Management District (SWFWMD). The project has been split into the western and eastern legs. Please refer to Section 2 for a more detailed description of the limits of each leg. Within the eastern leg, the project is located within the Peace Creek sub-basin of the Peace River Drainage Basin and the Kissimmee River Basin. Within the western leg, the project is located within the Peace Creek sub-basin of the Peace River Drainage Basin. A reproduction of the United States Geological Survey (USGS) Quadrangle **Maps** for the project vicinity is shown in **Figure 3-1, 3-2,** and **3-3** in **Appendix A**.

The purpose of this Pond Siting Report is to discuss, analyze, and identify the stormwater management plan for the proposed roadway alignment based on environmental, hydrology and hydraulics, and economic factors and to estimate right-of-way costs for ponds. Stormwater management for water quality treatment and runoff attenuation will be provided using wet detention and dry retention stormwater management facilities. The design of the drainage and stormwater facilities will comply with the standards set forth by the FDOT Drainage Manual and the SWFWMD Environmental Resource Permit (ERP) manual. The pond siting analysis documentation for the conceptual pond sites is found in Section 7 of this report. All exhibits for this report are included in **Appendix A**. For the ease of review, Drainage Design Criteria Matrix, Pond Design Calculations, and Pond Site Matrix are included in **Appendices B**, **C**, and **D**. Other supporting information and data is included in the remaining appendices.

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SECTION 2 - PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) proposes to add a new rural 6 lane divided facility in Polk County from the existing Polk Parkway (S.R. 570) to Pollard Road for the western leg; then from Pollard Road to Interstate 4 for the eastern leg. For the western leg, the project extends for approximately 10 miles traversing nineteen (19) proposed cross drain locations and thirty one (31) bridges/ bridge culverts which will have to be added in order to avoid access management conflicts and maintain conveyance for the existing rivers/canals. For the eastern leg, the project extends for approximately 30 miles traversing twenty nine (29) proposed cross drain locations and one hundred one (101) bridges/ bridge culverts which will have to be added in order to avoid access management conflicts and maintain conveyance for the existing rivers/canals. The limits of the project are shown on the Project Location Map as shown in **Figure 1**, **Appendix A**-Figures.

The proposed roadway is divided into two legs. The western leg is from S.R. 60 to the existing Polk Parkway (S.R. 570), including a spur to Pollard Road where the eastern leg is from S.R. 60 to Interstate 4, including a spur to Pollard Road. Please refer to **Figure 1**, in **Appendix A** for project legs. The typical section for both the western and eastern legs consists of a high speed rural roadway with a design speed of 65 mph. This six-lane divided rural roadway consists of a 44-foot depressed median, three 12-foot travel lanes in each direction, a 12-foot multi use trail, 10-foot inside shoulder, 12-foot outside shoulder and roadside ditches for stormwater conveyance. The proposed right-of-way for the rural roadway will be 350 feet. Please refer to **Figure 4**, **Appendix A** for proposed typical sections.

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SECTION 3 - DESIGN CRITERIA

The design of the stormwater management facilities for the project is governed by the rules set forth by the SWFWMD and FDOT. Water quality treatment and water quantity attenuation requirements will comply with the guidelines as defined in Chapter 40D-4 of the Florida Administration Code (F.A.C) and the SWFWMD Environmental Resource Permit (ERP) manual. A critical duration analysis will be performed to comply with FDOT Rule Chapter 14-86 F.A.C. Please refer to **Appendix B** for the Drainage Design Criteria Matrix compiled from both SWFWMD and FDOT criterion and used for this project.

Wet detention and dry retention ponds will provide for water quality improvements as well as water quantity attenuation for the project runoff. Please refer to the summary below for the water quality, water quantity, FDOT critical duration, and detention/retention pond facilities configuration criterion used for the project:

- **Water Quality** – Treatment will be provided for one inch (1") of stormwater runoff from the contributing area. The treatment volume should not rise more than 18" above the control elevation [orifice elevation/Seasonal High Water Level (SHWL)]. An orifice should be set at the SHWL elevation and sized to drawdown no more than one-half of the required treatment volume in 60 hours. Peace River and Kissimmee River are not Outstanding Florida Water Bodies (OFW), and therefore, the water quality treatment requirements for the project do not adhere to OFW criteria.

- **Water Quantity** – For open basins, the SWFWMD requires that the post development peak discharges shall be at or below pre-development volume for the 25-year/24-hour storm event. For closed basins, the SWFWMD requires that the post development volume shall be at or below pre-development volume for the 100-year/24-hour storm event. Also, for closed basin the discharge rates shall not be increased for the 25-year/24-hour storm over the pre-developed condition.

- **Critical Duration** – For open basins, FDOT critical duration analysis for 1-hour through 3-day storm events shall be analyzed to ensure that the post developed discharge rates and volume do not exceed pre-developed discharge rates. For closed basins, FDOT critical duration analysis for 1-hour through 10-day storm events shall be analyzed to ensure that the

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post development discharge rates and volume do not exceed pre-development discharge rates and volume.

- **Detention Pond Facilities Configuration** – The proposed pond will include a 20-foot maintenance berm, maximum 1:4 (Vertical:Horizontal) for pond side slopes and tie up/down slopes to existing ground, a minimum 1-foot freeboard from the inside maintenance berm to the Design High Water (DHW), and 35% of control water level area for littoral zone concentrated at the outfall.

The stormwater runoff for the roadway will be collected by roadside ditches and conveyed to the proposed wet detention or dry retention ponds. The SCS method has been used to determine the required pond size for each basin. It should be noted that in order to accommodate the TMDL (Total Maximum Daily Load) for Impaired Water Bodies, the ponds were upsized by twenty five percent (25%) as directed per the February 9, 2011 meeting with FDOT.

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SECTION 4 - DATA COLLECTION

The design team collected and reviewed data from the following sources:

- FDOT Drainage Manual Standards, March 2010.
- SWFWMD Environmental Resources Permitting Manual
- Federal Emergency Management Agency (FEMA), Polk County, Florida dated December 20, 2000
- US Department of Agriculture (USDA) Soil Conservation Service (SCS) Soil Survey of Polk County, Florida, October 1990
- USDA Detailed Soils (SSURGO) from SWFWMD
- USGS Quadrangle Maps (Bartow, Haines City, Winter Haven, Auburndale, Dundee, Wahneta, and Davenport)
- 1-foot Contours converted from the SWFWMD Light Detection and Ranging (LiDAR) data for Peace River South Project
- Polk County Property Appraiser's Website (GIS parcel lines)
- National Wetland Inventory (NWI) from US Fish and Wildlife Service (USFWS), May 2006 (GIS data)
- FDOT Straight Line Diagram (SLD) of Road Inventory for SR 60
- Peace River Cumulative Impact Study Final Report (2007)
- *Project Development and Environment Manual*; Florida Department of Transportation; Tallahassee, Florida; Multiple Publish Dates. http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm

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SECTION 5 - EXISTING SITE CONDITIONS

5.1 TOPOGRAPHY & HYDROLOGIC FEATURES

5.1.1 Eastern Leg

The topography of the project area varies greatly with elevations ranging from a high of 226 feet to a low of 80 feet NAVD 88. Please refer to USGS Quadrangle Map and **Figure 3-1, 3-2**, and **3-3** in **Appendix A**. Since this is a new proposed road, there are no existing cross drains and bridges/bridge culverts.

5.1.2 Western Leg

The topography of the project area varies with elevations ranging from a high of 152 feet to a low of 101 feet NAVD 88. Please refer to USGS Quadrangle Map and **Figure 3-1, 3-2,** and **3-3** in **Appendix A**. Since this is a new proposed road, there are no existing cross drains and bridges/bridge culverts. However, there are 2 existing cross drains that run along State Road 60 that fall within the project corridor. The size and geometry of all cross drains have been verified from straight line diagrams provided by the FDOT. Please refer to **Table 2** for a summary of existing cross drains.

Table 2 – Summary of Existing Cross Drains

Structure Number	Approximate Location	FDOT Milepost	Description	Geometry
Bridge Culvert 1	S.R. 60 Align	20.045	21' Bridge Culvert	Box
Bridge Culvert 2	S.R. 60 Align	20.965	31' Bridge Culvert	Box

5.2 SOILS DATA & GEOTECHNICAL INVESTIGATIONS

The Soil Survey of Polk County, Florida, published by the USDA SCS (dated July 1989) has been reviewed for the project vicinity. USDA SSURGO was also obtained from SWFWMD to create soils map in the project area using GIS ArcMap. SSURGO data was compared to the Soil Survey by USDA SCS and found no deviation. The soil survey map for the project vicinity is illustrated in **Figure 5-1, 5-2,** and **5-3** of **Appendix A** on the Soils Map.

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5.2.1 Eastern Leg

Several types of soils were encountered along the project limits because of the extensive project coverage. The soil types range from Hydrological Soil Groups A through D soils. Type A soils are well drained soils with low water tables whereas Type D soils are very poorly or poorly drained soils with high water tables. According to the Soil Survey, there are thirty three (33) different soil types located along the eastern leg within the project limits. **Table 3** – USDA SCS Soil Survey Information (Eastern Leg) summarizes and lists the soil types and relevant information.

Table 3 – USDA NRCS Soil Survey Information (Eastern Leg)

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
2	APOPKA FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-51	SP, SP-SM	A-3
							51-80	SM-SC, SC	A-2-4, A-2-6, A-4, A-6
3	CANDLER FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-80	SP, SP-SM	A-3
4	CANDLER FINE SAND, 5 TO 8 PCT SLOPES	NA	NA	6	6	A	0-81	SP, SP-SM	A-3
7	POMONA FINE SAND	JUN	SEP	0.5	1.5	D	0-6	SP, SP-SM	A-3, A-2-4
							6-21	SP, SP-SM	A-3, A-2-4
							21-26	SP-SM, SM	A-3, A-2-4
							26-48	SP, SP-SM, SM	A-3, A-2-4
							48-73	SC, SM-SC, SM	A-3, A-2-4, A-6
13	SAMSULA MUCK	JUN	APR	-2	0	D	0-31	PT	N/A
							31-80	SP-SM, SM, SP	A-3, A-2-4
14	SPARR SAND, 0 TO 5 PCT SLOPES	JUL	OCT	1.5	3.5	C	0-8	SP-SM, SM	A-3, A-2-4
							8-57	SP-SM, SM	A-3, A-2-4
							57-80	SM-SC, SC, SM	A-2-4, A-6
15	TAVARES FINE SAND, 0 TO 5 PCT SLOPES	JUN	DEC	3.5	6	A	0-80	SP, SP-SM	A-3
17	SMYRNA AND MYAKKA FINE SANDS	JUN	SEP	0.5	1.5	D	0-12	SP-SP-SM	A-3, A-2-4
							12-25	SM, SP-SM	A-3, A-2-4
							25-42	SP, SP-SM	A-3
							42-48	SM, SP-SM	A-3, A-2-4
							48-80	SP, SP-SM	A-3
19	FLORIDANA MUCKY FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-25	SP-SM, SM	A-3, A-2-4
							25-36	SP, SP-SM	A-3
							36-80	SM-SC, SC	A-2-4, A-2-6
20	FORT MEADE FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-80	SM	A-2-4

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Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
21	IMMOKALEE SAND	JUN	SEP	0.5	1.5	D	0-7	SP, SP-SM	A-3
							7-39	SP, SP-SM	A-3
							39-58	SP-SM, SM	A-3, A-2-4
							58-66	SP, SP-SM	A-3
							66-80	SP-SM, SM	A-3, A-2-4
22	POMELLO FINE SAND	JUL	NOV	2	3.5	C	0-48	SP, SP-SM	A-3
							48-63	SP-SM, SM	A-3, A-2-4
							63-80	SP, SP-SM	A-3
23	ONA FINE SAND	JUN	SEP	0.5	1.5	D	0-10	SP-SM, SP	A-3
							10-19	SP-SM, SM	A-3, A-2-4
							19-50	SP-SM, SP	A-3
							50-80	SP-SM, SM	A-3, A-2-4
25	PLACID AND MYAKKAFINE SANDS, DEPRESSIONAL	JUN	MAR	-2	1	D	0-18	SP, SP-SM, SM	A-3, A-2-4
25	PLACID AND MYAKKAFINE SANDS, DEPRESSIONAL (Cont.)	JUN	MAR	-2	1	D	18-80	SP, SP-SM, SM	A-3, A-2-4
30	POMPANO	JUN	OCT	0	0.5	D	0-80	SP, SP-SM	A-3, A-2-4
31	ADAMSVILLE FINE SAND	JUN	NOV	2	3.5	C	0-6	SP-SM	A-3, A-2-4
							6-80	SP-SM, SP	A-3, A-2-4
32	KALIGA MUCK	JUN	APR	-2	0	D	0-30	PT	N/A
							30-75	SM, SM-SC, SC, ML	A-2, A-4, A-6
							75-80	SP, SP-SM	A-3, A-2-4
33	HOLOPAW FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-41	SP, SP-SM	A-3
							41-65	SM, SM-SC	A-2-4
							65-80	SM, SP-SM	A-2-4
35	HONTOON MUCK	JUN	APR	-2	0	D	0-75	PT	A-8
36	BASINGER MUCKY FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-7	SP, SP-SM	A-3, A-2-4
							7-80	SP, SP-SM	A-3, A-2-4
37	PLACID FINE SAND, FREQUENTLY FLOODED	JUN	NOV	0	1	D	0-18	SP, SP-SM, SM	A-3, A-2-4
							18-80	SP, SP-SM, SM	A-3, A-2-4
40	WAUCHULA FINE SAND	JUN	SEP	0.5	1.5	D	0-7	SP-SM	A-3, A-2-4
							7-18	SP-SM	A-3, A-2-4
							18-26	SP-SM, SM	A-3, A-2-4
							26-33	SP-SM, SM	A-3, A-2-4
							33-80	SM, SM-SC, SC	A-2-4, A-2-6, A-4, A-6
42	FELDA FINE SAND	JUL	MAR	0	1	D	0-22	SP, SP-SM	A-3
							22-80	SM, SM-SC, SC	A-2-4, A-2-6
46	ASTATULA FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-7	SP, SP-SM	A-3
							7-80	SP, SP-SM	A-3
47	ZOLFO FINE SAND	JUN	NOV	2	3.5	C	0-7	SP-SM	A-3, A-2-4
							7-80	SP-SM, SM	A-3, A-2-

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Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
									4
53	MYAKKA - IMMOKALEE - URBAN LAND COMPLEX	JUN	SEP	0.5	1.5	NA	0-25	SP, SP-SM	A-3
							25-36	SM, SP-SM	A-3, A-2-4
							36-80	SP, SP-SM	A-3
58	PITS	NA	NA	0	6	NA	N/A	N/A	N/A
70	DUETTE FINE SAND	JUN	OCT	4	6	A	0-7	SP	A-3
							7-59	SP	A-3
							59-80	SP, SP-SM	A-3, A-2-4
74	NARCOOSSEE SAND	JUN	NOV	2	3.5	C	0-5	SP-SM	A-3
							5-17	SP, SP-SM	A-3
							17-22	SP-SM	A-3, A-2-4
							22-80	SP, SP-SM	A-3
77	SATELLITE SAND	JUN	NOV	1.5	3.5	C	0-80	SP	A-3
83	ARCHBOLD SAND, 0 TO 5 PCT SLOPES	JUN	NOV	3.5	6	A	0-80	SP	A-3
86	FELDA FINE SAND, DEPRESSIONAL	JUN	DEC	-2	1	D	0-6	SP, SP-SM	A-3
							6-27	SP, SP-SM	A-3
							27-45	SM, SM-SC, SC	A-2-4, A-2-6
							45-80	SP, SP-SM	A-3, A-2-4
87	BASINGER FINE SAND	JUN	FEB	0	1	D	0-19	SP	A-3
							19-80	SP, SP-SM	A-3, A-2-4

*Seasonal High Groundwater Table: Depth is referenced below existing grade, except where indicated as "-".

5.2.2 Western Leg

Several types of soils were encountered along the project limits because of the extensive project coverage. The soil types range from Hydrological Soil Groups A through D soils. Type A soils are well drained soils with low water tables whereas Type D soils are very poorly or poorly drained soils with high water tables. According to the Soil Survey, there are thirty (30) different soil types located along the project limits. **Table 4** – USDA SCS Soil Survey Information (Western Leg) summarizes and lists the soil types and relevant information.

Table 4 – USDA NRCS Soil Survey Information (Western Leg)

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
6	EATON MUCKY FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-6	SP-SM	A-3, A-2-4
							6-29	SM, SP-SM	A-2-4, A-3
							29-33	SC	A-7, A-4, A-6
							33-80	SC, CL, CH	A-7
7	POMONA FINE SAND	JUN	SEP	0.5	1.5	D	0-6	SP, SP-SM	A-3, A-2-4
							6-21	SP, SP-SM	A-3, A-2-4
							21-26	SP-SM, SM	A-3, A-2-4

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
							26-48	SP, SP-SM, SM	A-3, A-2-4
							48-73	SC, SM-SC, SM	A-3, A-2-4, A-6
8	SLICKENS	JAN	DEC	0	2	NA	0-80	CH	A-7
9	LYNNE SAND	JUL	SEP	0.5	1.5	D	0-5	SP, SP-SM	A-3
							5-21	SP, SP-SM	A-3
							21-28	SP-SM, SM	A-3, A-2-4
							28-33	SP-SM	A-3, A-2-4
							33-80	SC, CH, CL	A-6, A-7
12	NEILHURST SAND, 1 TO 5 PCT SLOPES	NA	NA	6	6	A	0-80	SP, SP-SM	A-3, A-2-4
13	SAMSULA MUCK	JUN	APR	-2	0	D	0-31	PT	N/A
							31-80	SP-SM, SM, SP	A-3, A-2-4
14	SPARR SAND, 0 TO 5 PCT SLOPES	JUL	OCT	1.5	3.5	C	0-8	SP-SM, SM	A-3, A-2-4
							8-57	SP-SM, SM	A-3, A-2-4
							57-80	SM-SC, SC, SM	A-2-4, A-6
15	TAVARES FINE SAND, 0 TO 5 PCT SLOPES	JUN	DEC	3.5	6	A	0-80	SP, SP-SM	A-3
17	SMYRNA AND MYAKKA FINE SANDS	JUN	SEP	0.5	1.5	D	0-12	SP-SP-SM	A-3, A-2-4
							12-25	SM, SP-SM	A-3, A-2-4
							25-42	SP, SP-SM	A-3
							42-48	SM, SP-SM	A-3, A-2-4
							48-80	SP, SP-SM	A-3
							7-39	SP, SP-SM	A-3
							39-58	SP-SM, SM	A-3, A-2-4
							58-66	SP, SP-SM	A-3
21	IMMOKALEE SAND	JUN	SEP	0.5	1.5	D	0-7	SP, SP-SM	A-3
							7-39	SP, SP-SM	A-3
							39-58	SP-SM, SM	A-3, A-2-4
							58-66	SP, SP-SM	A-3
							66-80	SP-SM, SM	A-3, A-2-4
22	POMELLO FINE SAND	JUL	NOV	2	3.5	C	0-48	SP, SP-SM	A-3
							48-63	SP-SM, SM	A-3, A-2-4
							63-80	SP, SP-SM	A-3
23	ONA FINE SAND	JUN	SEP	0.5	1.5	D	0-10	SP-SM, SP	A-3
							10-19	SP-SM, SM	A-3, A-2-4
							19-50	SP-SM, SP	A-3
							50-80	SP-SM, SM	A-3, A-2-4
25	PLACID AND MYAKKAFINE SANDS, DEPRESSIONAL	JUN	MAR	-2	1	D	0-18	SP, SP-SM, SM	A-3, A-2-4
							18-80	SP, SP-SM, SM	A-3, A-2-4
29	ST. LUCIE FINE SAND, 0 TO 5 PCT SLOPES	NA	NA	6	6	A	0-80	SP	A-3
30	POMPANO	JUN	OCT	0	0.5	D	0-80	SP, SP-SM	A-3, A-2-4
31	ADAMSVILLE FINE SAND	JUN	NOV	2	3.5	C	0-6	SP-SM	A-3, A-2-4
							6-80	SP-SM, SP	A-3, A-2-4
32	KALIGA MUCK	JUN	APR	-2	0	D	0-30	PT	N/A
							30-75	SM, SM-SC, SC, ML	A-2, A-4, A-6
							75-80	SP, SP-SM	A-3, A-2-4
33	HOLOPAW FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-41	SP, SP-SM	A-3
							41-65	SM, SM-SC	A-2-4
							65-80	SM, SP-SM	A-2-4
35	HONTOON MUCK	JUN	APR	-2	0	D	0-75	PT	A-8
36	BASINGER MUCKY FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-7	SP, SP-SM	A-3, A-2-4
							7-80	SP, SP-SM	A-3, A-2-4
37	PLACID FINE SAND, FREQUENTLY FLOODED	JUN	NOV	0	1	D	0-18	SP, SP-SM, SM	A-3, A-2-4

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Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water				HSG	Soil Classification		
		Duration (months)		Depth* (feet)			Depth (inches)	Unified	AASHTO
		BEG	END	HIGH	LOW				
							18-80	SP, SP-SM, SM	A-3, A-2-4
40	WAUCHULA FINE SAND	JUN	SEP	0.5	1.5	D	0-7	SP-SM	A-3, A-2-4
							7-18	SP-SM	A-3, A-2-4
							18-26	SP-SM, SM	A-3, A-2-4
							26-33	SP-SM, SM	A-3, A-2-4
							33-80	SM, SM-SC, SC	A-2-4, A-2-6, A-4, A-6
42	FELDA FINE SAND	JUL	MAR	0	1	D	0-22	SP, SP-SM	A-3
							22-80	SM, SM-SC, SC	A-2-4, A-2-6
47	ZOLFO FINE SAND	JUN	NOV	2	3.5	C	0-7	SP-SM	A-3, A-2-4
							7-80	SP-SM, SM	A-3, A-2-4
51	POMONA - URBAN LAND COMPLEX	JUN	SEP	0.5	1.5	NA	0-6	SP, SP-SM	A-3, A-2-4
							6-21	SP, SP-SM	A-3, A-2-4
							21-26	SP-SM, SM	A-3, A-2-4
							26-48	SP, SP-SM	A-3, A-2-4
							48-73	SC, SM-SC, SM	A-2, A-4, A-6
58	PITS	NA	NA	0	6	NA	N/A	N/A	N/A
59	ARENTS - URBAN LAND COMPLEX, , 0 TO 5 PCT SLOPES	JUN	NOV	1.5	3	NA	0-80	SP, SP-SM	A-3, A-2-4
68	ARENTS, 0 TO 5 PCT SLOPES	JUN	NOV	1.5	3	NA	N/A	N/A	N/A
77	SATELLITE SAND	JUN	NOV	1.5	3.5	C	0-80	SP	A-3
85	WINDER FINE SAND, DEPRESSIONAL	JUN	MAR	-2	0	D	0-16	SP, SP-SM	A-3, A-2-4
							16-50	SC	A-2-4, A-2-6
							50-80	SM, SM-SC, SC, GM-GC	A-2-4, A-2-6, A-1-B

*Seasonal High Groundwater Table: Depth is referenced below existing grade, except where indicated as "-".

5.3 ENVIRONMENTAL CHARACTERISTICS

5.3.1 Land Use Data

5.3.1.1 Eastern Leg

The eastern leg begins at S.R. 60 and ends at Interstate 4 (including a spur to Pollard Road). The predominant land use within the project limits is agricultural lands with some areas of residential homes, wetlands, and channelized canals and creeks that flow from east to west. The proposed roadway will cross and impact existing utility easements, Peace Creek Canal, existing roads such as US 17, and an active CSX Railroad track that runs along US 17 on the north end of the eastern leg.

With the addition of the new rural roadway, the future land uses of the agricultural and undeveloped land will be altered. The proposed interchanges at the existing roads will also impact the future land

use in the surrounding area. Future land uses for the project limits will include agricultural/ undeveloped lands and urban residential lands. Please see **Figures 6-1, 6-2, 6-3, 7-1, 7-2,** and **7-3** for Existing and Future Land Use Maps in **Appendix A**.

5.3.1.2 Western Leg

The western leg begins at S.R. 60 and ends at the existing Polk Parkway (with a spur to Pollard Road). The predominant land use within the project limits is undeveloped land with some areas of pasture lands, agricultural lands, residential homes, pocketed wetlands, and channelized canals and creeks that flow from east to west. At the proposed interchange of Central Polk Parkway and US 17, there is also an old phosphate mining facility.

With the addition of the new rural roadway, the future land uses will be consistent with the local comprehensive plan, and the potential for incompatible floodplain development is significantly reduced by the existing local, regional, and state policies and rules on floodplains. Also, the existing interchange at the Polk Parkway and Winter Lake Road will be altered due to the new interchanges to the proposed project. Another proposed interchange is located at US 17 which will alter the future land use in the area. Future land uses for the project limits will include agricultural/ undeveloped lands and urban residential lands. Please see **Figures 6-1, 6-2, 6-3, 7-1, 7-2,** and **7-3** for Existing and Future Land Use Maps in **Appendix A**.

5.3.2 Cultural Features

Cultural features preserve and enhance the cultural nature of a community and include parks, schools, churches and other religious institutions. Also included are historic sites, archaeologically significant sites and neighborhood gathering places. Community services include facilities that provide necessary services such as fire stations, police stations, public and private schools, hospitals, cemeteries, public buildings, and civic facilities. All of these resources represent commonly occurring types of architecture for the locale, and available data did not indicate any significant historical associations.

5.3.2.1 Eastern Leg

In the eastern leg of the project, it was found that at station 5510+00, Parcel No. 272902000000041000 is owned by the School Board of Polk County. After contacting school officials, it was found that the County is not planning any future school sites at this location. Other

findings and potential conflicts can be found in the Cultural Resource Assessment Survey provided by ACI in **Appendix E**.

5.3.2.2 Western Leg

Preliminary findings for this leg can be found in the Cultural Resource Assessment Survey provided by ACI in **Appendix E**.

5.3.3 Natural and Biological Features

For both legs of the project, several species have been observed within the project area or could potentially occur within the project area based on the literature and database review as stated in the executive summary of the Wetlands and Protected Species Assessment Report. Please refer to the Wetland and Protected Species Assessment in **Appendix F**. In addition, it is anticipated that wetland systems, as well as isolated wetlands, will be impacted by the new roadway. Pond alternative recommendations will be based on avoidance of wetland impacts whenever possible.

5.4 EXISTING DRAINAGE CONDITIONS

The project area is located within the Peace River Basin and the Kissimmee River Basin within the jurisdiction of the Southwest Florida Water Management District (SWFWMD). The project is split between the eastern and western legs.

5.4.1 Eastern Leg

The eastern leg is located within the Peace Creek sub-basin of the Peace River Basin and the Kissimmee River Basin. In the area located within the Peace Creek sub-basin, the general flow pattern is from north to south and is collected by the Peace Creek Canal. For the area located with the Kissimmee River Basin, the general flow pattern flows from north to southeast and is collected by a series of canals such as Snell Creek and Horseshoe Creek. These creeks drain to Kissimmee River which ultimately outfalls to Lake Okeechobee.

Within the eastern leg, there are a total of sixty six (66) roadway drainage basins. The limits of the basins are shown in **Table 5** for Summary of Existing and Proposed Drainage Basins – Eastern Leg. The existing runoff is collected in various ways such as lakes, local depressions, wetlands, and canals. Since there is no existing road, no water quality treatment is currently being provided with the

exception of I-4 at the northern terminus. A brief description of the existing drainage basins is provided in the following sections.

Table 5 – Summary of Existing and Proposed Drainage Basins – Eastern Leg

Basin Name	From Station	To Station	Outfall Location
EASTERN LEG			
E-101A	5000+00	5013+71	Peace Creek
E-102A	5013+71	5032+69	CDE-01
E-103A	5032+69	5078+18	CDE-02
E-104A	5078+18	5094+89	CDE-02
E-105A	5094+89	5111+89	CDE-03
E-106A	5111+89	5130+39	CDE-03
E-107A	5130+39	5160+89	Wetlands
E-101B	Existing S.R. 60	Existing S.R. 60	Wetlands
E-102B	Existing S.R. 60	Existing S.R. 60	Wetlands
E-103B	8000+00	8012+19	Wetlands
E-104B	8000+00	8012+19	Wetlands
E-105B	8012+19	8030+54	Wetlands
E-106B	8030+54	8069+19	Wetlands
E-108	5160+89	5186+89	Peace Creek
E-109	5182+52	5207+72	Peace Creek
E-110	5207+72	5245+43	Peace Creek
E-111 (Existing)	5252+00	5267+53	CDE-06
E-111 (Proposed)	5245+43	5267+53	CDE-06
E-112 (Existing)	5273+30	5289+73	CDE-07
E-112 (Proposed)	5267+53	5289+73	CDE-07
E-113 (Existing)	5296+00	5301+53	CDE-07
E-113 (Proposed)	5289+73	5301+53	CDE-07
E-114	5301+53	5319+14	CDE-08
E-115	5319+14	5343+43	Wetlands
E-116	5343+43	5362+59	Peace Creek
E-117	5362+59	5416+50	CDE-09
E-118	5416+50	5458+00	CDE-10
E-119	5458+00	5483+69	Wetlands – Lake Annie
E-120	5483+69	5507+33	Wetlands – Lake Annie
E-121	5507+33	5534+00	CDE-12
E-122	5534+00	5560+00	Local Depression
E-123	5560+00	5598+60	CDE-13
E-124	5598+60	5638+83	Local Depression
E-125	5638+83	5679+58	Lake Trask
E-126	5679+58	5697+58	Local Depression
E-127	5697+58	5709+23	Local Depression
E-128	5709+23	5723+57	Local Depression
E-129	5723+57	5765+08	CDE-15
E-130	5765+08	5781+58	Local Depression

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Basin Name	From Station	To Station	Outfall Location
EASTERN LEG			
E-131	5781+58	5804+58	Local Depression
E-132	5804+58	5831+40	CDE-16
E-133	5831+40	5844+91	Local Depression
E-134	5844+91	5870+36	CDE-17
E-135	5870+36	5914+00	Wetlands
F-135	Frontage Road	Frontage Road	Wetlands
E-136	5914+00	5957+29	CDE-19
E-137	5957+29	5984+06	Wetlands
E-138	5984+06	5996+11	Wetlands
E-139	5996+11	6010+46	CDE-21
E-140	6010+46	6037+14	Wetlands
E-141	6037+14	6092+00	Local Depression
E-142	6092+00	6120+00	CDE-23
E-143	6120+00	6145+55	Snell Creek
E-144	6145+55	6159+02	Wetlands
E-145	6159+02	6186+00	Wetlands
E-146	6186+00	6212+00	Wetlands
E-147	6212+00	6246+60	Wetlands
E-148	6226+00	6246+60	Wetlands
E-149	6246+60	6282+00	CDE-25
E-150	6282+00	6306+00	CDE-26
E-151	6306+00	6345+67	CDE-26
E-152	6345+67	6375+67	CDE-28
E-153	6375+67	6385+67	CDE-28
E-154	6385+67	6412+17	Wetlands
E-155	6412+17	6433+47	CDE-29
E-156	6433+47	6490+27	Wetlands
E-157	6490+27	6550+38	Wetlands
E-158	6490+27	6550+38	Wetlands
E-159	6550+38	6597+95.72	Wetlands

5.4.1.1 Basin E-101A

Basin E-101A begins at Pollard Road (station 5000+00) and continues to Station 5013+71. Basin E-101A is within undeveloped land. Runoff either infiltrates into the ground or sheet flows to Peace Creek Canal. There is no existing stormwater management within Basin E-101A.

5.4.1.2 Basin E-102A

Basin E-102A begins at Station 5013+71 and continues to an unnamed canal (station 5032+69). Basin E-102A is within undeveloped land. Runoff either infiltrates into the ground or sheet flows to

either the unnamed canal or Peace Creek Canal. There is no existing stormwater management within Basin E-102A.

5.4.1.3 Basin E-103A

Basin E-103A begins at the unnamed canal (station 5032+69) and continues to another unnamed canal (station 5078+18). Basin E-103A is mostly within undeveloped land with some agricultural areas. Runoff either infiltrates into the ground or sheet flows to either a wetland system or the unnamed canals at each end of the basin. Wetlands are adjacent to the proposed roadway, but only minor wetland and floodplain impacts are to be expected. There is no existing stormwater management within Basin E-103A.

5.4.1.4 Basin E-104A

Basin E-104A begins at the unnamed canal (station 5078+18) and continues to an existing CSX railroad track (station 5094+89). Basin E-104A is within undeveloped land. Runoff either infiltrates into the ground or sheet flows to a wetland system. There is no existing stormwater management within Basin E-104A.

5.4.1.5 Basin E-105A

Basin E-105A begins at an existing CSX railroad track (station 5094+89) and continues to an existing wetland system (station 5111+89). Basin E-105A is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a wetland system. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-105A.

5.4.1.6 Basin E-106A

Basin E-106A begins at an existing wetland system (station 5111+89) and continues to State Highway 653 (station 5130+39). Basin E-106A is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a wetland system. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-106A.

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5.4.1.7 Basin E-107A

Basin E-107A begins at State Highway 653 (station 5130+39) and continues to Peace Creek Canal (station 5160+89). Basin E-107A is mainly within agricultural land with a few adjacent wetland systems. Runoff either infiltrates into the ground or sheet flows to both wetland systems and the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-107A.

5.4.1.8 Basin E-101B

Basin E-101B begins at State Road 60 from the existing Railroad tracks to West Lake Wales Road. Basin E-101B consists of local commercial businesses and wetlands adjacent to State Road 60. Roadway runoff drains to roadside ditches and flows west to local wetlands adjacent to State Road 60. There is no existing stormwater management within Basin E-101B.

5.4.1.9 Basin E-102B

Basin E-102B begins at State Road 60 from West Lake Wales Road and continues to approximately 1000 feet from Godwin Road. Basin E-102B is within agricultural land with wetlands adjacent to State Road 60. Roadway runoff drains to roadside ditches and flows east to local wetlands adjacent to State Road 60. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-102B.

5.4.1.10 Basin E-103B

Basin E-103B begins at State Road 60 (station 8000+00) and continues to Scenic Park Road (station 8012+19). Basin E-103B is mostly within agricultural land with a few residential areas. Runoff either infiltrates into the ground or sheet flows to State Road 60 and is collected by the roadside ditches that drain northwest to a series of wetland systems. There is no existing stormwater management within Basin E-103B.

5.4.1.11 Basin E-104B

Basin E-104B begins at State Road 60 (station 8000+00) and continues to Scenic Park Road (station 8012+19). Basin E-104B is within both undeveloped and agricultural land. Runoff either infiltrates into the ground or sheet flows east to a wetland system north of State Road 60. Wetlands and

floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-104B.

5.4.1.12 Basin E-105B

Basin E-105B begins at Scenic Park Road (station 8012+19) and continues to Whidden Cemetary Road (station 8030+54). Basin E-105B is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to local wetland systems. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-105B.

5.4.1.13 Basin E-106B

Basin E-106B begins at Whidden Cemetary Road (station 8034+54) and continues to Old Bartow Lake Wales Road (station 8069+19). Basin E-106B is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows both west to local wetland systems and east to Lake Parker. There is no existing stormwater management within Basin E-106B.

5.4.1.14 Basin E-108

Basin E-108 begins at Station 5160+89 and continues to Station 5186+89. Basin E-108 is within undeveloped land and agricultural land with some wetlands. Runoff either infiltrates into the ground or sheet flows north to the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-108.

5.4.1.15 Basin E-109

Basin E-109 begins at the Peace Creek Canal (station 5182+52) and continues to Station 5207+72. Basin E-109 is within undeveloped land. Runoff either infiltrates into the ground or sheet flows south to the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-109.

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5.4.1.16 Basin E-110

Basin E-110 begins at Station 5207+72 and continues to an unnamed canal (station 5245+43). Basin E-110 is within undeveloped land with local wetland systems. Runoff either infiltrates into the ground or sheet flows south to the Peace Creek Canal or east to the unnamed canal which ultimately drains to the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-110.

5.4.1.17 Basin E-111

Basin E-111 begins at an unnamed canal (station 5252+00) and continues to another unnamed canal (station 5267+53). Basin E-111 is within undeveloped land with local wetland systems. Runoff either infiltrates into the ground or sheet flows to local wetland systems and creeks that ultimately drain to the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-111.

5.4.1.18 Basin E-112

Basin E-112 begins at an unnamed canal (station 5273+30) and continues to a wetland system (station 5289+73). Basin E-112 is within undeveloped land. Runoff either infiltrates into the ground or sheet flows west to a wetland system that ultimately drains to the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-112.

5.4.1.19 Basin E-113

Basin E-113 begins at a wetland system (station 5296+00) and continues to another wetland system (station 5301+53). Basin E-113 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows east to a wetland system. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-113.

5.4.1.20 Basin E-114

Basin E-114 begins at a wetland system (station 5301+53) and continues to Thompson Nursery Road (station 5319+14). Basin E-114 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows south to a wetland system. Wetlands and floodplains are expected to

be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-114.

5.4.1.21 Basin E-115

Basin E-115 begins at Thompson Nursery Road (station 5319+14) and continues to a local access road (station 5343+43). Basin E-115 is within undeveloped land with wetlands and a local access road to a business named Natural Encounters. Runoff either infiltrates into the ground or sheet flows west to a wetland system. Wetlands and floodplains are expected to be impacted from the proposed roadway project. It should be noted that an overpass has been provided for the local business to avoid business impacts. There is no existing stormwater management within Basin E-115.

5.4.1.22 Basin E-116

Basin E-116 begins at a local access road (station 5343+43) and continues to US 27 (station 5362+59). Basin E-116 is within undeveloped land that overpasses Peace Creek Canal and is part of the proposed interchange system to US 27. Runoff either infiltrates into the ground or sheet flows to the Peace Creek Canal. There is no existing stormwater management within Basin E-116.

5.4.1.23 Basin E-117

Basin E-117 begins at US 27 (station 5362+59) and continues to an existing utility easement (station 5416+50). Basin E-117 is within undeveloped land with wetland systems and is part of the proposed interchange system to US 27. Runoff either infiltrates into the ground or sheet flows to wetland systems adjacent to both sides of the proposed roadway. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-117.

5.4.1.24 Basin E-118

Basin E-118 begins at the existing utility easement (station 5416+50) and continues to Waverly Road (station 5458+00). Basin E-118 is within both undeveloped and agricultural land. Runoff either infiltrates into the ground or sheet flows west to Venus Lake, Lake Lee, and a series of local depressions. There is no existing stormwater management within Basin E-118.

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5.4.1.25 Basin E-119

Basin E-119 begins at Waverly Road (station 5458+00) and continues to US 17 (station 5483+69). Basin E-119 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to an isolated wetland. Wetlands are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-119.

5.4.1.26 Basin E-120

Basin E-120 begins at US 17 (station 5483+69) and continues to Station 5507+33. Basin E-120 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. There is no existing stormwater management within Basin E-120.

5.4.1.27 Basin E-121

Basin E-121 begins at Station 5507+33 and continues to Stalnaker Road (station 5534+00). Basin E-121 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. At station 5510+00, it was found that Parcel No. 272902000000041000 is owned by the School Board of Polk County. After contacting school officials, it was found that the county is not planning any future school sites at this location. Therefore, no cultural impacts are to be expected at this parcel. There is no existing stormwater management within Basin E-121.

5.4.1.28 Basin E-122

Basin E-122 begins at Stalnaker Road (station 5534+00) and continues to Almburg Road (station 5560+00). Basin E-122 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-122.

5.4.1.29 Basin E-123

Basin E-123 begins at Almburg Road (station 5560+00) and continues to Lake Mabel Loop Road (station 5598+60). Basin E-123 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-123.

5.4.1.30 Basin E-124

Basin E-124 begins at Lake Mabel Loop Road (station 5598+60) and continues to Swan Road (station 5638+83). Basin E-124 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-124.

5.4.1.31 Basin E-125

Basin E-125 begins at Swan Road (station 5638+83) and continues to Edwards Road (station 5679+58). Basin E-125 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions that ultimately drains to Lake Trask. There is no existing stormwater management within Basin E-125.

5.4.1.32 Basin E-126

Basin E-126 begins at Edwards Road (station 5679+58) and continues to Station 5697+58. Basin E-126 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-126.

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5.4.1.33 Basin E-127

Basin E-127 begins at Station 5679+58 and continues to County Road 542 (station 5709+23). Basin E-127 is within agricultural land and is part of the proposed interchange system to CR 542. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-127.

5.4.1.34 Basin E-128

Basin E-128 begins at County Road 542 (station 5709+23) and continues to Station 5723+57. Basin E-128 is within agricultural land and is part of the proposed interchange system to CR 542. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-128.

5.4.1.35 Basin E-129

Basin E-129 begins at Station 5723+57 and continues to County Road 546 (station 5765+08). Basin E-129 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-129.

5.4.1.36 Basin E-130

Basin E-130 begins at County Road 546 (station 5765+08) and continues to Station 5781+58. Basin E-130 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-130.

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5.4.1.37 Basin E-131

Basin E-131 begins at Station 5781+58 and continues to White Clay Pit Road (station 5804+58). Basin E-131 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-131.

5.4.1.38 Basin E-132

Basin E-132 begins at White Clay Pit Road (station 5804+58) and continues to Bannon Loop Road (station 5831+40). Basin E-132 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-132.

5.4.1.39 Basin E-133

Basin E-133 begins at Bannon Loop Road (station 5831+40) and continues to Bannon Island Road (station 5844+91). Basin E-133 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-133.

5.4.1.40 Basin E-134

Basin E-134 begins at Bannon Island Road (station 5844+91) and continues to Marion Road (station 5870+36). Basin E-134 is within agricultural land and is part of the proposed interchange system to Marion Road. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. There is no existing stormwater management within Basin E-134.

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5.4.1.41 Basin E-135

Basin E-135 begins at Marion Road (station 5870+36) and continues to Robinson Drive (station 5914+00). Basin E-135 is within agricultural land and is part of the proposed interchange system to Marion Road. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions that ultimately outfall into a local wetland. There is no existing stormwater management within Basin E-135.

5.4.1.42 Basin F-135

Basin F-135 begins at Marion Road from the proposed interchange of Marion Road and Central Polk Parkway and continues approximately 1000 feet north. Basin F-135 is within agricultural land and is part of the proposed interchange system to Marion Road. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. There is no existing stormwater management within Basin F-135.

5.4.1.43 Basin E-136

Basin E-136 begins at Robinson Drive (station 5914+00) and continues to East Hinson Avenue (station 5957+29). Basin E-136 is within agricultural land with isolated wetlands. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions and wetlands. Wetlands are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-136.

5.4.1.44 Basin E-137

Basin E-137 begins at East Hinson Avenue (station 5957+29) and continues to East Johnson Road/CR 580 (station 5984+06). Basin E-137 is within agricultural land, undeveloped residential land, and is part of the proposed interchange system to CR 580. Runoff either infiltrates into the ground or sheet flows to a series of local depressions and wetlands. Minor wetland and floodplain impacts are to be expected from the proposed roadway project. There is no existing stormwater management within Basin E-137.

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5.4.1.45 Basin E-138

Basin E-138 begins at East Johnson Road/CR 580 (station 5984+06) and continues to Station 5996+11). Basin E-138 is within agricultural land and undeveloped land that is part of the proposed interchange system to CR 580. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to wetlands. There is no existing stormwater management within Basin E-138.

5.4.1.46 Basin E-139

Basin E-139 begins at Station 5996+11 and continues to Baker Dairy Road (station 6010+46). Basin E-139 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions that ultimately outfall to local wetlands. There is no existing stormwater management within Basin E-139.

5.4.1.47 Basin E-140

Basin E-140 begins at Baker Dairy Road (station 6010+46) and continues to Carl Boozer Road (station 6037+14). Basin E-140 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. There is no existing stormwater management within Basin E-140.

5.4.1.48 Basin E-141

Basin E-141 begins at Carl Boozer Road (station 6037+14) and continues to Snell Creek Road (station 6092+00). Basin E-141 is within agricultural land. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to a series of local depressions. This existing basin is considered a closed basin. There is no existing stormwater management within Basin E-141.

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5.4.1.49 Basin E-142

Basin E-142 begins at Snell Creek Road (station 6092+00) and continues to Snell Creek (station 6120+00). Basin E-120 is within agricultural land and wetlands. A curve number of 68 was used for this basin because it was assumed that the existing land is HSG A, poor condition, grass cover <50% from the existing orange groves and crops. Runoff either infiltrates into the ground or sheet flows to Snell Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-120.

5.4.1.50 Basin E-143

Basin E-143 begins at Snell Creek (station 6120+00) and continues to Horseshoe Creek Road (station 6145+55). Basin E-143 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Snell Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-143.

5.4.1.51 Basin E-144

Basin E-144 begins at Horseshoe Creek Road (station 6145+55) and continues to East Palm Street (station 6159+02). Basin E-144 143 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. There is no existing stormwater management within Basin E-144.

5.4.1.52 Basin E-145

Basin E-145 begins at East Palm Street (station 6159+02) and continues to Horseshoe Creek (station 6186+00). Basin E-145 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-145.

5.4.1.53 Basin E-146

Basin E-146 begins at Horseshoe Creek (station 6186+00) and continues to Station 6212+00. Basin E-146 is within woods with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be

impacted from the proposed roadway project. There is no existing stormwater management within Basin E-146.

5.4.1.54 Basin E-147

Basin E-147 begins at Station 6212+00 and continues to US 17 (station 6246+60). Basin E-147 is within undeveloped land with wetlands that is part of the proposed interchange that connects to US 17. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-147.

5.4.1.55 Basin E-148

Basin E-148 begins at Station 6226+00 and continues to US 17 (station 6246+60). Basin E-148 is within undeveloped land with wetlands that is part of the proposed interchange that connects to US 17. Runoff either infiltrates into the ground or sheet flows to a series of wetlands. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-148.

5.4.1.56 Basin E-149

Basin E-149 begins at US 17 (station 6246+60) and continues to Station 6282+00. Basin E-149 is within undeveloped land that is part of the proposed interchange that connects to US 17. Runoff either infiltrates into the ground or sheet flows south to Horseshoe Creek. There is no existing stormwater management within Basin E-149.

5.4.1.57 Basin E-150

Basin E-150 begins at Station 6282+00 and continues to an unnamed canal (station 6306+00). Basin E-150 is within undeveloped land. Runoff either infiltrates into the ground or sheet flows to the unnamed canal that ultimately drains to Horseshoe Creek. There is no existing stormwater management within Basin E-150.

5.4.1.58 Basin E-151

Basin E-151 begins at an unnamed canal (station 6306+00) and continues to Crescent Valley Ranch Road (station 6345+67). Basin E-151 is within undeveloped land within a series of unnamed canals.

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Runoff either infiltrates into the ground or sheet flows south to a series of canals that outfall to Horseshoe Creek. There is no existing stormwater management within Basin E-151.

5.4.1.59 Basin E-152

Basin E-152 begins at Crescent Valley Ranch Road (station 6345+67) and continues to an isolated wetland (station 6375+67). Basin E-152 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of canals and wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-152.

5.4.1.60 Basin E-153

Basin E-153 begins at an isolated wetland (station 6375+67) and continues to Little Zion Road (station 6385+67). Basin E-153 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-153.

5.4.1.61 Basin E-154

Basin E-154 begins at Little Zion Road (station 6385+67) and continues to an unnamed creek (station 6412+17). Basin E-154 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that drain to an unnamed creek. This creek flows west and ultimately drains to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-154.

5.4.1.62 Basin E-155

Basin E-155 begins at an unnamed creek (station 6412+17) and continues to Station 6433+47. Basin E-155 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-155.

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5.4.1.63 Basin E-156

Basin E-156 begins at Station 6433+47 and continues to Station 6490+27. Basin E-156 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-156.

5.4.1.64 Basin E-157

Basin E-157 begins at Station 6490+27 and continues to Interstate 4 (station 6550+38). Basin E-157 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-157.

5.4.1.65 Basin E-158

Basin E-158 begins at Station 6490+27 and continues to Interstate 4 (station 6550+38). Basin E-158 is within undeveloped land with wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands that outfall to Horseshoe Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin E-158.

5.4.1.66 Basin E-159

Basin E-159 begins at Interstate 4 (station 6550+38) and continues to the on and off ramps to Interstate 4. Basin E-159 includes the existing I-4 travel lanes, undeveloped land, and wetlands. Runoff either infiltrates into the ground or sheet flows to a series of wetlands. There are existing stormwater management systems within Basin E-159 that currently treat the roadway runoff from I-4. Wetlands and floodplains are expected to be impacted from the proposed roadway project.

5.4.2 Western Leg

In the western leg, the project area is located within the Peace Creek sub-basin. The general flow pattern in the area is from east to west towards a series of unnamed creeks that drains to the Peace Creek Canal, which ultimately drains to the Peace River.

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Within the project area, there are a total of twenty seven (27) roadway drainage basins. The limits of the basins are shown in **Table 6** for Summary of Existing and Proposed Drainage Basins – Western Leg. The existing runoff is collected in various ways such as lakes, local depressions, wetlands, and canals. Since there is no existing road, no water quality treatment is currently being provided. A brief description of the existing drainage basins is provided in the following sections.

Table 6 – Summary of Existing and Proposed Drainage Basins- Western Leg

Basin Name	From Station	To Station	Outfall Location
WESTERN LEG			
W-101A	Existing S.R. 60	Existing S.R. 60	Wetlands
W-102A	Existing S.R. 60	Existing S.R. 60	Lake Garfield
W-103A	9000+00	9011+00	Wetlands
W-104A	9011+00	9026+65	CDW-03A
F-101A	Frontage Road	Frontage Road	Wetlands
W-101B	2000+00	2017+34	Peace Creek
W-102B	2000+00	2017+34	Peace Creek
W-103B	2017+34	2056+38	CDW-02B
W-104B	2056+38	2082+48	Peace Creek
W-105B	2082+48	2101+88	CDW-04B
W-106	2101+88	2117+11	CDW-04B
W-107	2117+11	2153+68	Wetlands
W-108	2153+68	2185+83	Wetlands
W-109	2185+83	2230+00	Wetlands
W-110	2230+00	2270+00	Wetlands
W-111	2270+00	2304+14	CDW-09
W-112	BNC Alignment	2280+00	Wetlands
W-113	2304+14	2344+00	CDW-10
W-114	2344+00	2363+07	CDW-11
W-115	2363+07	2408+70	Wetlands
W-116	2408+70	2450+48	Wetlands
W-117	2450+48	2476+67	CDW-13
W-118	2476+67	2523+85	Wetlands
W-119	2523+85	2542+70	CDW-13
W-120	2542+70	2594+40	CDW-14
W-121	2594+40	2658+75	CDW-15
W-122	2658+75	Existing CPP	Wetlands

5.4.2.1 Basin W-101A

Basin W-101A begins at SR 60 from Hankin Road to Gaskin Creek. Roadway runoff drains to roadside ditches and flows east to an existing 21-foot bridge culvert (CB: #0081) at FDOT milepost 20.045. The culvert crosses under SR 60 and discharges northwest to a series of wetland systems. CDW-01A also discharges offsite flow from the southeast side of SR 60. Wetlands and floodplains

are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-101A.

5.4.2.2 Basin W-102A

Basin W-102A begins at SR 60 from Gaskin Creek to Wahneta Farms Creek. Roadway runoff drains to roadside ditches and flows east to an existing 31-foot bridge culvert (CB: #0131) at FDOT milepost 20.965. The culvert crosses under SR 60 and discharges north to a series of canals that ultimately discharge into Peace River. CDW-02A also discharges offsite flow from the south side of SR 60. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-102A.

5.4.2.3 Basin W-103A

Basin W-103A begins at Station 9000+00 and continues to Station 9011+00. Basin W-103A is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a wetland system that flows north to Peace Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-103A.

5.4.2.4 Basin W-104A

Basin W-104A begins at Station 9011+00 and continues to Peace Creek (station 9026+65). Basin W-104A is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a wetland system that flows north to Peace Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-104A.

5.4.2.5 Basin F-101A

Basin F-101A begins at the Citrus Highlands Community and continues to Gaskin Creek. Basin F-101A is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a wetland system that flows north to an existing 21-foot bridge culvert (CDW-01A). This cross drain ultimately drains north into Gaskin Creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin F-101A.

5.4.2.6 Basin W-101B

Basin W-101B begins at Pollard Road (station 2000+00) and continues to the Peace Creek Canal (station 2017+34). Basin W-101B is undeveloped land. Runoff either infiltrates into the ground or

sheet flows to a wetland system. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W101-B.

5.4.2.7 Basin W-102B

Basin W-102B begins at Pollard Road (station 2000+00) and continues to the Peace Creek Canal (station 2017+34). Basin W-102B is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a wetland system. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W102-B.

5.4.2.8 Basin W-103B

Basin W-103B begins at Peace Creek (station 2017+34) and continues to Rifle Range Road (station 2056+38). Basin W-103B is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a wetland system. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W103-B.

5.4.2.9 Basin W-104B

Basin W-104B begins at Rifle Range Road (station 2056+38) and continues to Logan Lane (station 2082+48). Basin W-104B is mostly undeveloped land with some small residential areas. Runoff either infiltrates into the ground or sheet flows to both Wahneta Farms Creek and Peace Creek Canal. Wetlands and floodplains adjacent to CDW-03B are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W104-B.

5.4.2.10 Basin W-105B

Basin W-105B begins at Logan Lane (station 2082+48) and continues to Station 2101+88. Basin W-105B is mostly undeveloped land with some small residential areas. Runoff either infiltrates into the ground or sheet flows to both an unnamed lake and the Peace Creek Canal. There is no existing stormwater management within Basin W105-B.

5.4.2.11 Basin W-106

Basin W-106 begins at Station 2101+88 and continues to Station 2117+11. Basin W-106 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to the Peace Creek Canal. Wetlands and floodplains adjacent to the proposed bridge at the Peace Creek Canal are expected to be

impacted from the proposed roadway project. There is no existing stormwater management within Basin W-106.

5.4.2.12 Basin W-107

Basin W-107 begins at Station 2117+11 and continues to an unnamed canal (station 2153+68). Basin W-107 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a system of local canals that drain to the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-107.

5.4.2.13 Basin W-108

Basin W-108 begins at an unnamed canal (station 2153+68) and continues to Gaskin Branch Canal (station 2185+83). Basin W-108 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a wetland system that drains to both Gaskin Branch Canal and the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-108.

5.4.2.14 Basin W-109

Basin W-109 begins at Gaskin Branch Canal (station 2185+83) and continues to Station 2230+00. Basin W-109 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a series of wetland systems. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-109.

5.4.2.15 Basin W-110

Basin W-110 begins at Station 2230+00 and continues to Station 2270+00. Basin W-110 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to a major wetland system that ultimately connects to the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-110.

5.4.2.16 Basin W-111

Basin W-111 begins at Station 2270+00 and continues to Station 2304+14. Basin W-111 is mostly undeveloped land that has minor areas of previous phosphate mining activity. Runoff either

infiltrates into the ground or sheet flows to local wetland systems that ultimately connect to the Peace Creek Canal. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-111.

5.4.2.17 Basin W-112

Basin W-112 begins at Peace Creek Canal and continues to Station 2280+00. Basin W-112 is comprised mostly of an old phosphate mining site. Runoff either infiltrates into the ground or sheet flows to local wetland systems. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-112.

5.4.2.18 Basin W-113

Basin W-113 begins at Station 2304+14 and continues to Old Eagle Lake Road (station 2344+00). Basin W-113 is comprised mostly of an old phosphate mining site with some undeveloped land. Runoff either infiltrates into the ground or sheet flows to local wetland systems. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-113.

5.4.2.19 Basin W-114

Basin W-114 begins at Old Eagle Lake Road (station 2344+00) and continues to Station 2363+07. Basin W-114 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to wetland systems that ultimately drain to Lake Hancock. Wetlands are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-114.

5.4.2.20 Basin W-115

Basin W-115 begins at Station 2363+07 and continues to an unnamed canal (station 2408+70). Basin W-115 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to wetland systems that ultimately drain to Lake Hancock. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-115.

5.4.2.21 Basin W-116

Basin W-116 begins at an unnamed canal (station 2408+70) and continues to Station 2450+48. Basin W-116 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to local wetland

systems that ultimately drain to Lake Hancock. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-116.

5.4.2.22 Basin W-117

Basin W-117 begins at Station 2450+48 and continues to Station 2476+67. Basin W-117 is undeveloped land. Runoff either infiltrates into the ground or sheet flows to local wetland systems that ultimately drain to Lake Hancock. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-117.

5.4.2.23 Basin W-118

Basin W-118 begins at Station 2476+67 and continues to Station 2523+85. Basin W-118 is undeveloped land with local wetland areas. Runoff either infiltrates into the ground or sheet flows to local wetland systems that ultimately drain to Lake Hancock. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-118.

5.4.2.24 Basin W-119

Basin W-119 begins at Station 2523+85 and continues to Thornhill Road (station 2542+70). Basin W-119 is undeveloped land with local wetland areas and small residential areas. Runoff either infiltrates into the ground or sheet flows to local wetland systems that ultimately drain to Lake Hancock. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-119.

5.4.2.25 Basin W-120

Basin W-120 begins at Thornhill Road (station 2542+70) and continues to an unnamed creek (station 2594+40). Basin W-120 is undeveloped land with local wetland areas and small residential areas. Runoff either infiltrates into the ground or sheet flows to the unnamed creek. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-120.

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5.4.2.26 Basin W-121

Basin W-121 begins at an unnamed creek (station 2594+40) and continues to Winter Lake Road (station 2658+75). Basin W-121 is undeveloped land with local wetland areas. Runoff either infiltrates into the ground or sheet flows to local wetland areas and an unnamed lake. Wetlands and floodplains are expected to be impacted from the proposed roadway project. There is no existing stormwater management within Basin W-121.

5.4.2.27 Basin W-122

Basin W-122 begins at Winter Lake Road (2658+75) and continues to the existing Polk Parkway. Basin W-122 consists of the existing mainline of Polk Parkway, on and off ramps to Winter Lake Road, and local wetlands. Roadway runoff drains to roadside ditches and flows to a local stormwater facility adjacent to the existing interchange. This stormwater facility then outfalls to the local wetland areas. Wetlands and floodplains are expected to be impacted from the proposed roadway project.

5.5 FLOODPLAINS/FLOODWAYS

The Federal Emergency Management Agency (FEMA) has developed a Flood Insurance Rate Map (FIRM) for the study area. The project includes many areas designated as AE with 100-year flood stages at different elevations, other 100-year flood stage areas designated as Zone A that have no base flood elevations, and the remaining areas in Zone X. Zone AE indicates that base flood elevations are shown and depths are between one (1) and three (3) feet. Zone A indicates that a base flood elevation has not been determined for this area. Zone X is described as areas located outside of the 500-year floodplain. Any fill within the 100-year floodplain will need to be compensated. Typical method for floodplain compensation is "cup for cup" compensation, in which an equivalent amount to the impacted floodplain volume is provided between the 100-year floodplain elevation and the seasonal high water elevation. Further discussion regarding determination of the floodplain impacts is included in the Central Polk Parkway Location Hydraulic Report (LHR). Floodplain compensation ponds have been provided to compensate for the floodplain impacts. Also, for those floodplain impacts that are minor, it is anticipated that some degree of floodplain compensation will be achieved within the proposed stormwater management ponds and roadside swales within the right-of-way. Please see the FEMA Flood Insurance Rate Maps in **Appendix A, Figure 8-1, 8-2,** and **8-3**.

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SECTION 6 - PROPOSED DRAINAGE CONDITIONS

The stormwater runoff from the project limits will be collected in roadside ditches and conveyed through these ditches to the proposed off-site wet detention or dry retention ponds. The ponds will discharge at or near an existing wetland, canal, local depression or proposed cross drain similar to the existing condition, thus maintaining existing drainage patterns. The water quality treatment and water quantity attenuation will be achieved through the construction of offsite wet detention and dry retention ponds, which will require the acquisition of additional right-of-way. Offsite runoff into the proposed basin is anticipated and it is assumed that offsite bypass ditch systems will be provided to convey the offsite runoff. One methodology will be to provide a dual ditch system, but this will need to be further investigated during the design phase.

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SECTION 7 - PROPOSED PONDS

7.1 OVERVIEW

7.1.1 Stormwater Ponds

The stormwater runoff will be routed to proposed stormwater ponds for water quality treatment and attenuation purposes. For the eastern leg, there are a total of sixty six (66) roadway drainage basins. For the western leg, there are a total of twenty seven (27) roadway drainage basins. One (1) pond alternative for each basin has been analyzed to determine the suitability of these pond sites. The ponds were sized to accommodate the proposed six-laning and on the assumption that offsite runoff would be drained through separate bypass systems. Also, in order to accommodate the TMDL (Total Maximum Daily Load) for Impaired Water Bodies, the ponds were upsized by twenty five percent (25%) per direction from the February 9, 2011 meeting with the FDOT. Please refer to Drainage Maps in **Appendix D** for the pond locations.

Table 5 & 6 – Summary of Existing and Proposed Drainage Basins provides a summary of the proposed basin limits and their outfall locations for each leg.

7.1.2 Floodplain Compensation

Floodplain compensation will be required for the floodplain impact areas located along the project corridor. Floodplain compensation ponds have been provided in order to compensate for the floodplain impacts. For those floodplain impacts that are minor, it was assumed that compensation can be achieved within the stormwater management systems. Because of the uncertainty of the proposed roadway profile elevations, it was assumed that the roadway profile would be four (4) feet above the existing ground within the floodplain impact areas. The assumptions are made on the conservative basis that the seasonal high water would be at existing grade and provisions for 3-foot of roadway base clearance. Please refer to Floodplain Impact Calculations in the Central Polk Parkway Location Hydraulic Report (LHR).

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7.2 METHODOLOGY OF POND DETERMINATION

The pond siting analysis assumes that all ponds will be designed using the wet detention pond and dry retention pond design criteria. The following parameters were considered in the selection of potential pond sites:

- Hydrologic and hydraulic factors such as existing ground elevation, soil types, estimated seasonal high water (ESHW), stormwater conveyance feasibility, allowable hydraulic grade line (HGL);
- Environmental resource impacts including wetlands and threatened or endangered species;
- Floodplain impacts;
- Major utility conflict potential;
- Estimated right-of-way acquisition;
- Impacts to cultural resources; and
- Hazardous Materials Contamination

Please note that the information for environmental impacts, hazardous materials contamination impacts, estimated SHWT, and cultural resources impacts are included in Appendices E through H. All the information was gathered and incorporated into the Alternative Pond Sites Selection Matrices in **Appendix D**.

7.3 STORMWATER POND ALTERNATIVES

7.3.1 Eastern Leg

7.3.1.1 Pond E-101A

Basin E-101A is located at Pollard Road (station 5000+00) and Station 5013+71. Pond E-101A will serve as the wet treatment and attenuation pond for Basin E-101A. Pond E-101A is located within the east side of the proposed interchange of Pollard Road and Central Polk Parkway. The existing

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ground elevation is at approximately 115.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Imokalee Sand and Smryna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.5-foot below ground. The pond site is located upon two undeveloped parcels.

7.3.1.2 Pond E-102A

Basin E-102A is located at Station 5013+71 and an unnamed canal (station 5032+69). Pond E-102A will serve as the dry treatment and attenuation pond for Basin E-102A. Pond E-102A is located on the south side of the proposed roadway alignment. The existing ground elevation is at approximately 124.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Pomello Fine Sand) with an estimated SHWT depth of ± 2.00-foot below ground. The pond site is located upon one undeveloped parcel.

7.3.1.3 Pond E-103A

Basin E-103A is located at the unnamed canal (station 5032+69) and another unnamed canal (station 5078+18). Pond E-103A will serve as the wet treatment and attenuation pond for Basin E-103A. Pond E-103A is located on the south side of the proposed roadway alignment. The existing ground elevation is at approximately 116.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Zolfo Fine Sand) and D soil (Smryna and Myakka Fine Sands, Felda Fine Sand, and Wauchula Fine Sand) with an estimated SHWT depth of ± 1.00-foot below ground. The pond site is located upon one undeveloped parcel.

7.3.1.4 Pond E-104A

Basin E-104A is located at the unnamed canal (station 5078+18) and an existing CSX railroad track (station 5094+89). Pond E-104A will serve as the wet treatment and attenuation pond for Basin E-104A. Pond E-104A is located on the east side of the proposed roadway alignment. The existing ground elevation is at approximately 116.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Felda Fine Sand and Wauchula Fine Sand) with an estimated SHWT depth of ± 0.5-foot below ground. The pond site is located upon one undeveloped parcel.

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7.3.1.5 Pond E-105A

Basin E-105A is located at an existing CSX railroad track (station 5094+89) and an existing wetland system (station 5111+89). Pond E-105A will serve as the wet treatment and attenuation pond for Basin E-105A. Pond E-105A is located on the east side of the proposed roadway alignment. The existing ground elevation is at approximately 118.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Pomona Fine Sand) with an estimated SHWT depth of ± 0.5-foot below ground. The pond site is located upon one undeveloped parcel.

7.3.1.6 Pond E-106A

Basin E-106A is located at an existing wetland system (station 5111+89) and at State Highway 653 (station 5130+39). Pond E-106A will serve as the wet treatment and attenuation pond for Basin E-106A. Pond E-106A is located on the west side of the proposed roadway alignment. The existing ground elevation is at approximately 121.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Adamsville Fine Sand) and D soil (Imokalee Sand) with an estimated SHWT depth of ± 0.5-foot below ground. The pond site is located upon one undeveloped parcel.

7.3.1.7 Pond E-107A

Basin E-107A is located at the unnamed canal (station 5130+39) and an existing CSX railroad track (station 5160+89). Pond E-107A will serve as the wet treatment and attenuation pond for Basin E-107A. Pond E-107A is located on the west side of the proposed roadway alignment. The existing ground elevation is at approximately 121.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand, 0 to 5 PCT Slopes) and C soil (Adamsville Fine Sand) with an estimated SHWT depth of ± 2.00-foot below ground. The pond site is located upon one undeveloped parcel.

7.3.1.8 Pond E-101B

Basin E-101B is located at State Road 60 from the existing Railroad tracks to West Lake Wales Road. Pond E-101B will serve as the wet treatment and attenuation pond for Basin E-101B. Pond E-101B is located on the south side of State Road 60 and east of International Paper Company. The existing ground elevation is at approximately 122.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C

soil (Zolfo Fine Sand) with an estimated SHWT depth of ± 2.00-foot below ground. The pond site is located on a parcel owned by the International Paper Company, but is located on an undeveloped part of the parcel.

7.3.1.9 Pond E-102B

Basin E-102B is located at State Road 60 from West Lake Wales Road and continues to approximately 1000 feet from Godwin. Pond E-101B will serve as the wet treatment and attenuation pond for Basin E-102B. Pond E-102B is located on the south side of State Road 60. The existing ground elevation is at approximately 122.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Zolfo Fine Sand) with an estimated SHWT depth of ± 2.00-foot below ground. In order to hydraulically connect the existing S.R. 60 roadside ditches, the control elevation of the pond had to by lowered by 5 feet below the existing ground. The pond site is located on an undeveloped parcel.

7.3.1.10 Pond E-103B

Basin E-101B is located at State Road 60 (station 8000+00) and continues to Scenic Park Road (station 8012+19). Pond E-101B will serve as the dry treatment and attenuation pond for Basin E-101B. Pond E-101B is located within the proposed interchange of State Road 60 and Central Polk Parkway. The existing ground elevation is at approximately 129.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Archbold Sand, 0 to 5 PCT Slopes) and C soil (Zolfo Fine Sand) with an estimated SHWT depth of ± 2.50-foot below ground. The pond site is located on parcels that are both residential and undeveloped.

7.3.1.11 Pond E-104B

Basin E-104B is located from State Road 60 (station 8000+00) and continues to Scenic Park Road (station 8012+19). Pond E-104B will serve as the wet treatment and attenuation pond for Basin E-104B. Pond E-104B is located on between the proposed interchange of State Road 60 and Central Polk Parkway and the proposed Frontage Road. The existing ground elevation is at approximately 126.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Zolfo Fine Sand) and D soil (Imokalee Sand and Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on parcels that are both residential and undeveloped.

7.3.1.12 Pond E-105B

Basin E-105B is located from Scenic Park Road (station 8012+19) and continues to Whidden Cemetary Road (station 8030+54). Pond E-105B will serve as the wet treatment and attenuation pond for Basin E-105B. Pond E-105B is located on the east side of the proposed alignment. The existing ground elevation is at approximately 126.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Zolfo Fine Sand) and D soil (Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.5-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.13 Pond E-106B

Basin E-106B is located from Whidden Cemetary Road (station 8030+54) and continues to Old Bartow Lake Wales Road (station 8069+19). Pond E-106B will serve as the dry treatment and attenuation pond for Basin E-106B. Pond E-106B is located on the east side of the proposed alignment. The existing ground elevation is at approximately 130.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Adamsville Fine Sand and Sparr Sand, 0 to 5 PCT Slopes) with an estimated SHWT depth of ± 2.00-foot below ground. The pond site is located on two agricultural parcels.

7.3.1.14 Pond E-108

Basin E-108 is located from Station 5160+89 and continues to Station 5186+89. Pond E-108 will serve as the wet treatment and attenuation pond for Basin E-108. Pond E-108 is located within the Central Polk Parkway Interchange just south of the Peace Creek River Canal. The existing ground elevation is at approximately 119.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Basinger Mucky Fine Sand, Ona Fine Sand, and Smyrna and Myakka Fine Sands) with the estimated SHWT at the existing ground elevation. The pond site is located on an undeveloped parcel.

7.3.1.15 Pond E-109

Basin E-109 is located from the Peace Creek Canal (station 5182+52) and continues to Station 5207+72. Pond E-109 will serve as the wet treatment and attenuation pond for Basin E-109. Pond E-109 is located within the Central Polk Parkway Interchange just north of the Peace Creek River Canal. The existing ground elevation is at approximately 121.00 ft NAVD based on the existing

1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Adamsville Fine Sand) and D soil (Basinger Fine Sand and Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on a few undeveloped parcels.

7.3.1.16 Pond E-110

Basin E-110 is located from Station 5207+72 and continues to an unnamed canal (station 5245+43). Pond E-110 will serve as the wet treatment and attenuation pond for Basin E-110. Pond E-110 is located within the Central Polk Parkway Interchange north of the Peace Creek River Canal. The existing ground elevation is at approximately 118.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Basinger Mucky Fine Sand, Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on a few undeveloped parcels.

7.3.1.17 Pond E-111

Basin E-111 is located from an unnamed canal (station 5245+43) and continues to another unnamed canal (station 5267+53). Pond E-111 will serve as the wet treatment and attenuation pond for Basin E-111. The pond is also designed to overattenuate in the post because in the pre condition the footprint basin does not all flow to the outfall. Pond E-111 is located on the west side of the proposed alignment. The existing ground elevation is at approximately 120.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Basinger Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.18 Pond E-112

Basin E-112 is located from an unnamed canal (station 5267+53) and continues to a wetland system (station 5289+73). Pond E-112 will serve as the wet treatment and attenuation pond for Basin E-112. The pond is also designed to overattenuate in the post because in the pre condition the footprint basin does not all flow to the outfall. Pond E-112 is located on the east side of the proposed alignment. The existing ground elevation is at approximately 122.75 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Basinger Fine Sand) with the estimated SHWT at the existing ground. The pond site is located on an undeveloped parcel.

7.3.1.19 Pond E-113

Basin E-113 is located from a wetland system (station 5289+73) and continues to another wetland system (station 5301+53). Pond E-113 will serve as the wet treatment and attenuation pond for Basin E-113. The pond is also designed to overattenuate in the post because in the pre condition the footprint basin does not all flow to the outfall. Pond E-113 is located on the west side of the proposed alignment. The existing ground elevation is at approximately 122.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands and Wauchula Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.20 Pond E-114

Basin E-114 is located from a wetland system (station 5301+53) and continues to Thompson Nursery Road (station 5319+14). Pond E-114 will serve as the wet treatment and attenuation pond for Basin E-114. Pond E-114 is located on the east side of the proposed alignment. The existing ground elevation is at approximately 123.75 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Pomona Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.21 Pond E-115

Basin E-115 is located from Thompson Nursery Road (station 5319+14) and continues to a local access road (station 5343+43). Pond E-115 will serve as the wet treatment and attenuation pond for Basin E-115. Pond E-115 is located on the west side of the proposed alignment. The existing ground elevation is at approximately 121.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Pomona Fine Sand, Samsula Muck, and Basinger Fine Sand) with the estimated SHWT at the existing ground. The pond site is located on an undeveloped parcel.

7.3.1.22 Pond E-116

Basin E-116 is located from a local access road (station 5343+43) and continues to US 27 (station 5362+59). Pond E-116 will serve as the wet treatment and attenuation pond for Basin E-116. Pond E-116 is located on the southeast side of the proposed alignment and west of the Peace Creek Canal.

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The existing ground elevation is at approximately 121.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Imokalee Sand, Felda Fine Sand, and Holopaw fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.23 Pond E-117

Basin E-117 is located from US 27 (station 5362+59) and continues to an existing utility easement (station 5416+50). Pond E-117 will serve as the wet treatment and attenuation pond for Basin E-117. Pond E-117 is located on the north side of the proposed alignment. The existing ground elevation is at approximately 122.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Pomona Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.24 Pond E-118

Basin E-118 is located from the existing utility easement (station 5416+50) and continues to Waverly Road (station 5458+00). Pond E-118 will serve as the dry treatment and attenuation pond for Basin E-118. Pond E-118 is located on the north side of the proposed alignment and south of Lake Venus. The existing ground elevation is at approximately 127.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand, 0 to 5 PCT Slopes) and C Soil (Zolfo Fine Sand) with an estimated SHWT depth of ± 3.00-foot below ground. The pond site is located on two undeveloped parcels.

7.3.1.25 Pond E-119

Basin E-119 is located from Waverly Road (station 5458+00) and continues to US 17 (station 5483+69). Pond E-119 will serve as the dry treatment and attenuation pond for Basin E-119. Pond E-119 is located on the northwest side of the proposed alignment. The existing ground elevation is at approximately 126.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand, 0 to 5 PCT Slopes) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

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7.3.1.26 Pond E-120

Basin E-120 is located from US 17 (station 5483+69) and continues to Station 5507+33. Pond E-120 will serve as the dry treatment and attenuation pond for Basin E-120. Pond E-120 is located on the west side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 148.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.27 Pond E-121

Basin E-121 is located from Station 5507+33 and continues to Stalnaker Road (station 5534+00). Pond E-121 will serve as the dry treatment and attenuation pond for Basin E-121. Pond E-121 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 175.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 4.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.28 Pond E-122

Basin E-122 is located from Stalnaker Road (station 5534+00) and continues to Almburg Road (station 5560+00). Pond E-122 will serve as the dry treatment and attenuation pond for Basin E-122. Pond E-122 is located on the west side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 210.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.29 Pond E-123

Basin E-123 is located from Almburg Road (station 5560+00) and continues to Lake Mabel Loop Road (station 5598+60). Pond E-123 will serve as the dry treatment and attenuation pond for Basin E-123. Pond E-123 is located on the west side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 183.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is

situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.30 Pond E-124

Basin E-124 is located from Lake Mabel Loop Road (station 5598+60) and continues to Swan Road (station 5638+83). Pond E-124 will serve as the dry treatment and attenuation pond for Basin E-124. Pond E-124 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 171.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.31 Pond E-125

Basin E-125 is located from Swan Road (station 5638+83) and continues to Edwards Road (station 5679+58). Pond E-125 will serve as the wet treatment and attenuation pond for Basin E-125. Pond E-125 is located on the west side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 127.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) and D soil (Hontoon Muck) with an estimated SHWT depth of ± 3.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.32 Pond E-126

Basin E-126 is located from Edwards Road (station 5679+58) and continues to Station 5697+58. Pond E-126 will serve as the dry treatment and attenuation pond for Basin E-126. Pond E-126 is located on the east side of the proposed alignment. The existing ground elevation is at approximately 163.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.33 Pond E-127

Basin E-127 is located from Station 5679+58 and continues to County Road 542 (station 5709+23). Pond E-127 will serve as the dry treatment and attenuation pond for Basin E-127. Pond E-127 is

located within the proposed interchange of Central Polk Parkway and County Road 542. The existing ground elevation is at approximately 188.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on agricultural parcels.

7.3.1.34 Pond E-128

Basin E-128 is located from County Road 542 (station 5709+23) and continues to Station 5723+57. Pond E-128 will serve as the dry treatment and attenuation pond for Basin E-128. Pond E-128 is located within the proposed interchange of Central Polk Parkway and County Road 542. The existing ground elevation is at approximately 189.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 3.50-foot below ground. The pond site is located on agricultural parcels.

7.3.1.35 Pond E-129

Basin E-129 is located from Station 5723+57 and continues to County Road 546 (station 5765+08). Pond E-129 will serve as the dry treatment and attenuation pond for Basin E-129. Pond E-129 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 142.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.36 Pond E-130

Basin E-130 is located from County Road 546 (station 5765+08) and continues to Station 5781+58. Pond E-130 will serve as the dry treatment and attenuation pond for Basin E-130. Pond E-130 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 154.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

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7.3.1.37 Pond E-131

Basin E-131 is located from Station 5781+58 and continues to White Clay Pit Road (station 5804+58). Pond E-131 will serve as the dry treatment and attenuation pond for Basin E-131. Pond E-131 is located on the west side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 168.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.38 Pond E-132

Basin E-132 is located from White Clay Pit Road (station 5804+58) and continues to Bannon Loop Road (station 5831+40). Pond E-132 will serve as the dry treatment and attenuation pond for Basin E-132. Pond E-132 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 139.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.39 Pond E-133

Basin E-133 is located from Bannon Loop Road (station 5831+40) and continues to Bannon Island Road (station 5844+91). Pond E-133 will serve as the dry treatment and attenuation pond for Basin E-133. Pond E-133 is located on the west side of the proposed alignment on a remaining parcel just south of Bannon Island Road. The existing ground elevation is at approximately 132.5 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.40 Pond E-134

Basin E-134 is located from Bannon Island Road (station 5844+91) and continues to Marion Road (station 5870+36). Pond E-134 will serve as the dry treatment and attenuation pond for Basin E-134. Pond E-134 is located on the east side of the proposed alignment on a remaining parcel just south of Marion Road. The existing ground elevation is at approximately 118.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data.

The pond site is situated on HSG A soil (Candler Fine Sand and Tavares Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.41 Pond E-135

Basin E-135 is located from Marion Road (station 5870+36) and continues to Robinson Drive (station 5914+00). Pond E-135 will serve as the dry treatment and attenuation pond for Basin E-135. Pond E-135 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 105.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.42 Pond F-135

Basin F-135 is located from Marion Road from the proposed interchange of Marion Road and Central Polk Parkway and continues approximately 1000 feet. Pond F-135 will serve as the dry treatment and attenuation pond for Basin F-135. Pond F-135 is located between the proposed frontage road and Marion Road. The existing ground elevation is at approximately 105.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.43 Pond E-136

Basin E-136 is located from Robinson Drive (station 5914+00) and continues to East Hinson Avenue (station 5957+29). Pond E-136 will serve as the dry treatment and attenuation pond for Basin E-136. Pond E-136 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 118.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

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7.3.1.44 Pond E-137

Basin E-137 is located from East Hinson Avenue (station 5957+29) and continues to East Johnson Road/CR 580 (station 5984+06). Pond E-137 will serve as the dry treatment and attenuation pond for Basin E-137. Pond E-137 is located on the west side of the proposed alignment on a remaining parcel south of Johnson Road/CR 580. The existing ground elevation is at approximately 124.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand and Fort Mead Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an undeveloped residential parcel.

7.3.1.45 Pond E-138

Basin E-138 is located from East Johnson Road/CR 580 (station 5984+06) and continues to Station 5996+11. Pond E-138 will serve as the dry treatment and attenuation pond for Basin E-138. Pond E-138 is located on the west side of the proposed alignment on a remaining parcel north of Johnson Road/CR 580. The existing ground elevation is at approximately 127.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.46 Pond E-139

Basin E-139 is located from Station 5996+11 and continues to Baker Dairy Road (station 6010+46). Pond E-139 will serve as the dry treatment and attenuation pond for Basin E-139. Pond E-139 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 124.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) and D soil (Samsula Muck) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.47 Pond E-140

Basin E-140 is located from Baker Dairy Road (station 6010+46) and continues to Carl Boozer Road (station 6037+14). Pond E-140 will serve as the dry treatment and attenuation pond for Basin E-140. Pond E-140 is located on the west side of the proposed alignment on a remaining parcel north of Baker Dairy Road. The existing ground elevation is at approximately 125.50 ft NAVD based on the

existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.48 Pond E-141

Basin E-141 is located from Carl Boozer Road (station 6037+14) and continues to Snell Creek Road (station 6092+00). Pond E-141 will serve as the dry treatment and attenuation pond for Basin E-141. Pond E-141 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 124.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an agricultural parcel.

7.3.1.49 Pond E-142

Basin E-142 is located from Snell Creek Road (station 6092+00) and continues to Snell Creek (station 6120+00). Pond E-142 will serve as the wet treatment and attenuation pond for Basin E-142. Pond E-142 is located on the east side of the proposed alignment on two existing parcels just south of Snell Creek. The existing ground elevation is at approximately 85.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) and D soil (Hontoon Muck) with the estimated SHWT at the existing ground. The pond site is located on two undeveloped parcels.

7.3.1.50 Pond E-143

Basin E-143 is located from Snell Creek (station 6120+00) and continues to Horseshoe Creek Road (station 6145+55). Pond E-143 will serve as the wet treatment and attenuation pond for Basin E-143. Pond E-143 is located on the east side of the proposed alignment west of Snell Creek. The existing ground elevation is at approximately 91.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand) and D soil (Hontoon Muck) with an estimated SHWT depth of ± 2.50-foot below ground. The pond site is located on an undeveloped parcel.

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7.3.1.51 Pond E-144

Basin E-144 is located from Horseshoe Creek Road (station 6145+55) and continues to East Palm Street (station 6159+02). Pond E-144 will serve as the wet treatment and attenuation pond for Basin E-144. Pond E-144 is located on the east side of the proposed alignment on a remaining parcel south of Palm Street. The existing ground elevation is at approximately 116.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) with an estimated SHWT depth of ± 5.00-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.52 Pond E-145

Basin E-145 is located from East Palm Street (station 6159+02) and continues to Horseshoe Creek (station 6186+00). Pond E-145 will serve as the wet treatment and attenuation pond for Basin E-145. Pond E-145 is located on the east side of the proposed alignment on a remaining parcel south of Horseshoe Creek. The existing ground elevation is at approximately 115.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand) and C soil (Pomello Fine Sand) with an estimated SHWT depth of ± 2.00-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.53 Pond E-146

Basin E-146 is located from Horseshoe Creek (station 6186+00) and continues to Station 6212+00. Pond E-146 will serve as the wet treatment and attenuation pond for Basin E-146. Pond E-146 is located on the east side of the proposed alignment on a remaining parcel north of Horseshoe Creek. The existing ground elevation is at approximately 102.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Imokalee Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.54 Pond E-147

Basin E-147 is located from Station 6212+00 and continues to US 17 (station 6246+60). Pond E-147 will serve as the wet treatment and attenuation pond for Basin E-147. Pond E-147 is located within the proposed interchange of Central Polk Parkway and US 17. The existing ground elevation is at approximately 107.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD

Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Symrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on undeveloped parcels.

7.3.1.55 Pond E-148

Basin E-148 is located from Station 6226+00 and continues to US 17 (station 6246+60). Pond E-148 will serve as the wet treatment and attenuation pond for Basin E-148. Pond E-148 is located within the proposed interchange of Central Polk Parkway and US 17. The existing ground elevation is at approximately 110.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Symrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on undeveloped parcels.

7.3.1.56 Pond E-149

Basin E-149 is located from US 17 (station 6246+60) and continues to Station 6282+00. Pond E-149 will serve as the dry treatment and attenuation pond for Basin E-147. Pond E-149 is located on the north side of the proposed alignment on a remaining parcel west of US 17 and south of the Oakhaven Residential Community. The existing ground elevation is at approximately 122.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand and Tavares Fine Sand) with an estimated SHWT depth of ± 4.00-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.57 Pond E-150

Basin E-150 is located from Station 6282+00 and continues to an unnamed canal (station 6306+00). Pond E-150 will serve as the wet treatment and attenuation pond for Basin E-150. Pond E-150 is located on the east side of the proposed alignment on a remaining parcel south of an unnamed canal. The existing ground elevation is at approximately 114.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Narcoosee Sand) and D soil (Samsula Muck) with an estimated SHWT depth of ± 2.00-foot below ground. The pond site is located on an undeveloped parcel.

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7.3.1.58 Pond E-151

Basin E-151 is located from an unnamed canal (station 6306+00) and continues to Crescent Valley Ranch Road (station 6345+67). Pond E-151 will serve as the wet treatment and attenuation pond for Basin E-151. Pond E-151 is located on the west side of the proposed alignment on a remaining parcel north of the unnamed canal. The existing ground elevation is at approximately 111.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Narcoosee Sand) and D soil (Smyrna and Myakka Fine Sands & Samsula Muck) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.59 Pond E-152

Basin E-152 is located from Crescent Valley Ranch Road (station 6345+67) and continues to an isolated wetland (station 6375+67). Pond E-152 will serve as the wet treatment and attenuation pond for Basin E-152. Pond E-152 is located on the west side of the proposed alignment. The existing ground elevation is at approximately 115.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Narcoosee Sand) and D soil (Samsula Muck) with an estimated SHWT depth of ± 1.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.60 Pond E-153

Basin E-153 is located from an isolated wetland (station 6375+67) and continues to Little Zion Road (station 6385+67). Pond E-153 will serve as the wet treatment and attenuation pond for Basin E-153. Pond E-153 is located on the west side of the proposed alignment. The existing ground elevation is at approximately 117.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand), C soil (Narcoosee Sand), and D soil (Samsula Muck) with an estimated SHWT depth of ± 3.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.61 Pond E-154

Basin E-154 is located from Little Zion Road (station 6385+67) and continues to an unnamed creek (station 6412+17). Pond E-154 will serve as the wet treatment and attenuation pond for Basin E-154. Pond E-154 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 116.00 ft NAVD based on the existing 1-foot contours provided

by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Adamsville Fine Sand) and D soil (Smyrna and Myakka Fine Sands & Samsula Muck) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.62 Pond E-155

Basin E-155 is located from an unnamed creek (station 6412+17) and continues to Station 6433+47. Pond E-155 will serve as the wet treatment and attenuation pond for Basin E-155. Pond E-155 is located on the east side of the proposed alignment on a remaining parcel. The existing ground elevation is at approximately 117.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands & Basinger Mucky Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.63 Pond E-156

Basin E-156 is located from Station 6433+47 and continues to Station 6490+27. Pond E-156 will serve as the wet treatment and attenuation pond for Basin E-156. Pond E-156 is located on the northeast side of the proposed alignment. The existing ground elevation is at approximately 117.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Adamsville Fine Sand) and D soil (Smyrna and Myakka Fine Sands & Samsula Muck) with an estimated SHWT depth of ± 1.00-foot below ground. The pond site is located on undeveloped parcels.

7.3.1.64 Pond E-157

Basin E-157 is located from Station 6490+27 and continues to Interstate 4 (station 6550+38). Pond E-157 will serve as the wet treatment and attenuation pond for Basin E-157. Pond E-157 is located within the proposed interchange of Central Polk Parkway and Interstate 4. The existing ground elevation is at approximately 118.50 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand) and D soil (Basinger Mucky Fine Sand) with an estimated SHWT depth of ± 3.00-foot below ground. The pond site is located on an undeveloped parcel.

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7.3.1.65 Pond E-158

Basin E-158 is located from Station 6490+27 and continues to Interstate 4 (station 6550+38). Station Pond E-158 will serve as the wet treatment and attenuation pond for Basin E-158. Pond E-158 is located within the proposed interchange of Central Polk Parkway and Interstate 4. The existing ground elevation is at approximately 117.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand), C soil (Pomello Fine Sand), and D soil (Basinger Mucky Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.1.66 Pond E-159

Basin E-159 is located from Interstate 4 (station 6550+38) and continues to the on and off ramps to Interstate 4. Pond E-158 will serve as the dry treatment and attenuation pond for Basin E-157. Pond E-157 is located within the proposed interchange of Central Polk Parkway and Interstate 4. The existing ground elevation is at approximately 124.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Candler Fine Sand, Tavares Fine Sand) and D soil (Samsula Muck) with an estimated SHWT depth of ± 4.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2 Western Leg

7.3.2.1 Pond W-101A

Basin W-101A is located from SR 60 from Hankin Road to Gaskin Creek. Pond W-101A will serve as the wet treatment and attenuation pond for Basin W-101A. Pond W-101A is located on the north side of SR 60. The existing ground elevation is at approximately 102.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located upon an undeveloped parcel.

7.3.2.2 Pond W-102A

Basin W-102A is located from SR 60 from Gaskin Creek to Wahneta Farms Creek. Pond W-102A will serve as the dry treatment and attenuation pond for Basin W-102A. Pond W-102A is located on the south side of SR 60. The existing ground elevation is at approximately 113.00 ft NAVD based on

the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand) with an estimated SHWT depth of ± 4.00-foot below ground. The pond site is located upon an undeveloped parcel.

7.3.2.3 Pond W-103A

Basin W-103A is located from Station 9000+00 and continues to Station 9011+00. Pond W-103A will serve as the dry treatment and attenuation pond for Basin W-103A. Pond W-103A is located within the proposed interchange of Central Polk Parkway and SR 60. The existing ground elevation is at approximately 109.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Pomello Fine Sand and Sparr Sand) with an estimated SHWT depth of ± 2.00-foot below ground. The pond site is located on undeveloped and residential parcels.

7.3.2.4 Pond W-104A

Basin W-104A is located from Station 9011+00 and continues to Peace Creek (station 9026+65). Pond W-104A will serve as the dry treatment and attenuation pond for Basin W-104A. Pond W-104A is located on the east side of the proposed roadway alignment on a remaining parcel. The existing ground elevation is at approximately 110.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Sparr Sand, 0 to 5 PCT Slopes) with an estimated SHWT depth of ± 1.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.5 Pond F-101A

Basin F-101A is located from the Citrus Highlands Community and continues to Gaskin Creek. Pond F-101A will serve as the wet treatment and attenuation pond for Basin F-101A. Pond F-101A is located west of the proposed frontage road and north of the Citrus Highlands Residential Community. The existing ground elevation is at approximately 104.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Floridiana Mucky Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

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7.3.2.6 Pond W-101B

Basin W-101B is located from Pollard Road (station 2000+00) and continues to the Peace Creek Canal (station 2017+34). Pond W-101B will serve as the wet treatment and attenuation pond for Basin W-101B. Pond W-101B is located within the proposed interchange of Central Polk Parkway and Pollard Road. The existing ground elevation is at approximately 115.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands) with the estimated SHWT at the existing ground. The pond site is located on an undeveloped parcel.

7.3.2.7 Pond W-102B

Basin W-102B is located from Pollard Road (station 2000+00) and continues to the Peace Creek Canal (station 2017+34). Pond W-102B will serve as the wet treatment and attenuation pond for Basin W-102B. Pond W-102B is located within the proposed interchange of Central Polk Parkway and Pollard Road. The existing ground elevation is at approximately 111.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands and Eaton Mucky Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.8 Pond W-103B

Basin W-103B is located from Peace Creek (station 2017+34) and continues to Rifle Range Road (station 2056+38). Pond W-103B will serve as the wet treatment and attenuation pond for Basin W-103B. Pond W-103B is located south of the proposed roadway alignment and Peace Creek Canal. The existing ground elevation is at approximately 109.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Pomello Fine Sand) and D soil (Placid Fine Sand, Frequently Flooded) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.9 Pond W-104B

Basin W-104B is located from Rifle Range Road (station 2056+38) and continues to Logan Lane (station 2082+48). Pond W-104B will serve as the wet treatment and attenuation pond for Basin W-104B. Pond W-104B is located south of the proposed roadway alignment and north of the Peace

Creek canal. The pond was offset from the roadway right of way in order to provide access to the remaining parcel. The existing ground elevation is at approximately 108.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Imokalee Sand and Placid Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.10 Pond W-105B

Basin W-105B is located from Logan Lane (station 2082+48) and continues to Station 2101+88. Pond W-105B will serve as the wet treatment and attenuation pond for Basin W-105B. Pond W-105B is located south of the proposed roadway alignment. The existing ground elevation is at approximately 112.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Pomello Fine Sand) and D soil (Smyrna and Myakka Fine Sands, Placid and Myakka Fine Sands, Pomona Fine Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.11 Pond W-106

Basin W-106 is located from Station 2101+88 and continues to Station 2117+11. Pond W-106 will serve as the wet treatment and attenuation pond for Basin W-106. Pond W-106 is located within the Central Polk Parkway Interchange. The existing ground elevation is at approximately 113.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.12 Pond W-107

Basin W-107 is located from Station 2117+11 and continues to an unnamed canal (station 2153+68). Pond W-107 will serve as the wet treatment and attenuation pond for Basin W-107. Pond W-107 is located within the Central Polk Parkway Interchange. The existing ground elevation is at approximately 110.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands, Lynne Sand) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on undeveloped parcels.

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7.3.2.13 Pond W-108

Basin W-108 is located from an unnamed canal (station 2153+68) and continues to Gaskin Branch Canal (station 2185+83). Pond W-108 will serve as the wet treatment and attenuation pond for Basin W-108. Pond W-108 is located south of the proposed roadway alignment. The existing ground elevation is at approximately 106.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Pomello Fine Sand) and D soil (Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 2.00-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.14 Pond W-109

Basin W-109 is located from Gaskin Branch Canal (station 2185+83) and continues to Station 2230+00. Pond W-109 will serve as the wet treatment and attenuation pond for Basin W-109. Pond W-109 is located north of the proposed roadway alignment and west of Gaskin Branch Creek. The existing ground elevation is at approximately 105.5 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG C soil (Adamsville Fine Sand) and D soil (Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 1.00-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.15 Pond W-110

Basin W-110 is located from Station 2230+00 and continues to Station 2270+00. Pond W-110 will serve as the wet treatment and attenuation pond for Basin W-110. Pond W-110 is located north of the proposed roadway alignment. The existing ground elevation is at approximately 99.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Samsula Muck, Placid and Myakka Fine Sands) with an estimated SHWT depth of ± 2.00-foot above ground. The pond site is located on an undeveloped parcel.

7.3.2.16 Pond W-111

Basin W-111 is located from Station 2270+00 and continues to Station 2304+14. Pond W-111 will serve as the dry treatment and attenuation pond for Basin W-111. Pond W-111 is located north of the proposed roadway alignment and west of 91 Mine Road. The existing ground elevation is at approximately 105.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Neilhurst

Sand) and D soil (Slickens) with an estimated SHWT depth of ± 4.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.17 Pond W-112

Basin W-112 is located from Peace Creek Canal and continues to Station 2280+00. Pond W-112 will serve as the wet treatment and attenuation pond for Basin W-112. Pond W-112 is located south of the proposed roadway alignment. The existing ground elevation is at approximately 96.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Slickens) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an old phosphate mining field.

7.3.2.18 Pond W-113

Basin W-113 is located from Station 2304+14 and continues to Old Eagle Lake Road (station 2344+00). Pond W-113 will serve as the dry treatment and attenuation pond for Basin W-113. Pond W-113 is located within the proposed interchange of Central Polk Parkway and US 17. The existing ground elevation is at approximately 115.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Neilhurst Sand) and D soil (Slickens) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an old phosphate mining field.

7.3.2.19 Pond W-114

Basin W-114 is located from Old Eagle Lake Road (station 2344+00) and continues to Station 2363+07. Pond W-114 will serve as the dry treatment and attenuation pond for Basin W-114. Pond W-114 is located east of the proposed roadway alignment on a remaining parcel. The existing ground elevation is at approximately 111.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Arents) with an estimated SHWT depth of ± 6.00-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.20 Pond W-115

Basin W-115 is located from Station 2363+07 and continues to an unnamed canal (station 2408+70). Pond W-115 will serve as the dry treatment and attenuation pond for Basin W-115. Pond W-115 is located southeast of the proposed roadway alignment. The existing ground elevation is at

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approximately 110.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Arents, Neilhurst Sand) with an estimated SHWT depth of ± 4.00-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.21 Pond W-116

Basin W-116 is located from an unnamed canal (station 2408+70) and continues to Station 2450+48. Pond W-116 will serve as dry treatment and attenuation pond for Basin W-116. Pond W-116 is located east of the proposed roadway alignment. The existing ground elevation is at approximately 111.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Neilhurst Sand) and D soil (Pomona Fine Sand) with an estimated SHWT depth of ± 3.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.22 Pond W-117

Basin W-117 is located from Station 2450+48 and continues to Station 2476+67. Pond W-117 will serve as the wet treatment and attenuation pond for Basin W-117. Pond W-117 is located west of the proposed roadway alignment. The existing ground elevation is at approximately 111.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Arents) with an estimated SHWT depth of ± 1.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.23 Pond W-118

Basin W-118 is located from Station 2476+67 and continues to Station 2523+85. Pond W-118 will serve as the wet treatment and attenuation pond for Basin W-118. Pond W-118 is located east of the proposed roadway alignment. The existing ground elevation is at approximately 110.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands, Placid and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

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7.3.2.24 Pond W-119

Basin W-119 is located from Station 2523+85 and continues to Thornhill Road (station 2542+70). Pond W-119 will serve as the wet treatment and attenuation pond for Basin W-119. Pond W-119 is located west of the proposed roadway alignment and south of Fussell Lane. The existing ground elevation is at approximately 111.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Smyrna and Myakka Fine Sands, Samsula Muck) with an estimated SHWT depth of ± 0.20-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.25 Pond W-120

Basin W-120 is located from Thornhill Road (station 2542+70) and continues to an unnamed creek (station 2594+40). Pond W-120 will serve as the wet treatment and attenuation pond for Basin W-120. Pond W-120 is located southwest of the proposed roadway alignment and east of Thornhill Road. The existing ground elevation is at approximately 118.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG A soil (Tavares Fine Sand), C soil (Adamsville Fine Sand), and D soil (Placid Fine Sand) with an estimated SHWT depth of ± 4.00-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.26 Pond W-121

Basin W-121 is located from an unnamed creek (station 2594+40) and continues to Winter Lake Road (station 2658+75). Pond W-121 will serve as the wet treatment and attenuation pond for Basin W-121. Pond W-121 is located north of the proposed roadway alignment and west of Thornhill Road. The existing ground elevation is at approximately 116.00 ft NAVD based on the existing 1-foot contours provided by the SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Imokalee Sand, Smyrna and Myakka Fine Sands) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

7.3.2.27 Pond W-122

Basin W-122 is located from Winter Lake Road (2658+75) and continues to the existing Polk Parkway. Pond W-122 will serve as the wet treatment and attenuation pond for Basin W-122. Pond W-122 is located within the proposed interchange of the Polk Parkway. The existing ground elevation is at approximately 105.00 ft NAVD based on the existing 1-foot contours provided by the

SWFWMD Light Detection and Ranging (LiDAR) data. The pond site is situated on HSG D soil (Felda Fine Sand, Eaton Mucky Fine Sand, Depressional) with an estimated SHWT depth of ± 0.50-foot below ground. The pond site is located on an undeveloped parcel.

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SECTION 8 - CONCLUSIONS AND RECOMMENDATIONS

Potential pond sites have been identified along the project limits. The analysis estimates pond right-of-way needs using a volumetric analysis, which accounts for water quality treatment and water quantity for runoff attenuation. The Right of Way cost estimate found in this report is a budget tool used by the Department to estimate total acquisition costs associated with each pond site and to budget the appropriate funds for acquisition. Right of Way cost estimates are not real estate appraisals and do not reflect market value. In addition, the FDOT uses appraisals that comply with the Uniform Standards of Professional Appraisal Practice (USPAP) for acquisition purposes.

Pond sizing calculations as well as graphics showing the roadway alignment and associated pond site alternatives are included in Appendices B to D of this Conceptual Pond Siting Report. Please note that the recommendations were based on pond sizes and locations determined from preliminary data calculations, reasonable engineering judgment, and assumptions. Pond sizes and locations may change during final design as more detailed information on SHWT, wetland normal pool elevation, and final roadway profiles and alignments become available.

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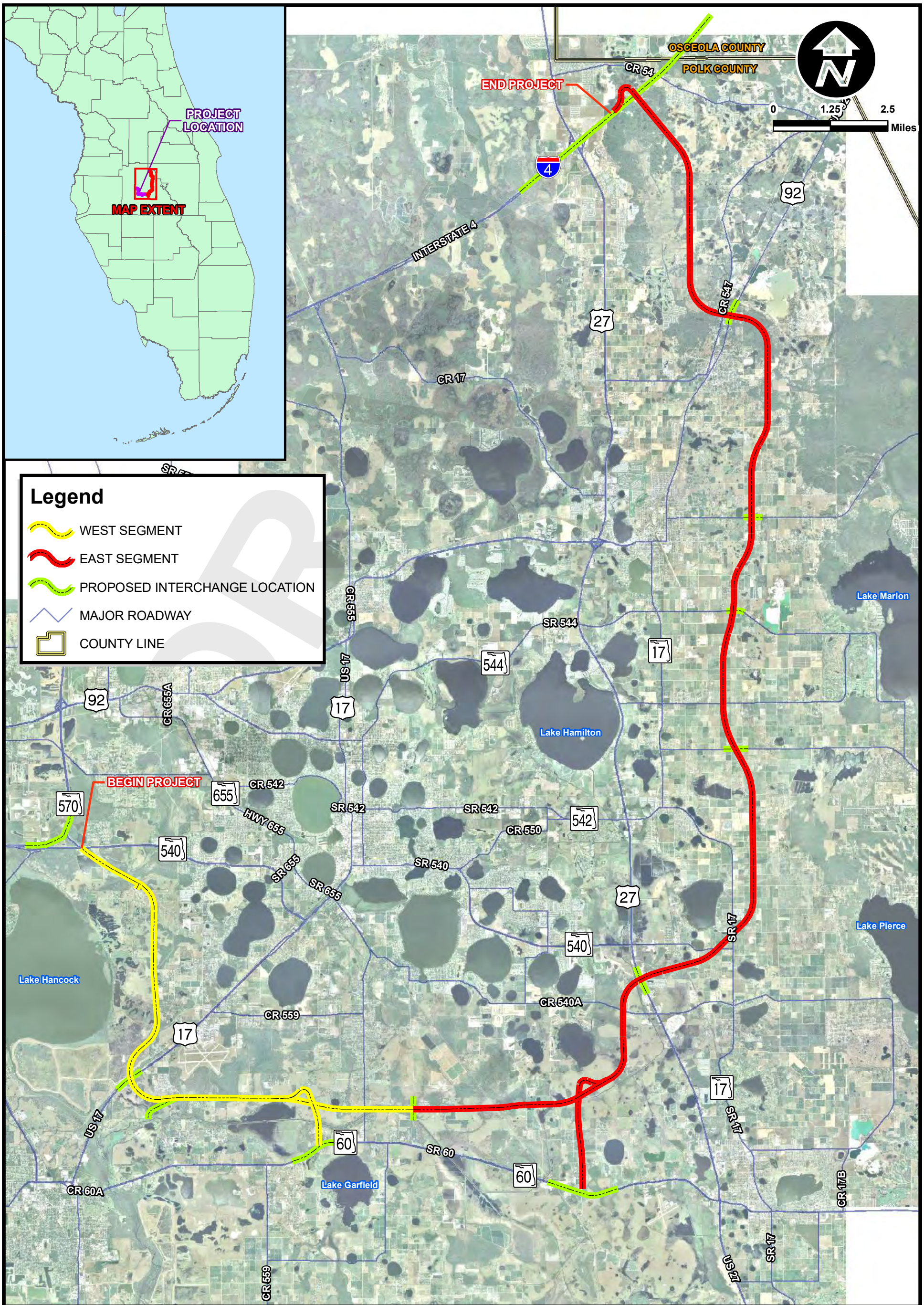
APPENDIX A

Figures



FPID: 423601-1-22-01

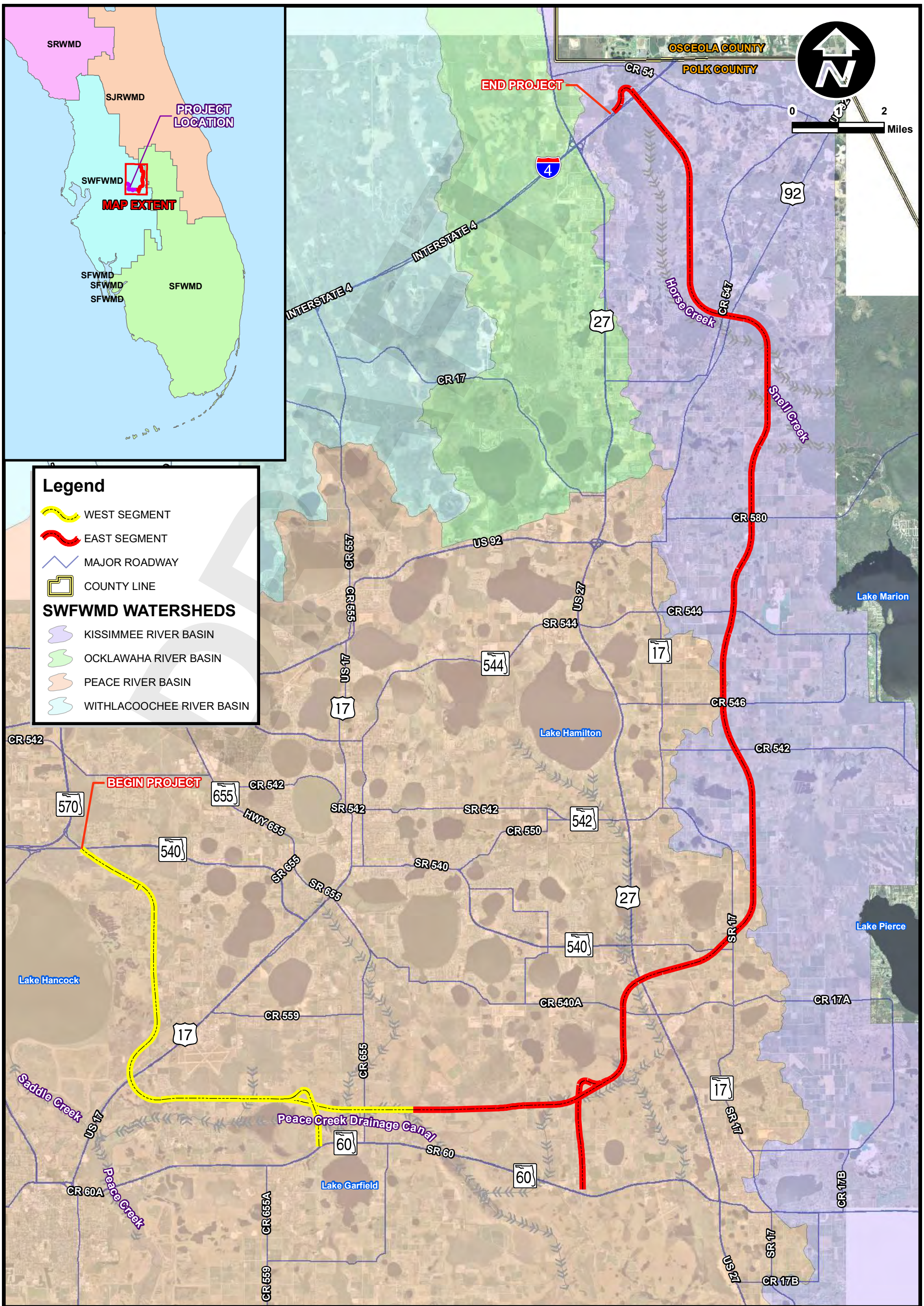
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
PROJECT LOCATION MAP

FIGURE

1



FPID: 423601-1-22-01

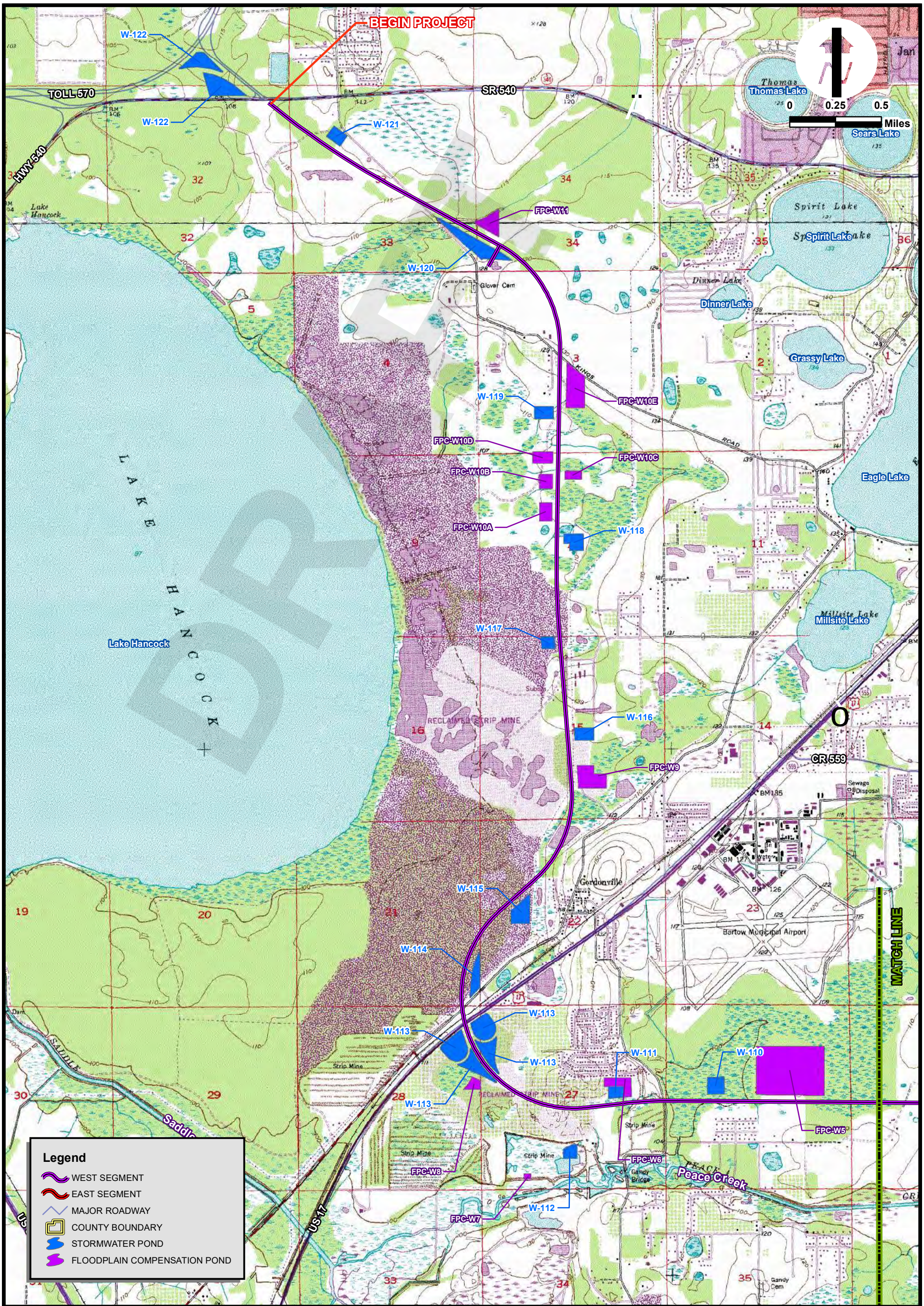
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
DRAINAGE BASIN MAP

FIGURE

2



FPID: 423601-1-22-01

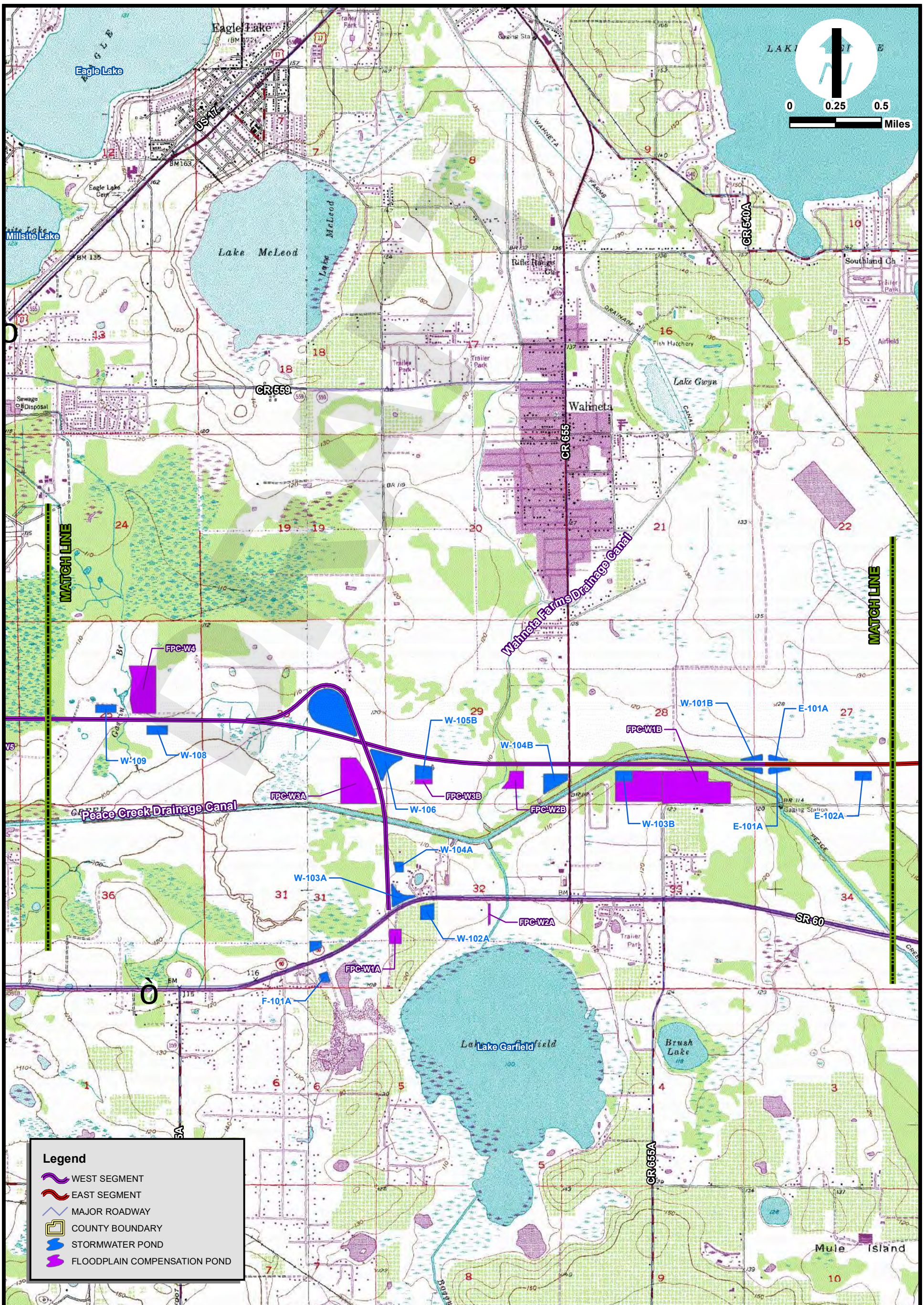
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-1A



FPID: 423601-1-22-01

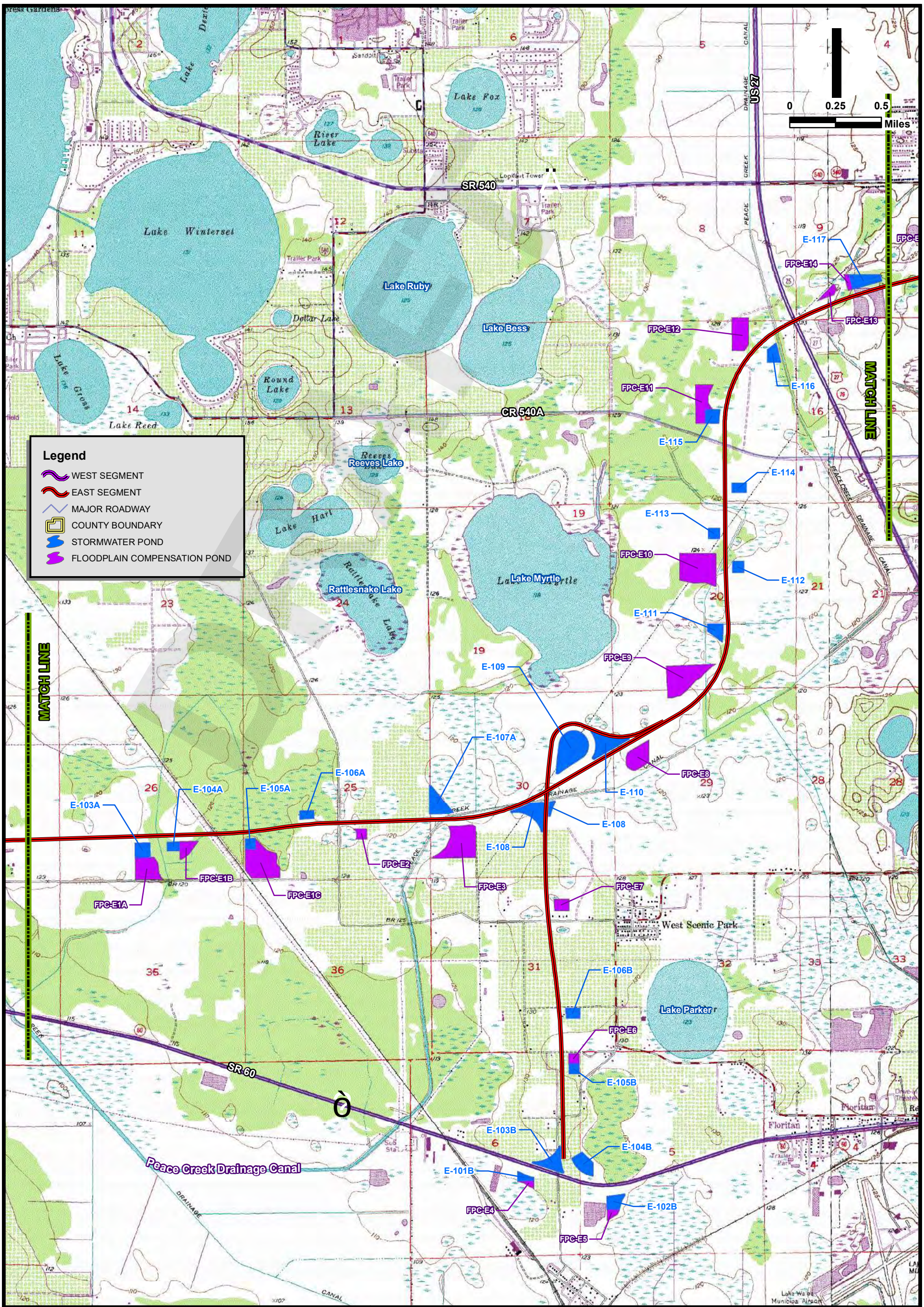
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-1B



FPID: 423601-1-22-01

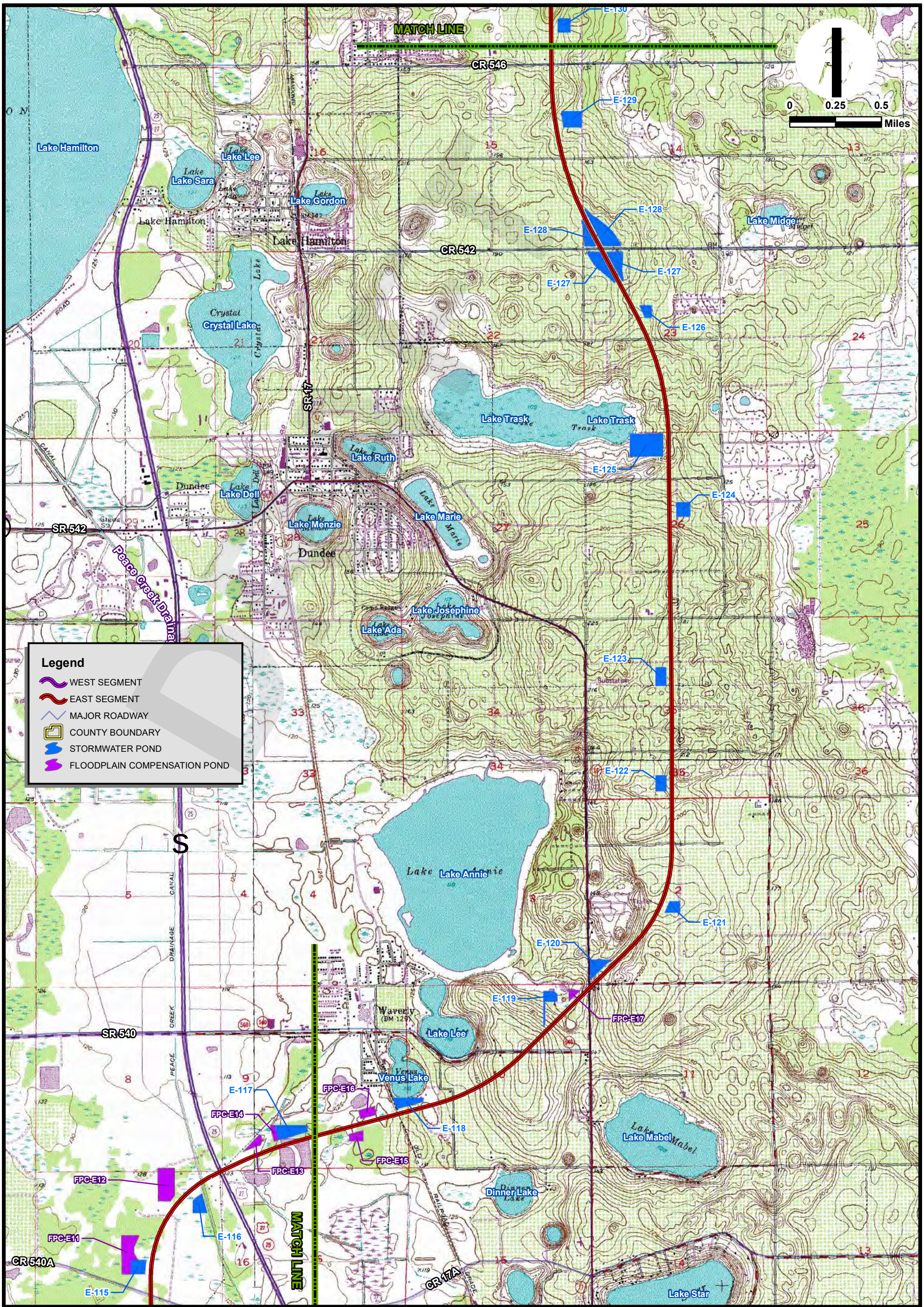
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-2A



FPID: 423601-1-22-01

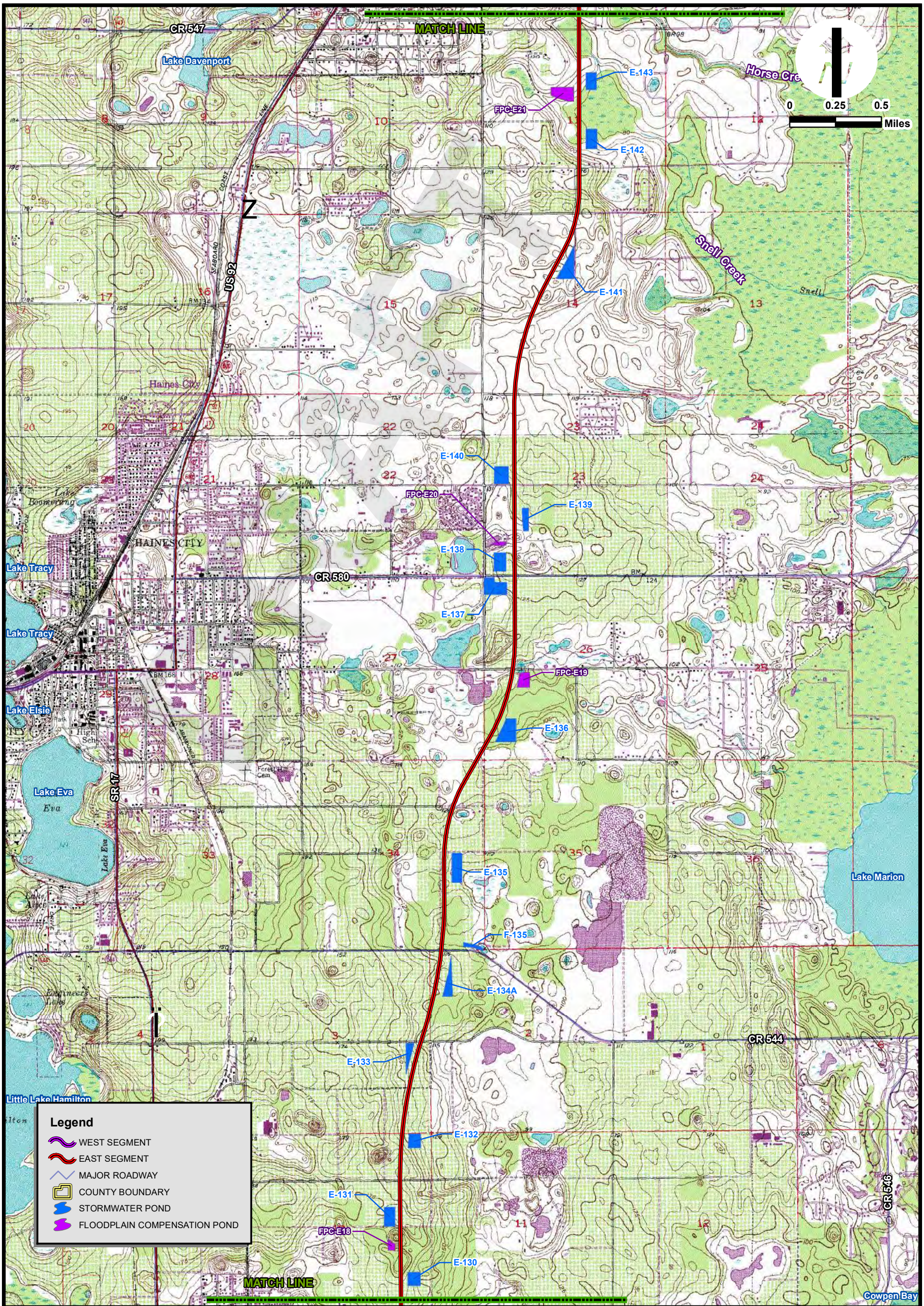
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-2B



FPID: 423601-1-22-01

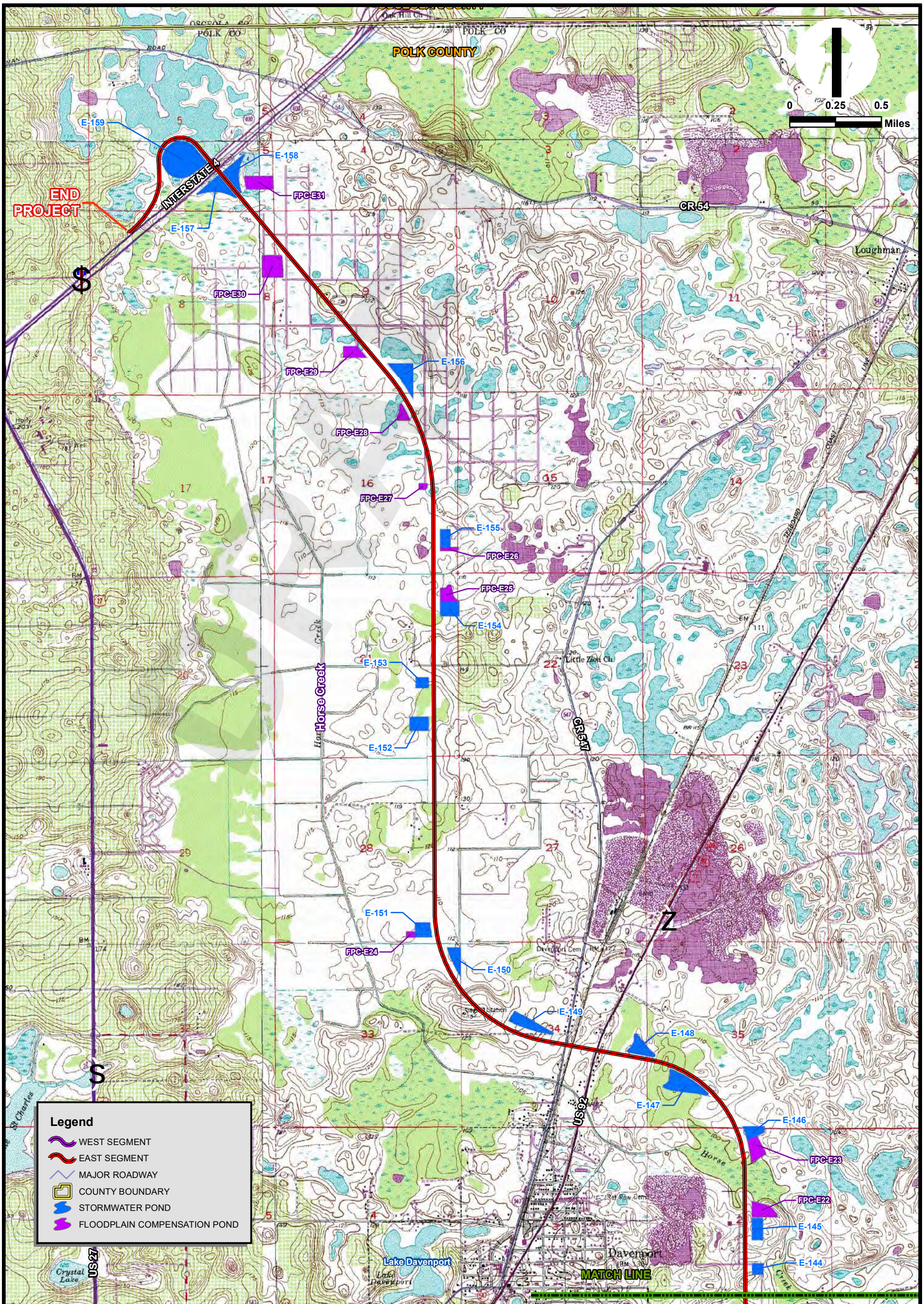
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-3A



FPID: 423601-1-22-01

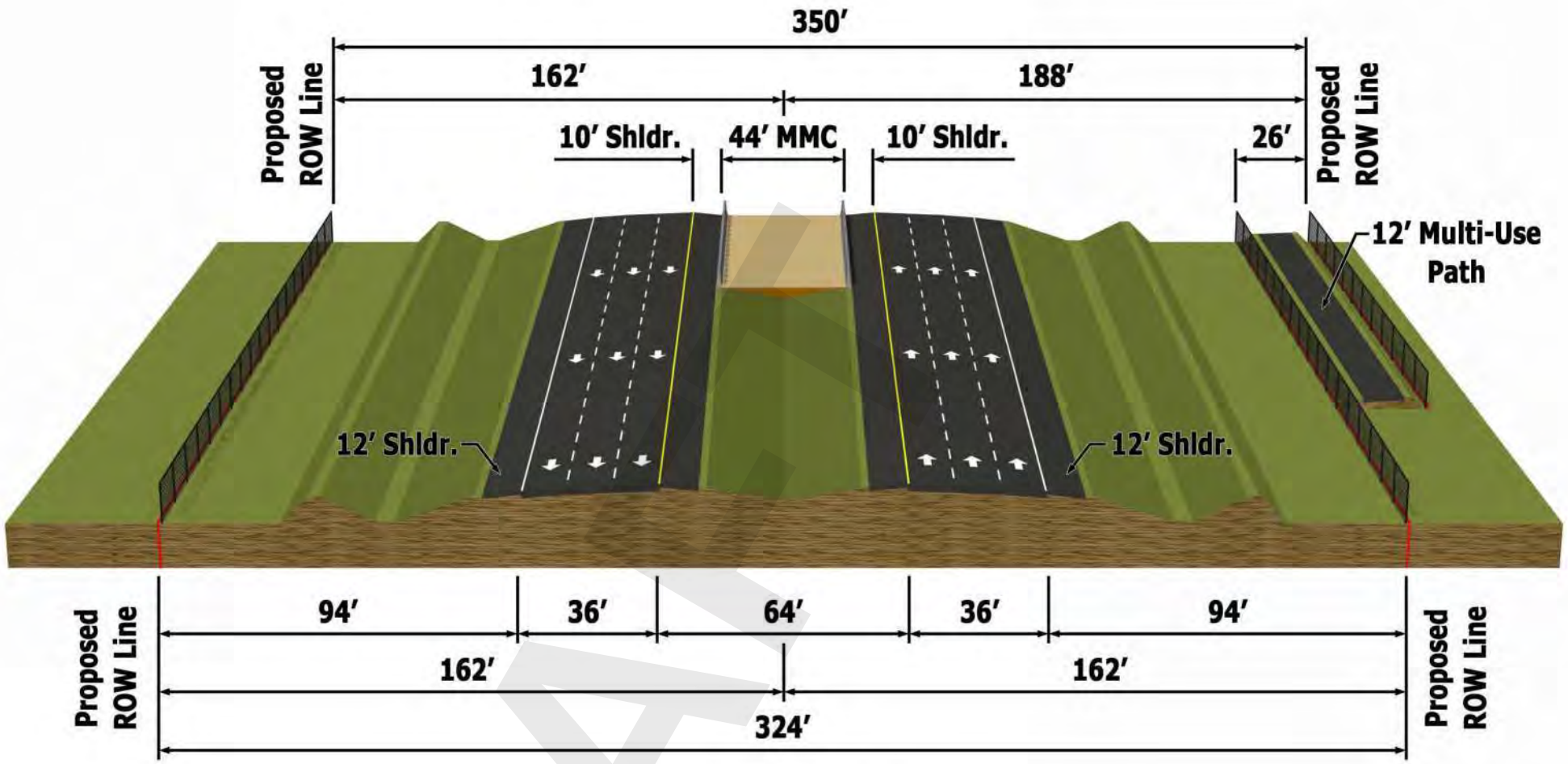
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
USGS QUADRANGLE MAP (WITH POND SITES)

FIGURE

3-3B



Central Polk Parkway
Six-Lane Typical Section
Design Speed = 65 mph

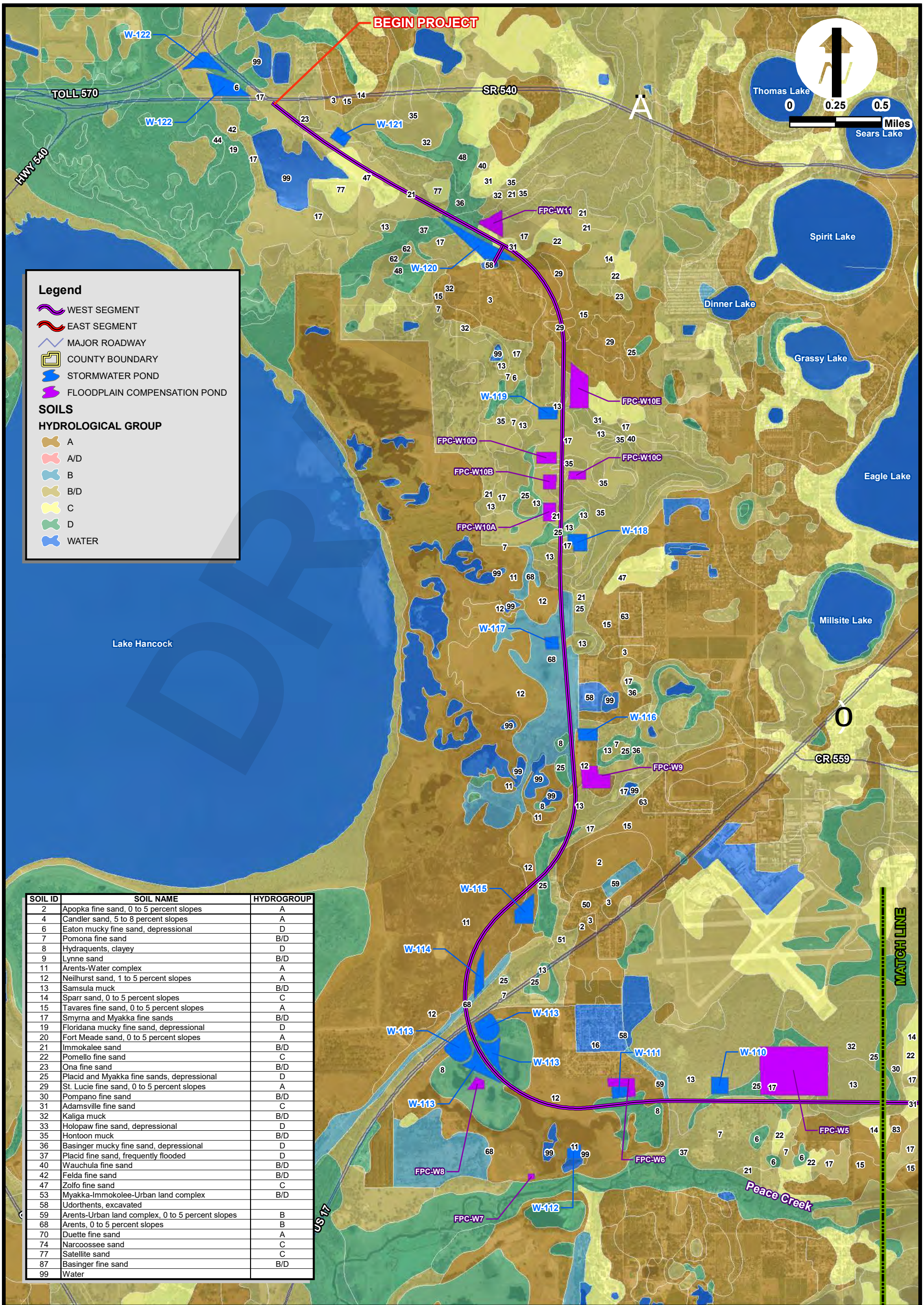
FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
TYPICAL SECTION

FIGURE
4



SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
47	Zolfo fine sand	C
53	Myakka-Immokolee-Urban land complex	B/D
58	Udorthents, excavated	
59	Arents-Urban land complex, 0 to 5 percent slopes	B
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	

FPID: 423601-1-22-01

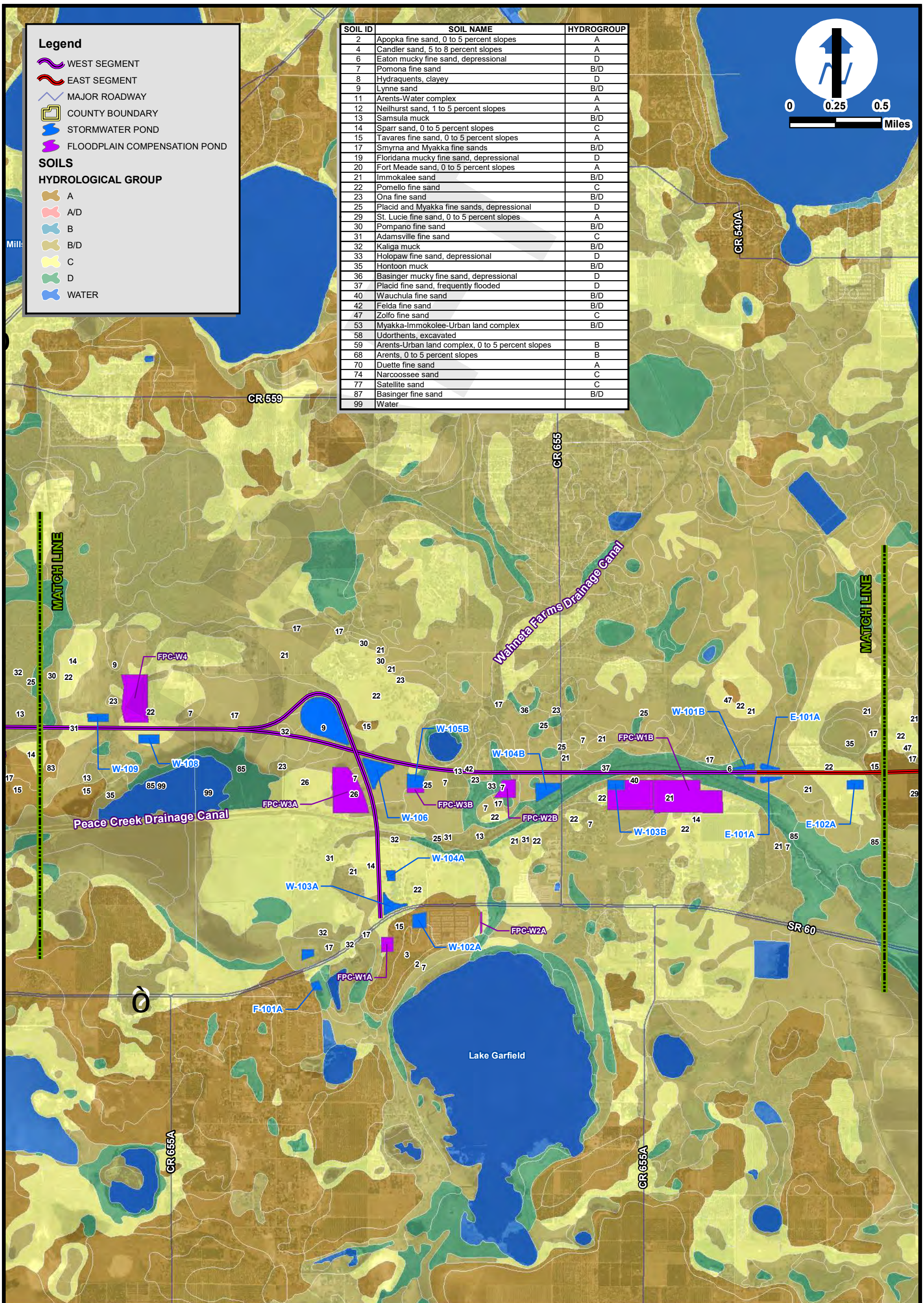
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-1A



SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
47	Zolfo fine sand	C
53	Myakka-Immokolee-Urban land complex	B/D
58	Udorthents, excavated	
59	Arents-Urban land complex, 0 to 5 percent slopes	B
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	

FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

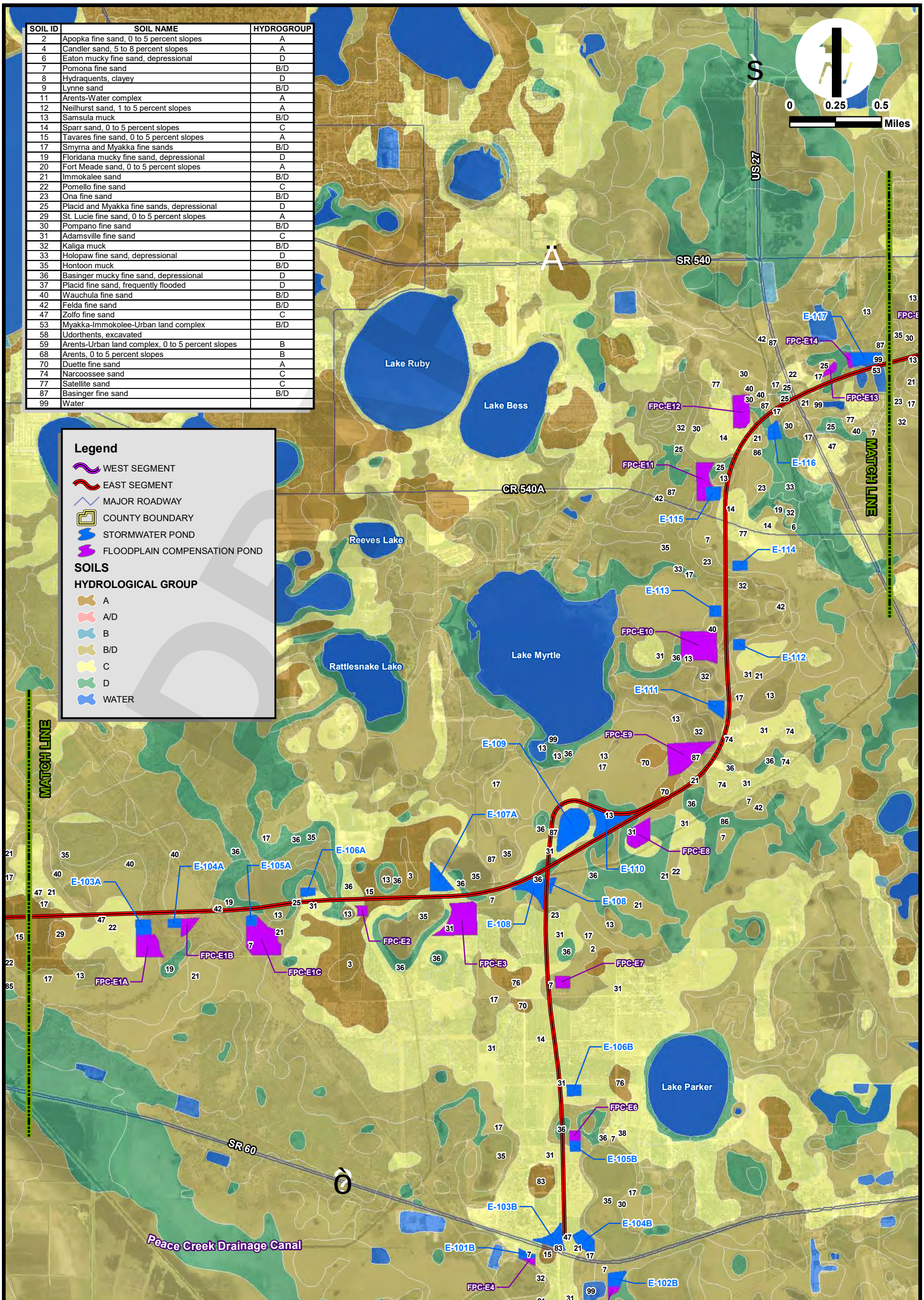
POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-1B

SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
47	Zolfo fine sand	C
53	Myakka-Immokolee-Urban land complex	B/D
58	Udorthents, excavated	
59	Arents-Urban land complex, 0 to 5 percent slopes	B
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	



FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-2A

SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
25	Placid and Myakka fine sands, depressional	D
29	St. Lucie fine sand, 0 to 5 percent slopes	A
30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
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36	Basinger mucky fine sand, depressional	D
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42	Felda fine sand	B/D
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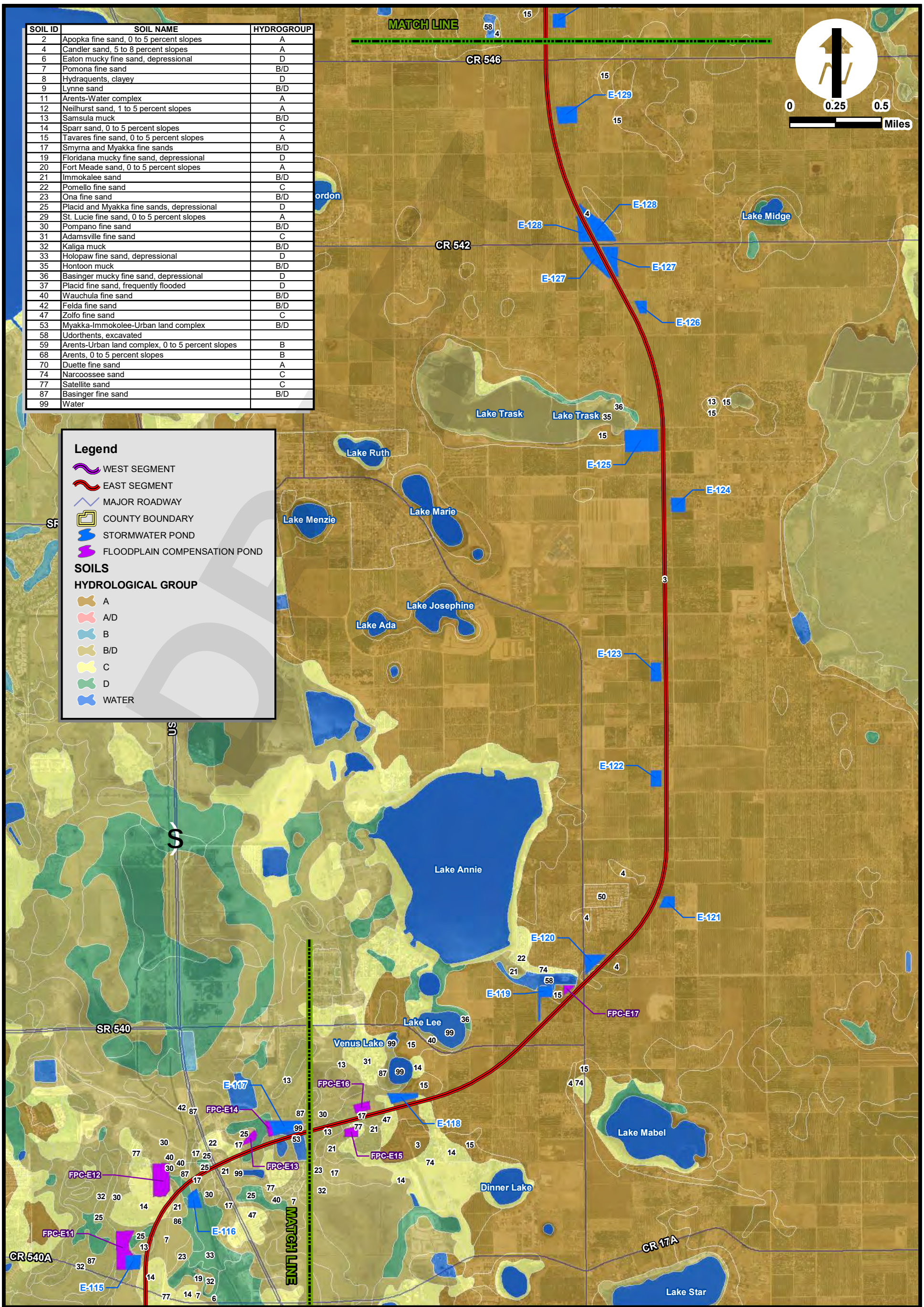
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	



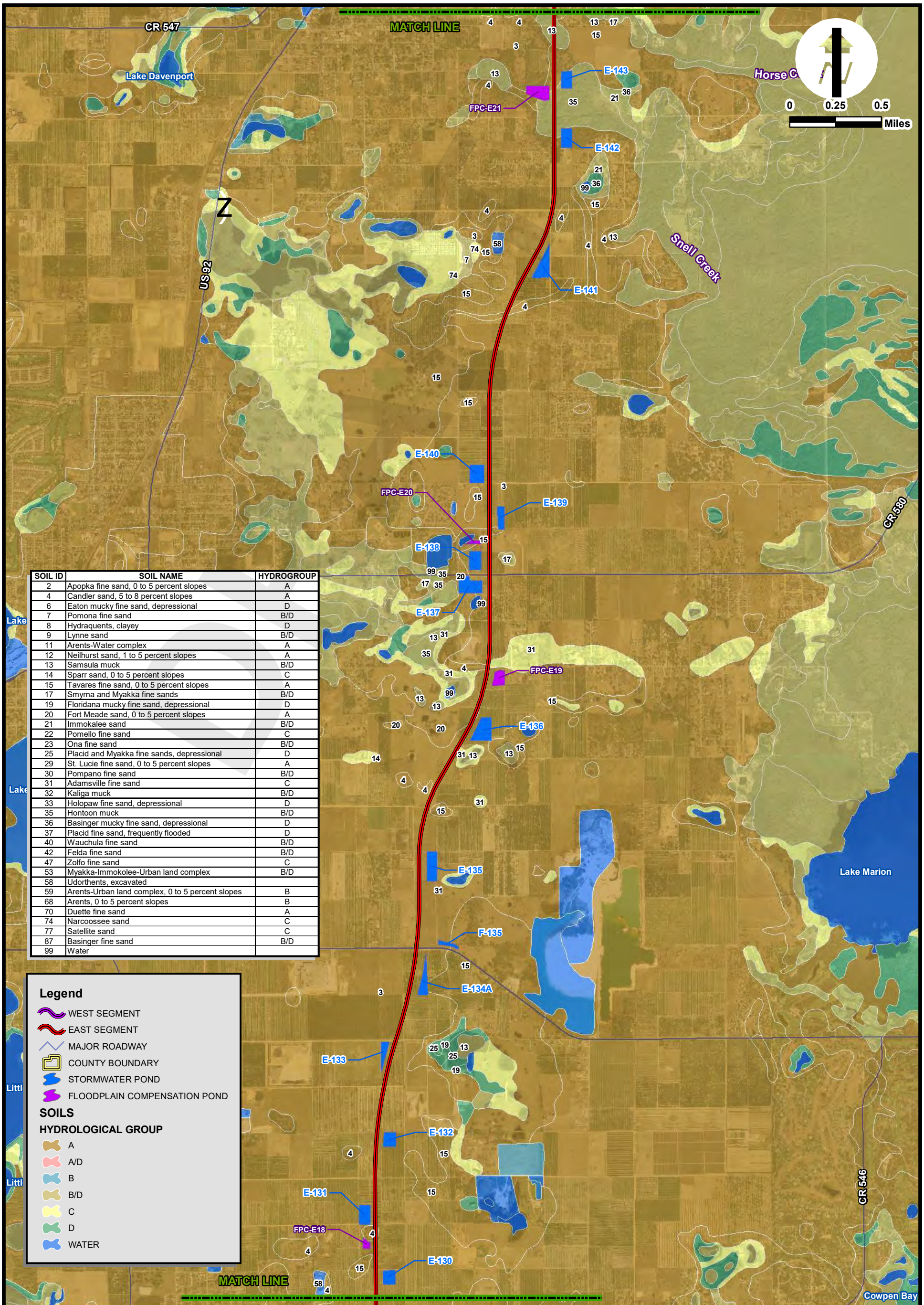
FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE
5-2B



SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
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30	Pompano fine sand	B/D
31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
47	Zolfo fine sand	C
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59	Arents-Urban land complex, 0 to 5 percent slopes	B
68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	

FPID: 423601-1-22-01

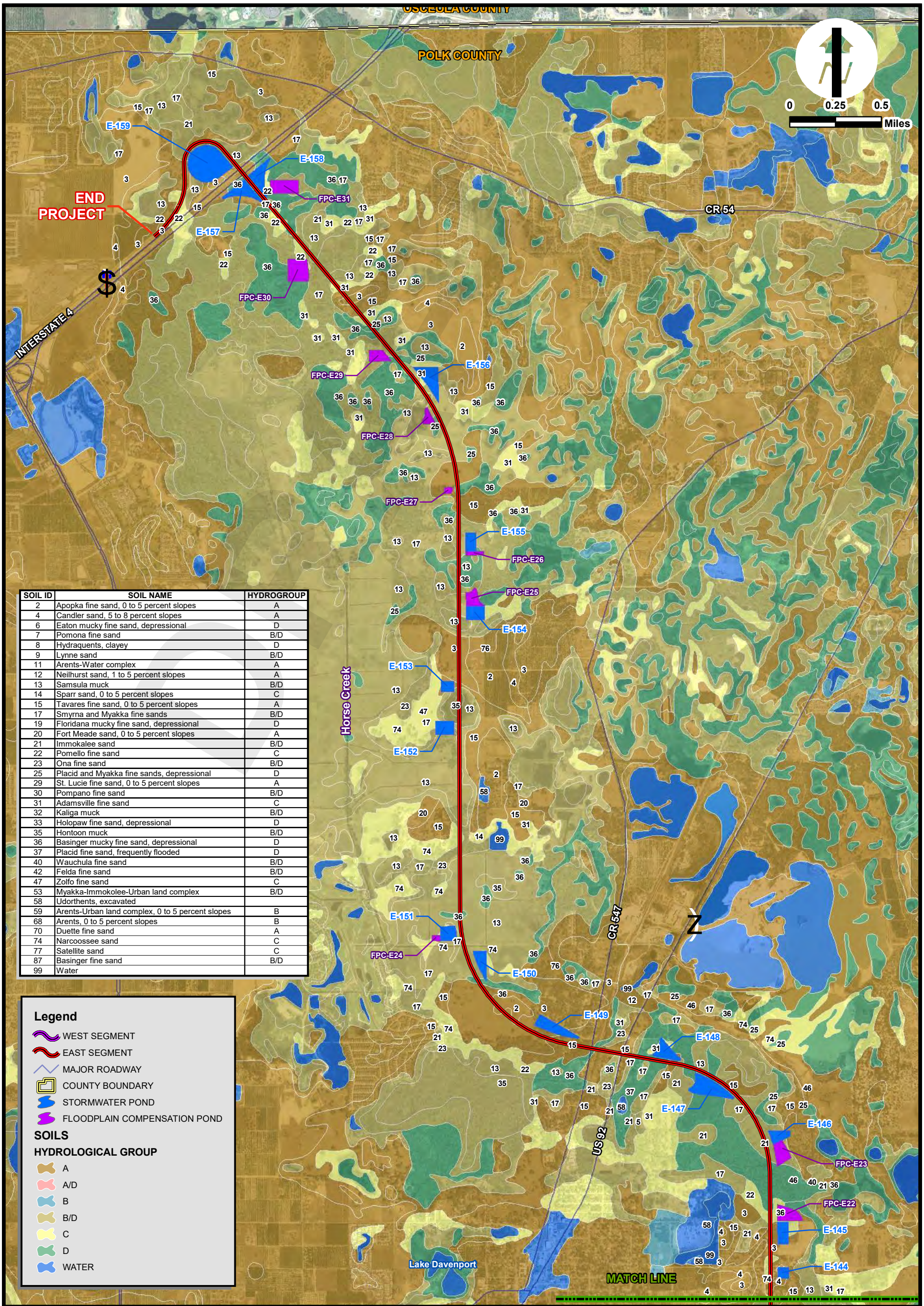
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-3A



SOIL ID	SOIL NAME	HYDROGROUP
2	Apopka fine sand, 0 to 5 percent slopes	A
4	Candler sand, 5 to 8 percent slopes	A
6	Eaton mucky fine sand, depressional	D
7	Pomona fine sand	B/D
8	Hydraquents, clayey	D
9	Lynne sand	B/D
11	Arents-Water complex	A
12	Neilhurst sand, 1 to 5 percent slopes	A
13	Samsula muck	B/D
14	Sparr sand, 0 to 5 percent slopes	C
15	Tavares fine sand, 0 to 5 percent slopes	A
17	Smyrna and Myakka fine sands	B/D
19	Floridana mucky fine sand, depressional	D
20	Fort Meade sand, 0 to 5 percent slopes	A
21	Immokalee sand	B/D
22	Pomello fine sand	C
23	Ona fine sand	B/D
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31	Adamsville fine sand	C
32	Kaliga muck	B/D
33	Holopaw fine sand, depressional	D
35	Hontoon muck	B/D
36	Basinger mucky fine sand, depressional	D
37	Placid fine sand, frequently flooded	D
40	Wauchula fine sand	B/D
42	Felda fine sand	B/D
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68	Arents, 0 to 5 percent slopes	B
70	Duette fine sand	A
74	Narcoossee sand	C
77	Satellite sand	C
87	Basinger fine sand	B/D
99	Water	

FPID: 423601-1-22-01

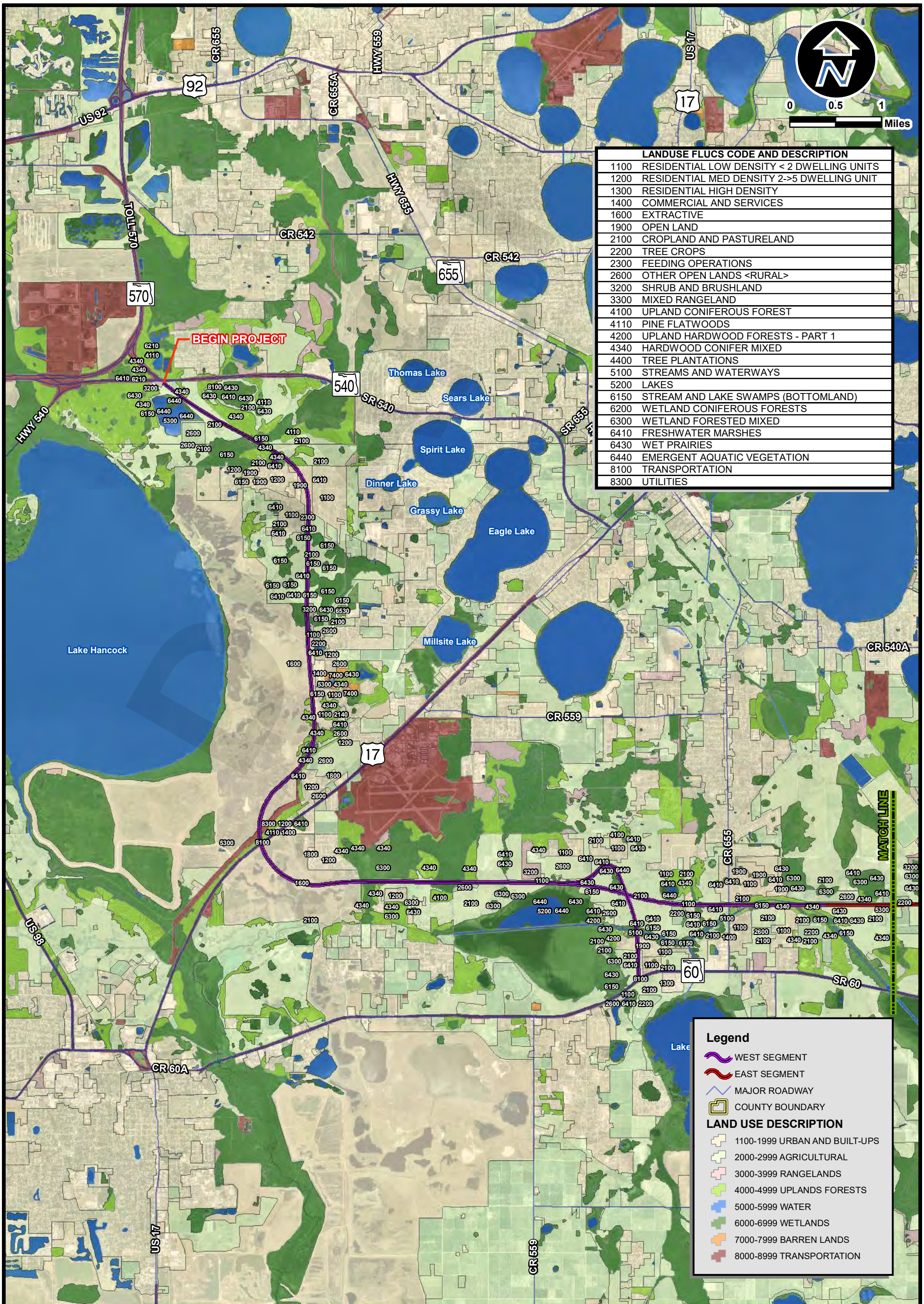
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
SOILS MAP

FIGURE

5-3B



FPID: 423601-1-22-01

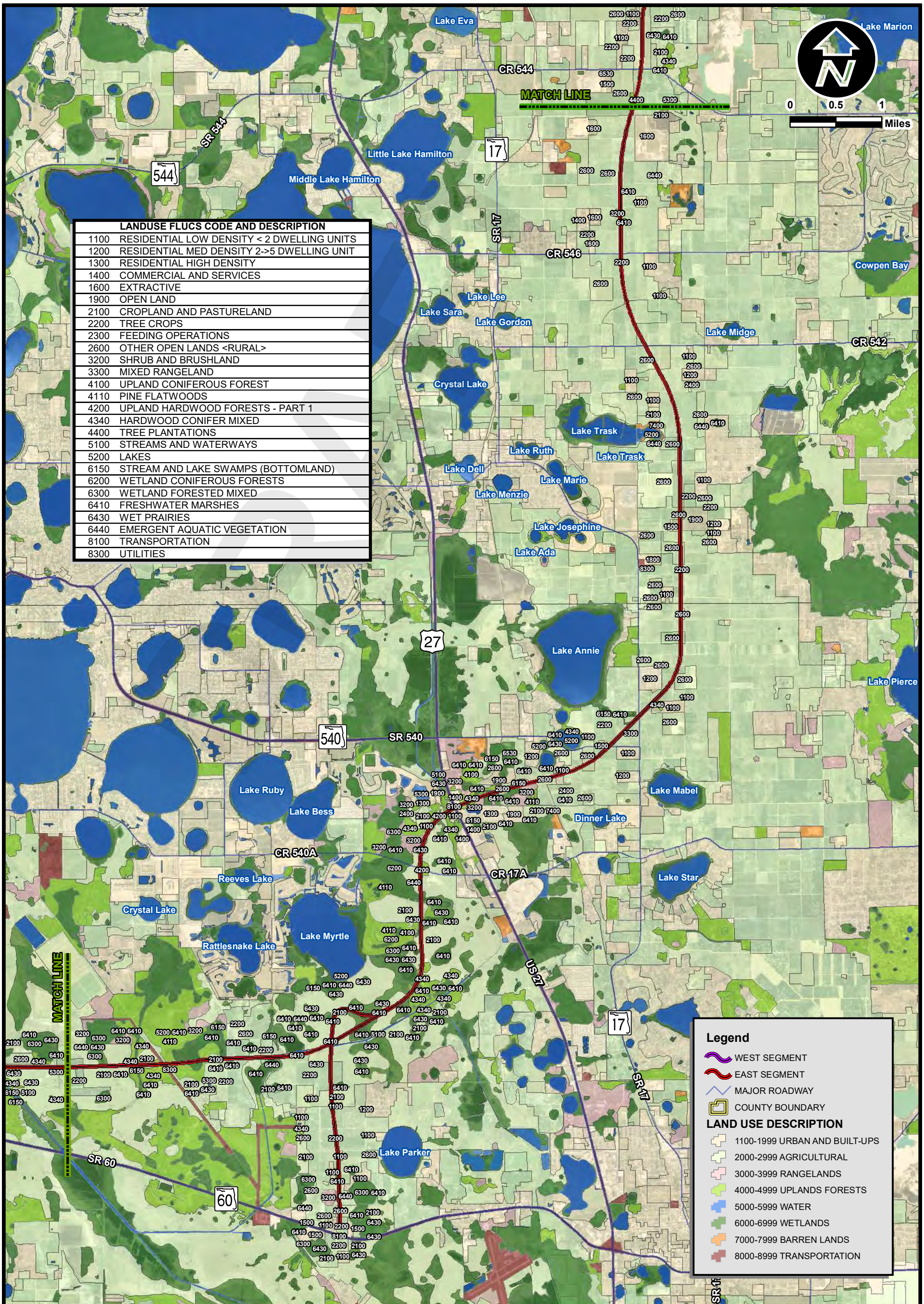
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
EXISTING LAND USE MAP

FIGURE

6-1



FPID: 423601-1-22-01

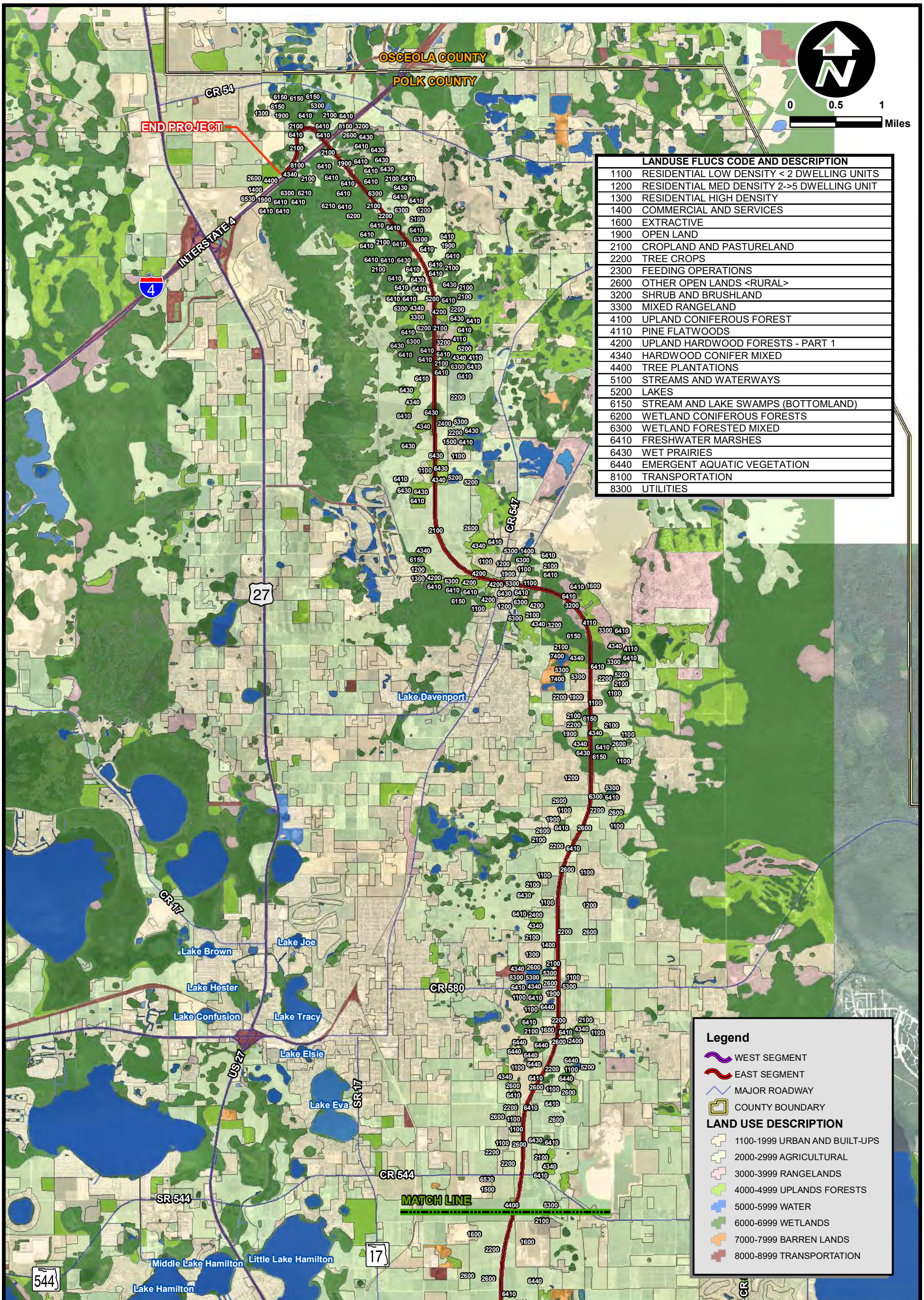
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
EXISTING LAND USE MAP

FIGURE

6-2



LANDUSE FLUCS CODE AND DESCRIPTION	
1100	RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS
1200	RESIDENTIAL MED DENSITY 2->5 DWELLING UNIT
1300	RESIDENTIAL HIGH DENSITY
1400	COMMERCIAL AND SERVICES
1600	EXTRACTIVE
1900	OPEN LAND
2100	CROPLAND AND PASTURELAND
2200	TREE CROPS
2300	FEEDING OPERATIONS
2600	OTHER OPEN LANDS <RURAL>
3200	SHRUB AND BRUSHLAND
3300	MIXED RANGELAND
4100	UPLAND CONIFEROUS FOREST
4110	PINE FLATWOODS
4200	UPLAND HARDWOOD FORESTS - PART 1
4340	HARDWOOD CONIFER MIXED
4400	TREE PLANTATIONS
5100	STREAMS AND WATERWAYS
5200	LAKES
6150	STREAM AND LAKE SWAMPS (BOTTOMLAND)
6200	WETLAND CONIFEROUS FORESTS
6300	WETLAND FORESTED MIXED
6410	FRESHWATER MARSHES
6430	WET PRAIRIES
6440	EMERGENT AQUATIC VEGETATION
8100	TRANSPORTATION
8300	UTILITIES

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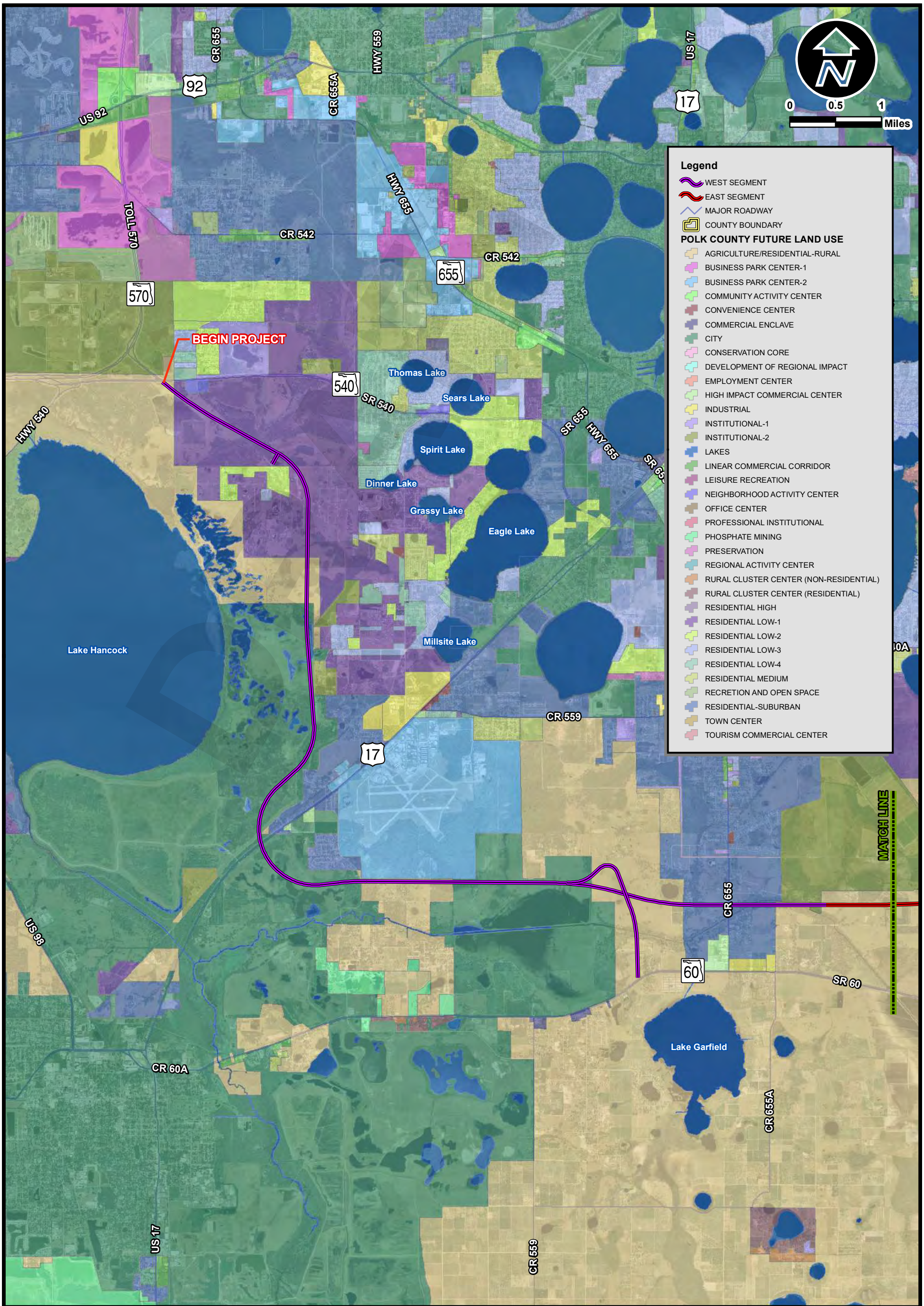
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
EXISTING LAND USE MAP

FIGURE

6-3



FPID: 423601-1-22-01

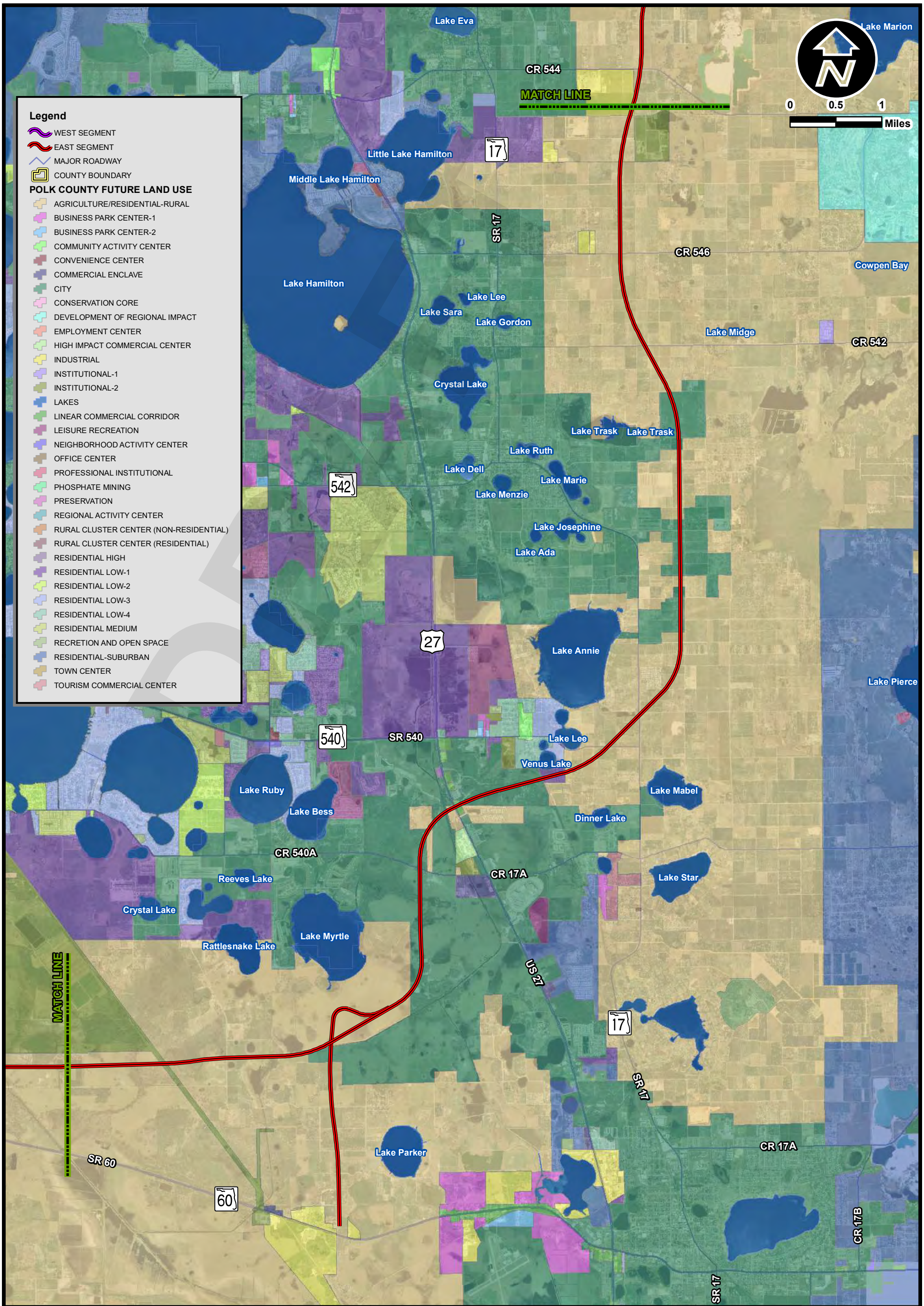
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FUTURE LAND USE MAP

FIGURE

7-1



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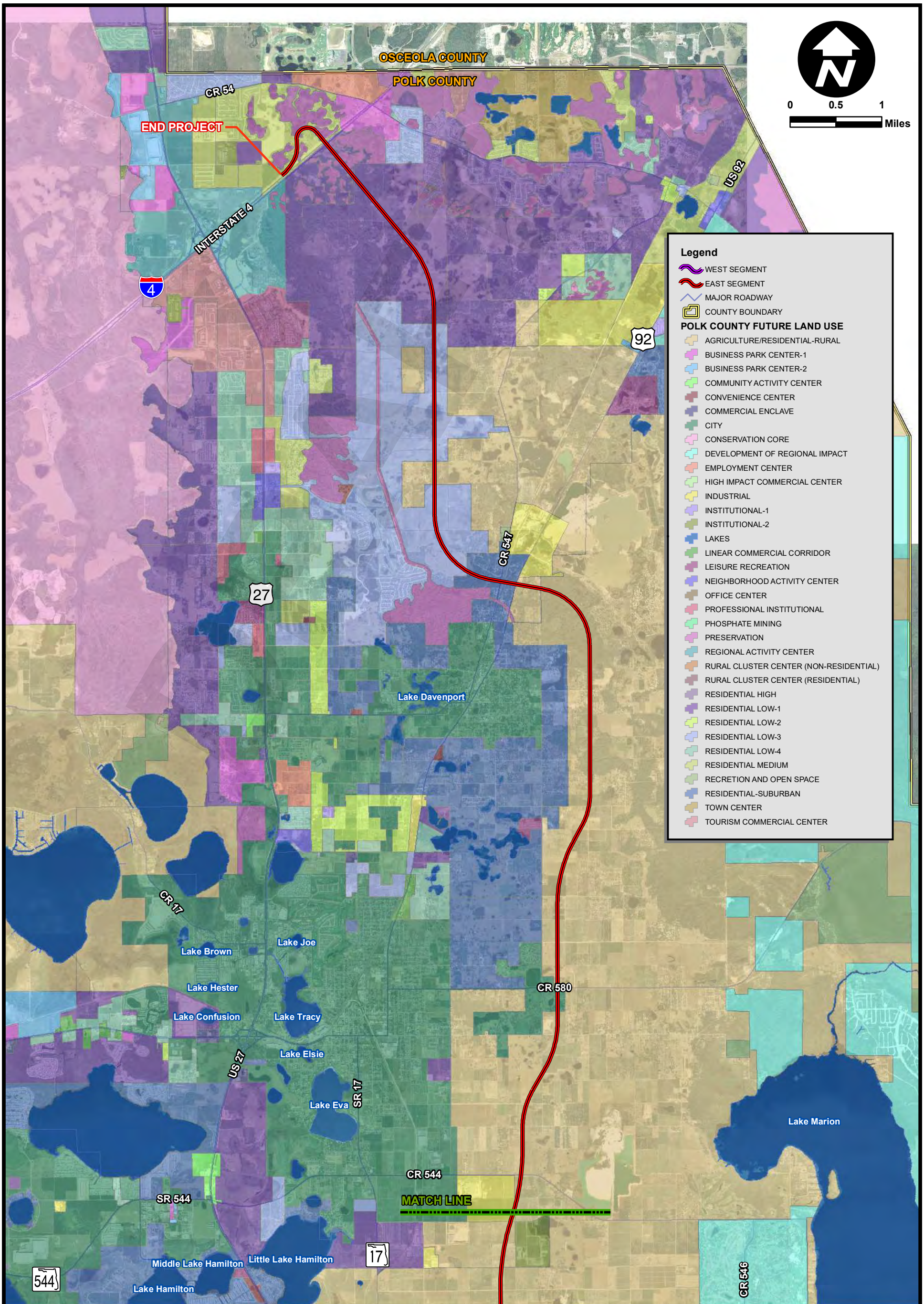
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FUTURE LAND USE MAP

FIGURE

7-2



FPID: 423601-1-22-01

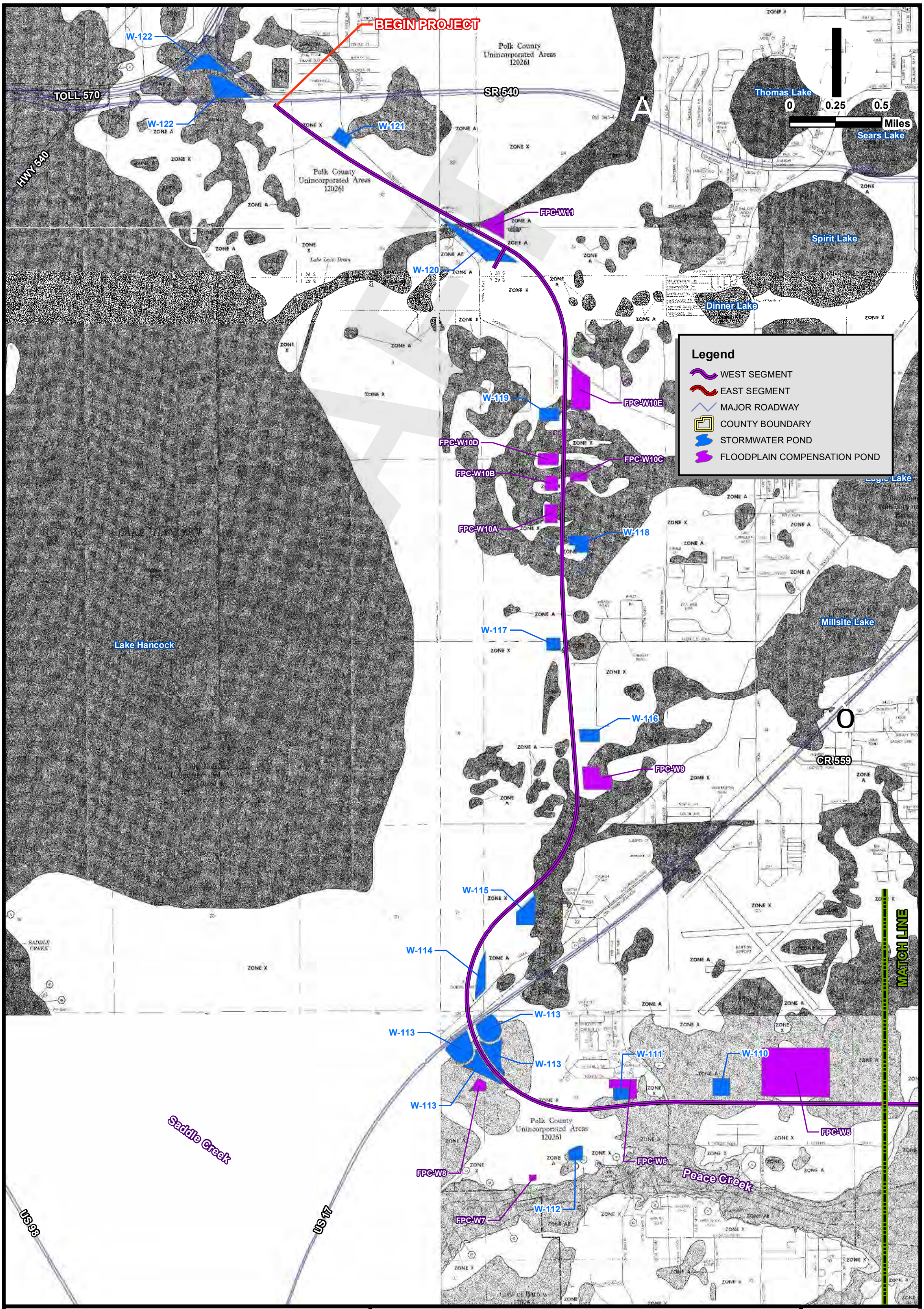
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FUTURE LAND USE MAP

FIGURE

7-3



FPID: 423601-1-22-01

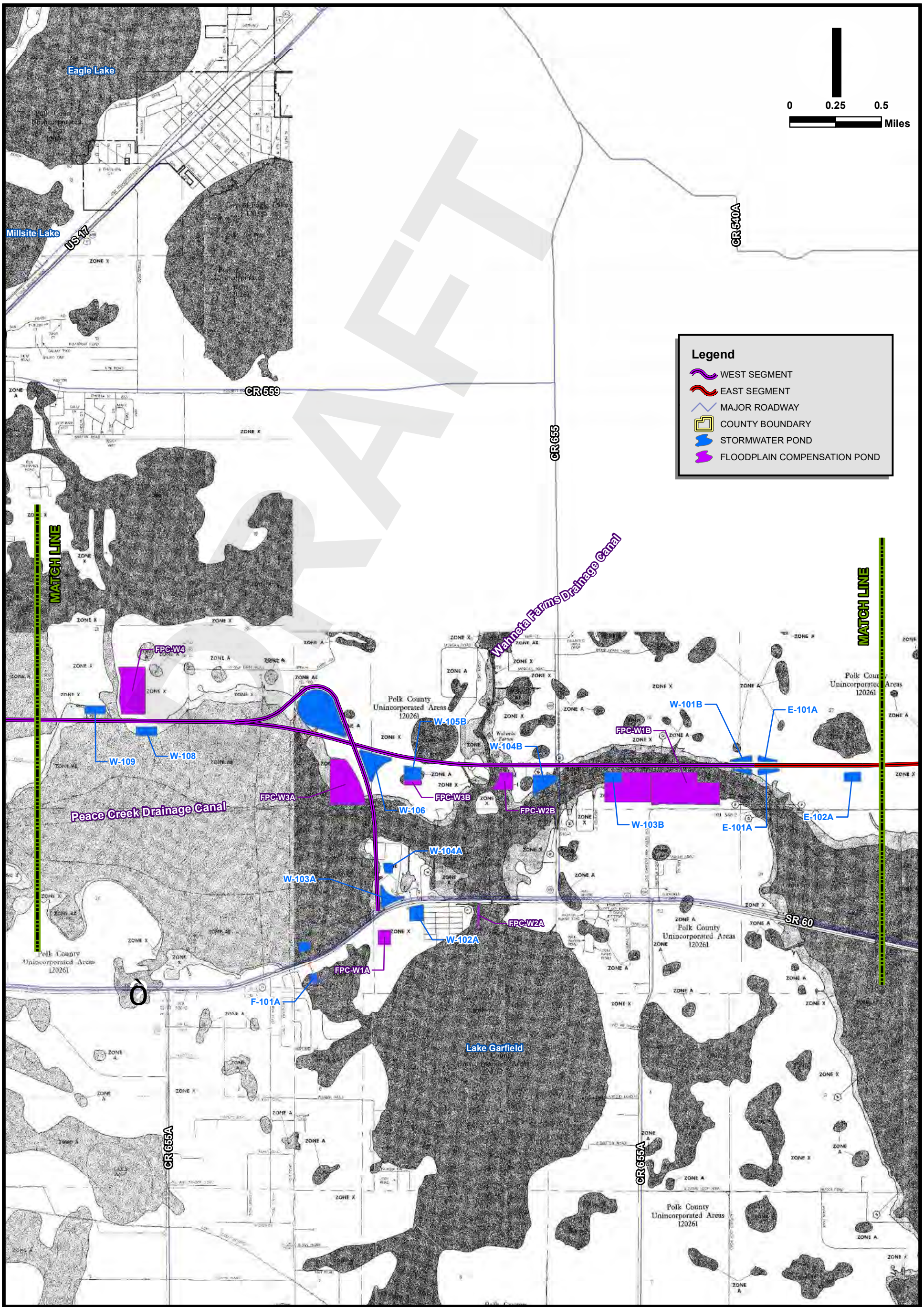
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-1A



FPID: 423601-1-22-01

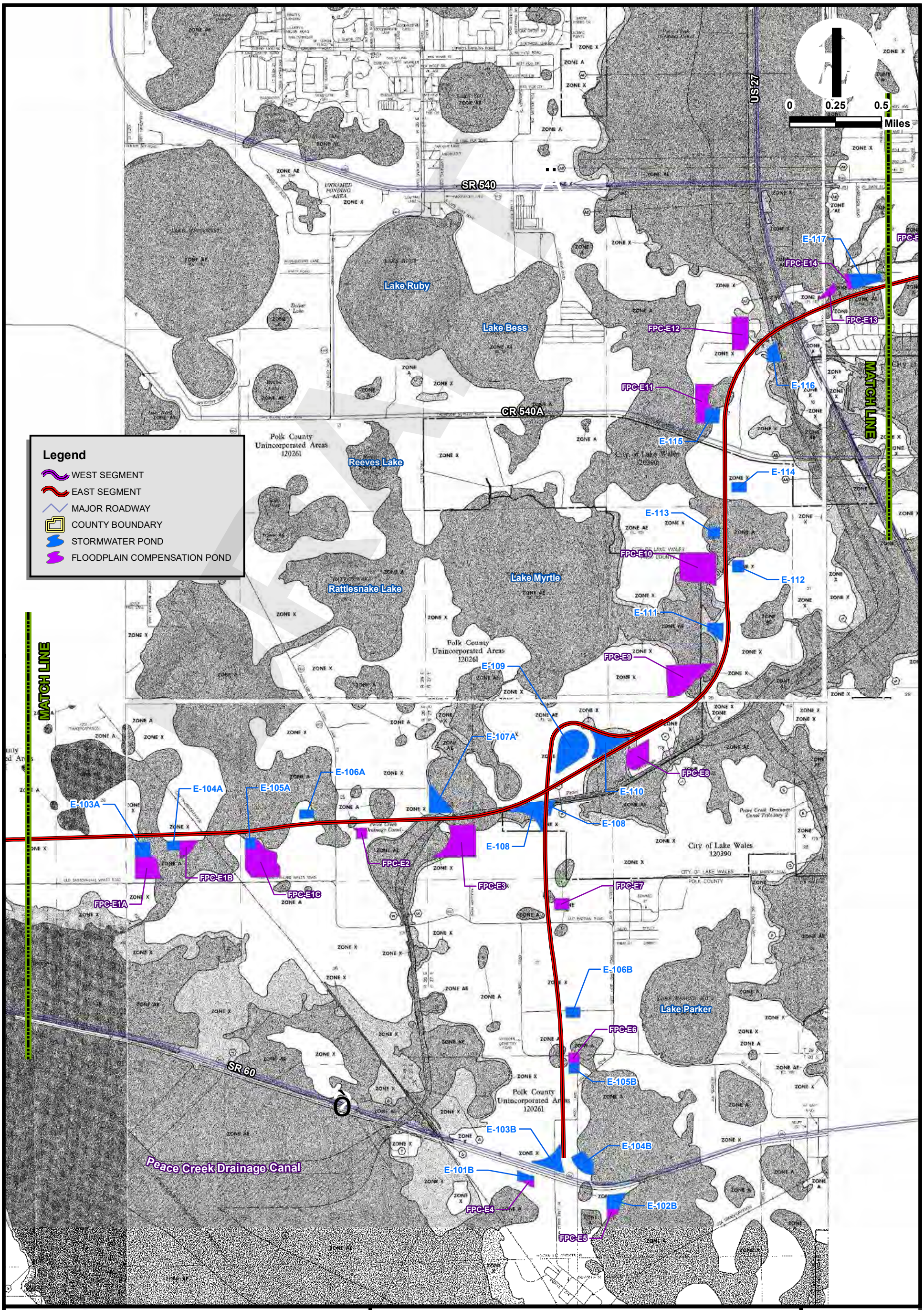
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-1B



FPID: 423601-1-22-01

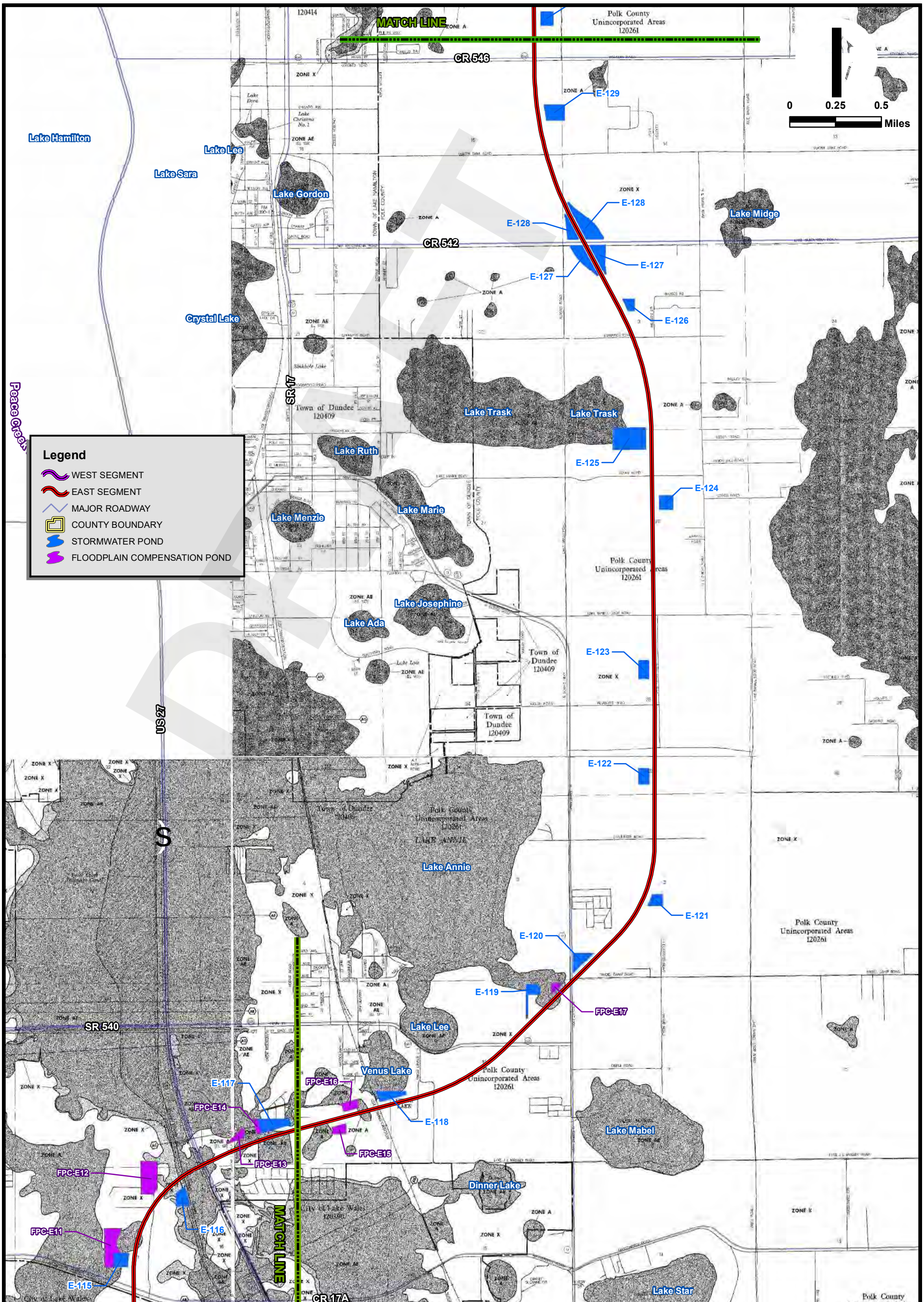
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-2A



FPID: 423601-1-22-01

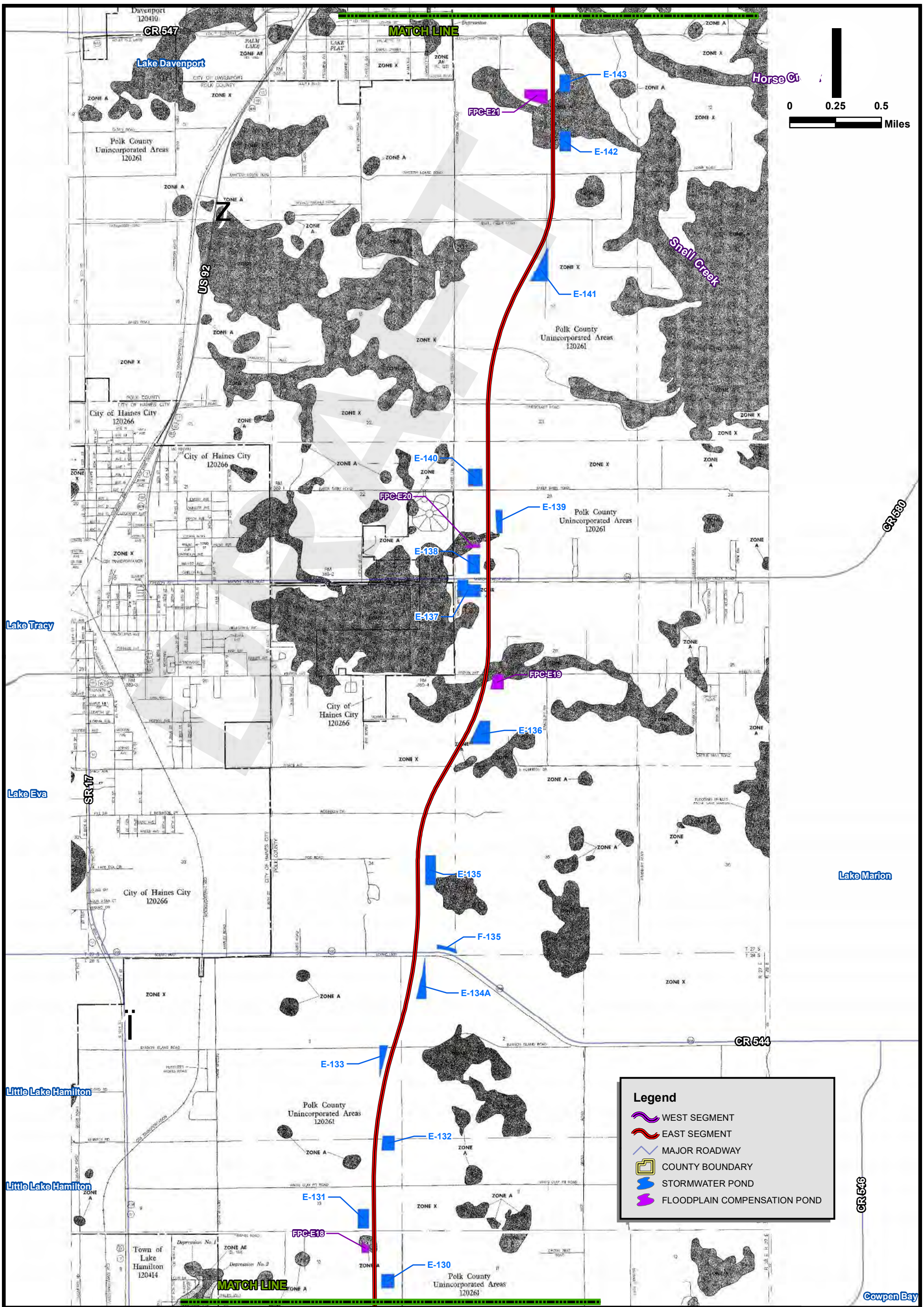
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-2B



FPID: 423601-1-22-01

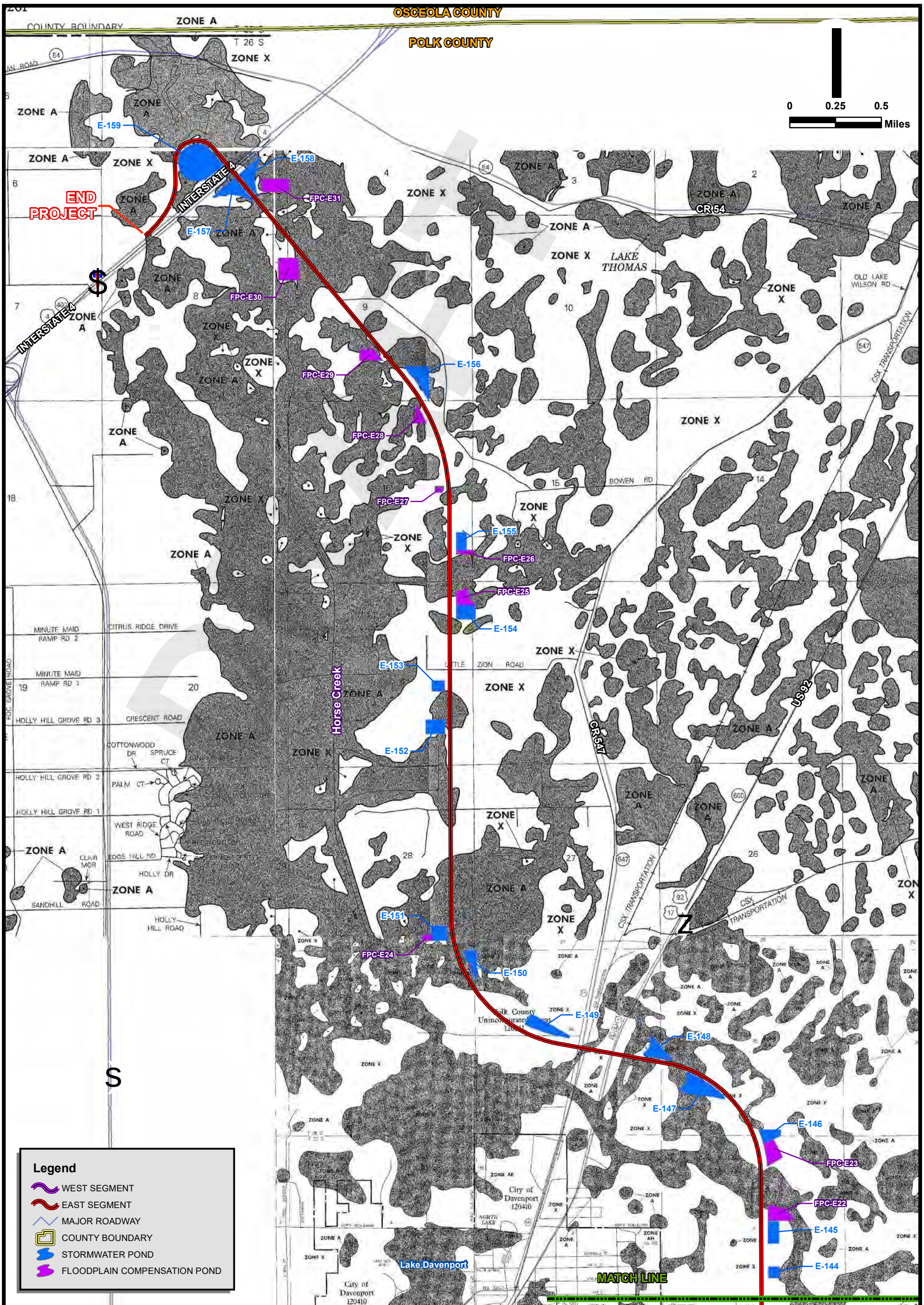
FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-3A



FPID: 423601-1-22-01

FROM S.R. 60 TO THE POLK PARKWAY (S.R. 570) & S.R. 60 TO INTERSTATE 4

POLK COUNTY, FLORIDA

CENTRAL POLK PARKWAY PD&E STUDY
FEMA FLOOD INSURANCE RATE MAP
(WITH POND SITES AND CROSSDRAINS)

FIGURE

8-3B

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APPENDIX B

Drainage Criteria Matrix

Drainage Design Criteria Matrix
Project Development and Environment Study
Central Polk Parkway
From SR 60 to Polk Parkway (SR 570) and I-4
Polk County

Design Parameter		SWFWMD Criteria	FDOT Criteria	Drainage Criteria to be Used
Storm Sewer	Design Frequency and Analysis for Pipe Hydraulics	N/A	Rational Method required. General design = 10-year/24-hour Composite C-value - Impervious=0.95, Pervious=0.20	FDOT
	Spread	N/A	Analyze with 4 in./hr. rainfall intensity. Based on design speed, 1/2 of lane shall remain clear (45mph or less). Keep 8' of lane clear (between 45 mph to 55 mph). With shoulder gutter, 10-year freq. storm shall not exceed 1'-3" outside gutter toward front slope.	FDOT
	Inlet Types	N/A	FDOT Inlets (Design Standards 2010)	FDOT
	Maximum Inlet Interception Rates	N/A	FDOT Storm Drain Handbook (2004) Appendix A (Inlet Efficiencies)	FDOT
	Inlet Placement	N/A	Inlets shall be placed at all low points in the gutter grade. For curb inlets on a continuous grade, a maximum spacing of 300 feet shall be used unless spread calculations indicate a greater spacing is acceptable. Curb inlets shall be placed at the critical section prior to the level section in superelevated transitions. Refer to the FDOT Drainage Manual Section 3.7.1.1	FDOT
Storm Sewer	System Velocity	N/A	Min. velocity = 2.5 fps when flowing full	FDOT
	Pipe Lengths	N/A	18" Pipe - max. 300 ft. 24" to 36" - max 400 ft. 42" and larger - max. 500 ft.	FDOT
	Hydraulic Grade Line	N/A	Friction and energy losses due to pollution control and utility conflict structures shall be considered for the storm sewer design event (3-year/24-hour). If minor losses are not considered in addition to the above losses, the HGL for the design storm shall be at least 1 ft. below the theoretical gutter elevation. If all minor losses are considered, the HGL elevation can reach the gutter elevation. This criteria does not apply to DBI's or structures where temporary ponding is not objectionable.	FDOT (minor losses will be considered in the storm sewer design)

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Drainage Design Criteria Matrix
Project Development and Environment Study
Central Polk Parkway
From SR 60 to Polk Parkway (SR 570) and I-4
Polk County

Design Parameter		SWFWMD Criteria	FDOT Criteria	Drainage Criteria to be Used
Storm Sewer	Design Tailwater	N/A	When discharging to stormwater ponds, the tailwater shall be the elevation of the pond at the peak inflow into the pond for the storm sewer design event (3-year/24-hour). The tailwater shall be computed assuming the pond control orifice plugged and starting initial pond elevation at the weir. For free flowing ditches - normal depth in the ditch at the storm drain outlet for storm drain design event (may differ from ditch design event). For ditches with downstream control - the higher of either the stage due to free flow conditions or the maximum stage at the storm drain outlet due to backwater from the downstream control using flows from the storm drain design event. When discharging to existing storm drain systems - the tailwater shall be the elevation of the HGL of the existing system at the location of the connection for the storm drain design storm event.	FDOT
Storm Sewer	Pipe Clearance	N/A	When flexible pavement is used, the minimum distance between the bottom of the roadway base material and the top of the pipe (outside edge) is 7" for concrete pipe and at least 12" for other pipe materials as specified in the FDOT Standard Index 205. Utilities - If utility has been accurately located, clearance between the outside of the storm drain pipe and the utility shall not be less than 6 in. If the location of the utility has been estimated, the clearance should not be less than 1ft.	FDOT
	Pipe Material	N/A	Optional Material Analysis to be performed for this project. Culvert Service Life Estimator (CSLE) program will be used for selection of appropriate materials.	FDOT
	Pipe Size	N/A	Trunk line and lateral, min. = 18". Does not apply to discharge systems from Stormwater Mgmt. Facilities	FDOT

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Drainage Design Criteria Matrix
Project Development and Environment Study
Central Polk Parkway
From SR 60 to Polk Parkway (SR 570) and I-4
Polk County

Design Parameter		SWFWMD Criteria	FDOT Criteria	Drainage Criteria to be Used
Culvert Design	Minimum Size and Length	N/A	Crossdrain = 18"; Median Drain = 15"/18"; Side Drain = 15"/18"; Box Culvert = 3' x 3' (Precast) 4' x 4' (Cast in Place). Pipe lengths shall follow the criteria for storm sewers. Max. Length for box culverts=500 feet.	FDOT
	Design Procedure	N/A	Refer to the FDOT Drainage Manual Chapter 4 and the FDOT Drainage Handbook Culvert Design.	FDOT
Hydrologic and Hydraulic Calculations for all other Drainage Features	Peak Discharge and Runoff Volume	Use one of the following methods: 1.) SCS Curve Number and Unit Hydrograph Method, 2.) Rainfall minus losses and storage or 3.) Rational Method, for systems serving projects less than 10 acreas (contributing) 4.) Other hydrographs methods approved by the District	For Open Channels and Crossdrains-Use gauge data when available. If not available, use regional or local regression equations (USGS) or use the rational equation for drainage areas up to 600 acres. For Stormwater Management Facilities, one of the following is acceptable: (1) for basins with a tc of 15 minutes or less, the modified rational method shall be used OR (2) the SCS Unit Hydrograph method shall be used.	SWFWMD - SCS unit-hydrograph method Uh256
	Design Frequency	Stormwater Management Facilities - 25 year-24 hour storm event.	Roadside Ditches-10-yr.; Outfall Ditches and Canals-25-yr.; Off-site crossdrains-50-yr (High use or essential).; Stormwater Management Facilities-Critical Duration Analysis (Chapter 14-86)	SWFWMD and FDOT Critical Duration (if applicable)
	Time of Concentration (T_C)	TR-55 (Overland flow, storm sewer flow, channel flow). Minimum Tc=10 minutes.	Velocity Method (Overland flow using Kinematic Wave equation, Shallow Channel Flow using V=kS^0.5, main channel flow using Manning's equation). Minimum Tc=10 minutes. TR-55 methodology acceptable.	TR-55 methodology (SWFWMD and FDOT accepted)
	Design Storm Duration	24-hour storm duration for stormwater mgmt facilities	24-hour storm duration for closed drainage systems and roadside ditches. Chapter 14-86 - Critical Duration Analysis (1-hour through 10-day duration)	SWFWMD and FDOT Critical Duration (if applicable)
	Rainfall Distributions	SWFWMD Distribution table from SWFWMD Technical Memorandum, Basis of Review For Environmental Resource Permit Applications Within the South Florida Water Management District, or NRCS	FDOT Rainfall Distributions	SWFWMD and FDOT Critical Duration (if applicable)

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Drainage Design Criteria Matrix
Project Development and Environment Study
Central Polk Parkway
From SR 60 to Polk Parkway (SR 570) and I-4
Polk County

Design Parameter		SWFWMD Criteria	FDOT Criteria	Drainage Criteria to be Used
Hydrologic and Hydraulic Calculations for all Other Drainage Features	Water Quality/Treatment (Wet Detention/Dry Retention)	Required treatment volume = 1" over impervious area or 1/2" over entire developed area (Dry Retention Systems). 1" over entire developed area (Wet Detention Systems) Pre - Post Pollutant Loading Calculations for Impaired Water Body will be required.	Specified by the Regulatory Agency (SWFWMD)	SWFWMD
	Water Quantity/Attenuation	**Open Basins:** Post-development peak discharges shall be at or below pre-development peak discharges for the 25-year/24-hour storm events. **Closed Basins:** Pre and Post development difference in volume for the 100-year/24 hour storm be retained and the discharge rates not be increased for the 25-year/24-hour storm over the pre-developed conditions	Post-development peak discharge rates and volumes cannot exceed pre development peak discharge rates and volume for all frequencies and durations from the 2-year/1-hour storm event to the 100-year/10-day storm event (closed basins) and up to the 3-day duration (open basins) and those in between (Critical Duration Analysis)	SWFWMD and FDOT Critical Duration (if applicable)
	Off-site Flows	N/A	When possible, offsite discharges should be separated from the FDOT facilities.	FDOT
Retention and Detention Facilities	Pond Configuration - Wet Ponds (for additional info, see Open Drainage Facilities)	Shallow, littoral areas are desirable for water quality enhancement (Please see Littoral Zone for more information). Wet Detention: Width shall be designed with a 100ft for linear areas in excess of 200 ft in length. (To be waived if operated by a single owner). Depth - Shall not be excavated to a depth that breaches an aquitard (impermeable or confined aquifers).	Pond Depth specified by Regulatory Agency (SWFWMD).	SWFWMD
Retention and Detention Facilities	Littoral Zone (Wet Detention)	Min. 35% littoral zone, conc. At the outfall. % littoral zone = vegetated area/pond area at control elevation. Shall be no deeper than 3.5 feet below the design overflow elevation.	Specified by the Regulatory Agency (SWFWMD)	SWFWMD
	Water Quality/Quantity Volume Recovery Rate (Wet Detention/Dry Retention)	**We Detention:** Treatment volume shall be discharged in no less than 120 hours (5 days) with no more than 1/2 total volume beign discharged within the first 60 hours (2.5 days). Gravity control devices shall be designed to dishcarge one-half of the detention volume within 24 hours. **Retention Systems:** drawdown the required treatment volume within 72 hours following a storm event.	Specified by the Regulatory Agency (SWFWMD)	SWFWMD

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Drainage Design Criteria Matrix
Project Development and Environment Study
Central Polk Parkway
From SR 60 to Polk Parkway (SR 570) and I-4
Polk County

Design Parameter		SWFWMD Criteria	FDOT Criteria	Drainage Criteria to be Used
Retention and Detention Facilities	Orifice/Bleeder Devices (Wet Detention)	Drawdown devices shall incorporate dimensions no smaller than 6 square inches of cross-section area that is 2 inches wide or less than 20º for "V" notches shall include a device to eliminate clogging.	Specified by the Regulatory Agency (SWFWMD)	SWFWMD
	Skimmer	Systems which receive stormwater from areas with greater than 50% impervious area (excluding water bodies) or which are a potential source of oil and grease, must include a baffle, skimmer, grease trap or other mechanism suitable for preventing oil and grease from leaving the stormwater system in concentrations that would cause a violation of water quality standards.	Oil skimmer is required and should be designed to function from an elevation 6 in. below the elevation of inflow to the outfall control structure to an elevation 6 in. above the DHW of the pond. It should also cover all directions of inflow to the outfall control structure.	FDOT
	Erosion Control Measures	N/A	Sod from the Pond Berm up to 2' below the Control Elevation (NWL)	FDOT
Floodplain	Compensation	"Cup for cup" method; design storm is 100-year/24-hr for floodplain compensation and flood protection of finished floors.	Specified by the Regulatory Agency (SWFWMD)	FDOT and SWFWMD
Open Drainage Facilities (Ponds, Ditches, Canals)	Minimum Requirement for Maintenance Berms around Perimeter of Ponds	N/A	Ponds - 20 ft. clearance between top edge of normal pool elevation and R/W line. At least 15 ft. of berm adjacent to the pond shall be at a 1:8 slope or flatter. For wet ponds, keep the lowest point of the maintenance berm at least 1 foot above the top of the treatment volume to minimize saturation of the maintenance berm. 1 ft. of freeboard is required above the maximum DHW. Inside edge of the berm shall have a minimum 35 ft. radius to accommodate the largest maintenance equipment.	FDOT
	Maximum Side Slopes for Ditches/Canals	For permanently wet ponds or ditches, side slopes can be no steeper than 1:4 (average pond side slope) out to a depth of 2-feet below the control elevation.	Based on FDOT Clear Zone Criteria	FDOT
	Maximum Side Slopes for Ponds		Use a 1:4 side slope for ease with maintenance. Side slopes steeper than 1:3 require special equipment for mowing.	SWFWMD

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Drainage Design Criteria Matrix
Project Development and Environment Study
Central Polk Parkway
From SR 60 to Polk Parkway (SR 570) and I-4
Polk County

Design Parameter		SWFWMD Criteria	FDOT Criteria	Drainage Criteria to be Used
Open Drainage Facilities (Ponds, Ditches, Canals)	Minimum Longitudinal Slope	N/A	0.0005 ft./ft.	FDOT
	Minimum Bottom Width	N/A	V-bottom allowed on ditches.	FDOT
	Tailwater Conditions for Ponds	For regulated systems the design and maintained stage elevations are available either from the respective local jurisdiction or the District. For non-regulated systems, water stages are computed from the best available data and must be submitted to the District for review and concurrence.	Free flowing ditches - normal depth in the ditch at the storm drain outlet for storm drain design event (may differ from ditch design event). For ditches with downstream control - the higher of the stage due to free flow conditions or the maximum stage at the storm drain outlet due to backwater from the downstream control using flows from the storm drain design event. When discharging to existing storm drain systems - the tailwater shall be the elevation of the HGL of the existing system at the location of the connection for the storm drain design storm event.	SWFWMD and FDOT
	Erosion Control Measures (by max. velocity)	N/A	Grass with Mulch - Bare Soil, Sod - 4 fps max vel., Riprap (rubble) ditch lining - 6 fps max vel. (refer to FDOT Drainage Manual, Table 2.4)	FDOT
	Minimum Freeboard	N/A	1 ft. above DHW elevation. Less freeboard is acceptable when a permanent containment, such as concrete, is provided.	FDOT
	Swales	Top width to depth ratio of the cross section equal to or greater than 6:1 or side slopes equal to or greater than 3:1 (horizontal to vertical).	Swale drainage only permitted in Type A Soils conditions	SWFWMD and FDOT

Criteria Sources:

1. SWFWMD - Environmental Resource Permit Information Manual Volume IV (2008
2. FDOT - Drainage Manual (2010), Drainage Handbook Culvert Design (2004), Drainage Handbook Hydrology (2005), Drainage Handbook Erosion and Sediment Control (2007), Drainage Handbook Storm Drains (2008), Drainage Handbook Stormwater Mgmt. Facility (2004) Drainage Handbook Temporary Drainage Design (2001)

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APPENDIX C

Eastern Leg

(Volume II of II)

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APPENDIX C

Western Leg

(See Volume II)

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APPENDIX D

Engineering and Impact Analysis

Inwood consulting engineers
3000 Dovera Drive, Suite 200, Oviedo Fl 32765
(407)971-8850 - (407) 971-8955 (fax)

Central Polk Parkway - From S.R. 60 to Polk Parkway (S.R. 547) & From S.R. 60 to Interstate 4

ALTERNATIVE POND SITES - EAST SEGMENT

ENGINEERING DATA & ANALYSIS

Pond Selections	Basin	Location		Existing Ground Elevation (ft)	Soil Names & Hydrologic Groups		Impaired Water Body	Wet Detention / Dry Retention	Open / Closed System	Estimated SHWT Elevation (ft)	Lowest Edge of Existing Roadway (ft)	Distance From Furthest Point of Proposed Roadway (ft)	Estimated Allowable DHW (ft)	Estimated Allowable Treatment & Attenuation Depth (ft)	Outfall Location	Roadway Drainage Area (ac)	Required Treatment & Attenuation Volume (ac-ft)	Required Pond Area Including Access (ac)
		Station	Parcel Number		HSG	Soil Name	YES/NO											
E-101A	E-101A	5004+00	262927000000042010 262927000000023010	115.00	D	Imokalee Sand, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	114.50	127.83	400	117.00	2.50	Peace Creek	23.75	3.14	3.20
E-102A	E-102A	5028+00	262927000000021000	124.00	C	Pomello Fine Sand	YES	Dry Retention	Open	122.00	125.83	400	124.50	1.50	CDE-01	18.71	1.62	2.82
E-103A	E-103A	5074+00	262927000000021010	116.00	C, D	Zolfo Fine Sand, Smyrna and Myakka Fine Sands, Felda Fine Sand, Wauchula Fine Sand	YES	Wet Detention	Open	115.00	119.33	100	118.80	3.80	CDE-02	39.46	6.03	4.46
E-104A	E-104A	5082+50	262926000000021010	116.50	D	Felda Fine Sand, Wauchula Fine Sanc	YES	Wet Detention	Open	116.00	128.33	300	118.20	2.20	CDE-02	14.82	1.80	2.19
E-105A	E-105A	5104+50	262925000000031020	118.00	D	Pomona Fine Sand	YES	Wet Detention	Open	117.50	122.33	300	119.00	1.50	CDE-03	15.06	1.18	2.11
E-106A	E-106A	5122+00	262925000000031020	121.00	C, D	Adamsville Fine Sand, Imokalee Sand	YES	Wet Detention	Open	120.50	124.33	450	122.50	2.00	CDE-03	16.35	1.47	2.28
E-107A	E-107A	5122+00	272930000000043010	121.50	A, C	Tavares Fine Sand, 0 to 5 PCT Slopes, Adamsville Fine Sand	YES	Wet Detention	Open	119.50	124.33	300	122.50	3.00	Wetlands	26.89	4.12	3.37
E-101B	E-101B	8000+00	273006000000014020	122.00	C	Zolfo Fine Sand	YES	Wet Detention	Open	117.00	121.00	1000	120.00	3.00	Wetlands	12.30	2.19	1.93
E-102B	E-102B	8000+00	273005000000041020	120.00	C	Zolfo Fine Sand	YES	Wet Detention	Open	118.00	122.20	400	121.20	3.20	Wetlands	32.99	6.04	4.07
E-103B	E-103B	8000+00	273006000000021050, 273006000000012080, 273006000000012020, 273006000000012070, 273006000000012100, 273006000000021060	129.00	A, C	Archbold Sand, 0 to 5 PCT Slopes, Zolfo Fine Sand	YES	Dry Retention	Open	126.50	129.83	200	129.00	1.50	Wetlands	24.85	2.47	6.47
E-104B	E-104B	8000+00	273006000000012100, 273006000000021060, 273005000000034010 273005000000043010	126.00	C, D	Zolfo Fine Sand, Imokalee Sand, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	125.50	132.33	500	129.00	3.50	Wetlands	45.89	7.63	6.03
E-105B	E-105B	8026+00	273006000000011010	127.00	C, D	Zolfo Fine Sand, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	125.50	132.33	500	129.50	4.00	Wetlands	15.97	2.66	2.09
E-106B	E-106B	8042+00	272931000000024080, 272931000000022010	130.00	C	Adamsville Fine Sand, Sparr Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	128.00	134.33	600	132.00	3.00	Wetlands	33.03	3.34	3.03
E-108	E-108	5186+00	272930000000021010, 272930000000024000	119.00	D	Basinger Mucky Fine Sand, Depressional, Ona Fine Sand, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	119.00	125.33	100	121.00	2.00	Peace Creek	59.98	8.37	9.02
E-109	E-109	5204+00	272930000000011020, 272930000000011030	121.00	C, D	Adamsville Fine Sand, Basinger Fine Sand, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	120.50	124.33	1000	122.00	1.50	Peace Creek	60.59	7.81	17.58
E-110	E-110	5214+50	272930000000011030, 272929000000031000	118.00	D	Basinger Mucky Fine Sand, Depressional, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	117.50	122.33	370	119.00	1.50	Peace Creek	45.06	6.41	9.83
E-111	E-111	5265+00	272920000000010000	120.00	D	Basinger Fine Sand	YES	Wet Detention	Open	117.00	125.33	375	122.00	5.00	CDE-06	20.33	7.83	3.85
E-112	E-112	5284+00	272920000000010000	123.00	D	Imokalee Sand, Wauchula Fine Sand	YES	Wet Detention	Open	121.00	127.33	500	124.50	3.50	CDE-07	21.01	7.32	4.59
E-113	E-113	5293+00	272920000000010000	123.00	D	Smyrna and Myakka Fine Sands, Wauchula Fine Sand	YES	Wet Detention	Open	121.00	126.33	600	124.50	3.50	CDE-07	12.29	6.65	4.09
E-114	E-114	5307+00	272917000000021000	123.75	D	Pomona Fine Sand	YES	Wet Detention	Open	123.25	126.33	350	125.00	1.75	CDE-08	15.98	1.99	2.72
E-115	E-115	5327+00	272917000000014020	121.50	D	Pomona Fine Sand, Samsula Muck, Basinger Fine Sand	YES	Wet Detention	Open	121.50	125.00	100	123.50	2.00	Wetlands	24.46	3.13	3.83
E-116	E-116	5352+00	272917000000011010	121.00	D	Imokalee Sand, Felda Fine Sand, Depressional, Holopaw fine Sand, Depressional	YES	Wet Detention	Open	120.50	125.00	300	122.70	2.20	Peace Creek	28.27	3.47	3.63
E-117	E-117	5386+00	272909000000021030	122.00	D	Pomona Fine Sand	YES	Wet Detention	Open	121.50	127.33	1000	124.00	2.50	CDE-09	59.99	7.69	6.30
E-118	E-118	5420+00	272909000000021020, 272910000000044010	127.00	A, C	Tavares Fine Sand, 0 to 5 PCT Slopes, Zolfo Fine Sand	YES	Dry Retention	Open	124.00	129.83	1000	129.00	4.00	CDE-10	36.02	6.58	4.00
E-119	E-119	5473+00	272910000000011000	126.00	A	Tavares Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	120.00	129.83	300	123.60	2.60	Wetlands – Lake Annie	22.73	3.29	2.67
E-120	E-120	5490+00	272902000000044070	148.00	A	Candler Fine Sand, 0 to 5 PCT Slopes, Candler Fine Sand, 5 to 8 PCT Slopes	YES	Dry Retention	Open	142.00	145.83	100	144.50	1.50	Wetlands – Lake Annie	22.04	3.05	4.07
E-121	E-121	5516+00	272902000000041000	175.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	171.00	177.33	500	175.80	3.80	CDE-12	23.32	4.23	2.75
E-122	E-122	5551+00	272835000000042020	210.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	204.00	208.80	500	207.50	2.50	Local Depression	23.38	4.16	3.18
E-123	E-123	5582+00	272835000000032010	183.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	181.00	186.50	100	186.50	4.50	CDE-13	32.80	6.02	3.58

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Central Polk Parkway - From S.R. 60 to Polk Parkway (S.R. 547) & From S.R. 60 to Interstate 4

ALTERNATIVE POND SITES - EAST SEGMENT

ENGINEERING DATA & ANALYSIS

Pond Selections	Basin	Location		Existing Ground Elevation (ft)	Soil Names & Hydrologic Groups		Impaired Water Body	Wet Detention / Dry Retention	Open / Closed System	Estimated SHWT Elevation (ft)	Lowest Edge of Existing Roadway (ft)	Distance From Furthest Point of Proposed Roadway (ft)	Estimated Allowable DHW (ft)	Estimated Allowable Treatment & Attenuation Depth (ft)	Outfall Location	Roadway Drainage Area (ac)	Required Treatment & Attenuation Volume (ac-ft)	Required Pond Area Including Access (ac)
		Station	Parcel Number		HSG	Soil Name	YES/NO											
E-124	E-124	5630+00	272826000000014030	171.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	165.50	175.33	100	171.00	4.50	Local Depression	35.05	6.37	3.65
E-125	E-125	5648+00	272826000000031030	127.00	A, D	Candler Fine Sand, 0 to 5 PCT Slopes, Hontoon Muck	YES	Wet Detention	Open	124.00	128.83	350	126.00	2.00	Lake Trask	43.86	16.69	14.22
E-126	E-126	5688+00	272823000000032020	163.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	157.00	173.33	200	161.30	3.30	Local Depression	17.87	3.07	2.08
E-127	E-127	5705+00	272823000000033020, 272823000000031010	188.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	182.50	185.33	200	184.00	0.50	Local Depression	24.12	2.70	10.32
E-128	E-128	5715+00	272815000000022010, 272814000000044030, 272814000000044010, 272814000000044020	189.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	186.00	190.33	200	187.50	0.50	Local Depression	29.89	3.37	12.12
E-129	E-129	5749+00	272815000000012010	142.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	136.50	165.33	200	142.00	4.50	CDE-15	37.96	14.23	6.07
E-130	E-130	5776+00	272810000000022050	154.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	148.00	170.33	200	155.50	6.50	Local Depression	15.74	9.66	3.66
E-131	E-131	5795+00	272810000000012030	168.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	162.50	172.33	350	172.00	8.50	Local Depression	21.15	13.07	4.25
E-132	E-132	5816+00	272810000000011010	139.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	133.50	145.33	1000	137.10	2.60	CDE-16	24.06	4.28	3.20
E-133	E-133	5841+00	272803000000021020	132.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	131.00	145.33	1000	134.50	2.50	Local Depression	12.34	2.17	2.35
E-134	E-134	5865+00	272802000000033010	118.00	A	Candler Fine Sand, 0 to 5 PCT Slopes, Tavares Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	112.00	123.33	1000	118.00	5.00	CDE-17	39.55	6.95	3.54
E-135	E-135	5896+00	272734000000021020	105.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	99.00	110.33	600	103.00	3.00	Wetlands	47.09	9.50	5.99
F-135	F-135	5874+00	272734000000021020, 272734000000022010, 272802000000031050	105.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	99.00	110.33	600	107.00	7.00	Wetlands	5.39	0.89	1.59
E-136	E-136	5940+00	272726000000043010	118.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	112.00	117.33	600	115.00	2.00	CDE-19	39.84	7.14	6.54
E-137	E-137	5980+00	272726000000033010	124.00	A	Candler Fine Sand, 0 to 5 PCT Slopes, Fort Mead Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	118.00	130.33	300	122.00	3.00	Wetlands	36.95	5.69	6.17
E-138	E-138	5989+00	272723757500040310	127.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	121.00	130.33	500	123.50	1.50	Wetlands	22.24	3.29	4.15
E-139	E-139	6000+00	272723757500040130	124.00	A, D	Candler Fine Sand, 0 to 5 PCT Slopes, Samsula Muck	YES	Dry Retention	Open	118.00	125.33	300	123.00	4.00	CDE-21	15.51	4.16	2.62
E-140	E-140	6013+00	272723000000034000	125.50	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Wet Detention	Open	121.00	134.33	200	124.00	2.00	Wetlands	25.08	3.96	4.65
E-141	E-141	6076+00	272714739000030220, 272714739000010150	124.00	A	Candler Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Closed	121.00	130.33	1000	126.50	4.50	Local Depression	67.32	11.14	5.68
E-142	E-142	6114+00	272711000000023050, 272711000000023060	89.50	A, D	Candler Fine Sand, 0 to 5 PCT Slopes, Hontoon Muck	YES	Wet Detention	Open	85.00	90.33	1000	89.00	4.00	CDE-23	25.51	6.07	4.01
E-143	E-143	6130+00	272711000000012000	91.50	A, D	Tavares Fine Sand, 0 to 5 PCT Slopes, Hontoon Muck	YES	Wet Detention	Open	88.00	91.33	500	90.00	2.00	Snell Creek	23.15	2.23	3.36
E-144	E-144	6157+00	272702713000020170	116.00	A	Candler Fine Sand, 0 to 5 PCT Slopes, Candler Fine Sand, 5 to 8 PCT Slopes	YES	Wet Detention	Open	111.00	125.33	100	113.00	2.00	Wetlands	12.56	1.51	2.30
E-145	E-145	6169+00	272702713000020020	115.50	A, C	Candler Fine Sand, 0 to 5 PCT Slopes, Pomello Fine Sand	YES	Wet Detention	Open	113.50	117.33	500	115.00	1.50	Wetlands	25.09	3.14	4.54
E-146	E-146	6195+00	272702713000010010	105.00	D	Imokalee Sand	YES	Wet Detention	Open	101.50	109.83	300	105.30	3.80	Wetlands	22.00	6.51	3.73
E-147	E-147	6220+00	272635711500004010, 272635000000044010, 272635000000021010	107.00	D	Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	106.50	113.33	1000	109.50	3.00	Wetlands	55.68	16.44	10.66
E-148	E-148	6235+00	272635711500004010, 272634000000021070, 272634000000021050	110.00	D	Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	109.50	114.33	800	113.50	4.00	Wetlands	33.48	9.28	5.59
E-149	E-149	6270+00	272634711000000010	122.00	A	Candler Fine Sand, 0 to 5 PCT Slopes, Tavares Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	118.00	127.33	400	121.50	2.50	CDE-25	42.30	9.62	7.16
E-150	E-150	6300+00	272633000000011000	114.00	C, D	Samsula Muck, Narcoosee Sand	YES	Wet Detention	Open	112.00	116.33	200	115.50	3.50	CDE-26	23.32	6.81	4.27

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Central Polk Parkway - From S.R. 60 to Polk Parkway (S.R. 547) & From S.R. 60 to Interstate 4

ALTERNATIVE POND SITES - EAST SEGMENT

ENGINEERING DATA & ANALYSIS

Pond Selections	Basin	Location		Existing Ground Elevation (ft)	Soil Names & Hydrologic Groups		Impaired Water Body	Wet Detention / Dry Retention	Open / Closed System	Estimated SHWT Elevation (ft)	Lowest Edge of Existing Roadway (ft)	Distance From Furthest Point of Proposed Roadway (ft)	Estimated Allowable DHW (ft)	Estimated Allowable Treatment & Attenuation Depth (ft)	Outfall Location	Roadway Drainage Area (ac)	Required Treatment & Attenuation Volume (ac-ft)	Required Pond Area Including Access (ac)
		Station	Parcel Number		HSG	Soil Name	YES/NO											
E-151	E-151	6310+00	272628000000011000	111.00	C, D	Narcoosee Sand, Smyrna and Myakka Fine Sands, Samsula Muck	YES	Wet Detention	Open	110.50	115.83	800	114.50	4.00	CDE-26	34.36	6.34	3.99
E-152	E-152	6369+00	272621000000011000	115.00	C, D	Narcoosee Sand, Samsula Muck	YES	Wet Detention	Open	113.50	120.33	300	115.50	2.00	CDE-28	27.70	4.79	4.97
E-153	E-153	6381+00	272621000000011000	117.50	A, C, D	Tavares Fine Sand, 0 to 5 PCT Slopes, Narcoosee Sand, Samsula Muck	YES	Wet Detention	Open	114.00	118.33	400	115.30	1.30	CDE-28	10.04	1.75	2.54
E-154	E-154	6402+00	272621000000011000	116.00	C, D	Adamsville Fine Sand, Smyrna and Myakka Fine Sands, Samsula Muck	YES	Wet Detention	Open	115.50	120.33	350	117.60	2.10	Wetlands	24.75	5.13	4.99
E-155	E-155	6423+00	272616000000024000	117.00	D	Smyrna and Myakka Fine Sands, Basinger Mucky Fine Sand, Depressional	YES	Wet Detention	Open	116.50	120.33	700	118.90	2.40	CDE-29	19.46	3.50	3.56
E-156	E-156	6470+00	272609000000024280, 272609000000024110, 272609000000024100, 272609000000024240, 272609000000024220, 272609000000024170, 272609000000024030, 272609000000024280	117.00	C, D	Adamsville Fine Sand, Samsula Muck, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	116.00	120.33	700	118.00	2.00	Wetlands	51.46	8.23	7.99
E-157	E-157	6544+00	272605000000021010	118.50	A, D	Tavares Fine Sand, 0 to 5 PCT Slopes, Basinger Mucky Fine Sand, Depressional	YES	Wet Detention	Open	115.50	120.33	1500	118.00	2.50	Wetlands	51.65	8.29	6.36
E-158	E-158	6544+00	272605000000021010	117.00	A, C, D	Tavares Fine Sand, 0 to 5 PCT Slopes, Pomello Fine Sand, Basinger Mucky Fine Sand, Depressional	YES	Wet Detention	Open	116.50	120.33	1500	119.00	2.50	Wetlands	34.88	6.07	6.06
E-159	E-159	6560+00	272605000000011020	124.00	A, D	Candler Fine Sand, 0 to 5 PCT Slopes, Tavares Fine Sand, 0 to 5 PCT Slopes, Samsula Muck	YES	Dry Retention	Open	119.50	123.33	1500	122.00	1.50	Wetlands	173.90	13.42	22.12

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Central Polk Parkway - From S.R. 60 to Polk Parkway (S.R. 547) & From S.R. 60 to Interstate 4

ALTERNATIVE POND SITES - EAST SEGMENT

IMPACT & COST ANALYSIS

Pond Selections	Pond Floodplain Impacts (ac-ft)	Arch. / Historical Impact Potential (Arch. / Hist.)	Wetland Impacts (ac)	Estimated Right-of-Way Acquisition Cost	Total Pond Costs
E-101A	0.00	Low / None	0.00	$0	TBD
E-102A	0.00	Low / None	0.00	$79,000	TBD
E-103A	0.00	Mod. to High / None	0.48	$125,000	TBD
E-104A	0.00	Mod. to High / None	0.00	$61,000	TBD
E-105A	0.00	Mod. to High / None	0.00	$59,000	TBD
E-106A	0.00	Low / None	0.00	$64,000	TBD
E-107A	0.00	Moderate / None	1.22	$210,000	TBD
E-101B	0.00	Low / None	0.00	$116,000	TBD
E-102B	0.00	Moderate / None	0.00	$163,000	TBD
E-103B	0.00	Low / None	0.00	$0	TBD
E-104B	0.00	Low / High	0.00	$0	TBD
E-105B	0.00	Low / None	0.00	$89,000	TBD
E-106B	0.00	Low / None	0.00	$116,000	TBD
E-108	0.00	Moderate / None	0.00	$0	TBD
E-109	0.00	Mod. to High / None	0.54	$0	TBD
E-110	0.00	Mod. to High / None	9.52	$0	TBD
E-111	4.60	Moderate / None	0.00	$108,000	TBD
E-112	0.00	Mod. to High / None	0.39	$70,000	TBD
E-113	8.10	Moderate / None	0.00	$71,000	TBD
E-114	0.00	Moderate / None	0.16	$76,000	TBD
E-115	1.14	Moderate / None	0.88	$306,000	TBD
E-116	5.67	Moderate / None	0.96	$290,000	TBD
E-117	0.00	Moderate / None	0.42	$379,000	TBD
E-118	0.00	Mod. to High / None	0.00	$240,000	TBD
E-119	0.00	Moderate / None	0.00	$261,000	TBD
E-120	0.00	Moderate / None	0.00	$245,000	TBD
E-121	0.00	Moderate / None	0.00	$18,000	TBD
E-122	0.00	Moderate / None	0.00	$191,000	TBD
E-123	0.00	Low / None	0.00	$89,000	TBD
E-124	0.00	Low / None	0.00	$175,000	TBD
E-125	0.00	Moderate / None	0.22	$844,000	TBD

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ALTERNATIVE POND SITES - EAST SEGMENT

IMPACT & COST ANALYSIS

Pond Selections	Pond Floodplain Impacts (ac-ft)	Arch. / Historical Impact Potential (Arch. / Hist.)	Wetland Impacts (ac)	Estimated Right-of-Way Acquisition Cost	Total Pond Costs
E-126	0.00	Low / None	0.00	$18,000	TBD
E-127	0.00	Moderate / None	0.00	$0	TBD
E-128	0.00	Moderate / None	0.00	$0	TBD
E-129	0.00	Low / None	0.00	$242,000	TBD
E-130	0.00	Moderate / None	0.00	$134,000	TBD
E-131	0.00	Mod. to High / None	0.00	$157,000	TBD
E-132	0.00	Low / None	0.00	$128,000	TBD
E-133	0.00	Low / None	0.00	$113,000	TBD
E-134	0.00	Moderate / None	0.00	$187,000	TBD
E-135	0.00	Low / None	0.00	$269,000	TBD
F-135	0.00	Moderate / None	0.24	$0	TBD
E-136	0.00	Mod. to High / None	0.00	$271,000	TBD
E-137	0.00	High / None	0.00	$832,000	TBD
E-138	0.00	High / None	0.00	$166,000	TBD
E-139	0.00	Low / None	0.00	$105,000	TBD
E-140	0.00	Low / None	0.00	$186,000	TBD
E-141	0.00	High / None	0.00	$223,000	TBD
E-142	0.51	Moderate / None	3.27	$184,000	TBD
E-143	0.08	High / None	1.91	$134,000	TBD
E-144	0.00	High / None	0.00	$200,000	TBD
E-145	0.00	High / None	0.13	$273,000	TBD
E-146	0.00	Low / None	3.73	$180,000	TBD
E-147	0.00	Mod. to High / None	7.94	$0	TBD
E-148	0.00	Low / None	0.80	$0	TBD
E-149	0.00	Mod. to High / None	0.00	$357,000	TBD
E-150	0.00	Moderate / None	4.33	$208,000	TBD
E-151	0.00	High / None	4.01	$206,000	TBD
E-152	0.00	Mod. to High / None	0.80	$239,000	TBD
E-153	0.00	Mod. to High / None	0.04	$122,000	TBD
E-154	0.00	Moderate / None	4.99	$239,000	TBD
E-155	0.00	Moderate / None	0.01	$138,000	TBD
E-156	0.86	Moderate / None	0.13	$188,000	TBD
E-157	0.00	Moderate / None	2.08	$0	TBD
E-158	0.00	Moderate / None	3.64	$0	TBD
E-159	0.00	Mod. to High / None	3.01	$0	TBD

TBD - This information is currently under investigation.
(1) Please refer to the Central Polk Parkway Location Hydraulic Report (LHR)

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ALTERNATIVE POND SITES - WEST SEGMENT

ENGINEERING DATA & ANALYSIS

Pond Selections	Basin	Location		Existing Ground Elevation (ft)	Soil Names & Hydrologic Groups		Impaired Water Body	Wet Detention / Dry Retention	Open / Closed System	Estimated SHWT Elevation (ft)	Lowest Edge of Existing Roadway (ft)	Distance From Furthest Point of Proposed Roadway (ft)	Estimated Allowable DHW (ft)	Estimated Allowable Treatment & Attenuation Depth (ft)	Outfall Location	Roadway Drainage Area (ac)	Required Treatment & Attenuation Volume (ac-ft)	Required Pond Area Including Access (ac)
		Station	Parcel Number		HSG	Soil Name	YES/NO											
W-101A	W-101A	Existing SR 60	262931000000013010	102.00	D	Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	101.50	113.33	850	103.50	2.00	Wetlands	16.09	1.42	2.03
W-102A	W-102A	9000+00	262932000000043010	113.00	A	Tavares Fine Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	109.00	113.33	1050	112.00	1.50	Lake Garfield	29.08	2.55	3.99
W-103A	W-103A	9004+00	262932000000034140, 262932000000034050, 262932000000034070, 262932000000034020, 262932000000034040, 262932000000034030, 262932000000034090	109.00	C	Pomello Fine Sand, Sparr Sand, 0 to 5 PCT Slopes	YES	Dry Retention	Open	106.50	113.33	1050	110.00	2.50	Wetlands	39.64	3.49	4.12
W-104A	W-104A	9012+00	262932000000034020	110.00	C	Sparr Sand, 0 to 5 PCT Slopes	YES	Wet Detention	Open	107.50	114.33	1050	112.20	3.70	CDW-03A	20.81	1.88	1.72
F-101A	F-101A	Existing SR 60	262931000000024010	104.00	D	Floridana Mucky Fine Sand, Depressional	YES	Wet Detention	Open	103.50	113.33	900	106.50	3.00	Wetlands	10.98	1.20	1.55
W-101B	W-101B	2003+00	262927000000023010, 262928000000011030, 262927000000042010	115.00	D	Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	115.00	120.00	400	118.00	3.00	Peace Creek	11.29	1.32	1.76
W-102B	W-102B	2003+00	262928000000011030, 262927000000042010	112.00	D	Smyrna and Myakka Fine Sands, Eaton Mucky Fine Sand, Depressional	YES	Wet Detention	Open	110.00	118.00	400	113.00	3.00	Peace Creek	11.35	1.30	1.45
W-103B	W-103B	2040+00	262928000000042060	109.00	C, D	Pomello Fine Sand, Placid Fine Sand, Frequently Flooded	YES	Wet Detention	Open	108.50	113.00	300	112.00	3.50	CDW-02B	34.75	4.25	3.41
W-104B	W-104B	2060+00	262929000000012010	108.00	D	Imokalee Sand, Placid Fine Sand, Depressional, Placid Fine Sand, Frequently Flooded	YES	Wet Detention	Open	107.50	110.33	1000	108.60	1.10	Peace Creek	25.34	3.61	6.00
W-105B	W-105B	2098+00	262929000000044000	112.00	C, D	Pomello Fine Sand, Smyrna and Myakka Fine Sands, Placid and Myakka Fine Sands, Depressional, Pomona Fine Sand	YES	Wet Detention	Open	111.50	116.83	200	112.70	1.20	CDW-04B	18.74	2.52	4.41
W-106	W-106	2110+00	262929000000044000, 262930000000022000, 262930000000021010, 262929000000043010	113.00	D	Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	112.50	115.00	300	114.00	1.50	CDW-04B	39.87	5.22	8.63
W-107	W-107	2130+00	262930000000021010, 262930000000013080, 262930000000011020	110.00	D	Smyrna and Myakka Fine Sands, Lynne Sand	YES	Wet Detention	Open	109.50	112.83	600	110.20	0.70	Wetlands	84.54	11.55	27.39
W-108	W-108	2175+00	252925000000013010	106.00	C, D	Pomello Fine Sand, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	104.00	108.83	1900	106.00	2.00	Wetlands	28.42	3.29	3.56
W-109	W-109	2191+00	252925000000013010	105.50	C, D	Adamsville Fine Sand, Smyrna and Myakka Fine Sands	YES	Wet Detention	Open	104.50	111.33	400	108.50	4.00	Wetlands	37.44	4.56	3.15
W-110	W-110	2255+00	252926000000010000	99.00	D	Samsula Muck, Placid and Myakka Fine Sands, Depressional	YES	Wet Detention	Open	99.00	105.33	150	101.00	2.00	Wetlands	38.50	4.98	5.56
W-111	W-111	2284+00	252927000000012020	105.00	A, D	Neilhurst Sand, 1 to 5 PCT Slopes, Slickens	YES	Dry Retention	Open	100.50	111.33	200	103.50	2.00	CDW-09	30.26	3.23	3.39
W-112	W-112	2298+00	252927000000012020	96.00	D	Slickens	YES	Wet Detention	Open	95.50	101.33	400	98.10	2.60	Wetlands	30.13	3.66	3.32
W-113	W-113	2330+00	252927000000012020, 252928000000011020	115.00	A, D	Neilhurst Sand, 1 to 5 PCT Slopes, Slickens	YES	Dry Retention	Open	115.00	120.33	600	116.50	0.50	CDW-10	85.96	4.19	34.13
W-114	W-114	2354+00	252921000000011010	111.00	A	Arents-Water Complex, Arents-0 to 5 PCT Slopes	YES	Wet Detention	Open	105.00	110.83	350	110.20	4.20	CDW-11	25.92	11.69	5.58
W-115	W-115	2380+00	252922361000000500	110.00	A	Arents-Water Complex, Neilhurst Sand, 1 to 5 PCT Slopes	YES	Dry Retention	Open	106.00	111.83	1500	109.00	2.00	Wetlands	43.58	9.49	7.84
W-116	W-116	2433+00	252915000000023030	111.00	A, D	Neilhurst Sand, 1 to 5 PCT Slopes, Pomona Fine Sand	YES	Dry Retention	Open	107.50	111.83	1800	109.80	1.30	Wetlands	37.17	3.16	4.65
W-117	W-117	2460+00	252915000000023030	111.00	A	Arents-0 to 5 PCT Slopes	YES	Wet Detention	Open	109.50	115.33	1050	111.80	2.30	CDW-13	23.45	3.63	3.45
W-118	W-118	2490+00	252910000000011010	110.00	D	Smyrna and Myakka Fine Sands, Placid and Myakka Fine Sands, Depressional	YES	Wet Detention	Open	109.50	115.33	1050	112.50	3.00	Wetlands	41.79	6.44	5.74
W-119	W-119	2526+00	252903000000022120	111.00	D	Smyrna and Myakka Fine Sands, Samsula Muck	YES	Wet Detention	Open	110.80	117.33	500	112.50	1.70	CDW-13	18.37	3.83	4.66
W-120	W-120	2584+00	252834000000011010, 252833000000011010	118.00	A, C, D	Tavares Fine Sand, 0 to 5 PCT Slopes, Adamsville Fine Sand, Placid Fine Sand, Frequently Flooded	YES	Wet Detention	Open	114.00	117.33	250	117.00	3.00	CDW-14	56.90	14.09	10.06

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Central Polk Parkway - From S.R. 60 to Polk Parkway (S.R. 547) & From S.R. 60 to Interstate 4

ALTERNATIVE POND SITES - WEST SEGMENT

ENGINEERING DATA & ANALYSIS

Pond Selections	Basin	Location		Existing Ground Elevation (ft)	Soil Names & Hydrologic Groups		Impaired Water Body	Wet Detention / Dry Retention	Open / Closed System	Estimated SHWT Elevation (ft)	Lowest Edge of Existing Roadway (ft)	Distance From Furthest Point of Proposed Roadway (ft)	Estimated Allowable DHW (ft)	Estimated Allowable Treatment & Attenuation Depth (ft)	Outfall Location	Roadway Drainage Area (ac)	Required Treatment & Attenuation Volume (ac-ft)	Required Pond Area Including Access (ac)
		Station	Parcel Number		HSG	Soil Name	YES/NO											
W-121	W-121	2637+00	252833000000014010	116.00	D	Smyrna and Myakka Fine Sands, Imokalee Sand	YES	Wet Detention	Open	115.00	121.33	200	119.50	4.50	CDW-15	60.28	6.76	4.23
W-122	W-122	2658+74	N/A	105.00	D	Felda Fine Sand, Eaton Mucky Fine Sand, Depressional	YES	Wet Detention	Open	104.50	120.33	1500	105.50	1.00	Wetlands	91.93	10.14	18.71

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Central Polk Parkway - From S.R. 60 to Polk Parkway (S.R. 547) & From S.R. 60 to Interstate 4

ALTERNATIVE POND SITES - WEST SEGMENT

IMPACT & COST ANALYSIS

Pond Selections	Pond Floodplain Impacts (ac-ft)	Arch. / Historical Impact Potential (Arch. / Hist.)	Wetland Impacts (ac)	Estimated Right-of-Way Acquisition Cost	Total Pond Costs
W-101A	0.00	Low / None	0.03	$81,000	TBD
W-102A	0.00	Moderate / None	0.00	$192,000	TBD
W-103A	0.00	Moderate / None	0.00	$0	TBD
W-104A	0.00	Low / High	0.00	$0	TBD
F-101A	0.00	Moderate / None	0.65	$87,000	TBD
W-101B	0.00	Moderate / None	0.00	$0	TBD
W-102B	0.00	Low / None	0.00	$0	TBD
W-103B	4.54	Moderate / None	0.68	$100,000	TBD
W-104B	0.00	Low / None	0.72	$144,000	TBD
W-105B	0.46	Moderate / None	0.00	$177,000	TBD
W-106	0.00	Low / None	0.00	$0	TBD
W-107	1.69	Low / None	11.79	$0	TBD
W-108	0.00	Low / None	0.00	$240,000	TBD
W-109	0.00	Low / None	0.00	$126,000	TBD
W-110	17.23	Low / None	5.56	$223,000	TBD
W-111	0.32	Low / None	0.00	$135,000	TBD
W-112	0.00	Mod. to High / None	0.00	$133,000	TBD
W-113	0.00	Mod. to High / None	0.00	$1,319,000	TBD
W-114	0.00	High / None	0.00	$71,000	TBD
W-115	0.00	Low / None	0.00	$101,000	TBD
W-116	0.00	Mod. to High / None	0.06	$59,000	TBD
W-117	0.00	Low / None	0.00	$44,000	TBD
W-118	1.14	Low / None	0.00	$138,000	TBD
W-119	2.53	Moderate / None	0.76	$112,000	TBD
W-120	0.07	Low / None	1.70	$339,000	TBD
W-121	0.00	Low / None	0.00	$102,000	TBD
W-122	0.00	Mod. to High / None	7.46	$0	TBD

TBD - This information is currently under investigation.
(1) Please refer to the Central Polk Parkway Location Hydraulic Report (LHR)

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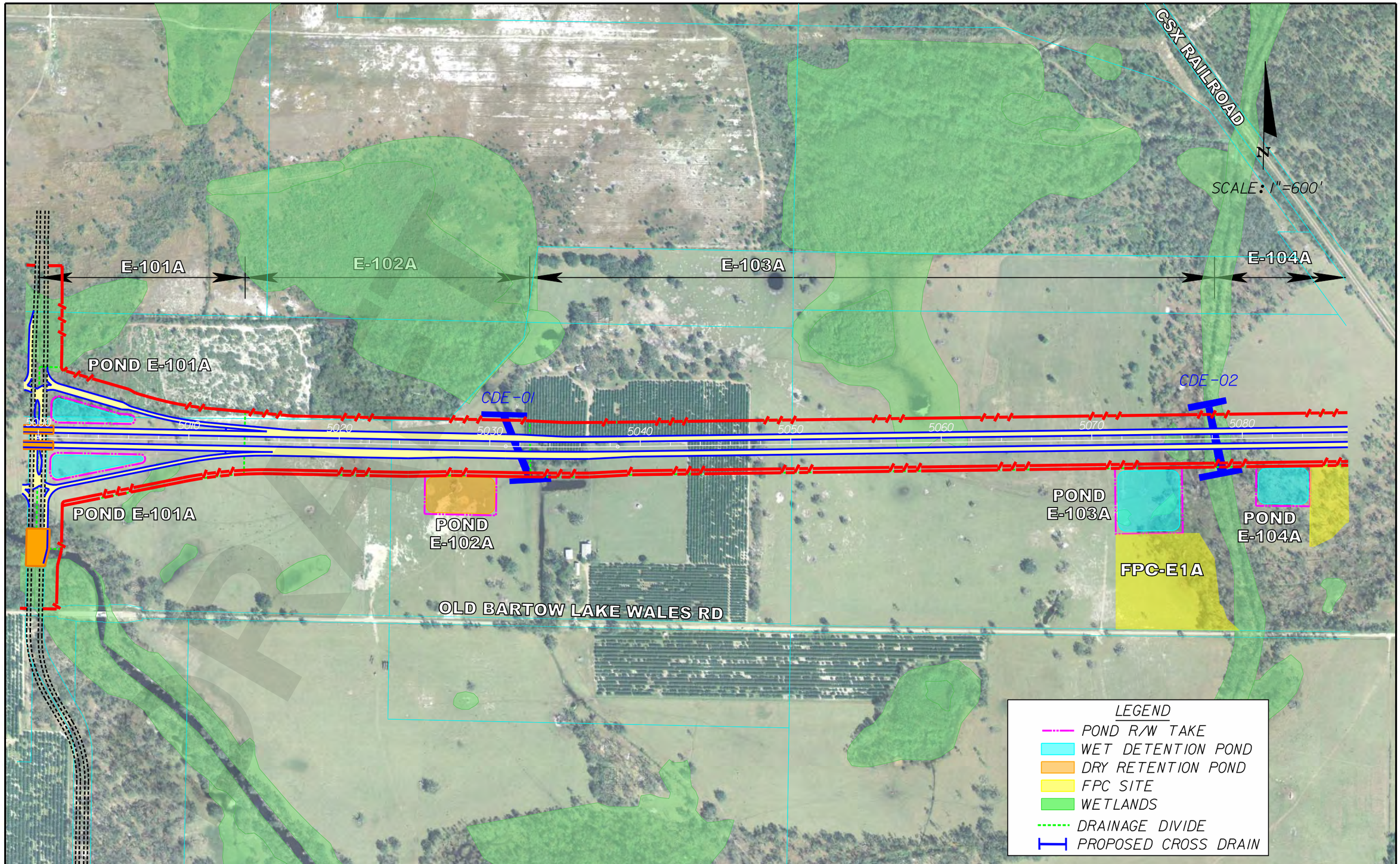

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 1

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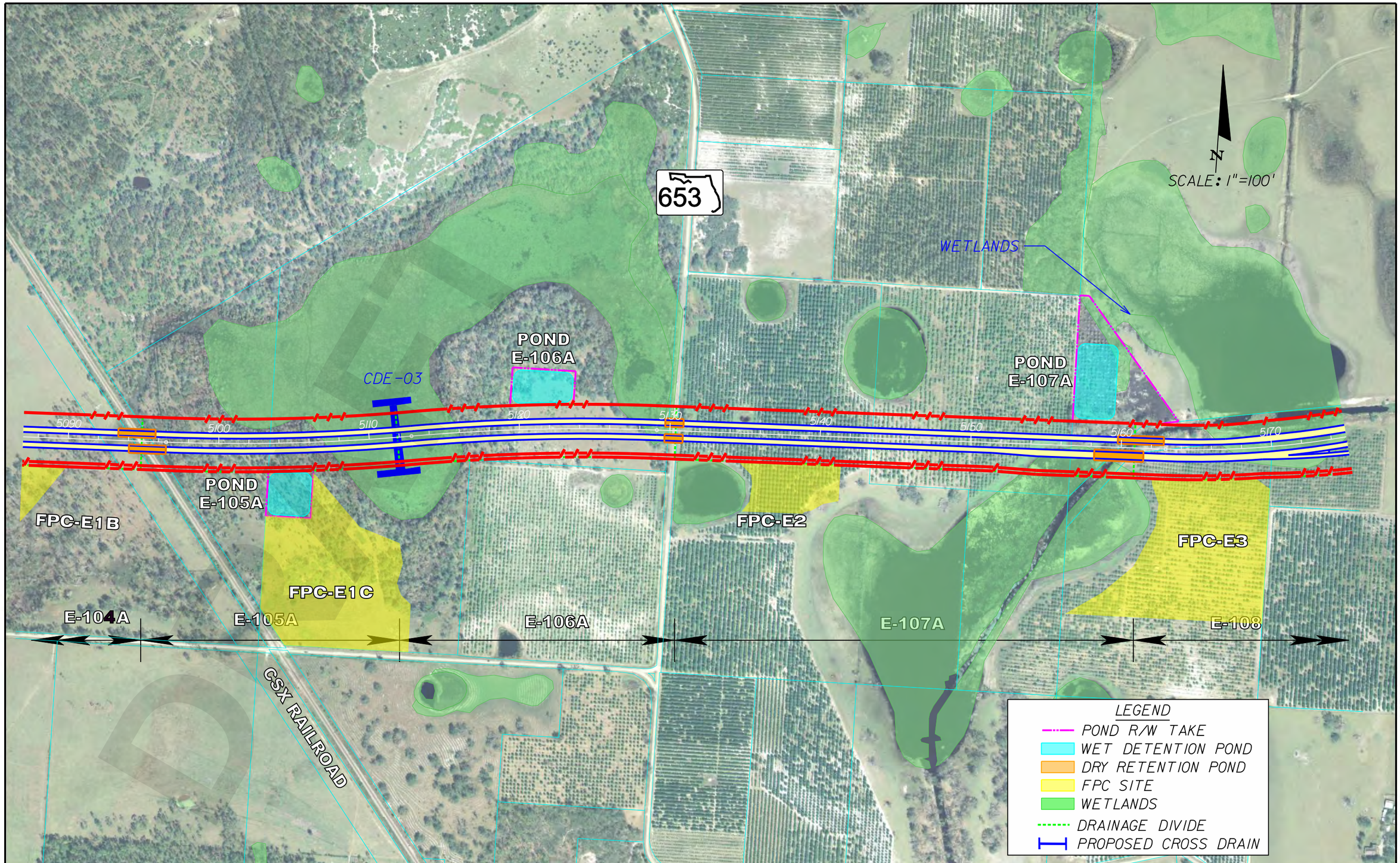

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CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 2

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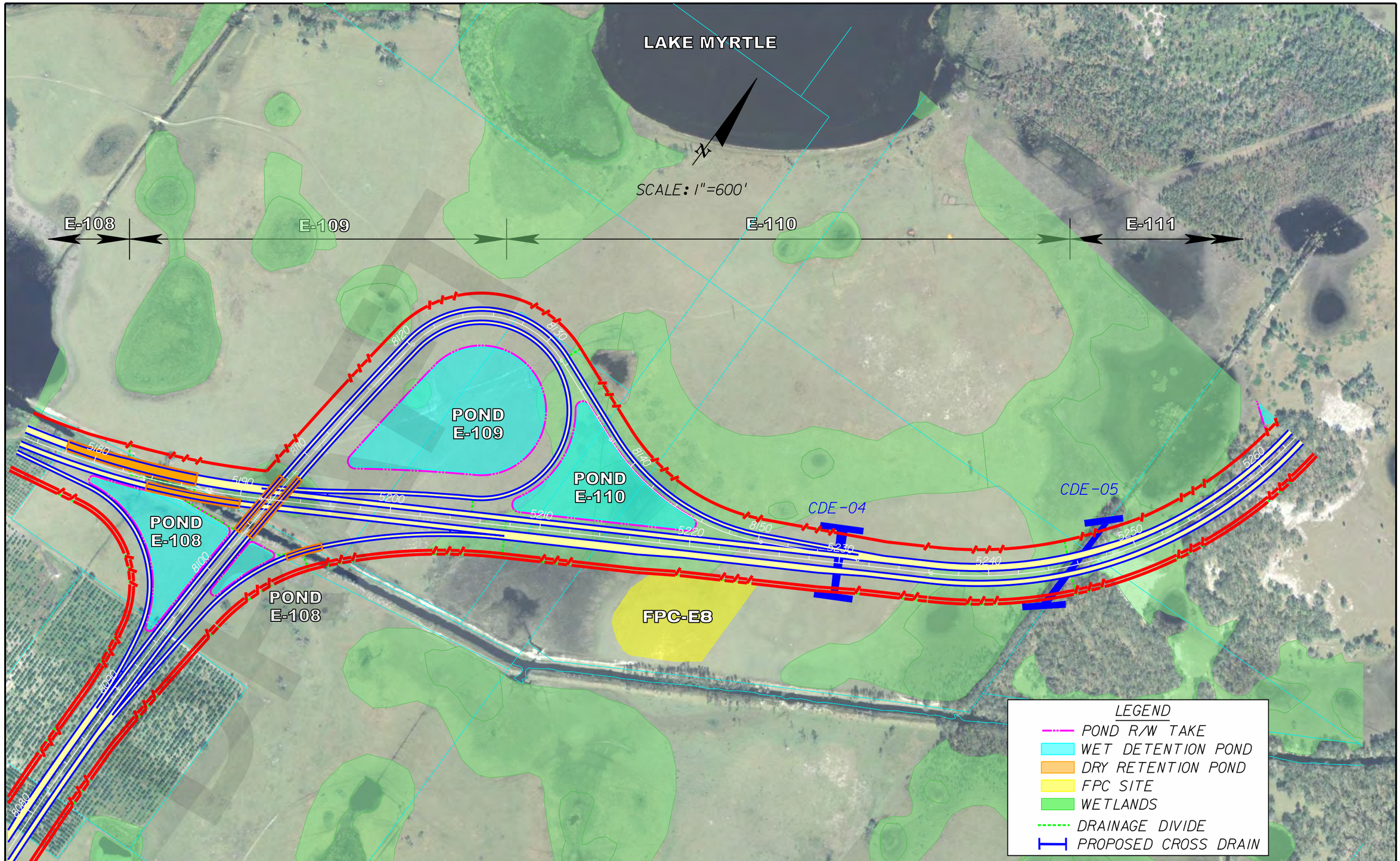

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CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 3

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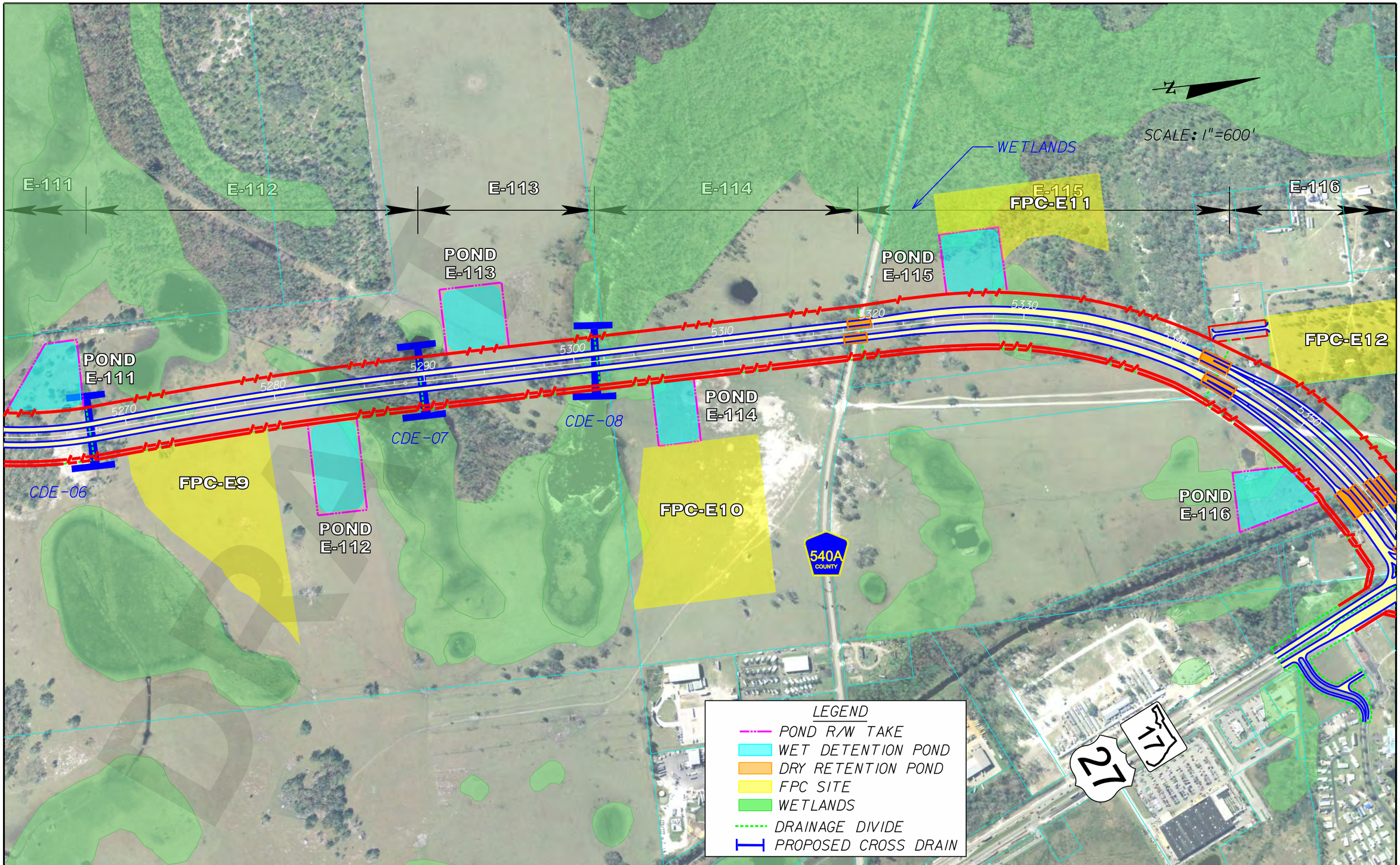

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SHEET NO. 4

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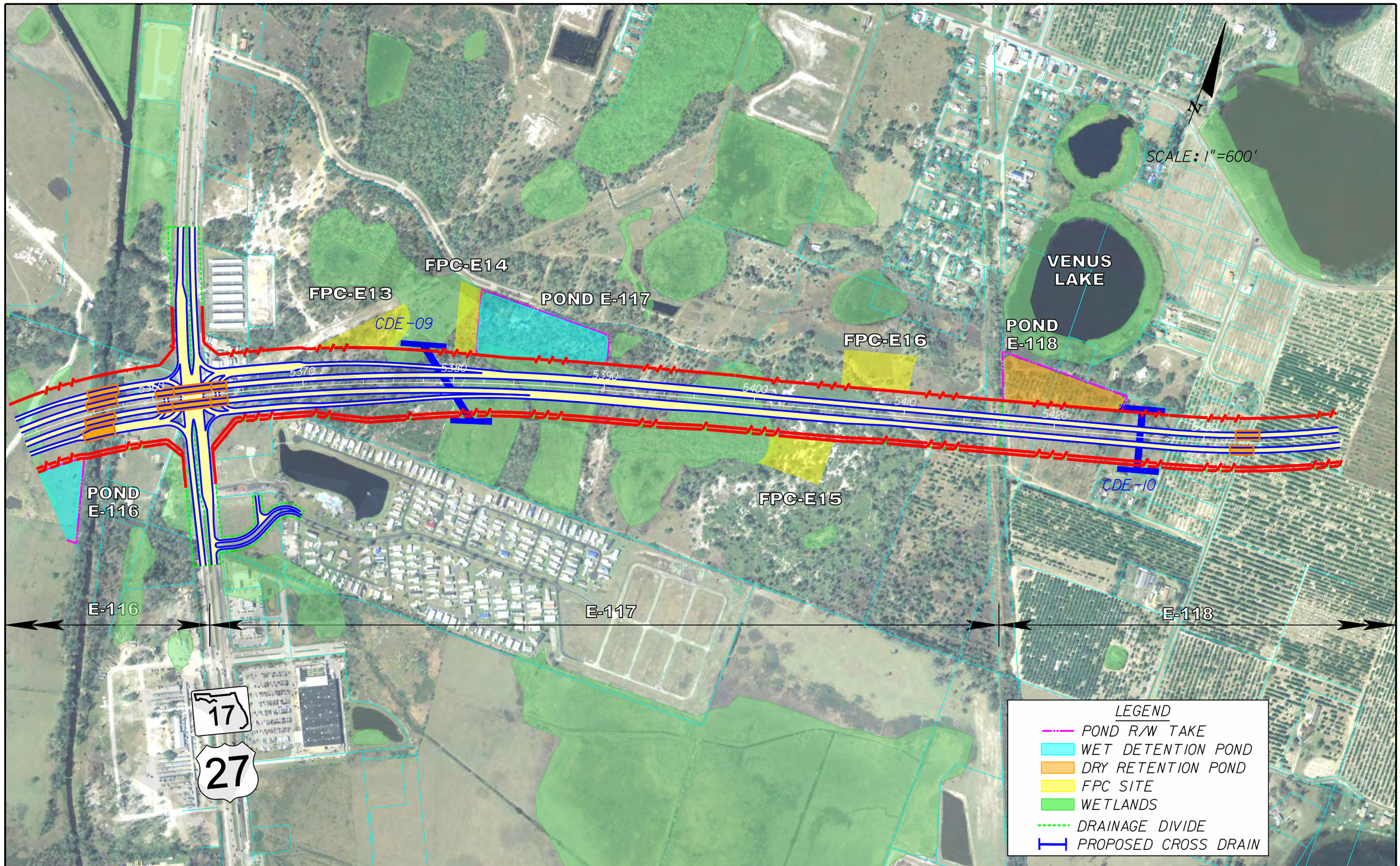

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SHEET NO. 5

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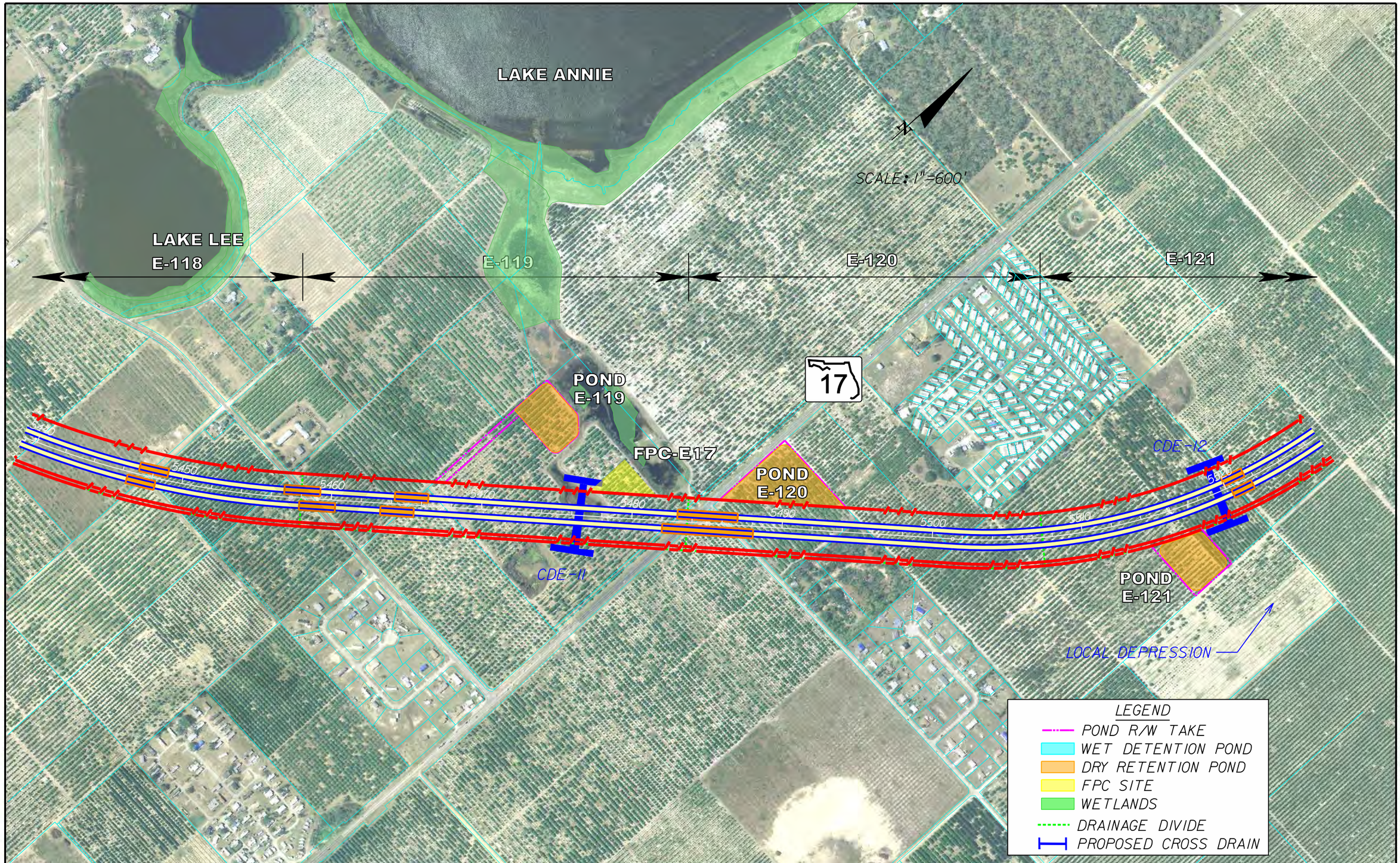

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CENTRAL POLK PARKWAY
EAST SEGMENT
POND EXHIBIT

SHEET NO. 6

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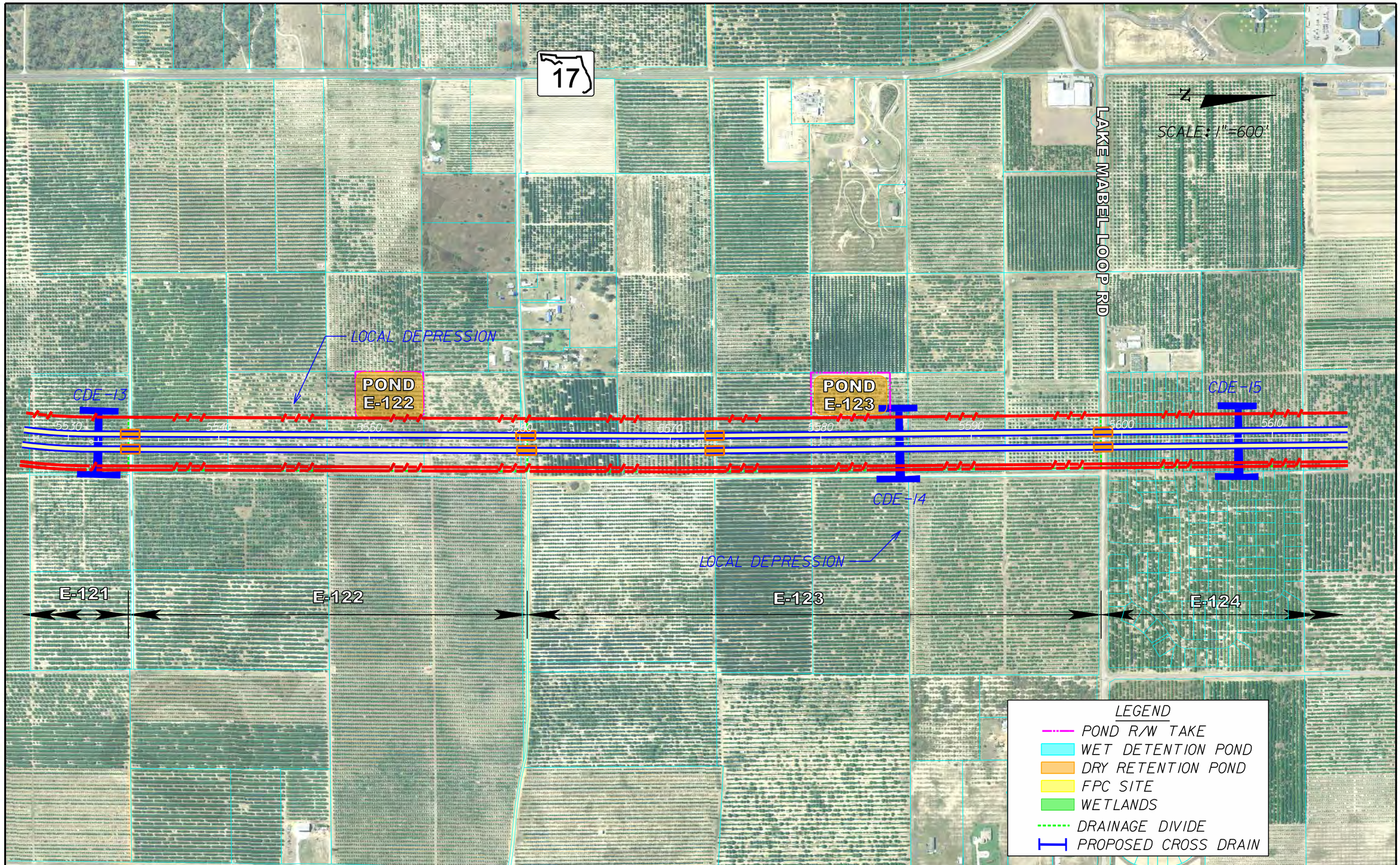

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SHEET NO. 7

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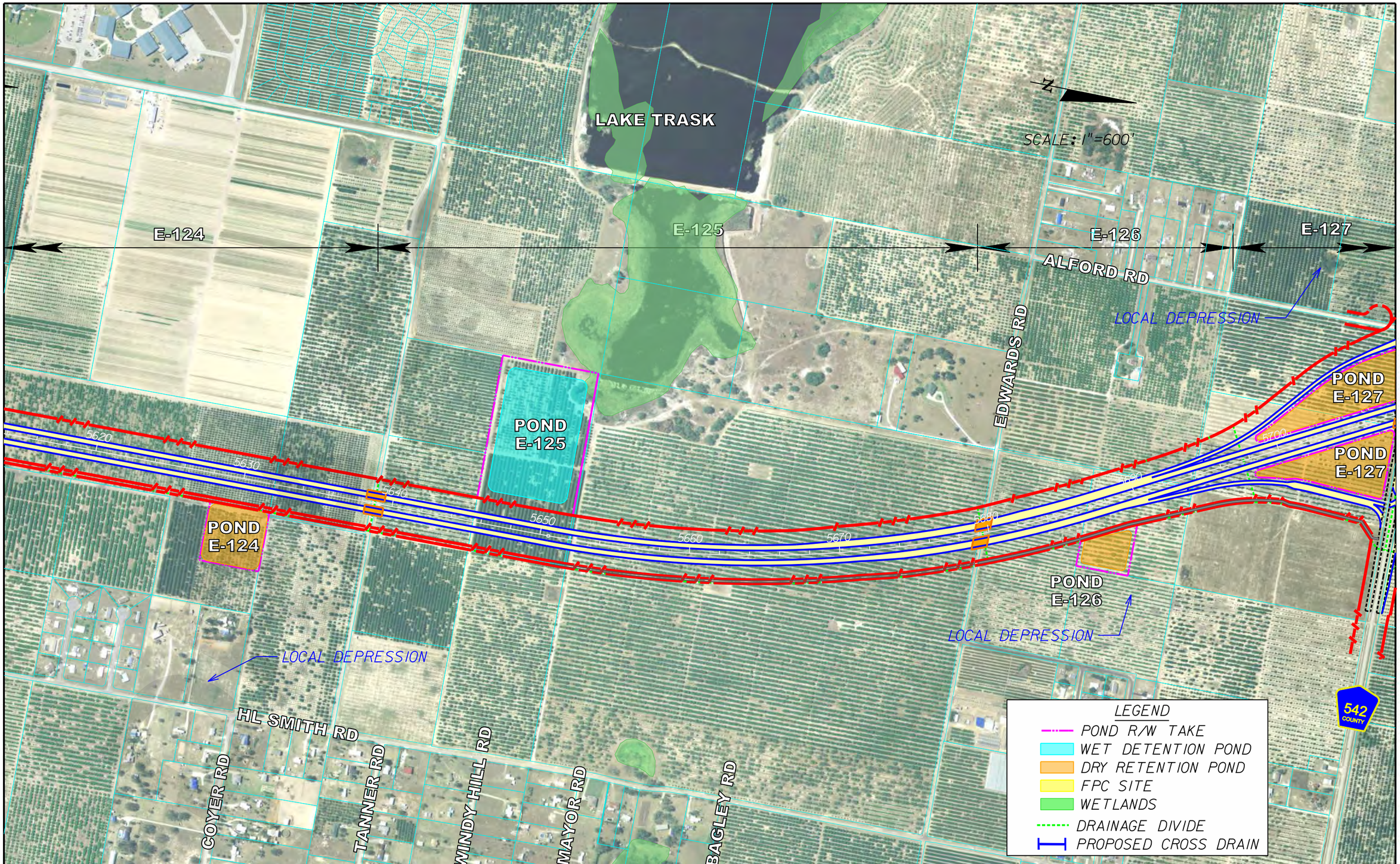

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SHEET NO. 8

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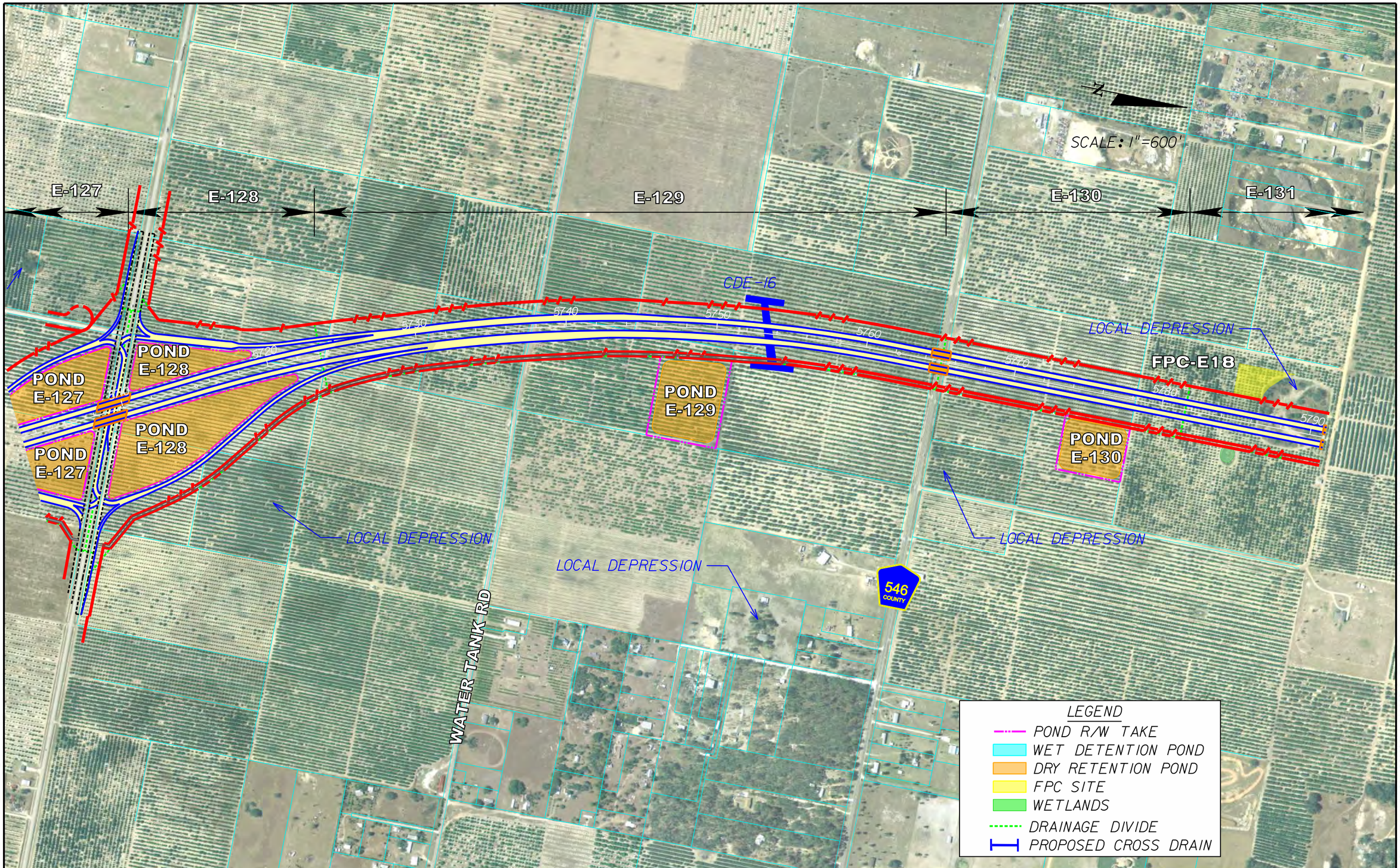

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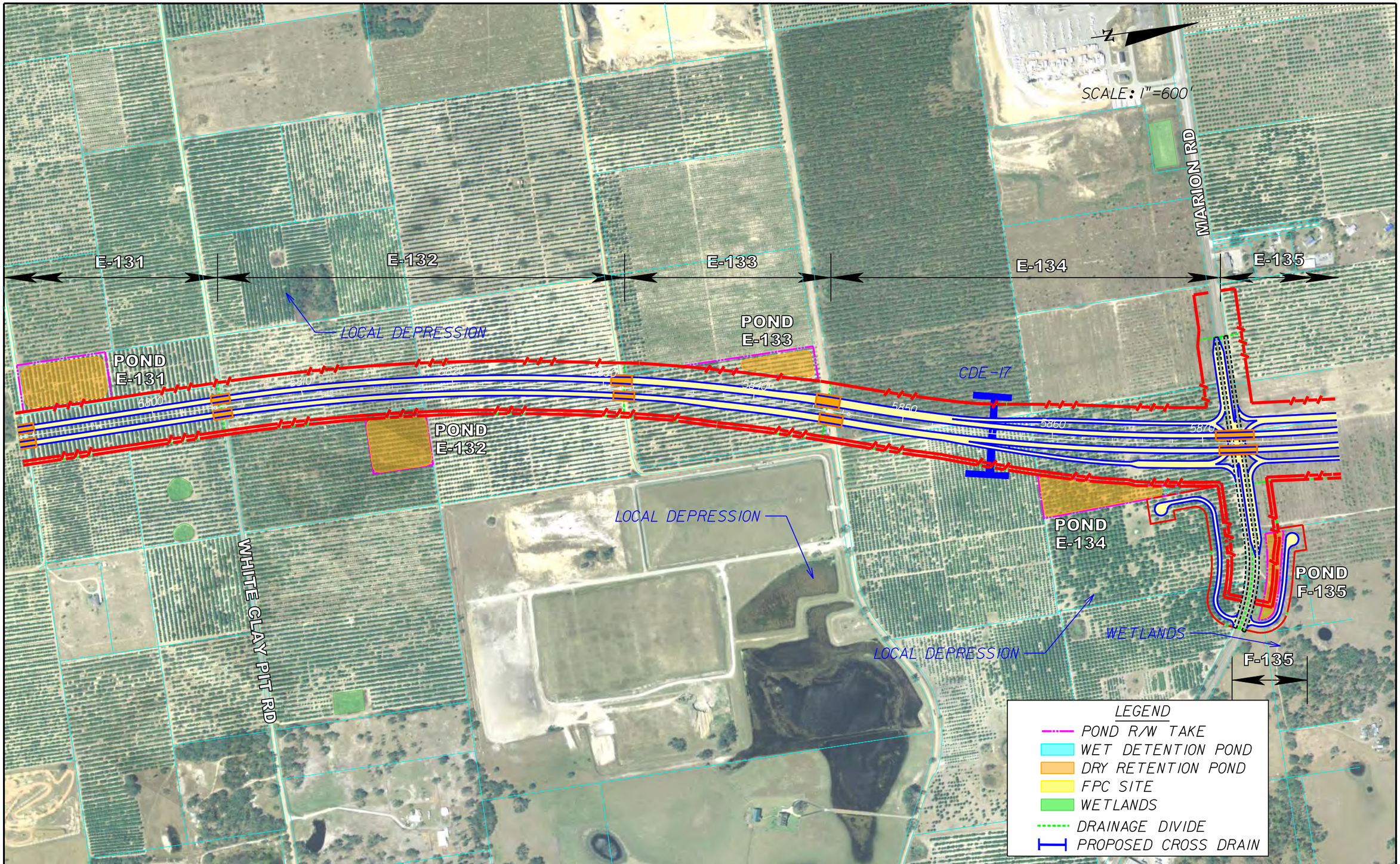

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SHEET NO. 10

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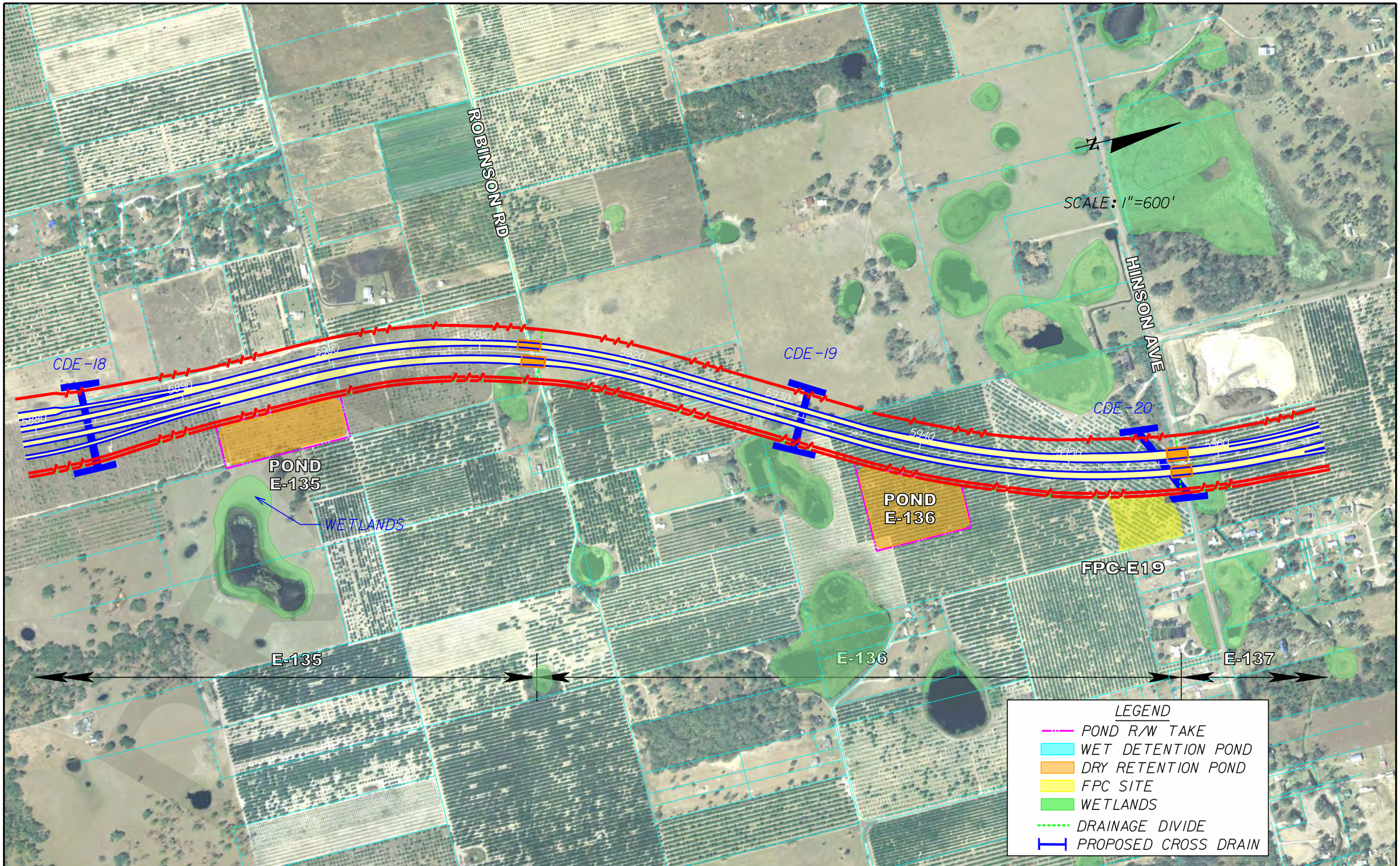

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SHEET NO. 11

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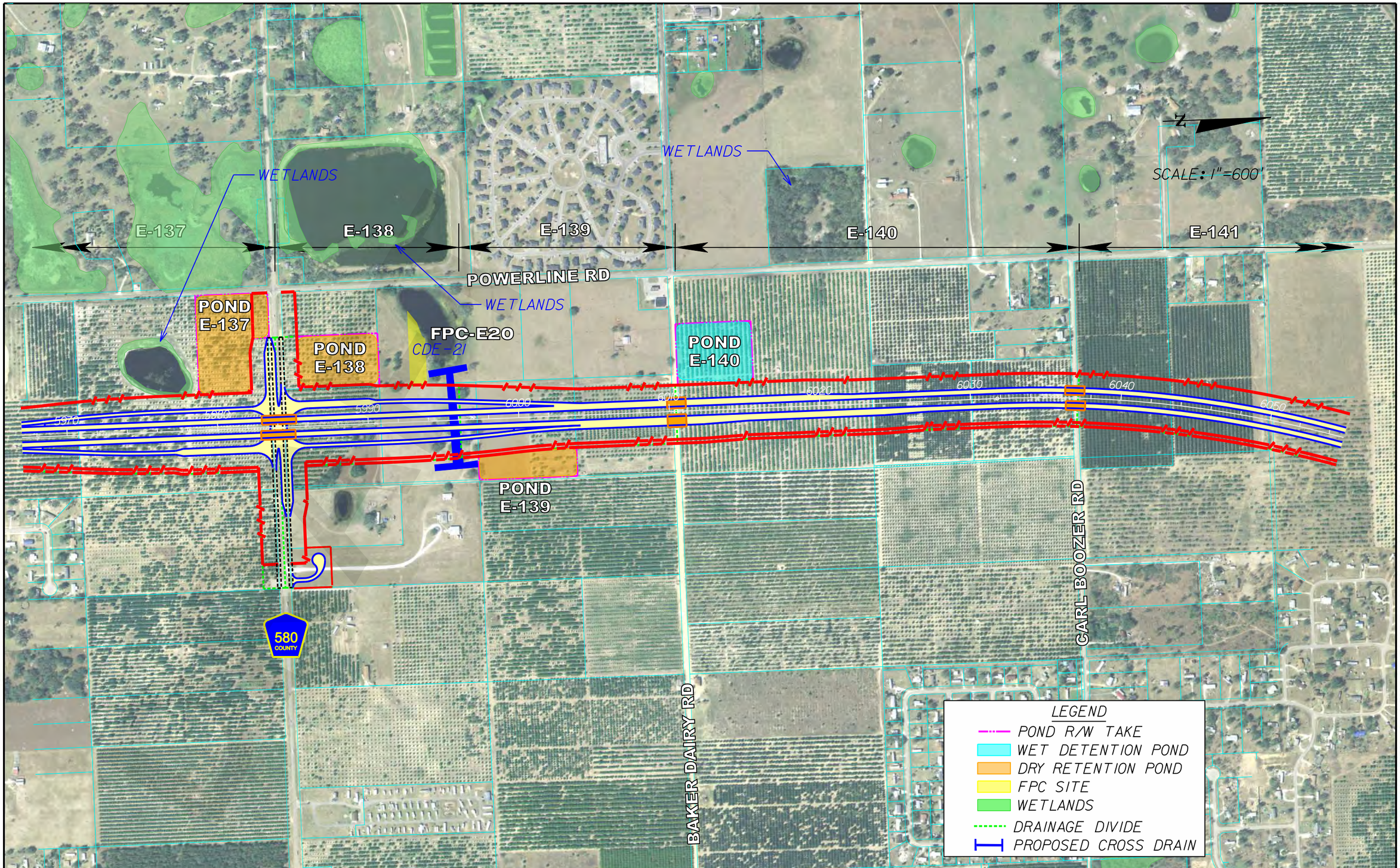

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SHEET NO. 12

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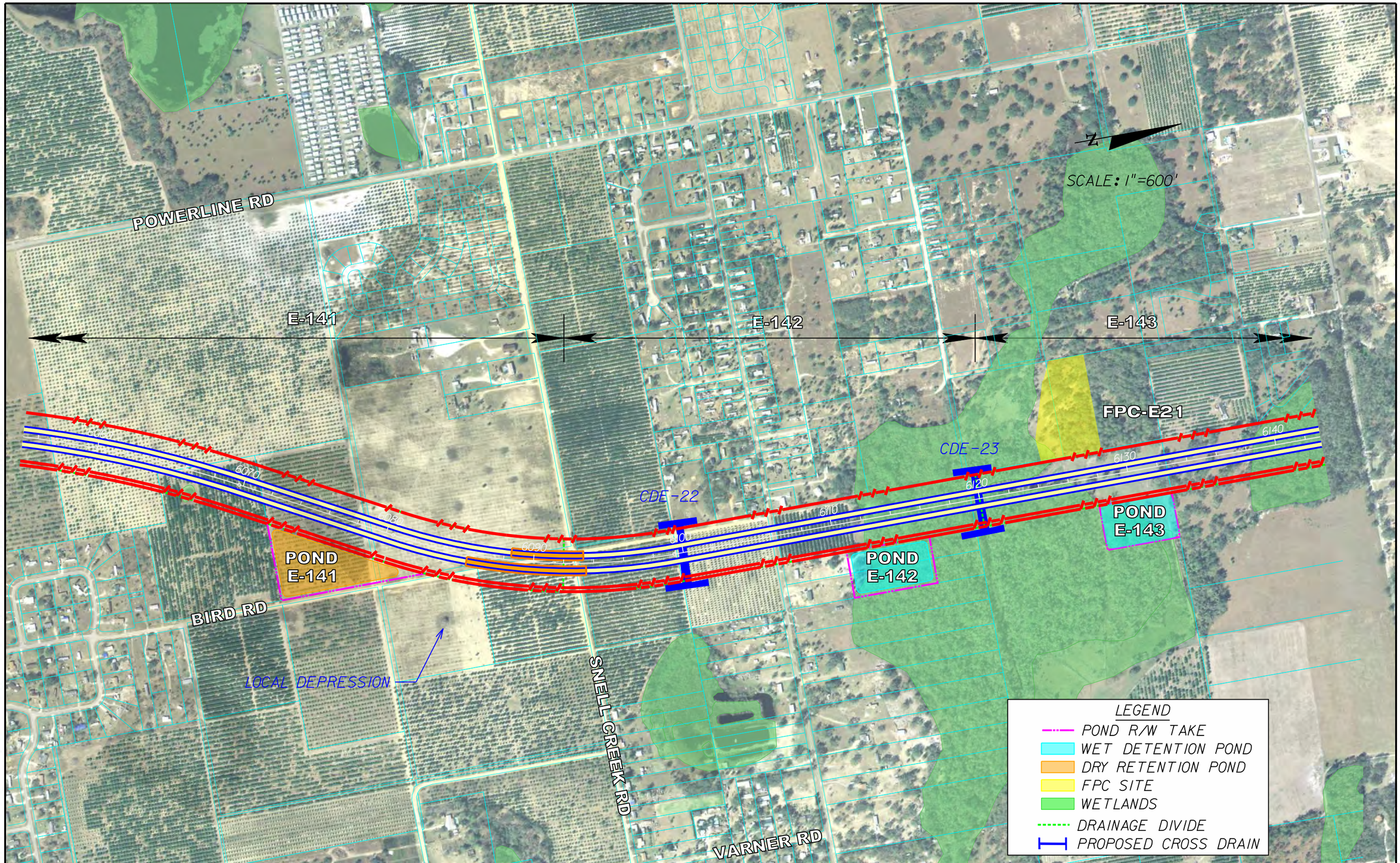

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CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 13

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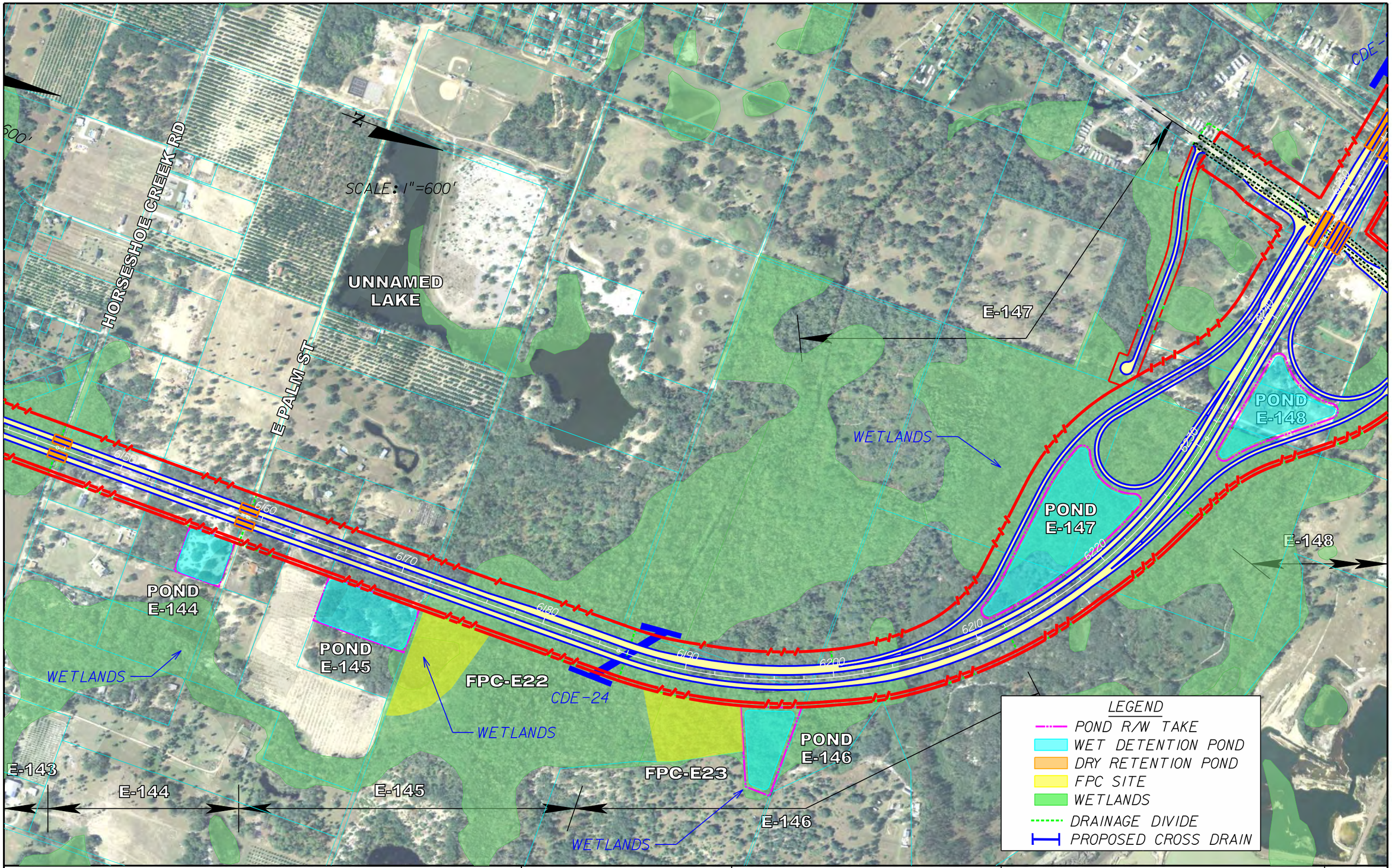

REVISIONS			
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CENTRAL POLK PARKWAY
EAST SEGMENT
POND EXHIBIT

SHEET NO. 14

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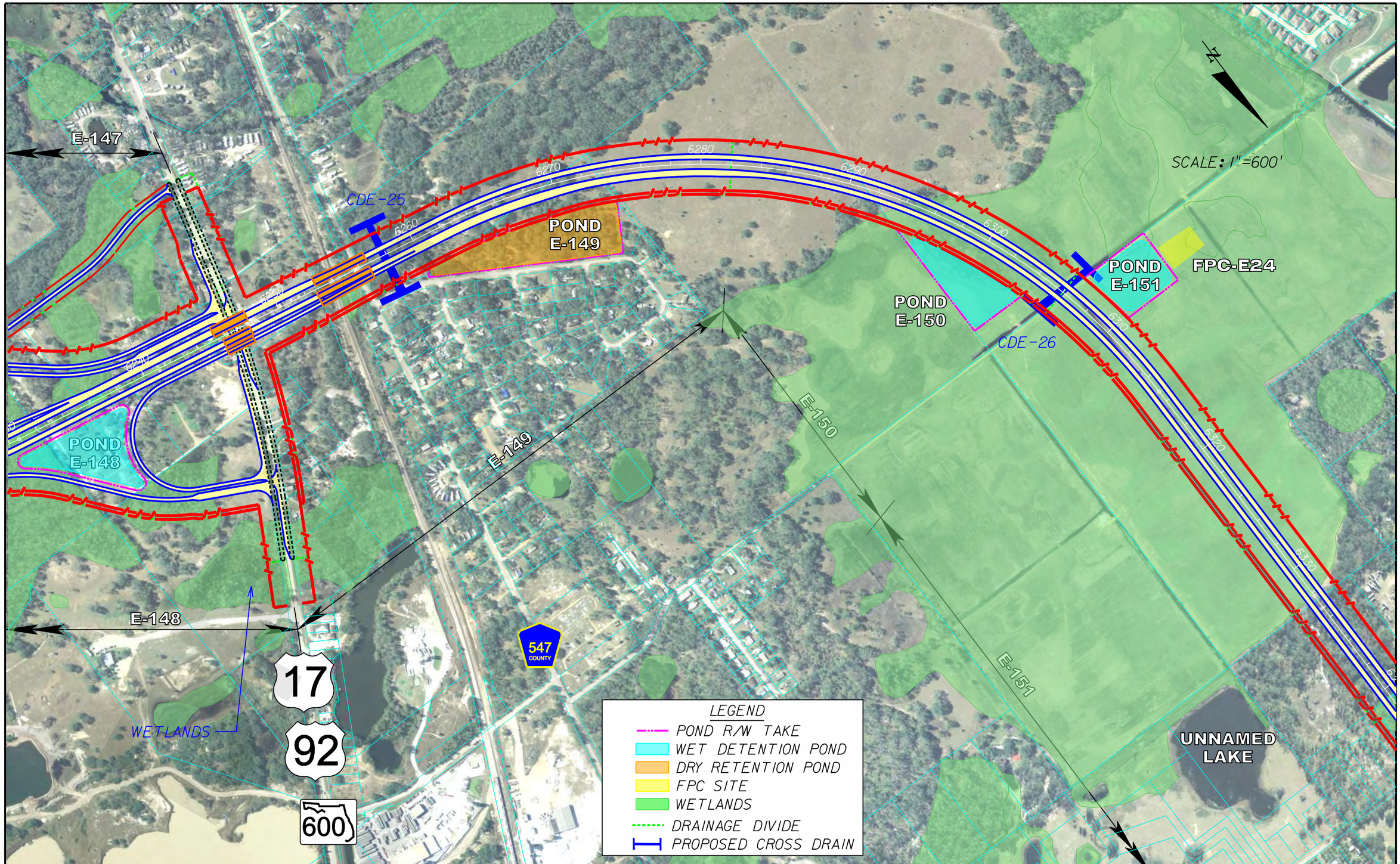

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 15

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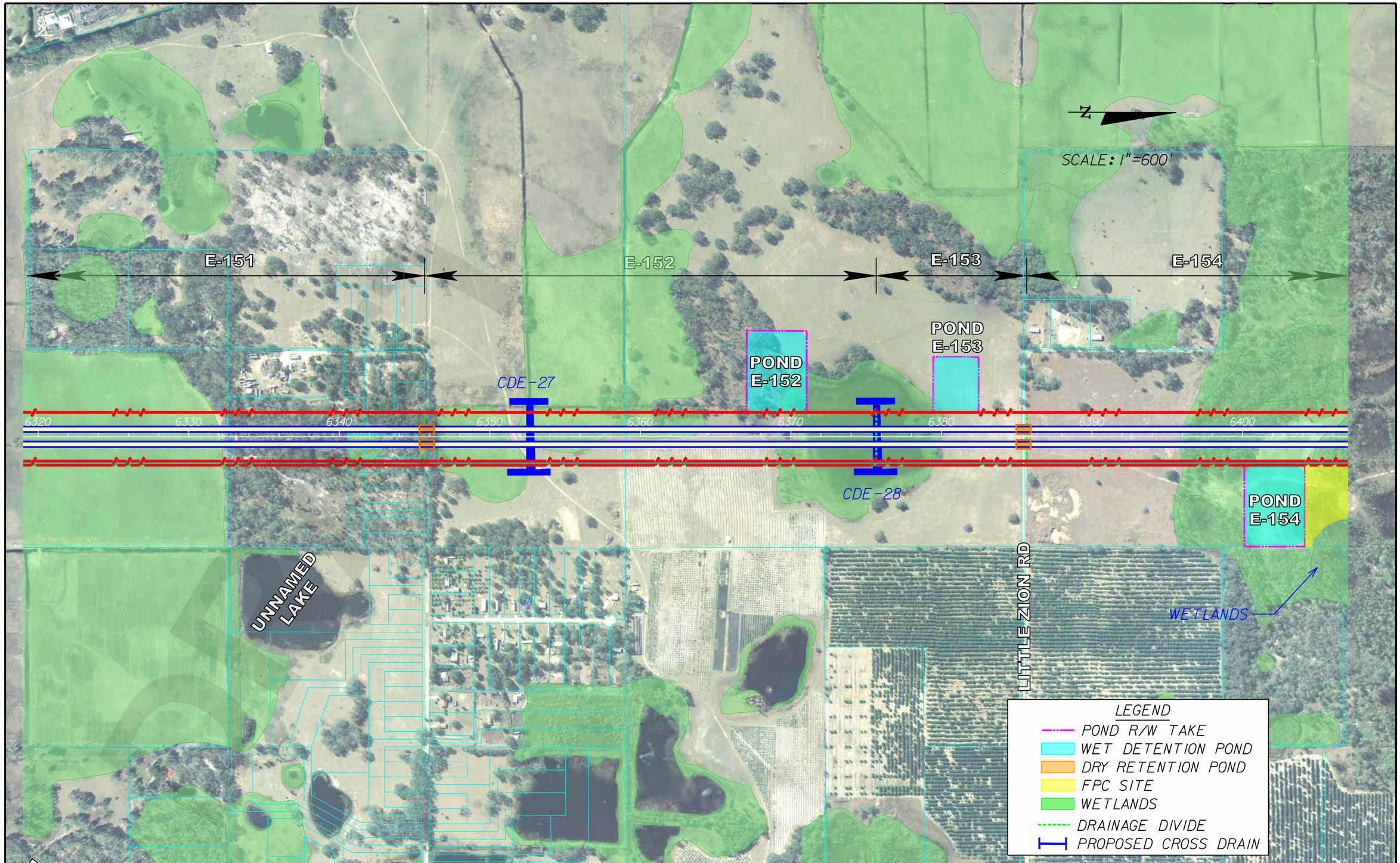

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 16

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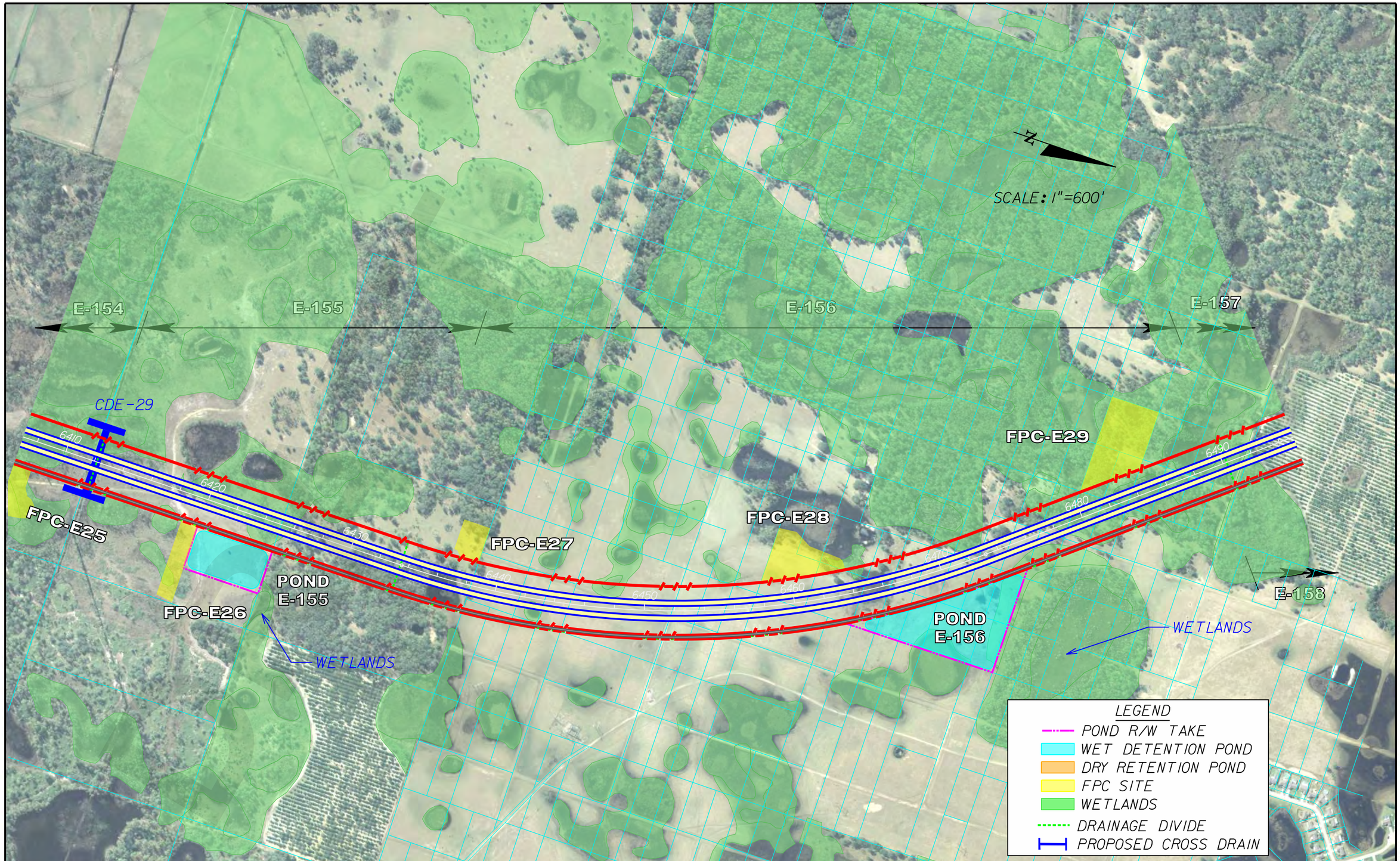

REVISIONS			
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CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 17

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CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 18

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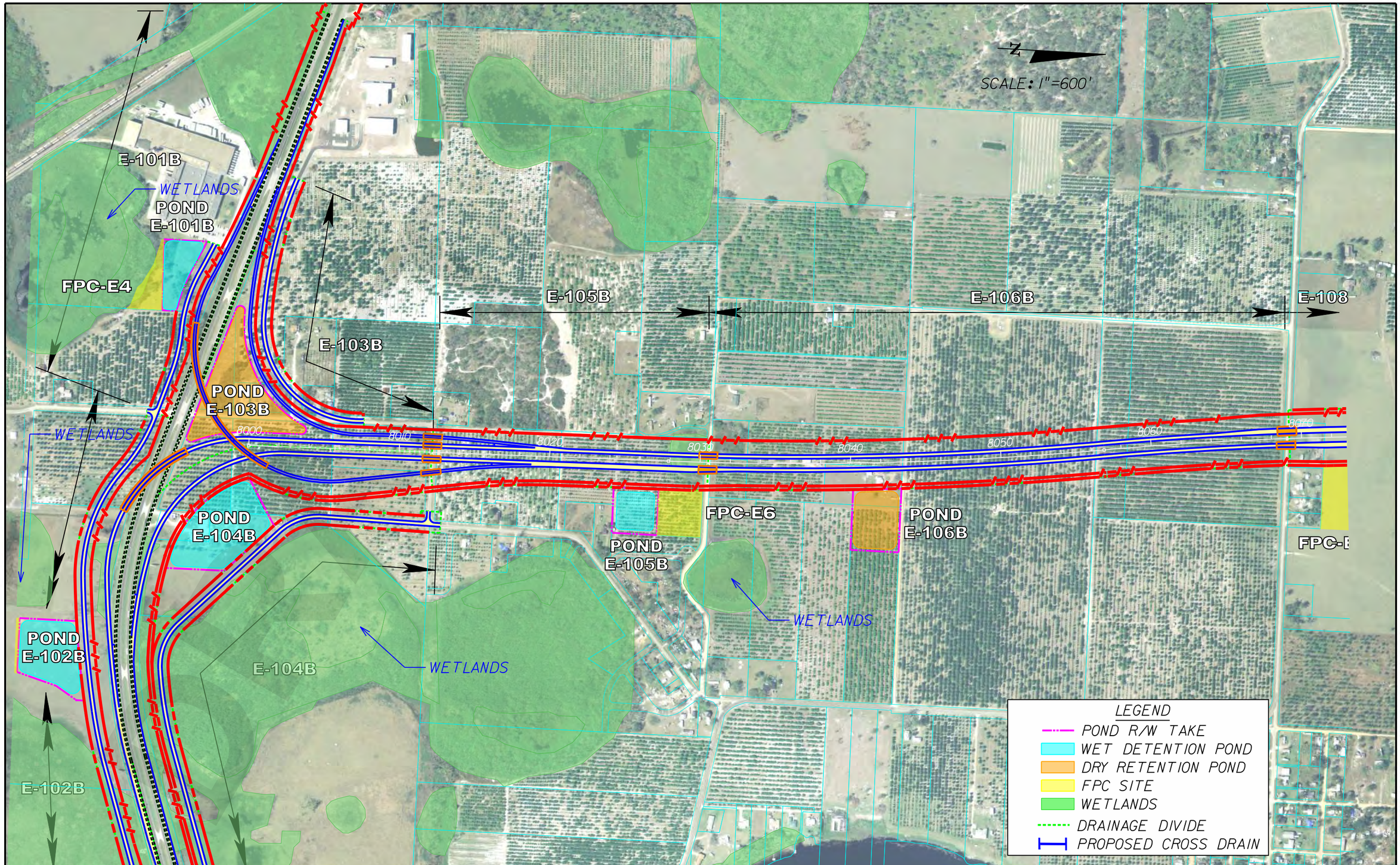

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CENTRAL POLK PARKWAY EAST SEGMENT POND EXHIBIT

SHEET NO. 19

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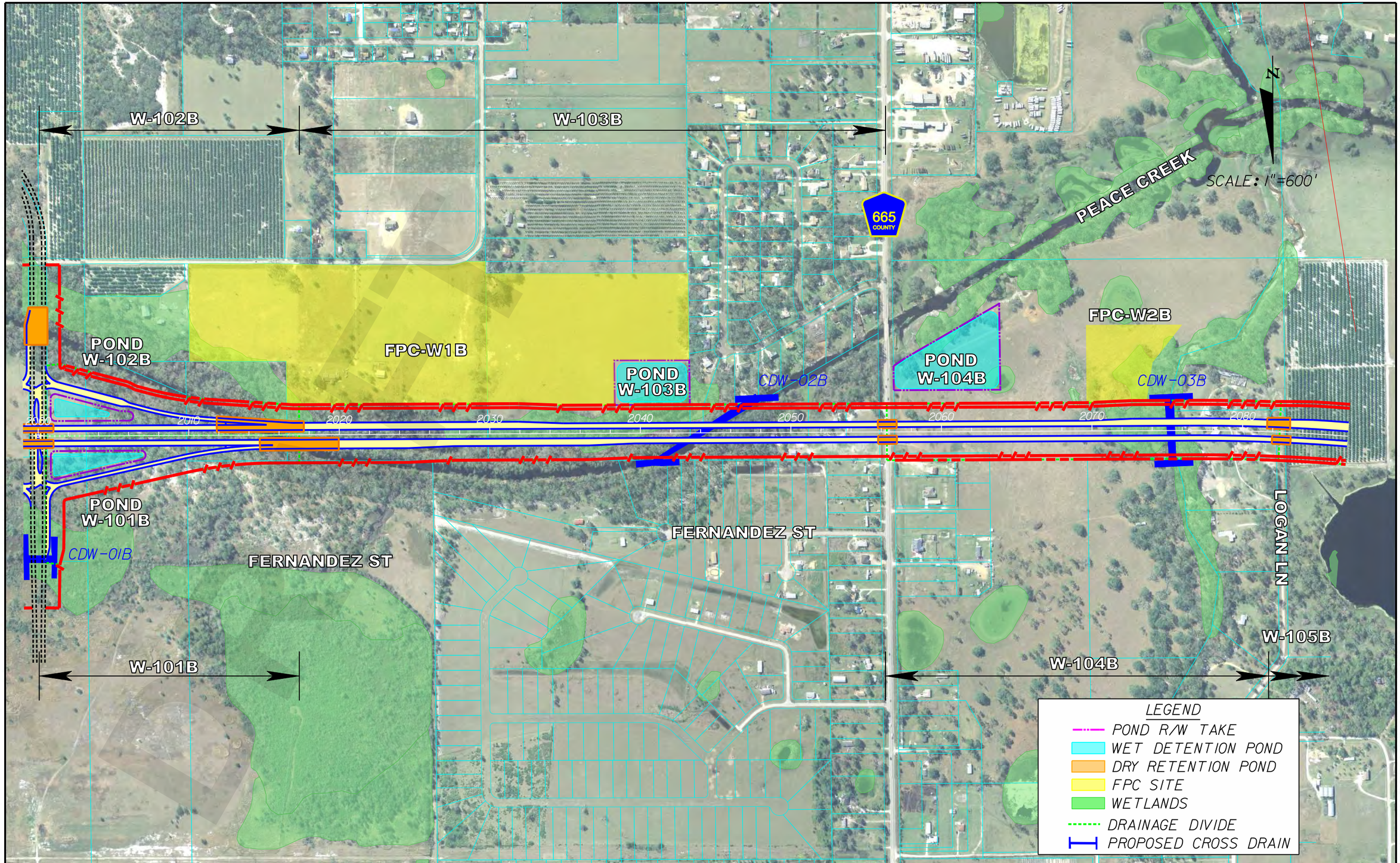

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Inwood consulting engineers

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY
WEST SEGMENT
POND EXHIBIT

SHEET NO. 1

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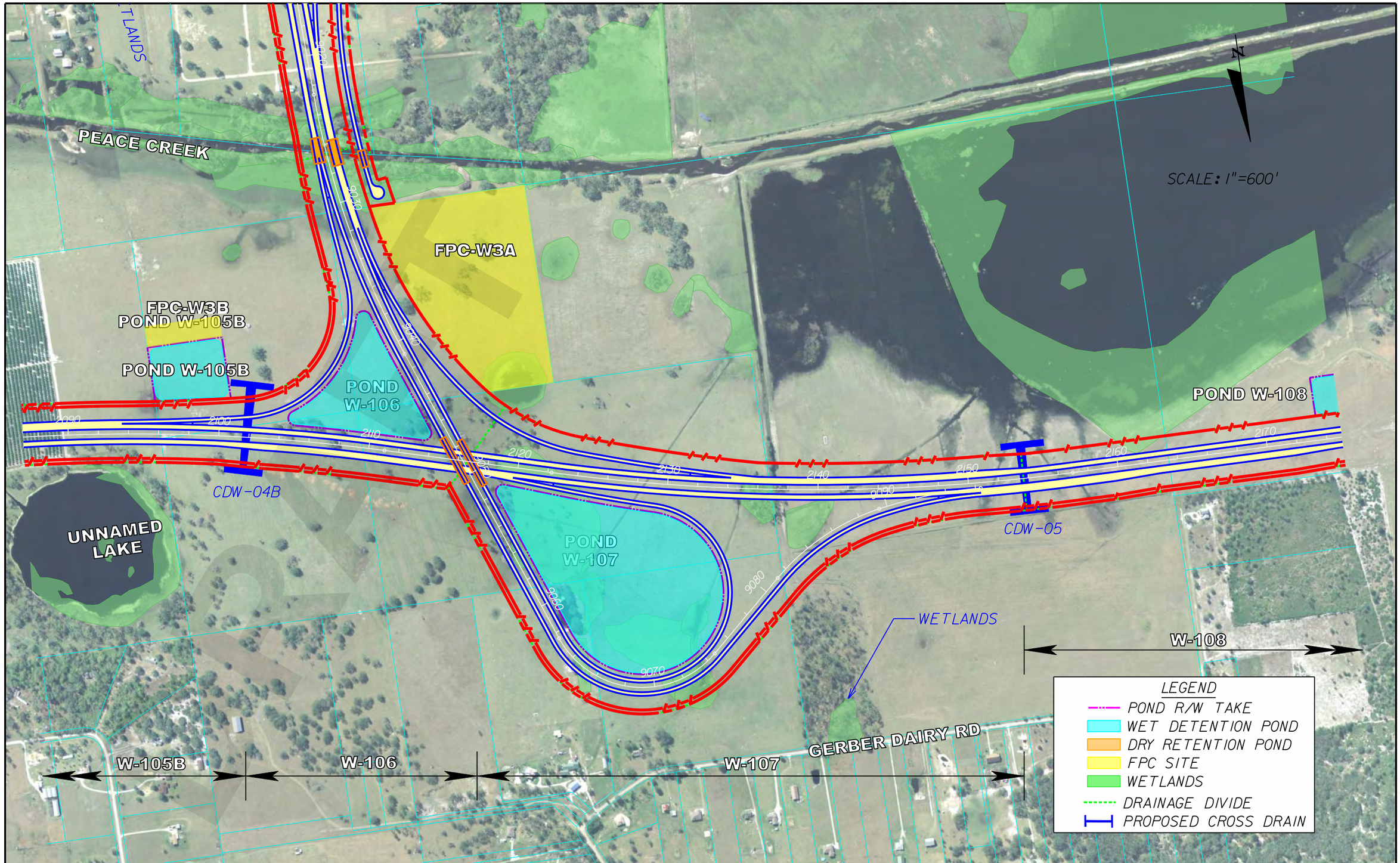

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY WEST SEGMENT POND EXHIBIT

SHEET NO. 2

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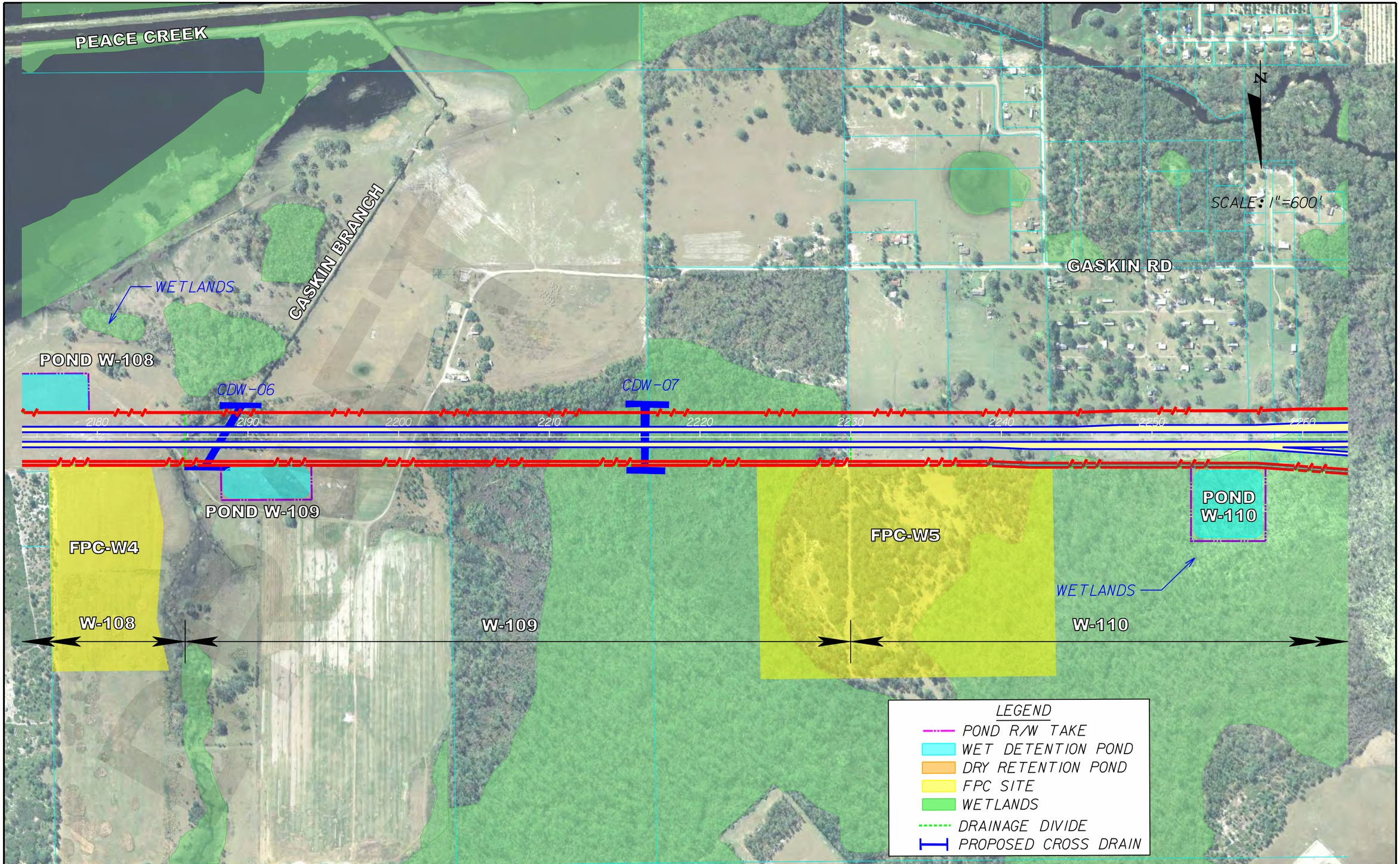

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY WEST SEGMENT POND EXHIBIT

SHEET NO. 3

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WETLANDS

POND W-112

UNNAMED LAKE

FPC-W8

W-112

POND W-113

POND W-113

POND W-113

POND W-113

CDW-10

SCALE: 1"=600'

POND W-111

FPC-W6

CDW-08

CDW-09

W-114

POND W-114

W-110

W-111

W-113

W-114

CDW-11

WETLANDS

LEGEND

- POND R/W TAKE
- WET DETENTION POND
- DRY RETENTION POND
- FPC SITE
- WETLANDS
- DRAINAGE DIVIDE
- PROPOSED CROSS DRAIN

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY WEST SEGMENT POND EXHIBIT

SHEET NO. 4

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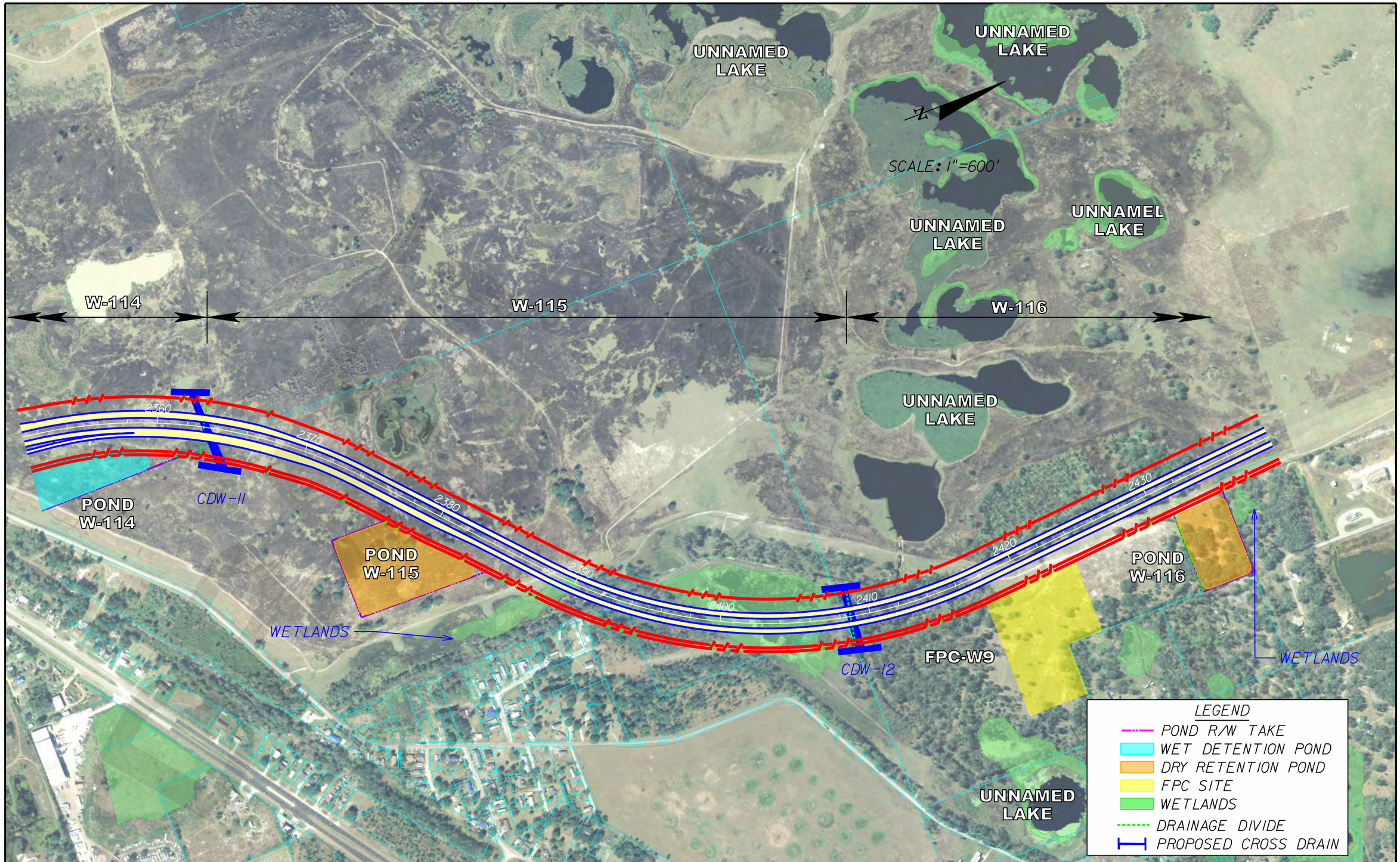

REVISIONS			
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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY
WEST SEGMENT
POND EXHIBIT

SHEET NO. 5

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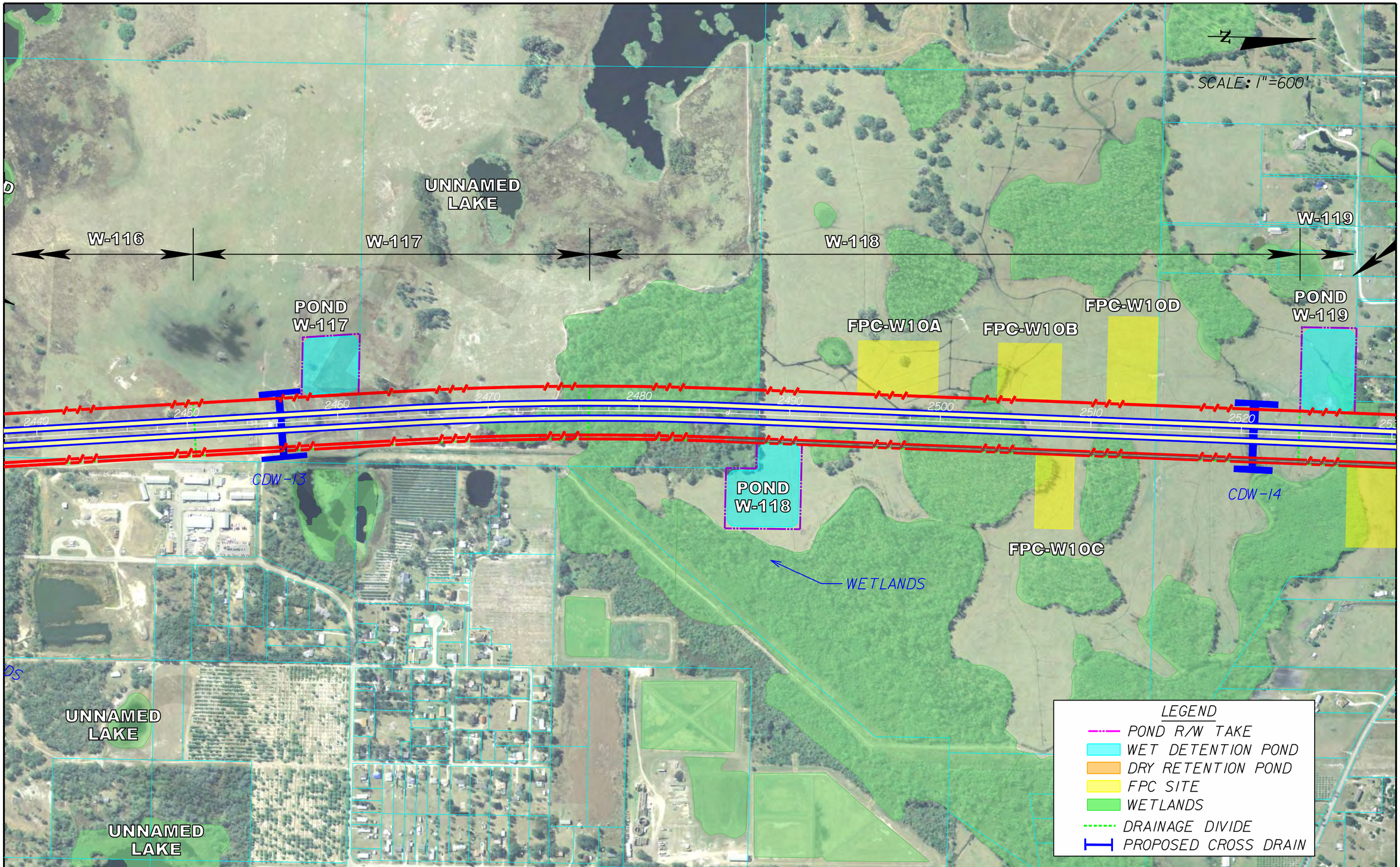

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY WEST SEGMENT POND EXHIBIT

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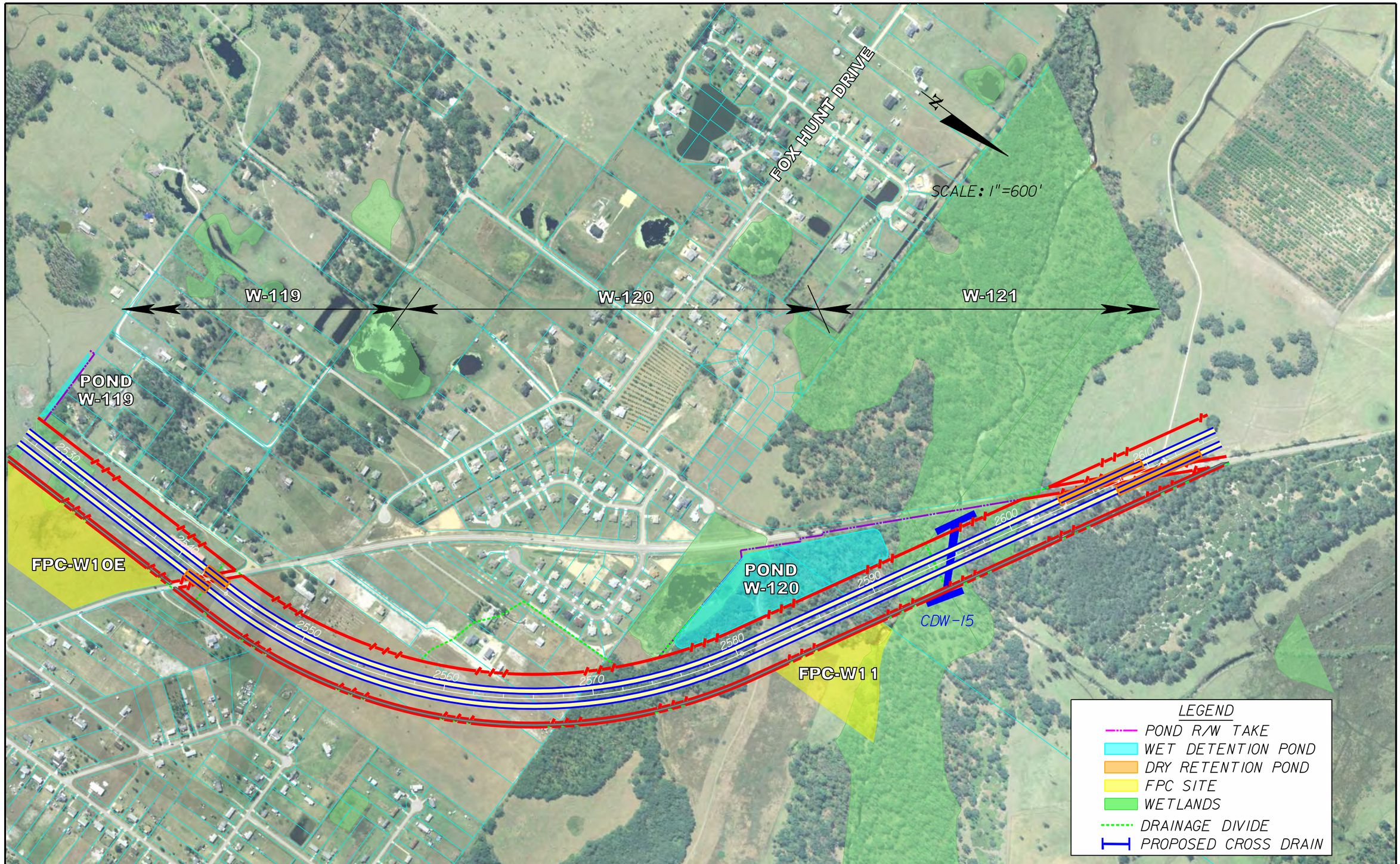

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY WEST SEGMENT POND EXHIBIT

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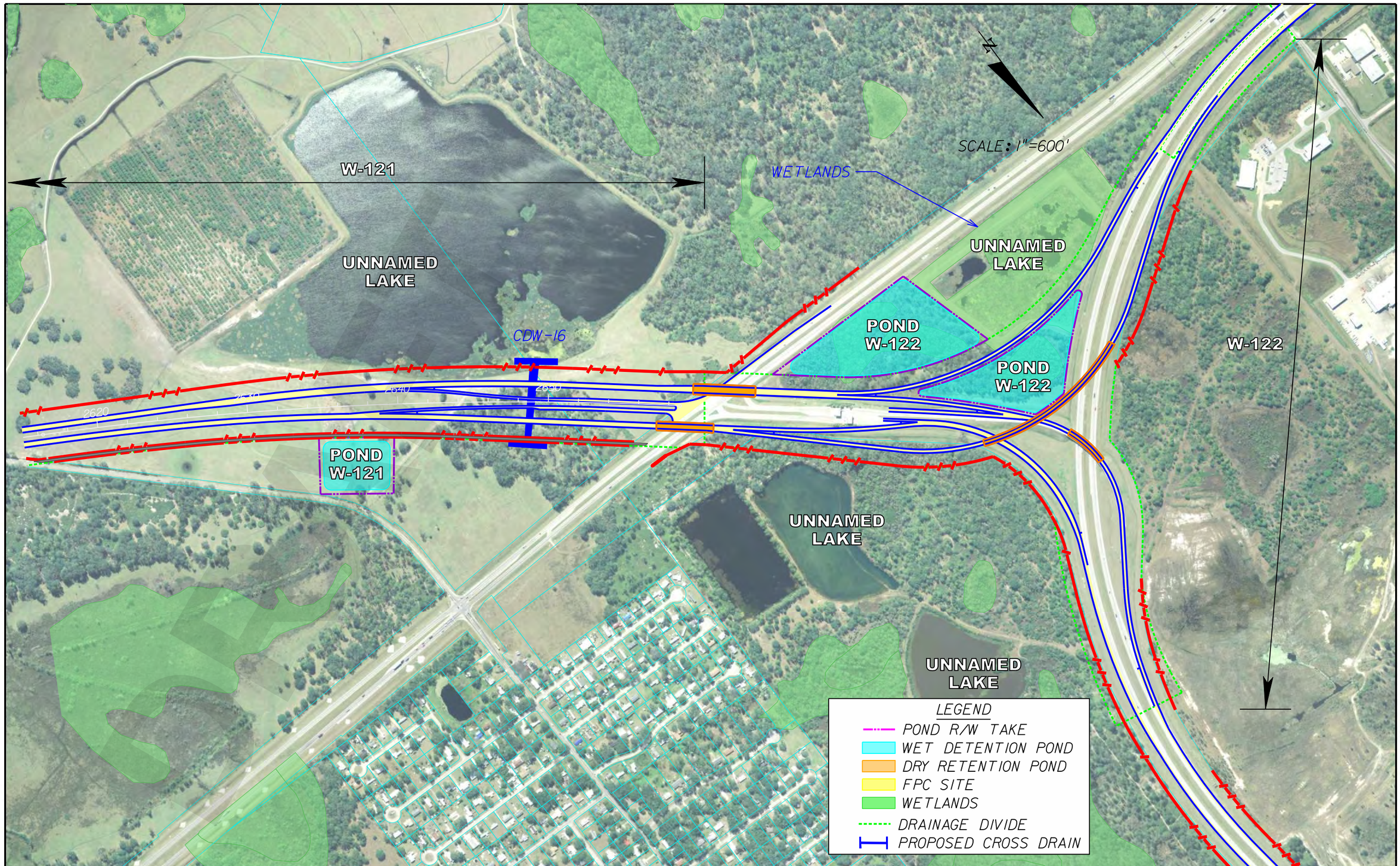

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Inwood consulting engineers

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY
WEST SEGMENT
POND EXHIBIT

SHEET NO. 8

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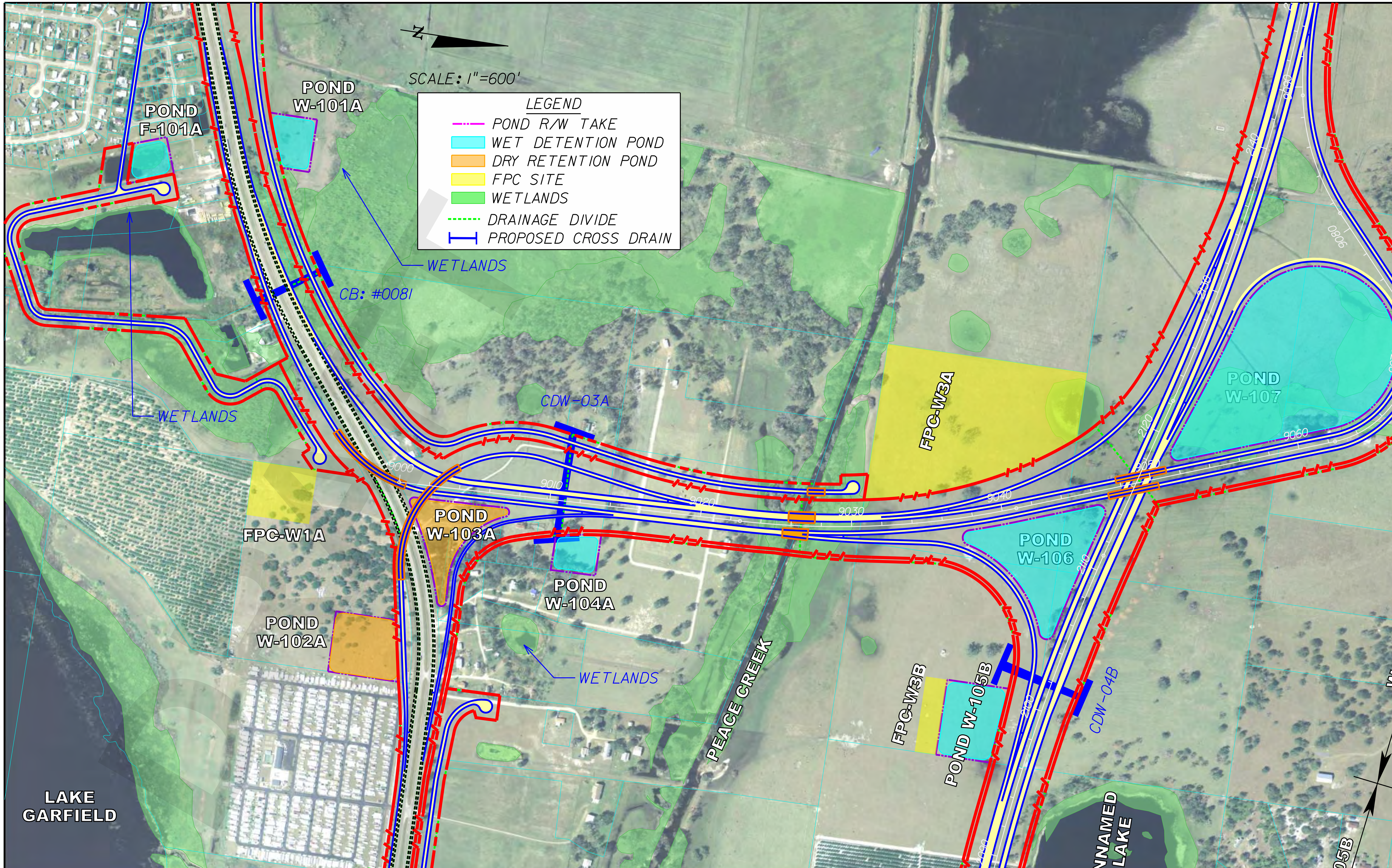

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Inwood consulting engineers

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
570	POLK	423601-1-22-01

CENTRAL POLK PARKWAY
WEST SEGMENT
POND EXHIBIT

SHEET NO. 9

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APPENDIX E

Cultural Resource Assessment Report

PRELIMINARY CULTURAL RESOURCE ASSESSMENT SURVEY
TECHNICAL MEMORANDUM
PROBABILITY ANALYSIS OF PROPOSED POND SITES
CENTRAL POLK PARKWAY
POLK COUNTY, FLORIDA

Financial Project ID: 423601-1-22-01

On Behalf of the:

Florida Department of Transportation, District One
P.O. Box 1349
MS 1-40
Bartow, Florida 33831-1249

December 2010

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PRELIMINARY CULTURAL RESOURCE ASSESSMENT SURVEY
TECHNICAL MEMORANDUM
PROBABILITY ANALYSIS OF PROPOSED POND SITES
CENTRAL POLK PARKWAY
POLK COUNTY, FLORIDA

Financial Project ID: 423601-1-22-01

On Behalf of the:

Florida Department of Transportation, District One
P.O. Box 1349
MS 1-40
Bartow, Florida 33831-1249

Prepared by:

Archaeological Consultants, Inc.
8110 Blaikie Court, Suite A
Sarasota, Florida 34240

In association with:

Post, Buckley, Schuh & Jernigan
600 North Broadway Avenue, Suite 310
Bartow, Florida 33830

December 2010

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PRELIMINARY CULTURAL RESOURCE ASSESSMENT SURVEY
TECHNICAL MEMORANDUM
PROBABILITY ANALYSIS OF PROPOSED POND SITES
CENTRAL POLK PARKWAY
POLK COUNTY, FLORIDA
Financial Project ID: 423601-1-22-01

The purpose of this preliminary cultural resource pond siting survey is to: 1) determine if any significant, previously recorded cultural resources, including archaeological sites, historic structures, or linear resources are located in any of the 93 preliminary pond sites; and 2) evaluate the archaeological and historical potential for each pond site. Significant cultural resources are defined as those sites which are listed, determined eligible, or considered potentially eligible for listing in the National Register of Historic Places (NRHP).

This preliminary pond siting cultural resource study complies with the provisions of the National Historic Preservation Act of 1966 (Public Law 89-665), as amended, and the implementing regulations 36 CFR 800, as well as with the provisions contained in the revised Chapter 267, *Florida Statutes (F.S.).*

There are 93 preliminary ponds for the CPP; of these, 66 are associated with the Eastern Preferred Alternative and 27 are associated with the Western Preferred Alternative.

Utilizing the previously approved predictive model prepared for the cultural resource assessment survey (CRAS) of the Central Polk Parkway (ACI 2010a; Stroh 2010), ACI evaluated each proposed pond site (66 on the Eastern Preferred Alignment and 27 on the Western Preferred Alignment) for archaeological and historical potential. The evaluation factors included previously recorded sites within or immediately adjacent to each proposed pond site; soil type; elevation; and distance to freshwater for archaeological sites. In addition, for historic resources, pertinent USGS quadrangle maps (United States Geological Survey [USGS] 1973a, 1973b, 1973c, 1973d, 1976, 1977a, 1977b, 1977c, 1981a, 1981b, 1981c, 1981d, 1981e, 1981f, 1981g) were reviewed to determine the potential for unrecorded buildings which might be 50 years of age or older. The evaluations utilized the data presented in the environmental, cultural history, and research considerations presented in the Central Polk Parkway CRAS (ACI 2010b) and are not repeated here.

Pond site locations are noted on the attached USGS quadrangle maps, and the archaeological/historical potential for each of the 93 proposed pond sites is presented in the following tables.

As a result of this study, it was determined that no preliminary pond site should be avoided for cultural resources. That is, there are no listed, determined eligible, or know potentially eligible archaeological sites, historic structures or linear resource groups within or adjacent to any preliminary pond site.

Table 1. Central Polk Parkway Potential Pond Sites on the Eastern Preferred Alternative and Associated Intersections. (Soil information provided by Inwood Consulting Engineers.)

Pond#	Pond Size (Acre)	Previously Recorded Resources	Soil Type	*Potential A	H
E-101A	3.19	0	Immokalee Sand; Smyrna and Myakka Fine Sands	L	None
E-102A	2.82	0	Pomello Fine Sand	L	None
E-103A	4.46	0	Zolfo Fine Sand; Smyrna and Myakka Fine Sands; Felda Fine Sand; Wauchula Fine Sand	M/H	None
E-104A	2.19	0	Felda Fine Sand; Wauchula Fine Sand	M/H	None
E-105A	2.11	0	Pomona Fine Sand	M/H	None
E-106A	2.28	0	Adamsville Fine Sand; Immokalee Sand	L	None
E-107A	7.48	0	Tavares Fine Sand, 0 to 5 PCT Slopes; Adamsville Fine Sand	M	None
E-101B	1.93	0	Zolfo Fine Sand	L	None
E-102B	4.08	0	Zolfo Fine Sand	M	None
E-103B	6.47	0	Archbold Sand, 0 to 5 PCT Slopes; Zolfo Fine Sand	L	None
E-104B	6.03	0	Zolfo Fine Sand; Immokalee Sand; Smyrna and Myakka Fine Sands	L	H
E-105B	2.09	0	Zolfo Fine Sand; Smyrna and Myakka Fine Sands	L	None
E-106B	3.03	0	Adamsville Fine Sand; Sparr Sand, 0 to 5 PCT Slopes	L	None
E-108	9.02	0	Basinger Mucky Fine Sand, Depressional; Ona Fine Sand; Smyrna and Myakka Fine Sands	M	None
E-109	17.58	0	Adamsville Fine Sand; Basinger Fine Sand; Smyrna and Myakka Fine Sands	M/H	None
E-110	9.83	0	Basinger Mucky Fine Sand, Depressional; Smyrna and Myakka Fine Sands	M/H	None
E-111	3.85	0	Basinger Fine Sand	M	None
E-112	2.51	0	Immokalee Sand; Wauchula Fine Sand	M/H	None
E-113	2.52	0	Smyrna and Myakka Fine Sands; Wauchula Fine Sand	M	None
E-114	2.72	0	Pomona Fine Sand	M	None
E-115	3.83	0	Pomona Fine Sand; Samsula Muck; Basinger Fine Sand	M	None
E-116	3.63	0	Immokalee Sand; Felda Fine Sand, Depressional; Holopaw Fine Sand, Depressional	M	None
E-117	6.30	0	Pomona Fine Sand	M	None
E-118	4.00	8PO4751 & 8PO4752 adj. to south	Tavares Fine Sand, 0 to 5 PCT Slopes; Zolfo Fine Sand	M/H	None
E-119	3.44	0	Tavares Fine Sand, 0 to 5 PCT Slopes	M	None
E-120	4.07	0	Candler Fine Sand, 0-5 PCT Slopes; Z	M	None
E-121	2.75	0	Candler Fine Sand, 0 to 5 PCT Slopes	M	None
E-122	3.18	0	Candler Fine Sand, 0 to 5 PCT Slopes	M	None
E-123	3.58	0	Candler Fine Sand, 0 to 5 PCT Slopes	L	None
E-124	3.65	0	Candler Fine Sand, 0 to 5 PCT Slopes	L	None
E-125	14.07	8PO4023	Candler Fine Sand, 0 to 5 PCT Slopes; Hontoon Muck	M	None
E-126	2.08	0	Candler Fine Sand, 0 to 5 PCT Slopes	L	None

E-127	10.32	0	Candler Fine Sand, 0 to 5 PCT Slopes	M	None
E-128	12.12	0	Candler Fine Sand, 0 to 5 PCT Slopes	M	None
E-129	6.08	0	Candler Fine Sand, 0 to 5 PCT Slopes	L	None
E-130	3.34	0	Candler Fine Sand, 0 to 5 PCT Slopes	M	None
E-131	3.91	0	Candler Fine Sand, 0 to 5 PCT Slopes	M/H	None
E-132	3.20	0	Candler Fine Sand, 0 to 5 PCT Slopes	L	None
E-133	2.36	0	Candler Fine Sand, 0 to 5 PCT Slopes	L	None
E-134	3.54	0	Candler Fine Sand, 0 to 5 PCT Slopes; Tavares Fine Sand, 0 to 5 PCT Slopes	M	None
E-135	5.54	0	Candler Fine Sand, 0 to 5 PCT Slopes	L	None
F-135	1.22	0	Candler Fine Sand, 0 to 5 PCT Slopes	M	None
E-136	6.54	0	Candler Fine Sand, 0 to 5 PCT Slopes	M/H	None
E-137	6.17	0	Candler Fine Sand, 0 to 5 PCT Slopes; Fort Meade Fine Sand, 0 to 5 PCT Slopes	H	None
E-138	4.15	0	Candler Fine Sand, 0 to 5 PCT Slopes	H	None
E-139	2.62	0	Candler Fine Sand, 0 to 5 PCT Slopes; Samsula Muck	L	None
E-140	4.65	0	Candler Fine Sand, 0 to 5 PCT Slopes	L	None
E-141	5.68	0	Candler Fine Sand, 0 to 5 PCT Slopes	H	None
E-142	4.01	0	Candler Fine Sand, 0 to 5 PCT Slopes; Hontoon Muck	M	None
E-143	3.36	0	Tavares Fine Sand, 0 to 5 PCT Slopes; Hontoon Muck	H	None
E-144	2.30	0	Candler Fine Sand, 0 to 5 PCT Slopes; Candler Fine Sand, 5 to 8 PCT Slopes	H	None
E-145	4.55	0	Candler Fine Sand, 0 to 5 PCT Slopes; Pomello Fine Sand	H	None
E-146	3.74	0	Immokalee Sand	L	None
E-147	10.66	8PO5371	Smyrna and Myakka Fine Sands	M/H	None
E-148	5.59	0	Smyrna and Myakka Fine Sands	L	None
E-149	7.16	0	Candler Fine Sand, 0 to 5 PCT Slopes; Tavares Fine Sand, 0 to 5 PCT Slopes	M/H	None
E-150	4.33	0	Samsula Muck; Narcoossee Sand	M	None
E-151	4.28	0	Narcoossee Sand; Smyrna and Myakka Fine Sands; Samsula Muck	H	None
E-152	4.97	0	Narcoossee Sand; Samsula Muck	M/H	None
E-153	2.54	0	Tavares Fine Sand, 0 to 5 PCT Slopes; Narcoossee Sand; Samsula Muck	M/H	None
E-154	4.99	0	Adamsville Fine Sand; Smyrna and Myakka Fine Sands; Samsula Muck	M	None
E-155	3.57	0	Smyrna and Myakka Fine Sands; Basinger Mucky Fine Sand, Depressional	M	None
E-156	7.99	8PO6503 adj. to east	Adamsville Fine Sand; Samsula Muck; Smyrna and Myakka Fine Sands	M	None
E-157	6.36	0	Tavares Fine Sand, 0 to 5 PCT Slopes, Basinger Mucky Fine Sand, Depressional	M	None
E-158	6.06	0	Tavares Fine Sand, 0 to 5 PCT Slopes; Pomello Fine Sand; Basinger Mucky Fine Sand, Depressional	M	None
E-159	22.12	8PO4119	Candler Fine Sand, 0 to 5 PCT Slopes; Tavares Fine Sand, 0 to 5 PCT Slopes; Samsula Muck	M/H	None

***A: Archaeological (M-Moderate; H-High); H: Historical (H-High)**

Table 2. Central Polk Parkway Potential Pond Sites on the Eastern Preferred Alternative and Associated Intersections. (Soil information provided by Inwood Consulting Engineers.)

Pond #	Pond Size (Acre)	Previously Recorded Resources	Soil Type	*Potential A	H
F-101A	1.55	0	Smyrna and Myakka Fine Sands	M	None
W-101A	2.03	0	Smyrna and Myakka Fine Sands	L	None
W-102A	3.99	0	Tavares Fine Sand, 0 to 5 PCT Slopes	M	None
W-103A	4.12	8PO7388 structure, adj. to north	Pomello Fine Sand; Sparr Sand, 0 to 5 PCT Slopes	M	None
W-104A	1.72	0	Sparr Sand, 0 to 5 PCT Slopes	L	H
W-101B	1.76	0	Smyrna and Myakka Fine Sands	M	None
W-102B	1.44	0	Smyrna and Myakka Fine Sands; Eaton Mucky Fine Sand, Depressional	L	None
W-103B	3.41	0	Pomello Fine Sand; Placid Fine Sand, Frequently Flooded	M	None
W-104B	6.00	0	Immokalee Sand; Placid Fine Sand, Depressional; Placid Fine Sand, Frequently Flooded	L	None
W-105B	4.43	0	Pomello Fine Sand; Smyrna and Myakka Fine Sands; Placid and Myakka Fine Sands, Depressional; Pomona Fine Sand	M	None
W-106	8.63	0	Smyrna and Myakka Fine Sands	L	None
W-107	27.41	0	Smyrna and Myakka Fine Sands; Lynne Sand	L	None
W-108	3.56	0	Pomello Fine Sand; Smyrna and Myakka Fine Sands	L	None
W-109	3.15	0	Adamsville Fine Sand; Smyrna and Myakka Fine Sands	L	None
W-110	5.56	0	Samsula Muck; Placid and Myakka Fine Sands, Depressional	L	None
W-111	3.36	0	Neilhurst Sand, 1 to 5 PCT Slopes; Slickens	L	None
W-112	3.32	0	Neilhurst Sand, 1 to 5 PCT Slopes	M/H	None
W-113	26.90	PO445	Neilhurst Sand, 1 to 5 PCT Slopes; Slickens	M/H	None
W-114	5.58	0	Arents-Water Complex; Arents, 0 to 5 PCT Slopes	H	None
W-115	7.84	0	Arents-Water Complex; Neilhurst Sand, 1 to 5 PCT Slopes	L	None
W-116	4.65	8PO4129	Neilhurst Sand, 1 to 5 PCT Slopes; Pomona Fine Sand	M/H	None
W-117	3.45	0	Arents, 0 to 5 PCT Slopes	L	None
W-118	5.64	0	Smyrna and Myakka Fine Sands; Placid and Myakka Fine Sands, Depressional	L	None
W-119	4.66	0	Smyrna and Myakka Fine Sands	M	None
W-120	14.14	0	Tavares Fine Sand, 0 to 5 PCT Slopes; Adamsville Fine Sand; Placid Fine Sand, Frequently Flooded	L	None
W-121	4.23	0	Smyrna and Myakka Fine Sands; Immokalee Sand	L	None
W-122	18.71	8PO4730/ 8PO4126	Felda Fine Sand; Arents, 0 to 5 PCT Slopes	M/H	None

***A: Archaeological (M-Moderate; H-High); H: Historical (H-High)**

DRAFT

References Cited

Archaeological Consultants, Inc. (ACI)

2010a Cultural Resource Research Design/Probability Assessment, Central Polk Parkway, Project Development and Environment (PD&E) Study, State Road (S.R.) 60 to the Polk Parkway (S.R. 570) and S.R. 60 to Interstate 4, Polk County, Florida. ACI, Sarasota.

2010b Cultural Resource Assessment Survey, Central Polk Parkway Project Development and Environmental (PD&E) Study State Road (S.R.) 60 to the Polk Parkway (S.R. 570) and S.R. 60 to Interstate 4, Polk County, Florida. ACI, Sarasota

Stroh, Scott M.

2010 Letter from Elizabeth Serdynski to Scott Stroh, RE: Central Polk Parkway PD&E Study, Financial Project ID No:423601-1-22-01 dated October 6, 2010. SHPO/DHR Project File Number 2010-4663, dated July 7.

United States Geological Survey (USGS)

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1973b Eloise, Fla. LABINS mrg3214.tif.
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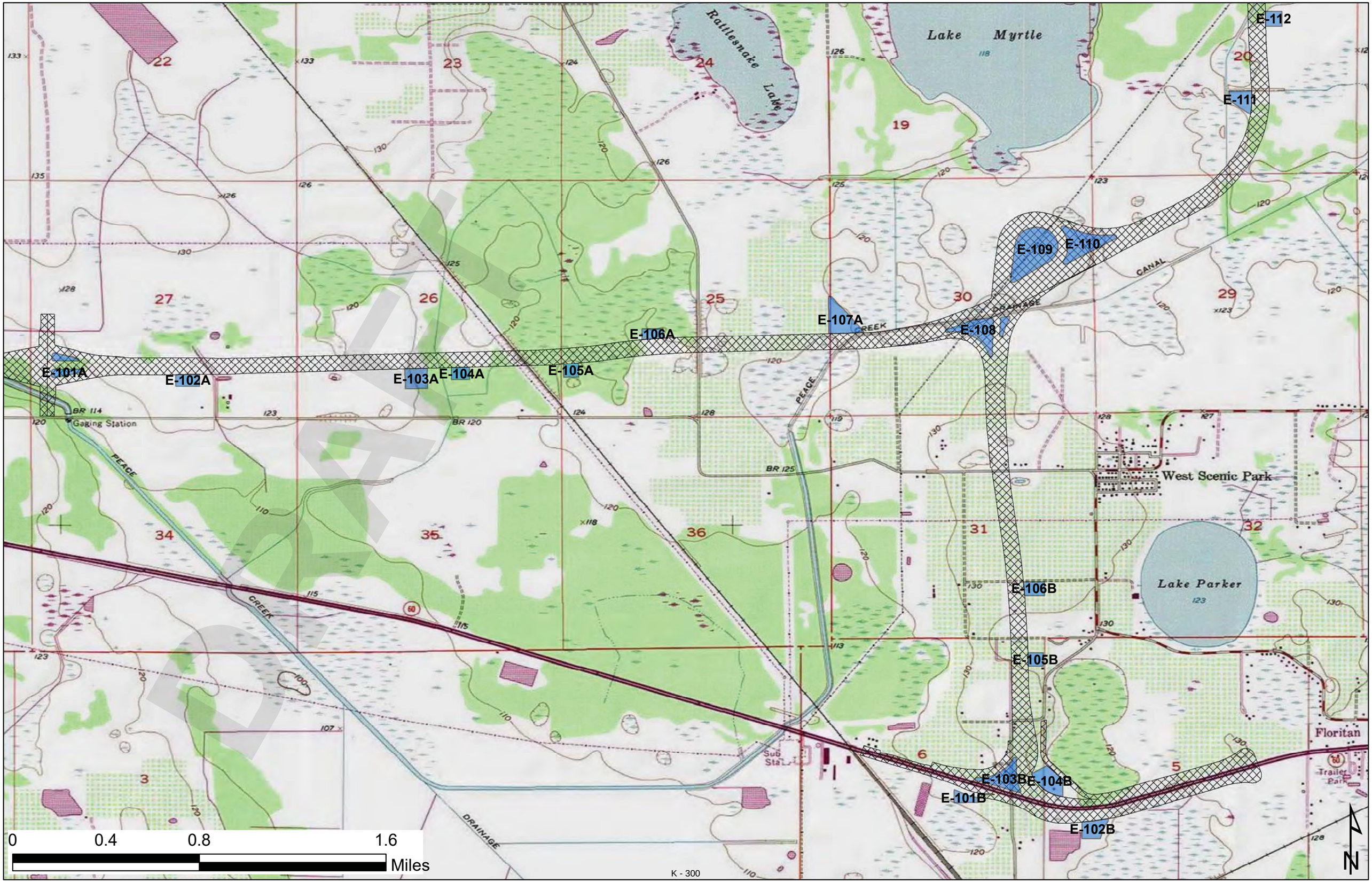
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Lake Myrtle
Rattlesnake Lake
West Scenic Park
Lake Parker
Floritan
Trailer Park
Gaging Station
BR 114
BR 120
BR 125
PEACE
CREEK
DRAINAGE
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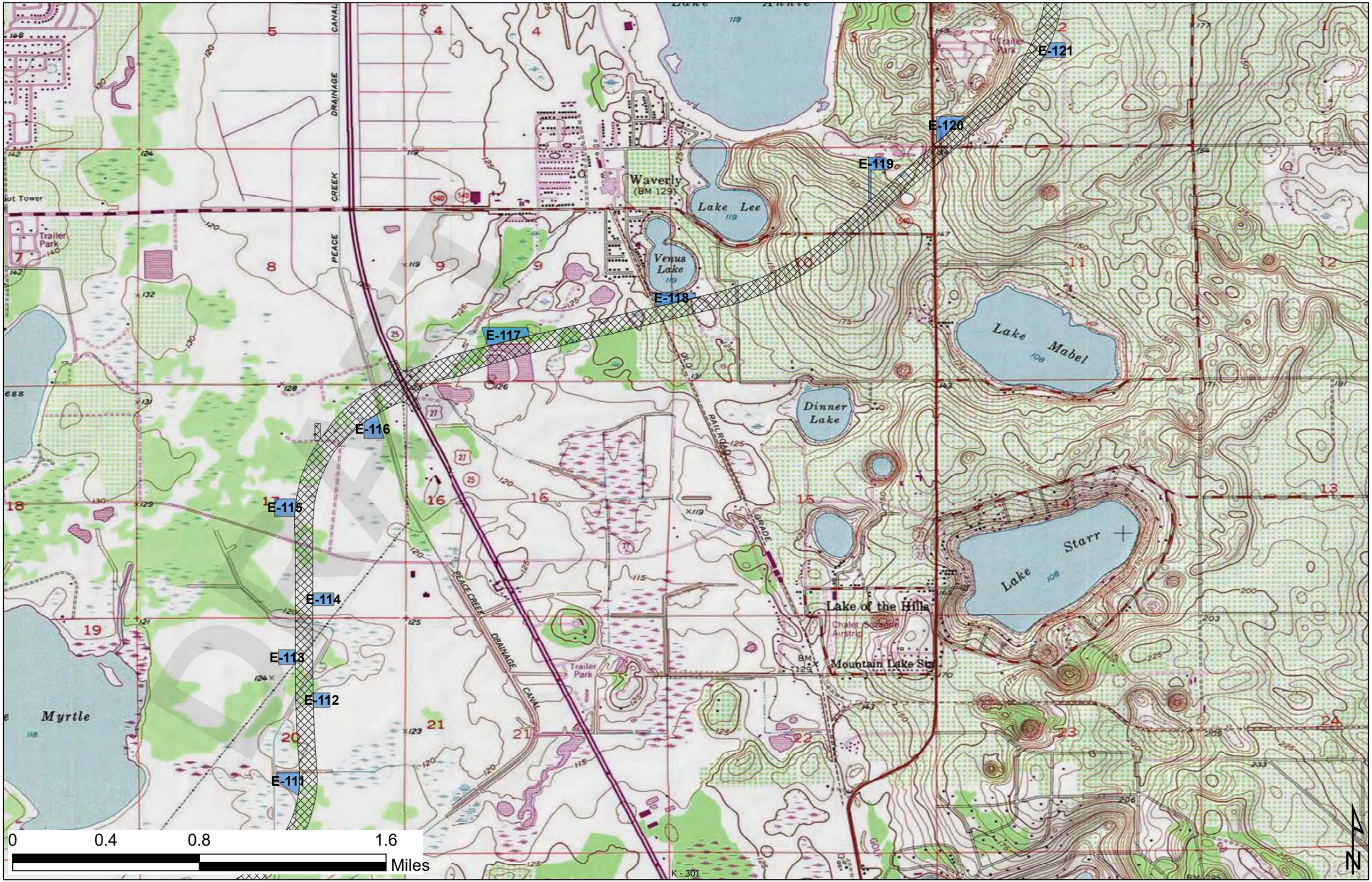
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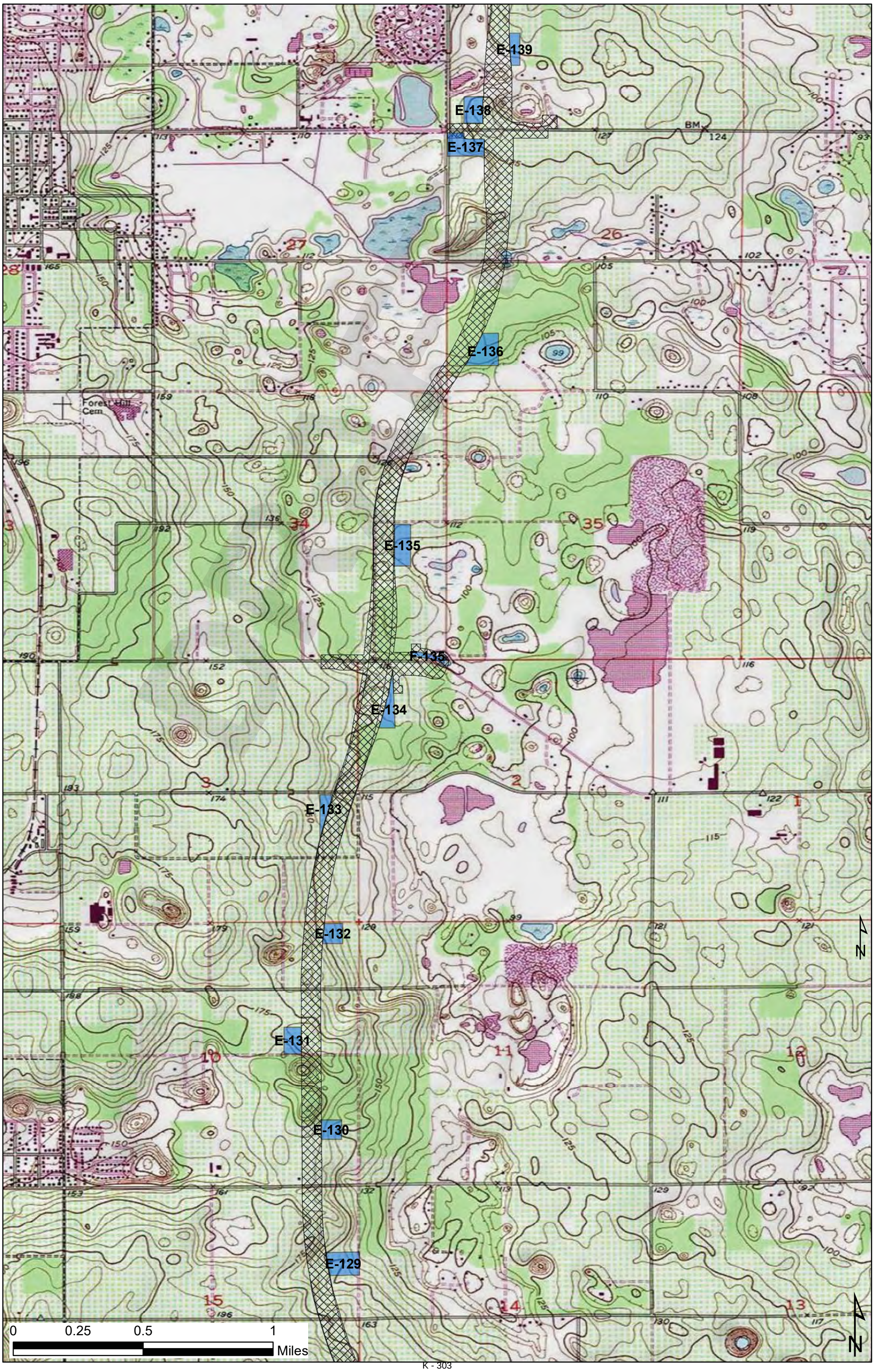
Waverly
(BM 129)
Lake Lee
Venus Lake
Lake Mabel
Dinner Lake
Lake Starr
Lake of the Hills
Mountain Lake Sta
Myrtle
Trailer Park
PEACE CREEK DRAINAGE CANAL
OLD RAILROAD GRADE
0
0.4
0.8
1.6
Miles
N

E-130
E-129
E-128
E-127
E-126
E-125
E-124
E-123
E-122
E-121
Lake Gordon
Lake Midge
Lake Trask
Lake Ruth
Lake Marie
Lake Menzie
Lake Josephine
Lake Ada
Camp Reagan
Substation
Trailer Park
Lake Annie
0 0.25 0.5 1
Miles
N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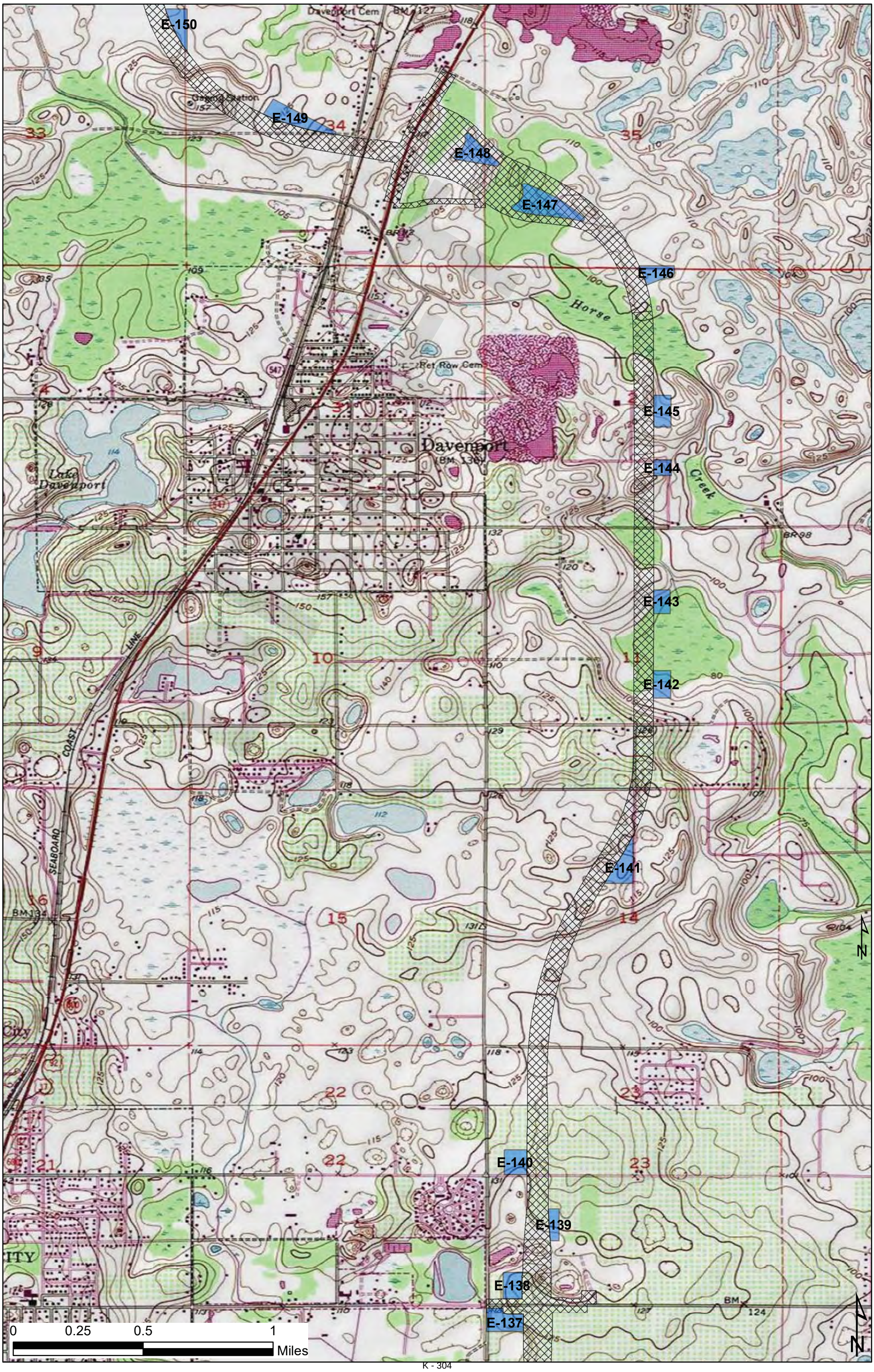
E-138
E-137
E-136
E-135
F-135
E-134
E-133
E-132
E-131
E-130
E-129
Forest Hill Cem
BM
0
0.25
0.5
1
Miles
N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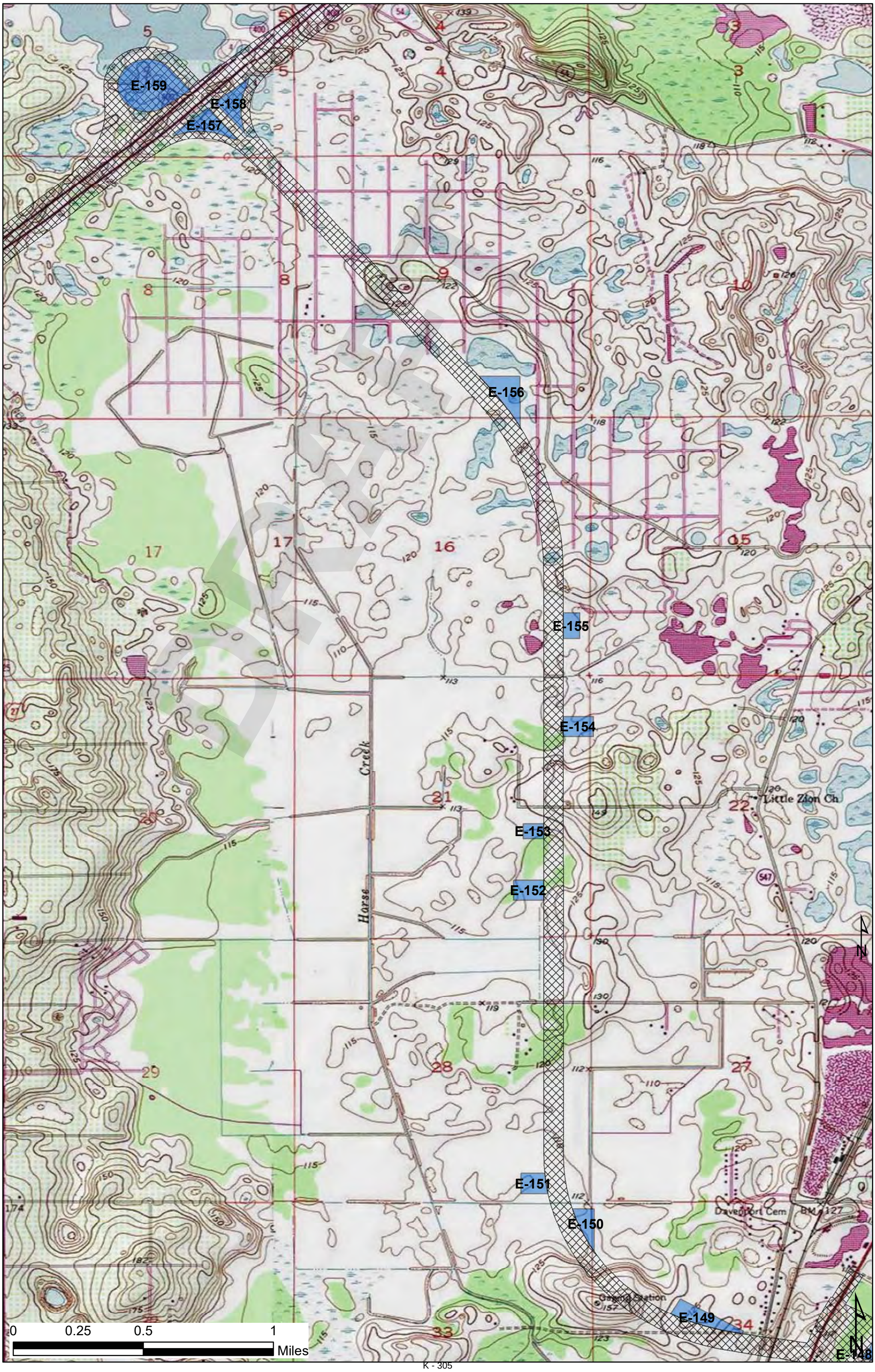
E-141
E-140
E-139
E-138
E-137
Davenport Cem
Gaging Station
Horse
Creek
Ret Row Cem
Davenport
Lake Davenport
COAST
LINE
SEABOARD
0
0.25
0.5
1
Miles
N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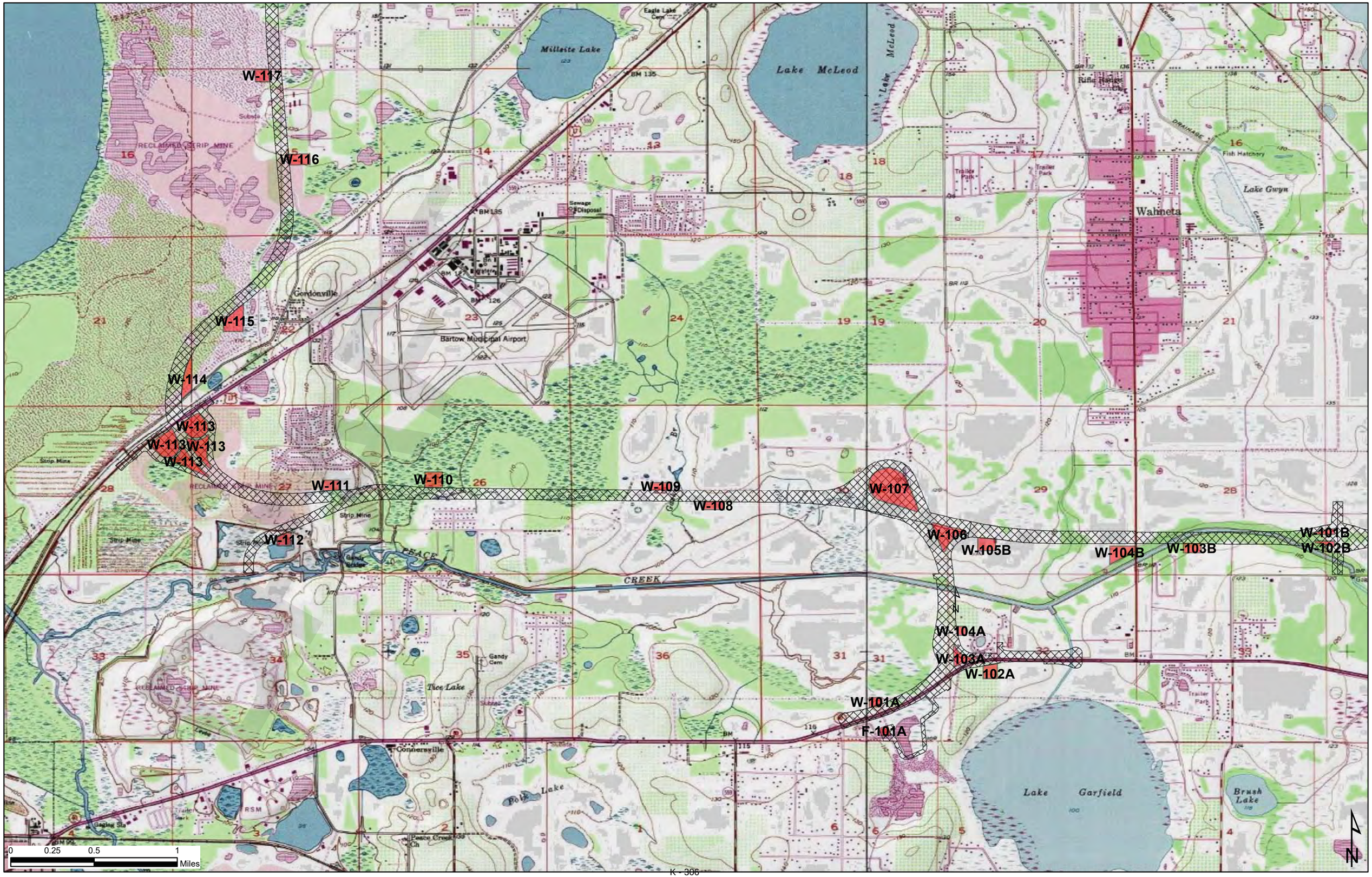
E-158
E-157
E-156
E-155
E-154
E-153
E-152
E-151
E-150
E-149
E-148
Horse
Creek
Little Zion Ch
Davenport Cem
Gaging Station
N
0
0.25
0.5
1
Miles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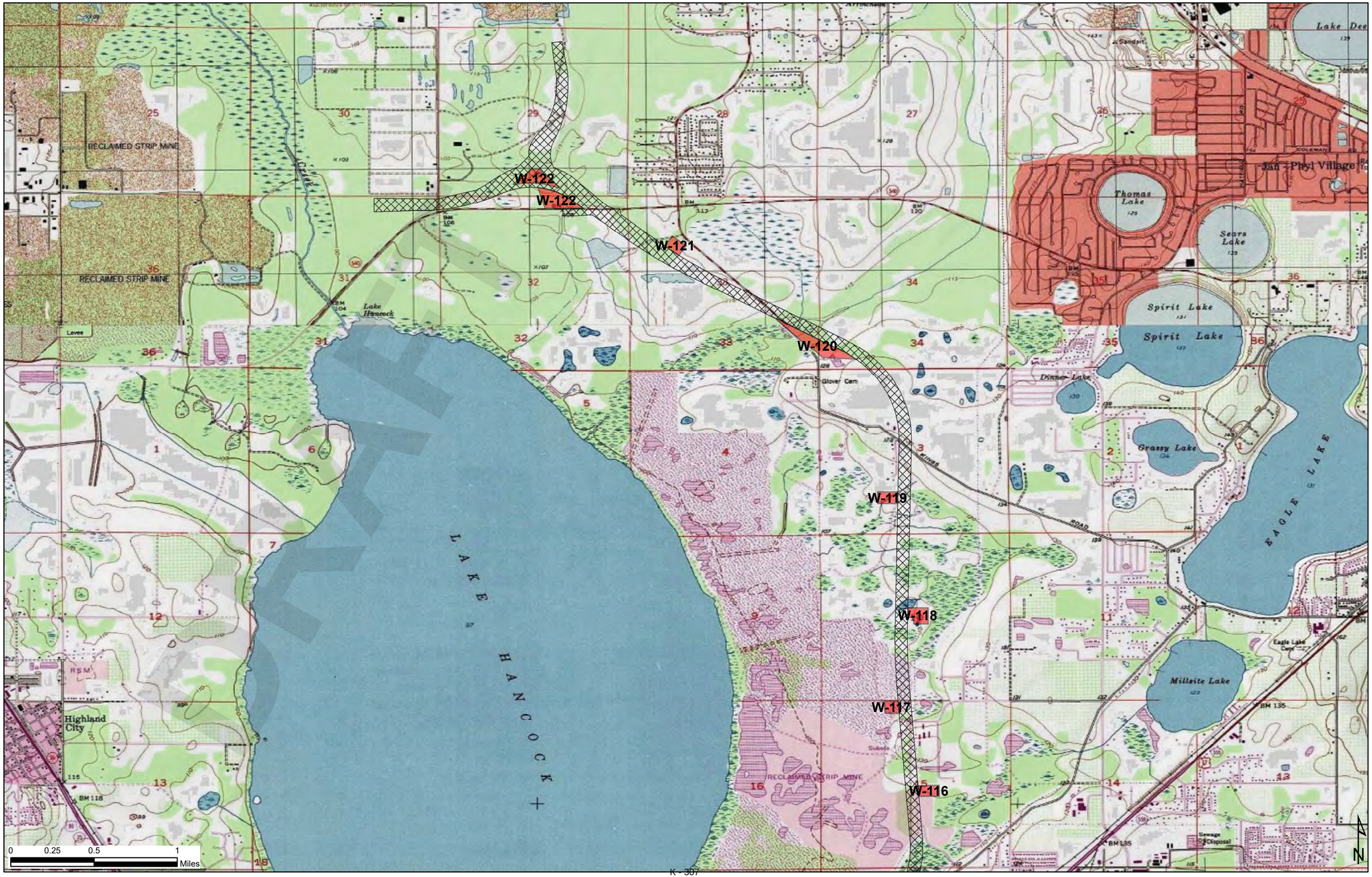
W-103B
W-101B
W-102B
W-112
W-104A
W-103A
W-102A
W-101A
F-101A
Millsite Lake
Lake McLeod
Lake McLeod
Wahneta
Lake Gwyn
Fish Hatchery
Gordonville
Bartow Municipal Airport
Sewage Disposal
Rifle Range
Trailer Park
Strip Mine
Gandy Cem
Tice Lake
Connersville
Polk Lake
Lake Garfield
Brush Lake
PEACE CREEK
RECLAIMED STRIP MINE
0 0.25 0.5 1 Miles
N


W-122
W-122
W-121
W-120
W-119
W-118
W-117
W-116
RECLAIMED STRIP MINE
RECLAIMED STRIP MINE
Lake Hancock
LAKE HANCOCK
Highland City
Thomas Lake
Sears Lake
Spirit Lake
Spirit Lake
Grassy Lake
EAGLE LAKE
Milleite Lake
Glover Cem
Levee
0 0.25 0.5 1 Miles
N

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APPENDIX F

Wetland/Protected Species Assessment Report

ENDANGERED SPECIES BIOLOGICAL ASSESSMENT

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
CENTRAL POLK PARKWAY
FROM S.R. 60 TO POLK PARKWAY (SR 570) and FROM S.R. 60 TO I-4

Financial Project ID No. 423601 1 22 01
POLK COUNTY, FLORIDA

Prepared for:
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DISTRICT ONE
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and
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Bartow, Florida 33830

Prepared by:
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5892 East Fowler Avenue
Tampa, Florida 33617

December 2010

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WESTERN LEG PREFERRED ALTERNATIVE EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate proposed construction of the Central Polk Parkway from S.R. 60 to the Polk Parkway in Polk County, Florida. The purpose of this project is to identify an environmentally sensitive western leg preferred alternative for the proposed Central Polk Parkway. Project needs include the improvement of regional connectivity, enhancement of emergency evacuation capabilities, and accommodation of future population growth. The project landscape is primarily agricultural, consisting of pastureland. Wetlands, upland forests, and residential land uses are also present within and adjacent to the project corridor. This Endangered Species Biological Assessment (ESBA) has been prepared to aid in determining the type, design, and location of improvements to the existing facility and to evaluate impacts, if any, associated with preferred alternative for the western leg of the proposed Central Polk Parkway.

This data collection effort was conducted in two phases. The first phase consisted of initial data collection to develop a project overview, review of agency Environmental Technical Advisory Team (ETAT) comments on the FDOT Efficient Transportation Decision Making (ETDM) website, and determining if any species-specific surveys would be required. The second phase consisted of developing the appropriate methodology and conducting field surveys.

A summary of the analysis of potential project impacts for the western leg preferred alternative is presented below.

Protected Species with Federal Designations

"May Affect" Determinations

The **wood stork** (*Mycteria americana*) is listed as endangered by the U.S. Fish and Wildlife Service (USFWS). The project area is located within the core foraging area (CFA) of seven wood stork colonies (Lone Palm, NE. Mulberry, #612316, #616037, #616114, #616117, and #616321). No wood storks were observed flying over the project area. Given the current mitigation criteria of the USFWS South Florida Ecological Services Office, it is anticipated that this project "may affect" the wood stork. Because of the potential for effects to the species, the

FDOT is committed to re-initiating Section 7 consultation during the design phase and prior to permitting the project. At that time, the FDOT will evaluate the current information and provide appropriate mitigation, if necessary.

"May Affect, But Is Not Likely To Adversely Affect" Determinations

The **crested caracara** (*Caracara cheriway*) is listed as threatened by the USFWS. The entire project corridor is located within the USFWS crested caracara Consultation Area (CA). No crested caracaras were observed and nests were identified during general project surveys, but suitable habitat is located within the project area. Therefore, it is anticipated that the project "may affect, but is not likely to adversely affect" the crested caracara.

The **Florida scrub-jay** (*Aphelocoma coerulescens*) is listed as threatened by the USFWS. The entire project area is located within the USFWS Florida scrub-jay CA. The nearest documented scrub-jay sighting is located approximately four miles southeast of the project area. During field surveys several small areas of scrub-jay habitat were located adjacent to links W203 and W203R and within and adjacent to link W207, but no Florida scrub-jays were observed. Because of limited suitable habitat within the project area it is anticipated that the project "may affect, but is not likely to adversely affect" the Florida scrub-jay.

The **American alligator** (*Alligator mississippiensis*) is listed by the USFWS as threatened due to its similarity of appearance to the American crocodile (*Crocodylus acutus*). No American alligators were observed during field surveys. Since project impacts to wetlands within the corridor will be appropriately mitigated for pursuant to Part IV, Chapter 373, F.S. and 33 U.S.C. 1344, it is anticipated that the project "may affect, but is not likely to adversely affect" the American alligator.

The **bluetail mole skink** (*Eumeces egregious lividus*) is listed as a threatened species by the USFWS. There are several bluetail mole skink sightings documented within two miles of the project area. During field surveys several small areas of bluetail mole skink habitat were located adjacent to links W203 and W203R and within and adjacent to link W207, but no individuals were observed. Since the project area contains potential habitat for this species it is anticipated that the project "may affect, but is not likely to adversely affect" the bluetail mole skink.

The **eastern indigo snake** (*Drymarchon corais couperi*) is listed by the USFWS as threatened. An eastern indigo snake was previously documented in the project area in 1989 and there are

other sightings documented within six miles of the project. No eastern indigo snakes were observed during general wildlife surveys. However, because areas of suitable habitat for this species occur adjacent to the project corridor, eastern indigo snake presence in the project corridor is possible. The FDOT will commit to implementing the standard FDOT Construction Precautions for the Eastern Indigo Snake (**Appendix D**). Therefore, it is anticipated that this project "may affect, but is not likely to adversely affect" the eastern indigo snake.

The **sand skink** (*Neoseps reynoldsi*) is listed as threatened by the USFWS. There are several sand skink sightings documented within two miles of the project area. During field surveys several small areas of sand skink habitat were located adjacent to links W203 and W203R and within and adjacent to link W207, but no sand skinks or signs of sand skink were observed. Since the project area contains potential habitat for this species it is anticipated that the project "may affect, but is not likely to adversely affect" the sand skink.

"No Effect" Determinations

The **Florida grasshopper sparrow** (*Ammodramus savannarum floridanus*) is listed as endangered by the USFWS. The project corridor falls within the USFWS CA for the species. No Florida grasshopper sparrow or their nests have been previously documented within or adjacent to the project area and no grasshopper sparrows were observed during field surveys. No suitable Florida grasshopper sparrow habitat was identified within or adjacent to the project area and no individuals of this species were observed during field surveys. Since no evidence of Florida grasshopper sparrow was detected no suitable habitat for this species exists it is anticipated that the project will have "no effect" on the Florida grasshopper sparrow.

The **snail kite** (*Rostrhamus sociabilis plumbeus*) is listed as endangered by the USFWS. Field surveys did not detect the snail kite in the project area. No observations of the species have been documented within or adjacent to the project area. No Florida apple snails or exotic ramshorn apple snails, primary food sources for the snail kite, were observed in the project area. The entire project corridor is located within the USFWS snail kite CA. Since no evidence of the snail kite or apple snails was detected, limited foraging opportunities appear to exist, and wetland impacts will be mitigated for pursuant to Part IV, Chapter 373, F.S. and 33 U.S.C. 1344, it is anticipated that the project will have "no effect" on the snail kite.

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Protected Species with State Designation Only

Wading birds such as the limpkin (*Aramus guarana*), white ibis (*Eudocimus albus*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), and roseate spoonbill (*Platalea ajaia*) are listed as species of special concern by the Florida Fish and Wildlife Conservation Commission (FWC) and are also protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712). There are several documented wading bird rookeries surrounding Lake Hancock, which is located approximately 0.5 miles west of the project area. Since wetland impacts to habitats potentially utilized by these state-listed species will be mitigated for pursuant to Part IV, Chapter 373, F.S. and U.S.C. 1344, it is anticipated that the project will not result in any adverse effects to these species.

The **Florida burrowing owl** (*Athene cunicularia floridana*) is listed as a species of special concern by the FWC. While adequate habitat exists along the project corridor for the burrowing owl, field surveys did not detect any burrowing owls or burrows. Based on field survey results and lack of previously documented observations, it is anticipated that the project will not adversely affect the Florida burrowing owl.

The **Florida sandhill crane** (*Grus canadensis pratensis*) is listed as threatened by the FWC. Florida sandhill cranes were observed foraging in the project area. Given the fact that suitable foraging habitat is located outside of the project area, it is anticipated that the project will not adversely affect the Florida sandhill crane.

The **southeastern American kestrel** (*Falco sparverius paulus*) is listed as threatened by the FWC. Suitable foraging habitat is present in the project area and adequate nesting habitat was observed. Two southeastern American kestrels were observed in the project area during field surveys. Given the fact that suitable foraging and nesting habitat is observed outside of the project area, it is anticipated that the project will not adversely affect the Southeastern American kestrel.

The **gopher tortoise** (*Gopherus polyphemus*) is listed by the FWC as threatened. Gopher tortoise burrows, both "potentially occupied burrows" and "abandoned burrows", were identified in the project corridor. Any gopher tortoises located within 25 feet of an area proposed for development must be relocated according to FWC requirements. The FWC encourages that commensal species such as the gopher frog (*Rana capito*) and Florida mouse (*Podomys floridanus*) be relocated along with gopher tortoise. Since all tortoises and commensal species will be relocated

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to suitable habitat, the project is not anticipated to adversely affect the gopher tortoise, gopher frog, or Florida mouse.

The **Sherman's fox squirrel** (*Sciurus niger shermani*) is listed as a species of special concern by the FWC. Field surveys identified one individual just north of the project area. No nests or individual Sherman's fox squirrels were identified. Because there is ample foraging and nesting habitat adjacent to the project area, it is anticipated that the project will not adversely affect the Sherman's fox squirrel.

The **Florida black bear** (*Ursus americanus floridanus*) is designated as a threatened species by the FWC in areas outside of Baker County, Columbia County, and the Apalachicola National Forest. Nuisance black bears have been previously documented within 2 miles of the project area. Field surveys conducted during this study did not detect signs of Florida black bear occurrence. Adequate black bear habitat is adjacent to the project corridor, therefore it is anticipated that the project will not affect the Florida black bear.

No state **protected plant species** were observed within the project area during general field surveys. The following protected plant species have been documented within a two-mile radius of the project area: Curtiss' milkweed (*Asclepias curtissi*), Florida bonamia (*Bonamia grandiflora*), pygmy fringe-tree (*Chionanthus pygmaeus*), scrub-buckwheat (*Eriogonum longifolium gnaphalifolium*), star anise (*Illicium parviflorum*), Britton's beargrass (*Nolina brittoniana*), Lewton's polygala (*Polygala lewtonii*), scrub plum (*Prunus geniculata*), and Carter's mustard (*Warea carteri*). If any state-protected plant species are observed within the proposed impact limits during the design phase, coordination with the Florida Department of Agriculture and Conservation Sercvices (FDACS) will be initiated, and efforts will be made prior to construction to allow for seed collection and/or relocation to adjacent habitat or other suitable protected lands. As a result, it is anticipated that the project will not adversely affect state-protected plants.

Other Species

The **bald eagle** (*Haliaeetus leucocephalus*) is no longer listed by the USFWS or FWC but remains protected under the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d), as amended, and the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712). Given the proximity of one active bald eagle within 660 feet of the project area and the possibility of new nests being identified by the FWC during yearly surveys, the FDOT will commit to resurveying

the project area prior to construction. If any nests within the 660-foot protection zone are deemed active, the FDOT will act in accordance with the BGEPA and MBTA as applicable during the design, permitting, and construction of this project. Therefore, this project is not likely to adversely affect the bald eagle.

For the western leg preferred alternative, the FDOT will consider the following commitments:

1. Gopher tortoise: Due to the presence of gopher tortoise habitat within and adjacent to the existing right-of-way (ROW), a gopher tortoise survey in appropriate habitat within construction limits (including roadway footprint and stormwater management ponds) will be performed prior to construction per FWC guidelines. The FDOT will secure any relocation permits as appropriate.

2. Eastern indigo snake: The standard FDOT Construction Precautions for the Eastern Indigo Snake will be adhered to during construction of the project.

3. Bald eagle: Given the proximity of a bald eagle nest to the project impact area, the FDOT will commit to resurveying the project area prior to construction. If any nests within the 660-foot protection zone are deemed active, The FDOT will act in accordance with the BGEPA and MBTA.

4. Wood stork: Because of the potential for effects to the species, the FDOT is committed to re-initiating Section 7 consultation during the design phase of this project. At that time, the FDOT will evaluate the current information and provide appropriate mitigation, if necessary.

In summary, the proposed project "may affect" the following federally-listed species:

- wood stork.

In summary, the proposed project "may affect, but will not likely adversely affect" the following federally-listed species:

- crested caracara;
- Florida scrub-jay;
- American alligator;

- bluetail mole skink;
- eastern indigo snake; and
- sand skink.

The proposed project will have "no effect" on the following federally-listed species:

- Florida grasshopper sparrow; and
- snail kite.

Based upon the assessment detailed in this report, ongoing agency coordination, and commitments made by the FDOT, the proposed project is not likely to adversely affect the existence of any threatened or endangered species, even though some are known or expected to occur in the study area.

EASTERN LEG PREFERRED ALTERNATIVE EXECUTIVE SUMMARY

The FDOT is conducting a PD&E Study to evaluate proposed construction of the Central Polk Parkway from S.R. 60 to I-4 in Polk and Osceola Counties, Florida. The purpose of this project is to identify an environmentally sensitive preferred alternative for the proposed Central Polk Parkway. Project needs include the improvement of regional connectivity, enhancement of emergency evacuation capabilities, and accommodation of future population growth. The project landscape is primarily agricultural, consisting of pastureland. Wetlands, upland forests, and residential land uses are also present within and adjacent to the project corridor. This ESBA has been prepared to aid in determining the type, design, and location of improvements to the existing facility and to evaluate impacts, if any, associated with preferred alternatives for the eastern leg of the proposed Central Polk Parkway.

This data collection effort was conducted in two phases. The first phase consisted of initial data collection to develop a project overview, review of agency ETAT comments on the FDOT ETDM website, and determining if any species-specific surveys would be required. The second phase consisted of developing the appropriate methodology and conducting field surveys.

A summary of the analysis of potential project impacts for the eastern leg preferred alternative is presented below.

Protected Species with Federal Designations

"May Affect" Determinations

The **wood stork** is listed as endangered by the USFWS. The project area is located within the CFA of seven wood stork colonies (Lake Russell, #612048, an unnamed colony,# 616117, #616321, #616037, and 612316). Several wood storks were observed flying over the project area. Given the current mitigation criteria of the USFWS South Florida Ecological Services Office, it is anticipated that this project "may affect" the wood stork. Because of the potential for effects to the species, the FDOT is committed to re-initiating Section 7 consultation during the design phase and prior to permitting the project. At that time, the FDOT will evaluate the current information and provide appropriate mitigation, if necessary.

"May Affect, But Is Not Likely To Adversely Affect" Determinations

The **crested caracara** is listed as threatened by the USFWS. The entire project corridor is located within the USFWS crested caracara CA. No crested caracaras or nests were observed during general project surveys, but suitable habitat is located within the project area. Therefore, it is anticipated that the project "may affect, but is not likely to adversely affect" the crested caracara.

The **Florida grasshopper sparrow** is listed as endangered by the USFWS. The project corridor falls within the USFWS CA for the species and moderate quality habitat was observed in some portions of the project area. No observations of the species were noted during surveys or have been documented within a two-mile radius of the project. Since no observations of the Florida grasshopper sparrow were recorded and moderate habitat for this species exists, it is anticipated that the project "may affect, but is not likely to adversely affect" the Florida grasshopper sparrow.

The **Florida scrub-jay** is listed as threatened by the USFWS. The project area is located within the USFWS Florida scrub-jay CA. The nearest documented scrub-jay sighting is located approximately two miles from the project area. During field surveys several small areas of scrub-jay habitat were located but no Florida scrub-jays were observed. Because of limited suitable habitat within the project area it is anticipated that the project "may affect, but is not likely to adversely affect" the Florida scrub-jay.

The **eastern indigo snake** is listed by the USFWS as threatened. An eastern indigo snake was previously documented in the project area in 1989 and there are other sightings documented within six miles of the project. No eastern indigo snakes were observed during general wildlife surveys. However, because areas of suitable habitat for this species occur within and adjacent to the project corridor, eastern indigo snake presence in the project corridor is possible. The FDOT will commit to implementing the standard FDOT Construction Precautions for the Eastern Indigo Snake (**Appendix D**). Therefore, it is anticipated that this project "may affect, but is not likely to adversely affect" the eastern indigo snake.

The **bluetail mole skink** is listed as a threatened species by the USFWS. There are several bluetail mole skink sightings documented within two miles of the project area. During field surveys several small areas of bluetail mole skink habitat were located within and adjacent to the project limits, but no individuals were observed. Since the project area contains potential habitat for this species it is anticipated that the project "may affect, but is not likely to adversely affect" the bluetail mole skink.

The **American alligator** is listed by the USFWS as threatened due to its similarity of appearance to the American crocodile. No American alligators were observed during field surveys. Since project impacts to wetlands within the corridor will be appropriately mitigated for pursuant to Part IV, Chapter 373, F.S. and 33 U.S.C. 1344, it is anticipated that the project "may affect, but is not likely to adversely affect" the American alligator.

The **sand skink** is listed as threatened by the USFWS. There are several sand skink sightings documented within two miles of the project area. During field surveys several small areas of sand skink habitat were located within and adjacent to the project, but no sand skinks or signs of sand skink were observed. Since the project area contains potential habitat for this species it is anticipated that the project "may affect, but is not likely to adversely affect" the sand skink.

"No Effect" Determinations

The **red-cockaded woodpecker** (*Picoides borealis;* RCW) is currently listed as endangered by the USFWS and a species of special concern by the Florida Fish and Wildlife Conservation Commission (FWC). Field surveys did not detect any RCWs in the project area. No observations of the species have been documented within a 2 mile radius of the project. A small portion of the project, specifically the northeast corner, is located within the CA for the RCW. Based on the

review of existing environmental data and lack of suitable nesting and foraging habitat with the project limits, it is anticipated that the project will have "no effect" on the RCW.

The **snail kite** is listed as endangered by the USFWS. Field surveys did not detect the snail kite in the project area. No observations of the species have been documented within or adjacent to the project area. No Florida apple snails or exotic ramshorn apple snails, primary food sources for the snail kite, were observed in the project area. The entire project corridor is located within the USFWS snail kite CA. Since no evidence of the snail kite or apple snails was detected, limited foraging opportunities appear to exist, and wetland impacts will be mitigated for pursuant to Part IV, Chapter 373, F.S. and 33 U.S.C. 1344, it is anticipated that the project will have "no effect" on the snail kite.

Protected Species with State Designation Only

Wading birds such as the limpkin, white ibis, little blue heron, snowy egret, tricolored heron, and roseate spoonbill are listed as species of special concern by the FWC and are also protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712). Since wetland impacts to habitats potentially utilized by these state-listed species will be mitigated for pursuant to Part IV, Chapter 373, F.S. and U.S.C. 1344, it is anticipated that the project will not result in any adverse effects to these species.

The **Florida burrowing owl** is listed as a species of special concern by the FWC. While adequate habitat exists along the project corridor for the burrowing owl, field surveys did not detect any burrowing owls or burrows. Based on field survey results and lack of previously-documented observations, it is anticipated that the project will not adversely affect the Florida burrowing owl.

The **Florida sandhill crane** is listed as threatened by the FWC. Florida sandhill cranes were observed foraging in the project area. Given the fact that suitable foraging habitat is located outside of the project area, it is anticipated that the project will not adversely affect the Florida sandhill crane.

The **southeastern American kestrel** is listed as threatened by the FWC. Suitable foraging habitat is present in the project area and adequate nesting habitat was observed. Two southeastern American kestrels were observed in the project area during field surveys. Given the

fact that suitable foraging and nesting habitat was also observed outside of the project area, it is anticipated that the project will not adversely affect the southeastern American kestrel.

The **gopher tortoise** is listed by the FWC as threatened. Gopher tortoise burrows were identified in the project corridor. Any gopher tortoises located within 25 feet of an area proposed for development must be relocated according to FWC requirements. The FWC encourages that commensal species such as the gopher frog and Florida mouse be relocated along with gopher tortoise. Since all tortoises and commensal species will be relocated to suitable habitat, the project is not anticipated to adversely affect the gopher tortoise, gopher frog, and Florida mouse.

The **Sherman's fox squirrel** is listed as a species of special concern by the FWC. Field surveys identified one individual just north of the project area. No nests or individual Sherman's fox squirrels were identified. Because there is ample foraging and nesting habitat adjacent to the project area, it is anticipated that the project will not adversely affect the Sherman's fox squirrel.

The **Florida black bear** is designated as a threatened species by the FWC in areas outside of Baker County, Columbia County, and the Apalachicola National Forest. Nuisance black bears have been previously documented within 2 miles of the project area. Field surveys conducted during this study did not detect signs of Florida black bear occurrence. Adequate black bear habitat is adjacent to the project corridor, therefore it is anticipated that the project will not affect the Florida black bear.

No state **protected plant species** were observed within the project area during general field surveys. The following protected plant species have been documented within a two-mile radius of the project area: Curtiss' milkweed, Florida bonamia, pygmy fringe-tree, scrub-buckwheat, star anise, Britton's beargrass, Lewton's polygala, scrub plum, and Carter's mustard. If any state-protected plant species are observed within the proposed impact limits during the design phase, coordination with the FDACS will be initiated, and efforts will be made prior to construction to allow for seed collection and/or relocation to adjacent habitat or other suitable protected lands. As a result, it is anticipated that the project will not adversely affect state-protected plants.

Other Species

The **bald eagle** is no longer listed by the USFWS or FWC but remains protected under the BGEPA (16 U.S.C. 668-668d), as amended, and the MBTA (16 U.S.C. 703-712). Given the proximity of three active bald eagle nests within 330 feet of the project area and one active bald

eagle nest within 660 feet of the project area, and the possibility of new nests being identified by the FWC during yearly surveys, the FDOT will commit to resurveying the project area prior to construction. If any nests within the 660-foot protection zone are deemed active, the FDOT will act in accordance with the BGEPA and MBTA as applicable during the design, permitting, and construction of this project. Therefore, this project is not likely to adversely affect the bald eagle.

The FDOT will consider the following for the eastern leg Preferred Alternative commitments:

1. Gopher tortoise: Due to the presence of gopher tortoise habitat within and adjacent to the existing ROW, a gopher tortoise survey in appropriate habitat within construction limits (including roadway footprint and stormwater management ponds) will be performed prior to construction per FWC guidelines. The FDOT will secure any relocation permits as appropriate.

2. Eastern indigo snake: The standard FDOT Construction Precautions for the Eastern Indigo Snake will be adhered to during construction of the project.

3. Bald eagle: Given the proximity of a bald eagle nest to the project impact area, the FDOT will commit to resurveying the project area prior to construction. If any nests within the 660-foot protection zone are deemed active, The FDOT will act in accordance with the BGEPA and MBTA.

4. Wood stork: Because of the potential for effects to the species, the FDOT is committed to re-initiating Section 7 consultation during the design phase of this project. At that time, the FDOT will evaluate the current information and provide appropriate mitigation, if necessary.

In summary, the proposed project "may affect" the following federally-listed species:

- wood stork.

In summary, the proposed project "may affect, but is not likely to adversely affect" the following federally-listed species:

- crested caracara;
- Florida grasshopper sparrow;

- Florida scrub-jay;
- eastern indigo snake;
- bluetail mole skink;
- American alligator; and
- sand skink.

The proposed project will have "no effect" on the following federally-listed species:

- RCW; and
- Snail kite.

Based upon the assessment detailed in this report, ongoing agency coordination, and commitments made by the FDOT, the proposed project is not likely to adversely affect the existence of any Threatened or Endangered species, even though some are known or expected to occur in the study area.

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APPENDIX G

Contamination Screening Evaluation Report

Preliminary Contamination Sites - CPP

	Link	No	Low	Medium	High		Total Sites
	W201	0	0	1	0		1
	W202	0	2	2	0		4
	W203	0	2	4	1		7
	W204	0	0	0	0		0
	W205	0	3	5	1		9
	W206	0	0	1	0		1
	W207	0	0	0	0		0
	W208	0	1	0	0		1
	E201	0	1	4	1		6
	E202	0	1	2	2		5
	E203	0	4	7	1		12
	E204	0	5	13	0		18
	E205	0	2	14	0		16
	E206	0	2	2	1		5
							85

Note: Large number of sites ranked as "Medium" is because **groves** are usually ranked Medium unless Level 2 results indicate no impacts.

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Link ID	Site No.	Field	Tierra Internal	Description	Site Address	Comments	Concern	EDM ID#
E201	E201-1	Residential with planted pines	A, B	Nursery, just north of SR 60	SR 60	Farm Equipment, Storage Tank, Dumping, Shooting Area		None
	E201-2	Citrus, Pump	C	Existing grove, just south of Old Bartow Lake Wales Road, mix/load area to the east	E201-Grove 1		groves	None
	E201-3	NO ACCESS (Jeff Stokes)		Existing grove, north of Old Bartow Lake Wales Road	E201-Grove 2		groves	None
	E201-4		G	CSX Railroad	middle of E201		arsenic, PAHs	None
	E201-5	Citrus, Abandon Pump/Well	D, E	Existing groves, east of CR 653 and west of Peace Creek Drainage Canal	E201-Grove 3		groves	None
	E201-6	Citrus	H	Existing groves, east of the Peace Creek Drainage Canal	E201-Grove 4		groves	None
	E201-6a	Pipeline	F					None
E202	E202-1	Citrus, Row crops	K, L, Q	Existing groves north and south of SR 60 and west of West Lake Wales Road North	E202-Grove 1	(Residential structure at bend in road)	groves	None
	E202-2		M, O, P	Claude E. Mann, Inc.	150 West Lake Wales Road North		ASTs	1
	E202-3	Central Supply Area, residence , AST and cemetery	D, E, F, G, J	Existing groves west of West Lake Wales Road, straddling Whidden Cemetery Road	E202-Grove 2	(note structures crossed by corridor)	groves	None
	E202-4	Citrus, Pump/Mix Load	D	Existing groves south of Old Bartow Lake Wales Road and east of Waters Road	E202-Grove 3		groves	None
	E202-5	Citrus	B	Groves north of Old Bartow Lake Wales Road and south of Peace Creek Drainage Canal	E202-Grove 4		groves	None
E203		NO ACCESS		Disturbed soil area north of Peace Creek Drainage Canal	may not be a "site"			
	E203-1		F	Winter Haven RV	4918 US Highway 27 North		Leaking USTs	16
	E203-1a	Pipeline	D, E, G					
	E203-1b	Debris	G					
	E203-2		AG	Old railroad grade	due south of Venus Lake		arsenic, PAHs	None
	E203-3	Citrus	H	Groves east of old railroad grade and along CF Kinney Road	E203-Grove 1		groves	None
	E203-4	Citrus	H, J	BJKW grove, east of CF Kinney Road and south of Waverly Road	E203-Grove 2		groves	17 ?
	E203-5	Ag Facility - 7634 Waverly Road	AE	probable agricultural facility (with structures/barns), immediately north of Waverly Road	Waverly Road (CR 540)		pest./herb., fuel	None
	E203-6	Citrus	I, M	Groves north of Waverly Road and west of N Scenic Highway (SR 17)	E203-Grove 3		groves	None
	E203-7	Citrus, abandon mix load	N, O, P, Q, R, S, T	Groves east of N Scenic Highway (SR 17) and south of Stalnaker Road	E203-Grove 4	(confirm former UST site)	groves	21 ?
	E203-8	Citrus, debris (possible AST)	U, V, AF	Groves north of Stalnaker Road and south of Aimburg Road	E203-Grove 5	(possible pump AST)	groves	None
	E203-9	Citrus, abandon mix load, pump, WWTP - under construction	V, W, X, Y, Z	Groves north of Aimburg Road, both sides of Steward Rd., south of Lake Mabel Loop Road	E203-Grove 6	(possible pump AST along Steward)	groves	None
	E203-10	Division of Plant Industry - 8020 Lake Mable Loop Road - Not in Operation	AH	Florida Dept. of Agriculture - Dundee	Lake Mable Loop Road		Leaking ASTs	27
	E203-11	Citrus, pump	AC, AD	Groves and former groves north of Spring Creek Road, extending to just north of Swann Road	E203-Grove 7	(ASTs west of corridor)	groves	None
	Disturbed Soil	Disturbed soil - young planted citrus	AH	Soil disturbance northwest of residential area under development	west of Spring Creek Road, south of Grove 7			

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Link ID	Site No.	Field	Tierra Internal	Description	Site Address	Comments	Concern	EDM ID#
E204	E204-1	Citrus, pumps, ag facility	A, Z	Groves from beginning of E204 to south side of CR 542 (Lake Hatchineha Road)	E204-Grove 1	(note pump AST in south and ag fac. to west)	groves	None
	E204-2	No access to possible AST		Dale Edward Dickinson	Hwy. 542 East		Former AST	32
	E204-3	Citrus, pumps	AA	L Dicks, Inc.	Maddox & Putnam Groves		Former grove pump ASTs	33
	E204-4	Citrus, pumps	Y	Groves from north of CR 542 to south side of CR 546 (Kokomo Road)	E204-Grove 2		groves	None
	E204-5	Citrus, mix load, pump	W, X	Groves from north of CR 546 to south side of Bannon Loop Road	E204-Grove 3		groves	None
	E204-6	Landfill		Northeast Polk Landfill (construction debris & transfer station)	Bannon Island Road (2-28S-27E)	(confirm presence of landfill)	landfill	40, 41
	E204-7	Sand pit		soil disturbance west and north of Bannon Loop Road, west of landfill	Bannon Loop Road	(what is the soil disturbance?)	unknown	None
	E204-8	Citrus, Pump/Mix Load	T, U	Groves and former groves north of Bannon Island Road, crossing Lk. Mariod Rd., and south of E. Robinson Drive	E204-Grove 4	(note pump AST east of central grove area)	groves	None
	E204-9	citrus, tanks, farm equipment	S	Groves and agricultural facilities south and north of E. Robinson Drive	E204-Grove 5	(note various structures)	groves	None
	E204-10	citrus, debris, pumps	R, Q	Groves from north of E. Robinson Drive, past Hinson Ave., to east of Oak Hollow Drive	E204-Grove 6	(note ASTs in central and north part of grove)	groves	None
	E204-11	Possible landfill - no address, sign references RHE, Inc. (excavation company - 407.932.0809); Abandon structure	P, AF	Fitzpatrick Grove Service, Inc. (plus suspect pit area north of Hinson Ave.)	4011 E. Hinson Ave	(confirm location of 4011 Hinson Ave.)	Former USTs	45
	E204-12	citrus, abandon pump	N	Small grove area north of Johnson Avenue	E204-Grove 7		groves	None
	E204-13	citrus, burn pile, abandon pump, pump	I, J, K, L, M, AE	BHS Groves, including large grove area from south of Baker Ave. to north of Carl Boozer Road	E204-Grove 8, Baker Avenue, Carl Boozer Road	(note pump ASTs east and west of corridor)	groves/ AST	49
	E204-14	Active Shell fuel station	AD	JK Foods #3	1199 Powerline Road, Haines City	Address is 1199 Powerline Road	USTs	47
	E204-15	citrus, burn pile, pump	B, F, G	Large grove area from well north of Carl Boozer Road to west side of Bird Road	E204- Grove 9	(note pump AST west of Bird Road)	groves	None
	E204-16	citrus, pumps	C	Groves from south of Snell Creek Road, east of Bird Road, to south side of Adair Road	E204-Grove 10	(note pump AST in SW corner of groves)	groves	None
	E204-17	No Access	AC	Suspect poor housekeeping area west of corridor, north of Horseshoe Creek Road	Horseshoe Creek Road	(identify contents of area)	unknown	None
	E204-18	citrus	205Y	Grove area north of E. Palm Street at north end of E204	E204-Grove 11		groves	None

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Link ID	Site No.	Field	Tierra Internal	Description	Site Address	Comments	Concern	EDM ID#
E205	E205-1	citrus, pumps	A	Groves from the split from E204 to H. Smith Road	E205-Grove 1	AST	groves	None
	E205-2	pumps	B	Recap Hilltop, LLC (grove ASTs)	H.L. Smith Road and Edwards Road		AST	30
	E205-3			Pesticide spill, Haines City Citrus Grower (ERNS)	Grove 256, 1/4 mile east of Smith Rd., 1/2 mile south of CR 452		pesticides	31
	E205-4	citrus, pumps	B	Groves from Edwards Road north to Lake Hatchineha Rd. (CR 542)	E205-Grove 2	(note pump ASTs SE of corridor)	groves	None
	E205-5	citrus, pumps	C, D, E	Groves from Lake Hatchineha Rd. (CR 542) to Kokomo Rd. (CR 546)	E205-Grove 3	(note 3 pump ASTs w/in and along route)	groves	None
	E205-6	Barn with hay equipment	D	Barn-type structure just south of Kokomo Road (CR 546)	Kokomo Road	(identify structure)	pesticides/ fuel	None
	E205-7	Citrus, pumps, Row crops	G, H	Existing and former groves from north of Kokomo Grove, past White Clay Pit Rd., to south of CR 544	E205-Grove 4	(note AST east of corridor)	groves	None
	E205-8	citrus, debris, abandon well	I	William G. Roe & Co., Inc. Robush Grove (former grove office facility)	E205-Grove 5, Bice Grove Road	(footprint of former grove office)	groves/ Leaking ASTs	38
	E205-9	citrus, pump,	J	Groves from north of Lake Marion Road (CR 544) to south of sand pits	E205-Grove 6	(note pump AST east of corridor)	groves	None
	E205-10	Citrus, pump, Vacant storage shed including styrofoam debris	L, M, N, O	Groves from east of sand pit to north of Bradbury Road	E205-Grove 7	(note barn at north end of site)	groves	None
	E205-11	Citrus, pump	Z, AA	Groves from north of Bradbury Road to south of Hinson Avenue East	E205-Grove 8	(note pump AST in central part of corridor)	groves	None
	E205-12	Citrus, debris, pump	Q, R, S	Existing and former groves from south of Johnson Avenue to Baker Avenue East	E205-Grove 9	(note pump ASTs w/in and west of route)	groves	None
	E205-13	citrus, Abandon residence	T, AC	Groves from north of Baker Avenue to south of Champagne Road	E205-Grove 10	(shed in south end of grove area)	groves	None
	E205-14	nursery/residence	AD, AE	Nursery (probable), Champagne Road	Corner of Champagne Road and JB Carter Road	(Residential/Nursery)	nursery	None
	E205-15	Citrus, Barn includes hay bails, boat, vehicle	V, W	Groves north of Rooks Road for 1/4 mile	E205-Grove 11	(note barn area at north end of site)	groves	None
	E205-16	AST, pump, storage	X, Y	Vickers Property	1510 Horseshoe Creek Road, Davenport	USTs located N of PBS&J's location	AST and former USTs	50
E206	E206-1	Abandon fuel station; Foundation in place; 1115 N US Hwy 17	T	C & F Grocery (former fuel facility)	1115 North Highway 17-92, Davenport	(confirm location of 1115 N. Hwy 17)	former USTs	51
	E206-2		S	CSX Railroad	just northwest of Highway 17-92		arsenic, PAHs	None
	E206-3	Poorly maintained shop with farm equipment, tank, etc.	Q	Ranch/ ag. Facility (with poor housekeeping)	end of Crescent Valley Ranch Road	(identify contents)	fuel/ pesticides	None
	E206-4	Citrus, pump, Abandon Row crop	H, J, R	Groves northwest of Crescent Ridge Road	E206-Grove 1	(possibly ASTs nearby) - Nursery	groves	None
	E206-4a	Monitoring well	N					
	E206-5	Citrus, pump	P	Groves 3,000 feet southeast of I-4, at the end of Bowen Road	E206-Grove 2		groves	None

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Area ID	Link No.	Intersection with CPP	Field	Comments
1	E206	I-4	DOT ROW, undeveloped land, planted pines	Photos 223 -226
2	E206	US 17	Residential, undeveloped, Old Foundation of abandon fuel station (Site E206-1), rail corridor (Site E206-2)	Photos 207 - 222
3	E204 E205	E Johnson Avenue / Marion Creek Road	Citrus, pump station (Site E204-10), undeveloped land, residential, possible landfill (Site E204-11), burn pile (Site E204-13), debris (Site E205-12)	Photos 200 - 206
4	E204 E205	Hatchineha Road	Citrus, abandoned and active pump station (Site E204-1, E204-3, E205-4, E205-5), ASTs, row crops (blueberries), residential, reported spill (Site E204-1)	Photos 187 - 199
5	E203	US 27	Construction site for residential, residential, commercial, Winter Haven RV (Site E203-1), pipeline (Site E203-1a)	Photos 177 - 186
6	E202	SR 60	Citrus, citrus conveyor, row crops (Site E202-1), AST (Site E202-2), Peterson Industries including ASTs, residential, rail corridor, pastureland	Photos 148 - 176
7	E201 W202 W201	SR 60	Residential, nursery (Site W202-1), commerical, feed store, storage, mobile home sales, Shell Fuel Station, cell tower, pastureland, citrus	Photos 82 - 147
8	W203	US 17	Mined property, equipment rental, Dura Teck Precast - concrete manufacturing (Site W203-3), rail corridor (Site W203-5), residential	Photos 1 - 33
9	W205	US 17	Religious centers, Thornton & Co - former UST (Site W205-5), rail corridor (Site W205-6), JSM Services including AST (Site W205-7), residential	Photos 36 - 57
10	W207 W208	Polk Parkway	Landfill (Site W208-1), pastureland	Photos 58 - 81

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Link ID	Site No.	Field	Tierra Internal	Description	Site Address	Comments	Concern	EDM ID#
W201	W201-1		C	Former groves, east of corridor and south of Peace Creek canal	north of SR 60		groves	None
W202	W202-1	SAME AS E201-1 - Residential with planted pines	E201-1			Farm Equipment, Storage Tank, Dumping, Shooting Area		None
	W202-2	SAME AS PORTIONS OF E201-2 - Citrus, Pumps, Mix/Load	E201-2, B, C	Existing grove, just south of Old Bartow Lake Wales Road, mix/load area to the east	E201-Grove 1		groves	None
	W202-3	No Tanks observed on property	H	Stuart property, with 2 former tank areas	Old Bartow Lake Wales Road		USTs/ AST	4, 5
	W202-3a	Debris	D					
	W202-4	NO ACCESS - Sent property owner a letter requesting access on 9/16/10 (Smith Gerber, LLC)	No Access	Existing grove, west of Wahneta Farms Drainage Canal	W202-Grove 2		groves	None
	W203-1	Mined Property, pump station, row crops	A, I	Row crops	middle of W203		herb./pest.	None
	W203-1a	Pastureland inlcuding pump station, burn pile	G					
	W203-2	Mined Property	E, R, S	Former Clear Springs Mine	west-central W203		phosphate mine	None
	W203-3	Dura Teck Precast - concrete manufacturing	B	US 17 Site	US 17, west side of corridor crossing		unknown	None
	W203-4	Tyre Equipment - 3380 Highway 17 N, Bartow, FL	C	Tyre Equipment	US Highway 17 north		ASTs	7
	W203-4a	Salvage yard located approximately 1,000 ft east of centerline	D					
	W203-5	Abandon Rail Corridor	Q	Old railroad grade	just north of US 17		arsenic, PAHs	None
	W203-6	NO ACCESS to majority of Mine; Sent property owner a letter requesting access on 9/16/10 (SWFWMD)	L, M	Former Saddle Creek Mine	northern W203	Farm Equipment, Herb/Pest Storage	phosphate mine	None
	W203-7	Polk County Fleet Management in operation - ASTs observed	N	Polk County Fleet Management	3000 Sheffield Road, Winter Haven		Leaking USTs/ ASTs	15
W204	W204-1	Monitoring Well oberved (4-in PVC)	A					
W205	W205-a	Debris	S					
	W205-1	Grove, Pump and buried gas pipeline	B, P	Existing groves, south of Bomber Road	W205-Grove 1		groves	None
	W205-2	Residenital - No ASTs observed (AST associated with W205-1)			CR 559, S. side of Lake McLeod		Leaking USTs/ ASTs	9
	W205-3	Grove, Herb/Pest, Abandon Pump Station (Photos of Pump Station taken from distance/No Access)	D, E, F, G	Existing and former groves, north of Bomber Road, extending west past Spruce Road	W205-Grove 2		groves	None
	W205-4	Grove	G	Small grove area east of US 17	W205-Grove 3		groves	None
	W205-5	Thornton & Co located at 3000 US 17, Eagle Lake, FL	Q	Thornton & Co.	US 17 North		former UST	12
	W205-6	Active Rail	R	Old railroad grade	just north of US 17		arsenic, PAHs	None
	W205-7	JSM Services located at 414 Lake Millsite Road	J	JSM Services, Inc.	414 Lake Millsite Road		AST	11
	W205-8	Grove	L, M	Existing and former groves, west of Spirit Lake Road and south of Sheffield Road	W205-Grove 4		groves	None
	W205-9	Grove, Mix Load and Tank	O	Small grove area northwest of Sheffield Road	W205-Grove 5		groves	None
W206	W206-1	Abandon Mix Load Area	B	WH Stuart Ranch, Inc.	4340 Thornhill Road		Former USTs/ ASTs	23
	W206-1a	Tanks and abandon generator	C					
W207	No sites - all wooded and pastureland							
W208	W208-1	Landfill	C	Suspect site on west side of Polk Parkway, where it meets W208	west side of Polk Parkway		Ag. Facility?/ landfill?	None

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APPENDIX H

Geotechnical Soil Borings Results

TIERRA

December 15, 2010

Ms. Kimberly Warren
PBS&J
335 East Van Fleet Drive
Bartow, Florida 33830

RE: Geotechnical Memorandum
Central Polk Parkway PD&E Study
From SR 60 to the Polk Parkway (SR 570) and from SR 60 to I-4
Polk County, Florida
Contract N0. C8Q94
FPN:423601-1-22-01
Tierra Project No. 6511-08-049

Ms. Warren:

Tierra, Inc. (Tierra) has completed a Geotechnical Memorandum for the referenced project. The results of the study are enclosed herein. The report, figures and tables presented herein address the alternative roadway alignments, interchanges and stormwater management sites.

Tierra appreciates the opportunity to provide our services to PBS&J on this project. If you have any questions regarding this report, please contact us at (813) 989-1354.

Sincerely,
Tierra, Inc.

David Z. Eggleston
Project Manager

Larry P. Moore, P.E.
Principal Geotechnical Engineer
Florida License No. 47673

DRAFT

7351 Temple Terrace Highway, Tampa, FL 33637
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Florida Engineering Certification Number 6486

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1-1 Central Polk Parkway PD&E Study Location Map
1-2 Central Polk Parkway PD&E Study Area Boundary

APPENDICES

Appendix A

Key Map; 1-A through 13-A Topographic Map and Project Location
Key Map; 1-B through 13-B Soil Survey Maps

Appendix B

Table 1: Polk County, FL, Summary of USDA Soil Survey, Roadway & Interchanges
Table 2: Polk County, FL, Summary of USDA Soil Survey, Stormwater Management Areas
Table 3: USDA Soil Types within each Stormwater Management Area

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Section 1.0
PROJECT SUMMARY

1.1 PURPOSE

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) study to determine the engineering and environmental effects of the proposed Central Polk Parkway. The Central Polk Parkway is proposed as a new multi-lane limited access facility in Polk County, Florida, that will serve as an additional north-south route in the central Polk County regional transportation network. The study limits extend from State Road (S.R.) 60 east of Bartow, northwesterly to the Polk Parkway (S.R. 570) and from S.R. 60 east of Bartow, northerly to Interstate 4 (I-4) (S.R. 400) near the Polk/Osceola County line as shown in **Figure 1-1.**

The western portion of the study area from S.R. 60 northwesterly to the Polk Parkway (S.R. 570) and the eastern portion from S.R. 60 east of Bartow, northerly to I-4 serve a separate unique purpose and function from one another within the context of the regional transportation system. Therefore, it is important to distinguish between the two legs in the study analysis and they will be referred to as the western leg and the eastern leg, respectively throughout this document as shown in **Figure 1-2**.

Polk County is uniquely positioned between two well defined regions, the Tampa Bay region on the west and the Central Florida region around Orlando on the east, and connected by the I-4 corridor. Over the past few decades, each of these regions has continued to grow, with growth increasingly crossing county boundaries and creating multi-county economic regions. These regions are anticipated to expand over the next few decades, with the Tampa Bay and greater Orlando areas growing together into one economic region along the I-4 or "High-Tech Corridor".

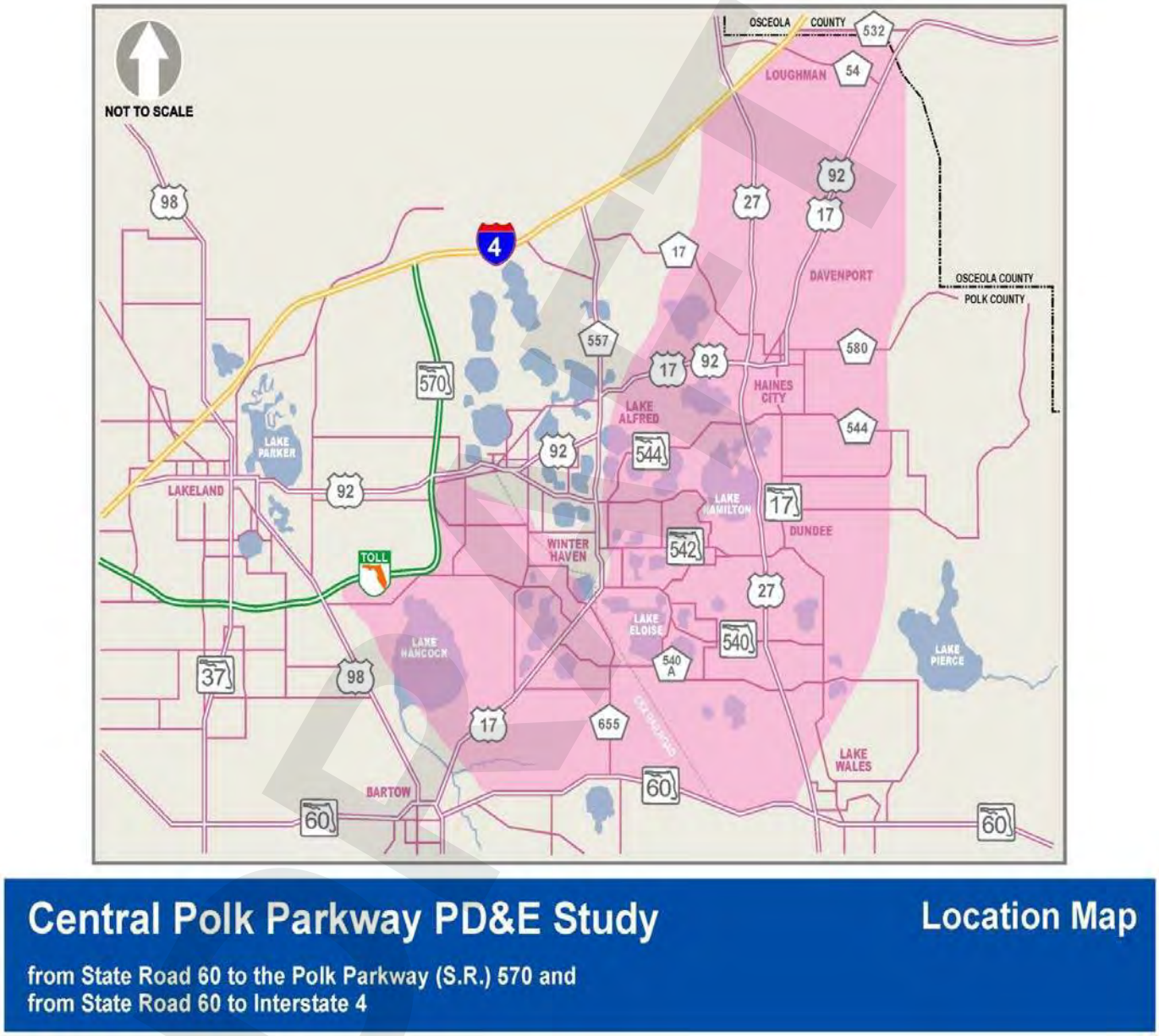
The purpose of the Central Polk Parkway study is to identify an environmentally sensitive preferred alternative for a new multi-lane limited access highway that will provide an additional north-south facility to enhance mobility and increase accessibility on the regional roadway network and also improve emergency evacuation and response times. The addition of another north-south facility to the network will reduce traffic congestion, including truck traffic, on several corridors in central Polk County, particularly parallel facilities such as U.S. 98, U.S. 17, and U.S. 27. The Central Polk Parkway is anticipated to support the increased travel demands expected from the continued residential and employment growth projected within the county and throughout the entire region. The preferred alternative must be consistent with meeting the following needs that have been identified:

- Improve connectivity to the regional transportation network
- Enhance freight mobility and economic competitiveness
- Improve emergency evacuation capabilities
- Accommodate future population and growth

Central Polk Parkway PD&E Study

Location Map

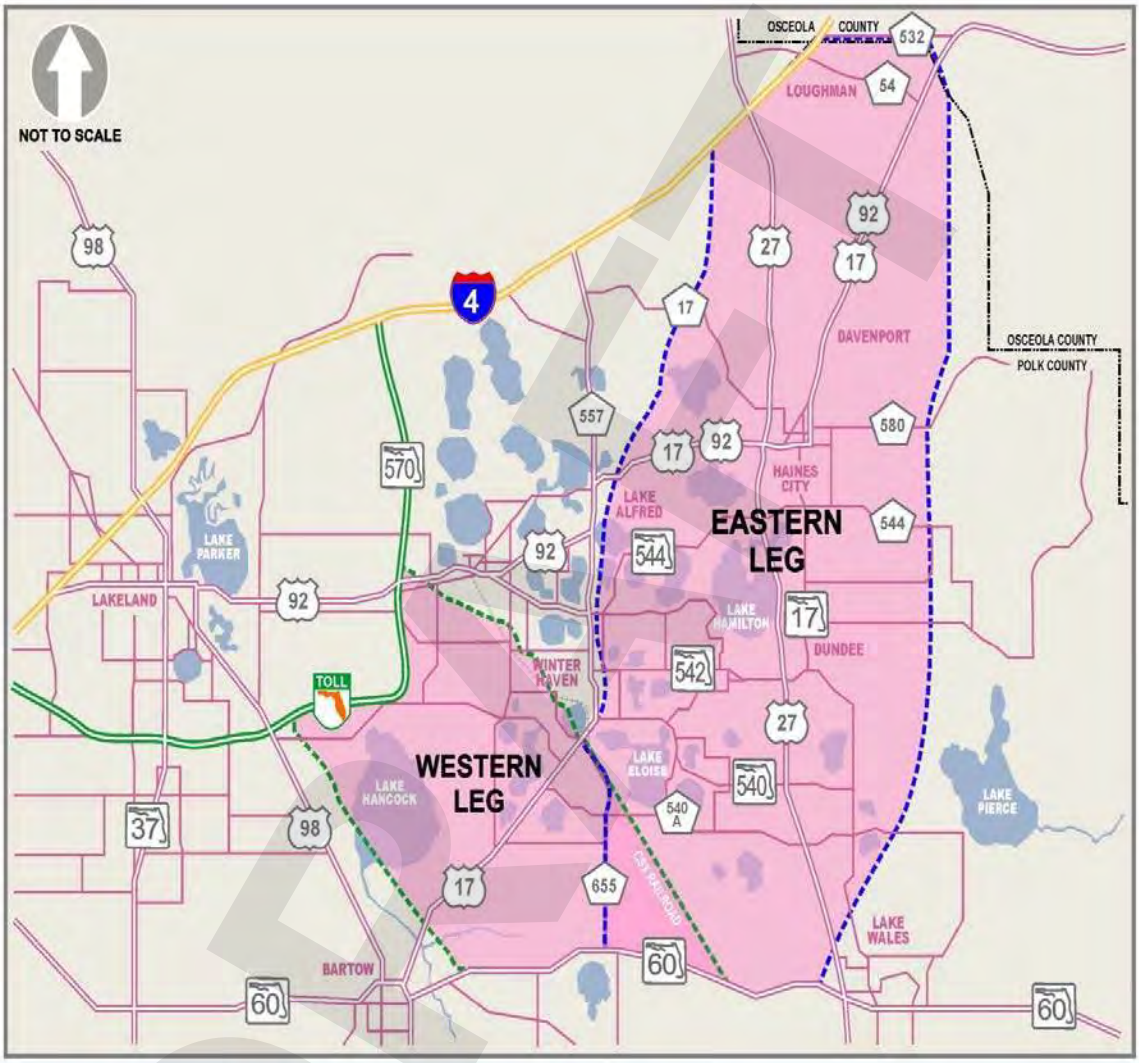
Figure 1-1



Central Polk Parkway PD&E Study

Study Area Boundary

Figure 1-2



Central Polk Parkway PD&E Study **Study Area Boundary**

from State Road 60 to the Polk Parkway (S.R.) 570 and
from State Road 60 to Interstate 4

Section 2.0
SCOPE OF SERVICES

The geotechnical PD&E study was performed to obtain information on the existing subsurface conditions along the project alignments to assist in the preparation of the PD&E Report for the project. The following services were provided:

Reviewed published information on topographic, soils and groundwater conditions. Soil, groundwater and regional geology information was obtained from the Web Soil Survey of Polk County, Florida published by the United States Department of Agriculture (USDA) – Natural Resource Conservation Service (NRCS). Topographic information was obtained from appropriate topographic maps published by United States Geological Survey (USGS).

Prepared this Geotechnical Memorandum for the project.

The geotechnical services were performed in general accordance with FDOT guidelines and the project scope of services.

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Section 3.0
SUBSURFACE CONDITIONS

3.1 USGS TOPOGRAPHIC SURVEY

The USGS topographic survey maps for the proposed alignments were reviewed for ground surface features. A list of the USGS topographic survey maps reviewed, including Quadrangle title and date published, are outlined as follows:

- Intercession City, Florida;
- Gum Lake, Florida;
- Davenport, Florida;
- Dundee, Florida;
- Lake Wales, Florida;
- Eloise, Florida;
- Bartow, Florida; and
- Auburndale, Florida.

The natural ground surface elevations appear to be within the range of approximately +75 to +220 feet National Geodetic Vertical Datum of 1929 (NGVD29) along the proposed alignment areas. Reproductions of USGS maps are presented in **Appendix A** on **Sheets 1-A, 2-A, 3-A, 4-A, 5-A, 6-A, 7-A, 8-A, 9-A, 10-A, 11-A, 12-A and 13-A**.

3.2 REGIONAL GEOLOGY

Based upon review of the USDA/NRCS Soil Survey for Polk County, Florida, most of Polk County is in the Polk and Lake upland areas. Several ridges rise above the Polk Upland surface. The most prominent is the Lake Wales Ridge. The elevation of the Polk Upland generally ranges between 100 to 130 feet above NGVD.

The Eocene Series in Polk County consists of the Oldsmar, Avon Park, and Ocala Group limestones. Only the uppermost unit, the Ocala Group, is described herein. The Ocala Group consists of three formations, which in ascending order are the Inglis, Williston, and Crystal River Formations. Essentially, all of Polk County is underlain by limestone of the Ocala Group.

The Oligocene Series in Polk County consists of the Suwannee limestone. The Suwannee limestone is throughout the western part of Polk County but is not in the northern and eastern parts of the county because of the erosion on the flanks of the Ocala Uplift (northwest-southeast trend).

The Miocene Series in Polk County consists of the Hawthorn Group limestones. The Hawthorn Group has been raised from formation status to group status. It includes sediments that were

included in the Tampa, Hawthorn, and Bone Valley Formations in the past. The Hawthorn Group consists of the Arcadia Formation and the Peace River Formation, in ascending order. The Arcadia Formation includes, in ascending order, the Nocatee and Tampa members and an unnamed member. The Nocatee member is made up of the sediment that was previously described as the "sand and clay" unit of the Tampa Limestone. The Tampa member includes the sediment of the Tampa Formation of King and Wright. The unnamed upper member includes the sediments that have been referred to in the past as the "Hawthorn carbonate unit".

The Nocatee member consists of complex, interbedded sequences of variably phosphatic quartz sand, clay, and carbonate. It is predominantly a sand and clay unit. Typically, quartz sand is fine to coarse grained, sometimes silty, clayey, calcareous or dolomitic, and variably phosphatic. Clay beds are common. The clay is variably quartz sandy and silty, phosphatic, and calcareous to dolomitic. Carbonate beds are subordinate.

The Tampa Member is lithologically similar to the Tampa formation of King and Wright, but it has a slightly higher content of phosphate (1 to 3 percent) and larger areal extent. The Tampa Member is only in the southwestern corner of Polk County.

The upper (unnamed) member of the Arcadia Formation includes sediments known previously as the "Hawthorn Carbonate Unit". The upper member of the Arcadia Formation is throughout Polk County except in the northernmost part.

The Peace River Formation includes a downdip unnamed member and the updip Bone Valley member, formerly the Bone Valley Formation. The Bone Valley Member is "all the phosphorite pebble or gravel bearing beds with sand-size phosphorite in a sandy to clayey matrix". The Peace River Formation is throughout Polk County except in the northernmost part. The Bone Valley Member is only in the western part of the County and thins in all directions from a center of deposition in the Bartow-Mulberry area. Throughout much of the area underlain by the Bone Valley Member, this member makes up the entire Peace River Formation and is directly underlain by the Arcadia Formation. In southernmost Polk County, the Bone Valley member interfingers laterally and vertically with the undifferentiated Peace River Formation. Only the undifferentiated Peace River Formation is in the eastern part of the county.

3.3 POLK COUNTY SOIL SURVEY

Based on a review of the Polk County Soil Survey published by USDA-NRCS, it appears that there are fifty (50) soil-mapping units noted within the proposed alignment areas of the Central Polk Parkway PD&E Study(Links: E201R, E202R, E203R, E204R, E205, E206R, W201R, W202R, W203R, W204, W205, W206, W207 and W208). Candler Fine Sand, 0 to 5 Percent Slopes (Unit 3) covers significant areas of the eastern alignment areas (Links: E203R, E204R, and E205) with the remaining soil types comprising the remainder of the proposed alignment areas. Additionally, soil types associated with seventeen (17) interchange areas are included in the discussions of the interchanges' respective Link.

The proposed alignment areas of the Central Polk Parkway addressed in this report include the revised alternatives moving forward as of November 18, 2010 (E201R, E202R, E203R, E204R, E206R, W201R, W202R, W203R, W206 and W207) and alternatives not being carried forward as of November 18, 2010 (E205, W204, W205 and W208). Additionally, ninety-three (93) potential stormwater management areas as of November 23, 2010 are addressed in this report.

The northeast portion of the interchange connection of I-4 and the Central Polk Parkway, Link E206R, extends into Osceola County. The soil types encountered within Link E206R in Osceola County are similar to those soils encountered in Polk County for this alignment, therefore, specific USDA Soil Survey information for Osceola County is not included in the following descriptions.

Detailed soil survey maps are shown in **Appendix A** on **Sheets 1-B, 2-B, 3-B, 4-B, 5-B, 6-B, 7-B, 8-B, 9-B, 10-B, 11-B, 12-B and 13-B**. Summarized general soil descriptions are presented in each the sub-sections below, as described in the Web Soil Survey. Additionally, summarized soil descriptions are presented in several of the sub-sections below, as described in the Soil Survey of Polk County, Florida, published in 1990 (*these descriptions are presented in italics*).

3.3.1 APOPKA FINE SAND, 0 TO 5 PERCENT SLOPES (UNIT 2)

(Link: E206R)

The Apopka component makes up 85 percent of the map unit. This component is on knolls on marine terraces on coastal plains, ridges on marine terraces on coastal plains. The parent material consists of eolian deposits and/or sandy and loamy marine deposits. The natural drainage class is well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.2 CANDLER SAND, 0 TO 5 PERCENT SLOPES (UNIT 3)

(Links: E203R, E204R, E205, E206R and W205)

The Candler component makes up 85 percent of the map unit. This component is on knolls on marine terraces on coastal plains, ridges on marine terraces on coastal plains. The parent material consists of eolian deposits and/or sandy and loamy marine deposits. The natural drainage class is excessively drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.3 CANDLER SAND, 5 TO 8 PERCENT SLOPES (UNIT 4)

(Links: E203R, E204R E205 and E206R)

The Candler component makes up 85 percent of the map unit. This component is on hillslopes on marine terraces on coastal plains. The parent material consists of eolian deposits and/or sandy and loamy marine deposits. The natural drainage class is excessively drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.4 EATON MUCKY FINE SAND, DEPRESSIONAL (UNIT 6)

(Links: W202R, W204R, W207)

The Eaton, depressional component makes up 80 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material consists of loamy and clayey marine deposits. The natural drainage class is very poorly drained. Shrink-swell potential

is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December.

3.3.5 POMONA FINE SAND (UNIT 7)

(Links: E201R, E202R, E203R, W201R, W202R, W203R, W204, W207 and W208)

The Pomona, non-hydric component makes up 70 percent of the map unit. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October.

The Pomona, hydric component makes up 20 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is poorly drained. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, and October.

3.3.6 HYDRAQUENTS, CLAYEY (UNIT 8)

(Link: W203R)

These soils occur as areas of slime (colloidal clay), a by-product of phosphate mining and processing. The slime has been pumped into holding ponds and/or mine cuts that remained from phosphate mining activities

The Hydraquents, clayey component makes up 95 percent of the map unit. This component is on leveled land, depressions on marine terraces on coastal plains. The parent material **consists of altered marine deposits**. The natural drainage class is very poorly drained. Shrink-swell potential is high. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, and December.

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3.3.7 LYNNE SAND (UNIT 9)

(Links: W201R, W203R and W205)

The Lynne, non-hydric component makes up 65 percent of the map unit. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during July, August, September, and October.

The Lynne, hydric component makes up 20 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is moderate. This

soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, and October. Organic matter content in the surface horizon is about 3 percent.

3.3.8 ARENTS-WATER COMPLEX (UNIT 11)

(Link: W203R)

This map unit is a series of open pits that are filled with water and are paralleled by long steep mounds of soil material. It is a result of phosphate mining. The Arents part consists of piles of soil material or overburden that originally covered the phosphate-bearing strata. the Water part of this map unit is formed after the phosphate-bearing strata has been removed.

The Arents component makes up 50 percent of the map unit. Slopes are 35 to 65 percent. This component is on fills, ridges on marine terraces on coastal plains. The parent material **consists of altered marine deposits**. The natural drainage class is well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

Generated brief soil descriptions are created for major soil components. The water is a miscellaneous area.

3.3.9 NEILHURST SAND, 1 TO 5 PERCENT SLOPES (UNIT 12)

(Links: E206R and W203R)

This excessively drained soil is on broad uplands and low knolls. It formed in homogenous sandy material from phosphate and silica mining operations.

The Neilhurst component makes up 90 percent of the map unit. This component is on rises on marine terraces on coastal plains, spoil piles on knolls on marine terraces on coastal plains. The parent material **consists of sandy mine spoil or earthy fill**. The natural drainage class is excessively drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.10 SAMSULA MUCK (UNIT 13)

(Links: E201R, E202R, E203R, E204R, E205, E206R, W201R, W202R, W203R, W205, W206 and W208)

This very poorly drained, organic soil is in swamps and marshes. Areas of this soil range from 30 to several hundred acres. Slopes are smooth and are less than 2 percent. This Samsula soil has a seasonal high water table at or above the surface except during extended dry periods. Areas on the flood plains are subject to frequent flooding.

The Samsula component makes up 80 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material **consists of herbaceous organic material over sandy marine deposits**. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, and December. **Organic matter content in the surface horizon is about 60 percent**.

3.3.11 SPARR SAND, 0 TO 5 PERCENT SLOPES (UNIT 14)

(Links: E201R, E202R, E203R, W201R, W202R, W204, W205 and W208)

The Sparr component makes up 85 percent of the map unit. This component is on rises on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during July, August, September, and October.

3.3.12 TAVARES FINE SAND, 0 TO 5 PERCENT SLOPES (UNIT 15)

(Links: E201R, E202R, E203R, E204R, E205, E206R, W201R, W203R, W205, W206 and W208)

The Tavares component makes up 85 percent of the map unit. This component is on knolls on marine terraces on coastal plains, ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. The natural drainage class is moderately well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, November, and December.

3.3.13 URBAN LAND (UNIT 16)

(Soil Unit 16, is not specifically encountered as a major soil type, however, Urban Land is a subcomponent in several Soil Units, throughout the project alignments.)

The Urban Land map unit consists of miscellaneous areas that are covered by concrete, asphalt, buildings, or other impervious surfaces that obscure or alter the soils so that identification is not feasible. In areas mapped as Urban Land, 85 percent or more of the surface is covered by

streets, parking lots, buildings or other structures. Most areas of Urban Land are artificially drained by sewer systems, gutters, tile drains and surface ditches which tend to lower historic water tables.

3.3.14 SMYRNA AND MYAKKA FINE SANDS (UNIT 17)

(Links: E201R, E202R, E203R, E204R, E205, E206R, W201R, W202R, W203R, W204, W205, W206, W207 and W208)

The Myakka component makes up 40 percent of the map unit. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October.

The Smyrna, non-hydric component makes up 40 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October.

The Smyrna, hydric component makes up 15 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, and October.

3.3.15 FLORIDANA MUCKY FINE SAND, DEPRESSIONAL (UNIT 19)

(Links: E201R and W207)

The Floridana, depressional component makes up 80 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. **Organic matter content in the surface horizon is about 10 percent**.

3.3.16 FORT MEADE SAND, 0 TO 5 PERCENT SLOPES (UNIT 20)

(Links: E204R and W208)

The Fort Meade component makes up 85 percent of the map unit. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.17 IMMOKALEE SAND (UNIT 21)

(Links: E201R, E202R, E203R, E205, E206R, W201R, W202R, W203R, W204, W205, W206, W207 and W208)

The Immokalee, non-hydric component makes up 75 percent of the map unit. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October.

The Immokalee, hydric component makes up 10 percent of the map unit. This component is on flats on marine terraces, coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, and October.

3.3.18 POMELLO FINE SAND (UNIT 22)

(Links: E201R, E203R, E204R, E205, E206R, W201R, W202R, W203R, W204 and W205)

The Pomello component makes up 80 percent of the map unit. This component is on ridges on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is moderately well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, and November.

3.3.19 ONA FINE SAND (UNIT 23)

(Links: E202R, E203R, E206R, W201R, W202R, W203R, W204, W205 and W207)

The Ona, non-hydric component makes up 80 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October.

The Ona, hydric component makes up 10 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, and October.

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3.3.20 PLACID AND MYAKKA FINE SANDS, DEPRESSIONAL (UNIT 25)

(Links: E201R, E203R, E206R, W201R, W202R, W203R, W204, W205, W206 and W208)

The Placid, depressional component makes up 60 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, June, July, August, September, October, November, and December. **Organic matter content in the surface horizon is about 6 percent.**

The Myakka, depressional component makes up 30 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 4 percent.

3.3.21 LOCHLOOSA FINE SAND (UNIT 26)

(Link: W205)

The Lochloosa component makes up 90 percent of the map unit. This component is on rises on marine terraces on coastal plains, flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 45 inches during July, August, September, and October.

3.3.22 KENDRICK FINE SAND, 0 TO 5 PERCENT SLOPES (UNIT 27)

(Link: W205)

The Kendrick component makes up 80 percent of the map unit. This component is on ridges on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of loamy marine deposits. The natural drainage class is well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.23 ST. LUCIE FINE SAND, 0 TO 5 PERCENT SLOPES (UNIT 29)

(Links: E201R, W206 and W208)

The St. Lucie component makes up 90 percent of the map unit. This component is on ridges on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. The natural drainage class is excessively drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.24 POMPANO FINE SAND (UNIT 30)

(Links: E203R and W203R)

The Pompano component makes up 85 percent of the map unit. This component is on flats on marine terraces on coastal plains, drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, and November.

3.3.25 ADAMSVILLE FINE SAND (UNIT 31)

(Links: E201R, E202R, E203R, E204R, E205, E206R, W201R, W203R, W205, W206 and W208)

The Adamsville component makes up 85 percent of the map unit. This component is on ridges on marine terraces on coastal plains, rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during June, July, August, September, October, and November.

3.3.26 KALIGA MUCK (UNIT 32)

(Links: E202R, E203R, W201R, W202R, W203R and W208)

The Kaliga component makes up 85 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material **consists of herbaceous organic material over stratified loamy marine deposits.** The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, and December. **Organic matter content in the surface horizon is about 60 percent.**

3.3.27 HOLOPAW FINE SAND, DEPRESSIONAL (UNIT 33)

(Links: W203R and W204)

The Holopaw, depressional component makes up 70 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 2 percent.

3.3.28 HONTOON MUCK (UNIT 35)

(Links: E201R, E202R, E204R, E206R, W205, W206 and W208)

The Hontoon component makes up 80 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material **consists of herbaceous organic material**. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, and December. **Organic matter content in the surface horizon is about 80 percent**.

3.3.29 BASINGER MUCKY FINE SAND, DEPRESSIONAL (UNIT 36)

(Links: E201R, E202R, E203R, E205, E206R and W207)

The Basinger, depressional component makes up 85 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. **Organic matter content in the surface horizon is about 14 percent**.

3.3.30 PLACID FINE SAND, FREQUENTLY FLOODED (UNIT 37)

(Links: E201R, E204R, E205, E206R, W202R, W204, W206 and W207)

The Placid component makes up 85 percent of the map unit. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during January, February, June, July, August, September, October, November, and December.

3.3.31 WAUCHULA FINE SAND (UNIT 40)

(Links: E201R, E203R, W202R, W204 and W208)

The Wauchula, non-hydric component makes up 65 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October.

The Wauchula, hydric component makes up 15 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, and October.

3.3.32 FELDA FINE SAND (UNIT 42)

(Links: E201R, W202R, W204 and W207)

The Felda component makes up 80 percent of the map unit. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, July, August, September, October, November, and December.

3.3.33 PAISLEY FINE SAND (UNIT 44)

(Links: W207 and W208)

The Paisley, non-hydric component makes up 60 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material **consists of clayey marine deposits**. The natural drainage class is poorly drained. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during June, July, August, September, and October.

The Paisley, hydric component makes up 20 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material **consists of clayey marine deposits**. The natural drainage class is poorly drained. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, and November.

3.3.34 ASTATULA SAND, 0 TO 8 PERCENT SLOPES (UNIT 46)

(Link: E205)

The Astatula component makes up 90 percent of the map unit. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. The natural drainage class is excessively drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.35 ZOLFO FINE SAND (UNIT 47)

(Links: E201R, E202R, E203R, W207 and W208)

The Zolfo component makes up 90 percent of the map unit. This component is on rises on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during June, July, August, September, October, and November.

3.3.36 CHOBEE FINE SANDY LOAM, DEPRESSIONAL (UNIT 48)

(Links: W207 and W208)

The Chobee, depressional component makes up 85 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material consists of loamy alluvium. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. **Organic matter content in the surface horizon is about 6 percent**.

3.3.37 MYAKKA-IMMOKALEE-URBAN LAND COMPLEX (UNIT 53)

(Link: E203R)

The Myakka, non-hydric component makes up 30 percent of the map unit. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October.

The Immokalee component makes up 25 percent of the map unit. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, and October.

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

The Myakka, hydric component makes up 10 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, and October.

3.3.38 POMELLO URBAN LAND COMPLEX (UNIT 54)

(Link: W205)

The Pomello component makes up 55 percent of the map unit. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is moderately well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, and November.

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

3.3.39 UDORTHENTS, EXCAVATED (UNIT 58)

(Link: W203R)

This map unit consists of excavated areas, locally called "borrow pits." The excavated soil and geological material have been removed for use as fill or as base for roads.

The Udorthents, excavated component makes up 100 percent of the map unit. This component is on fills on marine terraces on coastal plains. The parent material **consists of altered marine deposits**. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches.

3.3.40 ARENTS-URBAN LAND COMPLEX, 0 TO 5 PERCENT SLOPES (UNIT 59)

(Link: W203R)

These highly variable soils have been reworked by earth-moving equipment during phosphate mining. The areas of these soils are reclaimed and planted to grass and pine trees. The soil material is 2 to 20 feet thick. Typically, these soils consist of mixed soil material that is white, light gray, brownish yellow, very pale brown, yellowish brown, grayish brown, brown, dark brown, and black. They are fine sand, sand, loamy sand, sandy loam, sandy clay loam, sandy clay, or clay and are remnants of spodic and argillic horizons.

The Arents component makes up 55 percent of the map unit. This component is on fills, rises on marine terraces on coastal plains. The parent material **consists of altered marine deposits**. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during June, July, August, September, October, and November.

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

3.3.41 TAVARES-URBAN LAND COMPLEX (UNIT63)

(Link: W205)

The Tavares component makes up 75 percent of the map unit. This component is on flats on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. The natural drainage class is moderately well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, November, and December.

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

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3.3.42 ARENTS, 0 TO 5 PERCENT SLOPES (UNIT 68)

(Links: W203R and W205)

These highly variable soils have been reworked by earth-moving equipment during phosphate mining. The areas of these soils are reclaimed and planted to grass and pine trees. The soil material is 2 to 20 feet thick. Typically, these soils consist of mixed soil material that is white, light gray, brownish yellow, very pale brown, yellowish brown, grayish brown, brown, dark brown, and black. They are fine sand, sand, loamy sand, sandy loam, sandy clay loam, sandy clay, or clay and are remnants of spodic and argillic horizons.

The Arents component makes up 100 percent of the map unit. This component is on rises on marine terraces on coastal plains, fills. The parent material **consists of altered marine deposits**. The natural drainage class is moderately well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 36 inches during January, June, July, August, September, October, November, and December.

3.3.43 DUETTE FINE SAND (UNIT 70)

(Link: E203R)

The Duette component makes up 85 percent of the map unit. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is moderately well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 60 inches during June, July, August, September, and October.

3.3.44 NARCOOSSEE SAND (UNIT 74)

(Links: E203R, E204R and E206R)

The Narcoossee component makes up 90 percent of the map unit. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during June, July, August, September, October, and November.

3.3.45 MILLHOPPER FINE SAND, 0 TO 5 PERCENT SLOPES (UNIT 76)

(Link: E206R)

The Millhopper component makes up 90 percent of the map unit. This component is on knolls on marine terraces on coastal plains, ridges on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is moderately well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during July, August, September, October, November, and December.

3.3.46 SATELLITE SAND (UNIT 77)

(Links: E203R, W207 and W208)

The Satellite component makes up 90 percent of the map unit. This component is on knolls on marine terraces on coastal plains, ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is somewhat poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during June, July, August, September, October, and November.

3.3.47 ARCHBOLD SAND, 0 TO 5 PERCENT SLOPES (UNIT 83)

(Link: W202R)

The Archbold component makes up 90 percent of the map unit. This component is on ridges on marine terraces on coastal plains, knolls on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. The natural drainage class is moderately well drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, and November.

3.3.48 FELDA FINE SAND, DEPRESSIONAL (UNIT 86)

(Link: E203R)

The Felda, depressional component makes up 85 percent of the map unit. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. The natural drainage class is very poorly drained. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 2 percent.

3.3.49 BASINGER FINE SAND (UNIT 87)

(Links: E201R and E203R)

The Basinger component makes up 80 percent of the map unit. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The natural drainage class is poorly drained. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, June, July, August, September, October, November, and December.

3.3.50 WATER (UNIT 99)

(Links: E203R, E205 and W203R)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

3.4 GENERAL SOIL PROPERTIES

Additional soils-related information for the roadway alignments and interchange areas from the Polk County Web Soil Survey published by USDA-NRCS is presented in **Appendix B** on **Table 1.**

Information for the stormwater management areas from the Polk County Web Soil Survey published by USDA-NRCS is presented in **Appendix B** on **Table 2.**

Additionally, USDA soils types associated with each individual stormwater management area is presented in **Appendix B** on **Table 3.**

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3.5 GROUNDWATER CONDITIONS

According to the USDA-NRSC Soil Survey, portions of Polk County are poorly drained. Many swamps, marshes, lakes and ponds exist throughout the county. The county has numerous small streams. The water table is at or near the surface throughout much of the northern, southern and western portions of Polk County. Natural drainage systems have been channelized and extensive ditch systems constructed to improve drainage.

Along most of the southern and western project corridors, Seasonal High Groundwater Table (SHGWT) levels, in their natural condition, are estimated to be 0.0 to 3.5 feet below natural ground surface. At some locations, the SHGWT is reported to be above natural ground surface during wet seasons as shown in **Appendix B** on **Table 1.** Along significant portions of E204R and E206R of the eastern alignment, SHGWT levels are reported to be deeper than 6 feet below grade.

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SECTION 4.0
PRELIMINARY ENGINEERING EVALUATIONS

4.1 GENERAL

Based upon the USDA-NRSC Web Soil Survey for Polk County, sandy soils should be expected within the top 48 inches for the majority of the alignments with the exception of areas with shallow clayey soils and organic soils (with the exception of Link W203R). In general, these existing soils are suitable for supporting the proposed Parkway after proper subgrade preparation and removal of unsuitable materials as detailed below.

Areas along the potential project alignments were noted with shallow or above ground Seasonal High Groundwater Table (SHGWT) levels, near surface clayey soils and/or organic materials and mining activities as detailed below. Areas with organic soils and mining-related soils are the primary areas along the project where subsurface conditions limit the suitability of the project site for the proposed Parkway.

4.1.1 SHALLOW OR ABOVE GROUND SEASONAL HIGH GROUNDWATER TABLE (SHGWT)

SHGWT levels along areas of the project in an undrained state are within about one to two feet of the ground surface or above ground (up to 2 feet). In general, shallow or above ground SHGWT should be expected for significant portions for Links: E201R, E202R, Portions of E203R to the south of Lake Annie, E206R, W201R, W202R, W203R, W204, W205, W206, W207 and W208. There are twenty-six (26) soil units with SHGWT levels within about one to two feet of the ground surface or above ground (up to 2 feet) and are summarized as follows:

- EauGallie Fine Sand (Unit 5)
- Eaton Mucky Fine Sand, Depressional (Unit 6)
- Pomona Fine Sand (Unit 7)
- Hydraquents, Clayey (Unit 8)
- Lynne Sand (Unit 9)
- Smyrna and Myakka Fine Sands (Unit 17)
- Floridana Mucky Fine Sand, Depressional (Unit 19)
- Immokalee Sand, Hydric (Unit 21)
- Ona Fine Sand (Unit 23)
- Placid and Myakka Fine Sands, Depressional (Unit 25)
- Pompano Fine Sand (Unit 30)
- Kaliga Muck (Unit 32)
- Holopaw Fine Sand, Depressional (Unit 33)
- Hontoon Muck (Unit 35)
- Basinger Mucky Fine Sand, Depressional (Unit 36)

- Placid Fine Sand, Frequently Flooded (Unit 37)
- Wauchula Fine Fand (Unit 40)
- Felda Fine Sand (Unit 42)
- Paisley Fine Sand (Unit 44)
- Chobee Fine Sandy Loam, Depressional (Unit 48)
- Myakka-Immokalee-Urban Land Complex (Unit 53)
- Arents-Urban Land Complex, 0 to 5 Percent Slopes (Unit 59)
- Satellite Sand (Unit 77)
- Felda Fine Sand, Depressional (Unit 86)
- Basinger Fine Sand (Unit 87)
- Water (Unit 99)

Within the project alignment areas, only three Links (Portions of E203R to the east and north of Lake Annie, E204R and E205) have a majority of their area with soil types that have the SHGWT indicated as 2 feet or deeper as follows: Candler Sand, 0 to 5 percent Slopes (Unit 3), Candler Sand, 5 to 8 Percent Slopes (Unit 4), and Tavares Fine Sand, 0 to 5 Percent Slopes (Unit 15).

Roadway base to groundwater clearance will need to be evaluated. The roadway grades should be set to provide a minimum separation per the FDOT Plans Preparation Manual (PPM) between the bottom of the base and the estimated seasonal high groundwater levels. Correspondingly, the base should remain equally above sustained water treatment levels in roadside ditches, making positive drainage of the ditches important. In portions of the alignments, the existing SHGWT is above grade in natural conditions. The SHWGT at these locations will have to be established by the project biologist utilizing biological indicators.

4.1.2 NEAR SURFACE CLAYEY SOILS

Relatively shallow clayey soils (A-2-6, A-4, A-6, A-7) within 36 inches of the natural ground surface are identified in several areas along the project alignments as shown below:

- Eaton Mucky Fine Sand, Depressional (Unit 6), Links W202R, W204 and W207
- Hydraquents, Clayey (Unit 8), Link W203R
- Lynne Sand (Unit 9), Links W201R, W203R and W205
- Floridana Mucky Fine Sand, Depressional (Unit 19), Links E201R and W207
- Kendrick Fine Sand, 0 to 5 Percent Slopes (Unit 27), Link W205
- Kaliga Muck (Unit 32), Links E202R, E203R, W201R, W202R, W203R and W208
- Wauchula Fine Fand (Unit 40), Links E201R, E203R, W202R, W204 and W208
- Felda Fine Sand (Unit 42), Links E201R, W202R, W204 and W207
- Paisley Fine Sand (Unit 44), Links W207 and W208
- Chobee Fine Sandy Loam, Depressional (Unit 48), Links W207 and W208
- Felda Fine Sand, Depressional (Unit 86), Link E203R

Clayey soils have limitations related base clearance and are also poorly drained. Separation between plastic clayey soils and the roadway pavement sections should be in accordance with FDOT Standard Indices 500 and 505.

4.1.3 ORGANIC MATERIALS

Muck and organic-rich sand are reported within portions of the alignments within soil mapping units containing muck layers as follows:

- Samsula Muck (Unit 13)
  (Links E201R, E202R, E203R, E204R, E205, E206R, W201R, W202R, W203R, W205, W206 and W208)
- Kaliga Muck (Unit 32)
  (Links E202R, E203R, W201R, W202R, W203R and W208)
- Hontoon Muck (Unit 35)
  (Links E201R, E202R, E204R, E206R, W205, W206 and W208)

Based on the Polk County soil survey, the muck and peat depths could be expected to range to depths up to 75 inches below the natural ground surface.

In addition, other soils reported with organic material in the surface horizon include the following:

- Eaton Mucky Fine Sand, Depressional (Unit 6)
  (Links W202R, W204 and W207)
- Floridana Mucky Fine Sand, Depressional (Unit 19)
  (Links E201R and W207)
- Basinger Mucky Fine Sand, Depressional (Unit 36)
  (Links E201R, E202R, E203R, E205, E206R and W207)
- Chobee Fine Sandy Loam, Depressional (Unit 48)
  (Links W207 and W208)

Construction of the roadway within areas of muck will require removal of the muck in accordance with FDOT Index 500. During the project design, detailed design level muck delineation will be required as part of the design-level geotechnical services.

4.1.4 SHALLOW LIMESTONE

The Polk County Soil Survey did not identify a shallow limestone stratum within 60 inches of the ground surface within the alignment areas.

4.1.5 PHOSPHATE MINED LAND

Phosphate mining and processing is and has been a major industry in Polk County. Phosphate pebble was mined within portions of the PD&E Study with mining operations dating back to the

1940's. Mining was typically completed with a dragline that removed unconsolidated overburden soils above the "matrix" layer containing the phosphate pebble. The "matrix" layer was then excavated with draglines, slurried and pumped to a beneficiation processing plant. At the beneficiation processing plant the phosphate pebble was separated from the slurry. The remaining waste sand, silt, clay and fine phosphate fraction tailings were then returned to the mine area typically in a hydraulic manner.

The resulting post mining topography can vary significantly not only in topographic features but also in subsurface materials that remained from the mining process and/or tailings and waste clays, silts and sands that were returned to the mined area.

Resulting topography and soil types from mining operations include, but are not limited to, the following: strip mining cuts; backfill of mined areas with – waste phosphatic clay/slimes and/or tailings; overburden stockpiles; and mining waste product settling/disposal areas.

Based upon the Polk County Soil Survey, soil units that resulted from mining operations that are present along portions of the alignment are as follows:

- Hydraquents, Clayey (Unit 8), Links: W203R
- Arents-Water Complex (Unit 11), Link W203R
- Neilhurst Sand, 1 to 5 Percent Slopes (Unit 12), Links E206R and W203R
- Udorthents, Excavated (Unit 58), Link W203R
- Arents-Urban Land Complex, 0 to 5 Percent Slopes (Unit 59), Link W203R
- Arents, 0 to 5 Percent Slopes (Unit 68), Links W203R and W205

As reported in the Polk County USDA Soil Survey, Hydraquents, clayey (Unit 8) is a soil unit that is a by-product of the phosphate mining beneficiation process. Hydraquents are also known as waste phosphatic clay (slime). The waste phosphatic clay (slime) results from the clay slurry being pumped into holding ponds and, in older mine areas, the slime was pumped into open mine pits. Waste phosphatic clay is generally too weak to support a roadway and/or embankment without improvements to the soils that may including surcharging.

It should be noted that alignment segment/link W203R crosses a large area identified as Hydraquents, clayey (Unit 8) as shown on Sheet 10-B.

The remaining soil types associated with mining may or may not include colloidal waste phosphatic clay.

Additionally, depending on the reclamation process, if any, mining impacted areas can be expected to have a high potential for instability and high potential for excessive settlement both total and differential without soil improvement measures such as surcharging or soil strengthening by means of rigid inclusions or other subsurface improvements.

Based upon the USGS Topographic maps and the USDA Polk County Soil Survey, significant portions of Segment/Link W203R have been impacted by phosphate mining. The USGS topographic map identifies portions of Segment/Link W203R as "Reclaimed Strip Mine."

The design and construction of the Parkway through mined land will increase the cost and duration of construction due to the poor soil conditions. The magnitude of construction duration and cost increases are a function of the specific landforms, topography, subsurface conditions and roadway geometrics.

Perhaps the most problematic soil type is waste phosphatic clay because this soil type can be very soft, weak and compressible. It should be noted that oftentimes, waste clays are covered during the reclamation process. As such, geotechnical subsurface exploration and testing are warranted to better define the subsurface conditions.

4.2 EMBANKMENT CONSTRUCTION

Embankments should be constructed using materials in accordance with FDOT Standard Index 505. This requires the use of soils with AASHTO Classification of A-1, A-3, or A-2-4 in the upper 4 feet below the bottom of base or asphaltic concrete pavement, while soils with AASHTO Classification A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, and A-7 (all with liquid limits less than 50) may be used in the lower portions of the embankment.

Site preparation should consist of stripping and grubbing of topsoil and surface vegetation followed by compaction of the fill and subgrade soils. Upon completion of stripping and clearing operations, the resulting subgrade surface should be compacted in accordance with the FDOT Standard Specification for Road and Bridge Construction (SSRBC). Placement of the embankment fill materials may then begin.

With the exception of the areas affected by phosphate mining activities and areas containing organic soils, the existing shallow subsurface soils should be capable of supporting the construction of the proposed roadway after proper subgrade preparation. Subgrade preparation will include the removal of any surficial and buried organic soils within the proposed roadway pavement widths and shoulders in accordance with FDOT Index 500.

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APPENDIX I

Correspondence

CPP Meeting 2/9/11

Attendees

Karina Della Sera	FDOT - Drainage	519-2750
Al Stewart	Analytic Engineering	813/449-4358
Tim Polk	PBS:J	533-7000
Nicole Harris	FDOT	519 2373
Doug Reed	PBS+J	813-281-8310
Gordon Greene	PBS&J	863-533-7000
Kim Warren	PBS&J	863-533-7000
Sergio Figueroa	Inwood	
Renato Chaw	Inwood	407-971-8850
Carl Spirio	FDOT	

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M E E T I N G
M I N U T E S

DATE: February 10, 2011 (February 9, 2011 meeting)

RE: **CENTRAL POLK PARKWAY PD&E STUDY FROM S.R. 60 TO POLK PARKWAY (S.R. 570) AND FROM S.R. 60 TO I-4 (S.R. 400) DRAINAGE MEETING**
FPID: 423601-1-22-01

ATTENDEES: Karina Della Sera, Nicole Harris, and Carl Spirio – FDOT

Al Stewart – Analytical Engineering

Tim Polk, Doug Reed, Gordon Greene, and Kim Warren – PBS&J

Renato Chuw and Sergio Figueroa – Inwood Consulting Engineers

LOCATION: FDOT District 1 (Bartow) – 1:00 pm

MEETING GOAL:

The goal of the February 9, 2011 Central Polk Parkway PD&E Study Drainage Meeting was to discuss the main issues for the comments and responses regarding to the Pond Siting Report and Location Hydraulics report. Comments were made by Tim Polk, Al Stewart, and Gordon Greene and responses were provided by Inwood Consulting Engineers. A meeting between PBS&J and Inwood Consulting Engineers was previously held to discuss each comment and response for both reports. After the meeting, it was in agreement between both parties that further discussion with the FDOT would be needed in order to make a final decision on some of the comments and responses to the reports.

The following is a brief description and resolution of the drainage meeting held between the FDOT, PBS&J, and Inwood.

DISCUSSION ITEMS:

- ✓ **Location Hydraulics Report**
  - Inwood started the meeting by stating that all of the comments provided by Al Stewart were addressed for the Draft Reports.
  - Tim Polk Comments
    - Comments 3, 4, and 12 were discussed in detail. Tim expressed concerns that there will be major longitudinal floodway impacts to the Peace Creek Canal and along the western alignment that longitudinally traverses the canal.
    - As a resolution, it was agreed upon between all parties that language will be added in the LHR to discuss the need to re-evaluate these floodway/floodplain impacts during the design phase of this segment.

- ✓ **Pond Siting Report**
  - o Future Statewide Storwater Rule
    - ▪ Comment 6 by Al Stewart and Comment 2 by Gordon Greene both expressed concerns of the upsize percentage used for the stormwater ponds in the report. Inwood had originally used a 25% increase factor based on previous conversations with FDOT. Carl Spirio indicated that at this time, to not consider the future statewide stormwater rule, per direction of the Governor and FDEP. However, TMDL for impaired water bodies will still need to be accounted for. It was agreed between all parties that the 25% increase in the pond sizes are acceptable at this stage of the PD&E study to account for the impaired water body status for this project. Inwood will update the PSR report to not mention the future statewide stormwater rule and instead, impaired water body requirements and the assumption of the 25% increase in the pond size.
  - o Comment 18 by Gordon Greene
    - ▪ In a previous meeting held between PBS&J and Inwood Consulting Engineers, Gordon Greene expressed concerns of using basin limits that were set from cross drain to cross drain. Inwood reviewed the roadway basin limits that were specifically set from cross drain to cross drain and determined that one basin would have to be split into two basins with a potential addition of a new pond. After discussions with FDOT and PBS&J, it was decided that because of the tight schedule to submit the final reports, no significant impacts to the overall estimate of the right of way costs for the corridor and the uncertainty in the final profile of the road, the pond locations as shown in the Draft Report will remain, with no additional ponds. Also, the ponds will be re-evaluated with further scrutiny during the design phase of the project. Inwood will update the Pond Siting Report that will recognize that pond sites will be re-evaluated with further detail during the design phase of the project.

ACTION ITEMS:

- ✓ Inwood will update the Pond Siting Report and Location Hydraulics Report based on discussions in this meeting and have it submitted to PBS&J by no later than February 22, 2011.

The above summary is Inwood's understanding of the main points of the meeting. If any one of the participants has any clarifications or additional information that may be useful, please reply to Inwood via email rchuw@inwoodinc.com.

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Evaluation Factors	No-Build	West Alternatives					East Links			
		Alternative W-E	Alternative W-H	Alternative W-I	Alternative W-J	Alternative W-K	Alternative E-I	Alternative E-K	Alternative E-M	Alternative E-O
		Links: W201, W205, W206, W207	Links: W202, W203, W206, W207	Links: W202, W203, W206, W208	Links: W202, W204, W205, W206, W207	Links: W202, W204, W205, W206, W208	Links: E201, E203, E204, E206	Links: E201, E203, E205, E206	Links: E202, E203, E204, E206	Links: E202, E203, E205, E206
Right-of-Way (ROW) Impacts										
Area of ROW to be Acquired for Roadway (in acres)	0	542	890	975	670	755	1608	1637	1471	1499
Area of ROW to be Acquired for Ponds (acres)	0	125.04	195.23	201.09	249.07	254.93	0.00	0.00	0.00	0.00
Business Impacts										
Number of Businesses Expected to be Relocated	0	0	0	0	0	0	0	0	0	0
Number of Businesses Impacted	0	0	0	0	0	0	0	0	0	0
Residential Impacts										
Number of Residences Expected to be Relocated	0	0	0	0	0	0	0	0	0	0
Number of Residences Impacted	0	0	0	0	0	0	0	0	0	0
Engineering Issues										
Number of New Bridges Required	0	27	29	29	38	38	73	71	67	65
Future Travel Demand - 2035 Annual Average Daily Traffic (AADT) Ranges	0	66,800-91,400	60,600-111,600	60,600-111,600	95,200-97,200	84,000-96,400	77,000-116,200	77,000-116,200	77,000-104,200	77,000-104,200
Diversion of Traffic from Existing Roads (US 17, US 98 & US 27)	0	51,800	52,200	52,200	52,300	52,300	52,300	52,300	51,800	51,800
Connectivity to Major Activity Centers (# Sites Within 5 Miles)	0	2	4	4	4	4	7	5	5	3
Natural Environment										
Area of Wetlands (ac)	0	0	0	0	0	0	0	0	0	0
Area of Floodplain Encroachment (ac)	0	132	234	304	275	345	261	274	230	243
Potential Threatened and Endangered Species Inpacts (none, low, medium, high)	none	high	medium	medium	high	high	high	high	high	high
Potential Contamination Sites										
Number of potential petroleum pollutant and hazardous materials contaminated sites ranked: High Risk	0	1	1	1	1	1	3	3	4	4
Medium Risk	0	7	9	9	10	10	26	27	24	25
Cultural/Historical Resources and Public Parks										
Number of Archaeological/Historic Sites Impacted (NHRP Listed/Eligible)	0	0	0	0	0	0	0	0	0	0
Number of Public Recreational Facilities Impacted	0	2	1	1	1	1	4	4	4	4
Number of Designated Conservation Areas Impacted	0	0	0	0	0	0	0	0	0	0
Potential Social Impacts										
Number of Social Resources Impacted	0	1	0	0	1	1	0	0	0	0
Estimated Cost (All costs are reported in 2010 dollars)*										
Design (15% of Construction)	$0	$7,993,500	$10,246,350	$10,767,450	$9,292,800	$9,813,750	$23,816,100	$24,103,950	$22,019,400	$22,307,100
Roadway Right-of-Way	$0	$64,376,600	$71,213,800	$75,438,800	$79,651,600	$83,876,600	$225,170,700	$229,630,900	$225,062,700	$229,522,900
SMF Right-of-Way	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Wetland Mitigation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Roadway Construction	$0	$53,290,000	$68,309,000	$71,783,000	$61,952,000	$65,425,000	$158,774,000	$160,693,000	$146,796,000	$148,714,000
CEI (15% of Construction)	$0	$7,993,500	$10,246,350	$10,767,450	$9,292,800	$9,813,750	$23,816,100	$24,103,950	$22,019,400	$22,307,100
Total Cost	$0	$133,653,600	$160,015,500	$168,756,700	$160,189,200	$168,929,100	$431,576,900	$438,531,800	$415,897,500	$422,851,100

* Subject To Change As Study Progresses

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APPENDIX C

Eastern Leg

(Volume II of II)

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(407) 971-8850 (phone)
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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101A**
POND NAME : **E-101A**

Station Limits: From: 5000+00 To: 5013+71

Roadway Length = 1371 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 21.66 ac
Total Roadway Area: 21.66 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.09 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **23.75 ac**
Total Area: **23.75 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	A	68	0.51 ac	34.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	C	86	18.18 ac	1563.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	D	89	2.97 ac	264.3
		Total:	21.66 ac	1862.5

CN = Total CN*Area / Total Area = **86.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.63 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.85 in**	**8.87 in**	**11.72 in**	**5.79 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101A**
POND NAME : **E-101A**

Station Limits: From: 5000+00 To: 5013+71

Roadway Length = 1371 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 7.37 ac
*Pervious Roadway Area: 14.29 ac
Total Roadway Area: 21.66 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 0.84 ac
Water Surface Area: 1.26 ac Wet Pond
Total Pond Area: 2.09 ac

Total Area:

Impervious Area: **7.37 ac**
Pervious Area: **15.13 ac**
Water Surface Area: **1.26 ac**
Total Area: **23.75 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.37 ac	722.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	A	68	0.35 ac	24.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	C	86	12.70 ac	1092.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	D	89	2.07 ac	184.6
Proposed Ponds (Water Surface)	D	100	1.26 ac	125.7
		Total:	23.75 ac	2148.7

CN = Total CN*Area / Total Area = **90.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.05 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.37 in**	**9.43 in**	**12.31 in**	**6.31 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101A**
POND NAME : **E-101A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.98 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.98 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.57 ac-ft	17.55 ac-ft	23.21 ac-ft	11.46 ac-ft
Q_{post} =	12.60 ac-ft	18.67 ac-ft	24.37 ac-ft	12.49 ac-ft
ΔQ =	**1.03 ac-ft**	**1.12 ac-ft**	**1.16 ac-ft**	**1.03 ac-ft**

Attenuation V_{req} = **1.16 ac-ft** (use largest value)

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

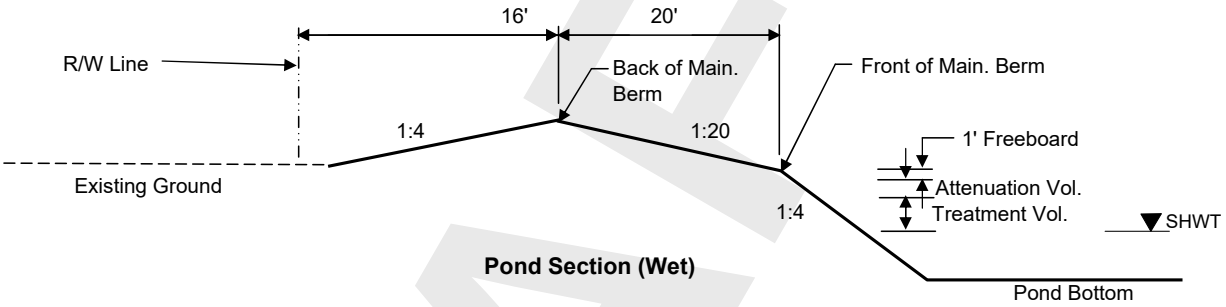
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101A**
POND NAME : **E-101A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	115.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	114.50
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	127.83

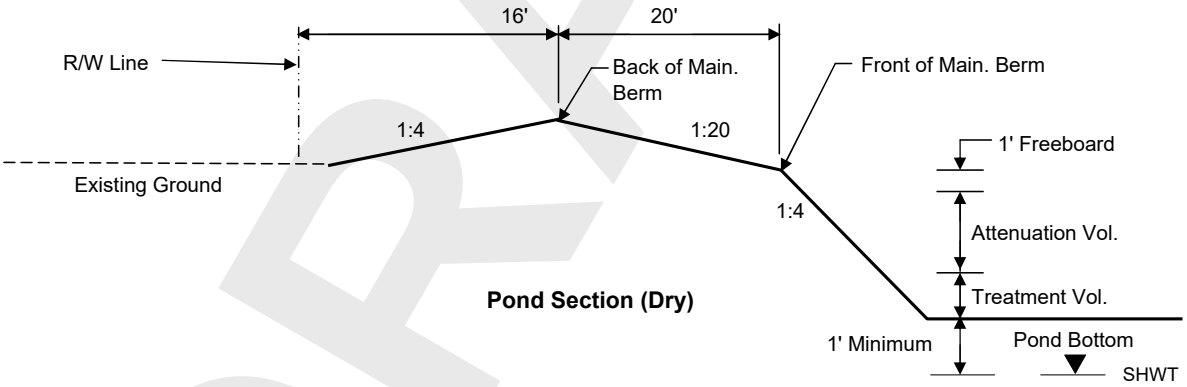
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	126.63 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101A**
POND NAME : **E-101A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
115.00	Pond R/W	2.56 ac	334.0 ft	334.0 ft	
119.00	Back of Main. Berm	2.09 ac	302.0 ft	302.0 ft	6.78 ac-ft
118.50		1.83 ac	282.0 ft	282.0 ft	5.80 ac-ft
118.00	Front of Main. Berm	1.58 ac	262.0 ft	262.0 ft	4.95 ac-ft
117.00	Provided Treat.Vol.+Att.Vol	1.48 ac	254.0 ft	254.0 ft	3.42 ac-ft
116.81	Req'd Treat.Vol+Att. Vol	1.46 ac	252.5 ft	252.5 ft	3.14 ac-ft
116.75	Estimated Storm Sewer TW	1.46 ac	252.0 ft	252.0 ft	3.05 ac-ft
116.00	Top of Treatment Vol.	1.39 ac	246.0 ft	246.0 ft	1.98 ac-ft
114.50	Normal Water Level	1.26 ac	234.0 ft	234.0 ft	0.00 ac-ft
118.00		1.58 ac	262.0 ft	262.0 ft	
113.00	Pond Bottom	1.16 ac	228.0 ft	222.0 ft	

Required Treatment+Attenuation Vol.= 3.14 ac-ft
Required Treatment+Attenuation Stage= 116.81 ft

Provided Treatment+Attenuation Vol.= 3.42 ac-ft
Provided Treatment+Attenuation Stage= 117.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.01 ac-ft
Estimated Storm Sewer TW EL.= 116.75 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.20 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102A**
POND NAME : **E-102A**

Station Limits: From: 5013+71 To: 5032+69

Roadway Length = 1898 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 16.73 ac
Total Roadway Area: 16.73 ac

Pond Area: Pervious Pond Area = 1.98 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **18.71 ac**
Total Area: **18.71 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	A	68	0.39 ac	26.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	C	86	14.04 ac	1207.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	D	89	2.29 ac	204.2
		Total:	16.73 ac	1438.6

CN = Total CN*Area / Total Area = **86.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.63 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.85 in**	**8.87 in**	**11.72 in**	**5.79 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102A**
POND NAME : **E-102A**

Station Limits: From: 5013+71 To: 5032+69

Roadway Length = 1898 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 6.38 ac
Pervious Roadway Area: 10.35 ac
Total Roadway Area: 16.73 ac

Pond Area:

Pervious Pond Area : 1.98 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 1.98 ac

Total Area:

Impervious Area: **6.38 ac**
Pervious Area: **12.33 ac**
Water Surface Area: **0.00 ac**
Total Area: **18.71 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	6.38 ac	625.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	A	68	0.29 ac	19.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	C	86	10.35 ac	890.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition	D	89	1.69 ac	150.4
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	18.71 ac	1685.3

CN = Total CN*Area / Total Area = **90.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.10 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.32 in**	**9.38 in**	**12.26 in**	**6.26 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102A**
POND NAME : **E-102A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.53 ac-ft
	0.50 in	x Total Basin Area =	0.78 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.78 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	9.11 ac-ft	13.82 ac-ft	18.28 ac-ft	9.02 ac-ft
Q_{post} =	9.86 ac-ft	14.63 ac-ft	19.12 ac-ft	9.77 ac-ft
ΔQ =	**0.74 ac-ft**	**0.81 ac-ft**	**0.84 ac-ft**	**0.74 ac-ft**

Attenuation V_{req} = **0.84 ac-ft** (use largest value)

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

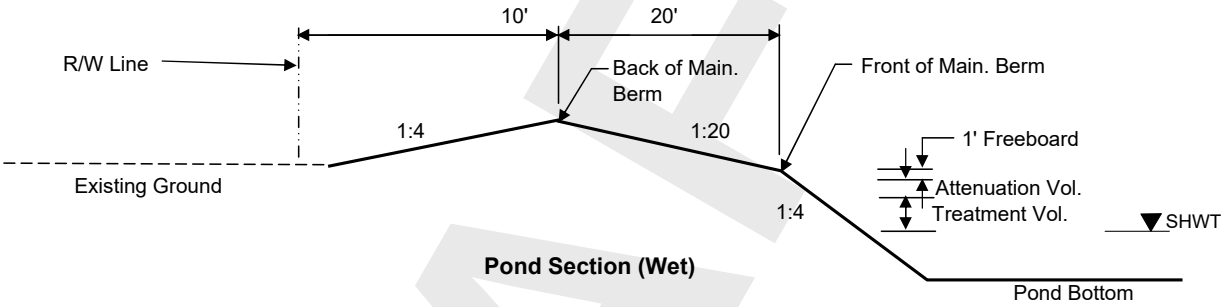
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102A**
POND NAME : **E-102A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	124.00
Pond Tie-In Width =	10.0 ft	@ 1:4	*Normal Water Elevation =	122.00
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	125.83

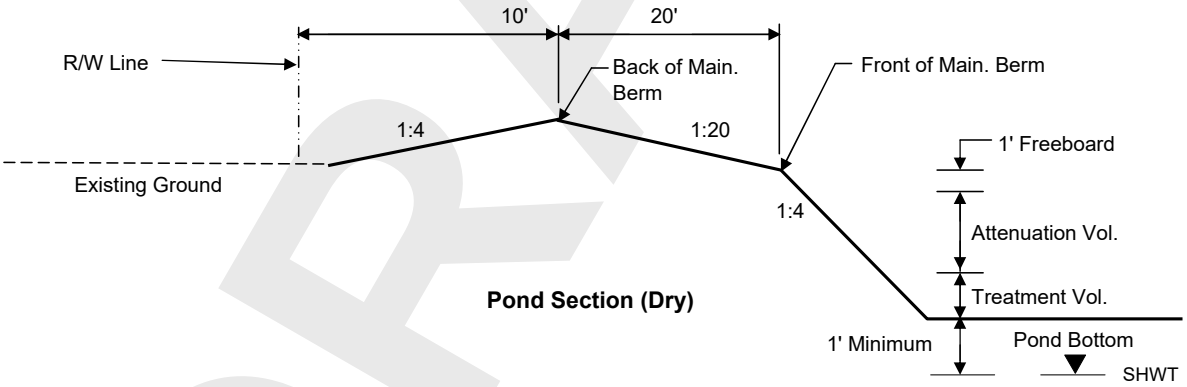
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	124.63 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by: _____

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102A**
POND NAME : **E-102A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
124.00	Pond R/W	2.26 ac	314.0 ft	313.0 ft	
126.50	Back of Main. Berm	1.98 ac	294.0 ft	293.0 ft	5.13 ac-ft
126.00		1.72 ac	274.0 ft	273.0 ft	4.20 ac-ft
125.50	Front of Main. Berm	1.48 ac	254.0 ft	253.0 ft	3.41 ac-ft
124.50	Provided Treat.Vol.+Att.Vol	1.38 ac	246.0 ft	245.0 ft	1.98 ac-ft
124.38	Req'd Treat.Vol+Att. Vol	1.37 ac	245.0 ft	244.0 ft	1.81 ac-ft
124.30	Estimated Storm Sewer TW	1.37 ac	244.4 ft	243.4 ft	1.70 ac-ft
123.61	Top of Treatment Vol.	1.30 ac	238.9 ft	237.9 ft	0.78 ac-ft
123.00	Pond Bottom	1.25 ac	234.0 ft	233.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 1.62 ac-ft
Required Treatment+Attenuation Stage= 124.38 ft

Provided Treatment+Attenuation Vol.= 1.98 ac-ft
Provided Treatment+Attenuation Stage= 124.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.52 ac-ft
Estimated Storm Sewer TW EL.= 124.30 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.82 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103A**
POND NAME : **E-103A**

Station Limits: From: 5032+69 To: 5078+18

Roadway Length = 4549 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 36.55 ac
Total Roadway Area: 36.55 ac

Pond Area: Pervious Pond Area = 2.91 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **39.46 ac**
Total Area: **39.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	11.07 ac	752.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	13.11 ac	1127.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	15.28 ac	1360.0
		Total:	39.46 ac	3240.0

CN = Total CN*Area / Total Area = **82.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.18 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.40 in**	**8.37 in**	**11.20 in**	**5.34 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103A**
POND NAME : **E-103A**

Station Limits: From: 5032+69 To: 5078+18

Roadway Length = 4549 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 13.37 ac
Pervious Roadway Area: 23.18 ac
Total Roadway Area: 36.55 ac

Pond Area:

Pervious Pond Area : 1.14 ac
Water Surface Area: 1.77 ac Wet Pond
Total Pond Area: 2.91 ac

Total Area:

Impervious Area: **13.37 ac**
Pervious Area: **24.32 ac**
Water Surface Area: **1.77 ac**
Total Area: **39.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	13.37 ac	1310.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	6.82 ac	463.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	8.08 ac	695.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	9.42 ac	838.3
Proposed Ponds (Water Surface)	D	100	1.77 ac	176.7
		Total:	39.46 ac	3484.0

CN = Total CN*Area / Total Area = **88.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.33 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.11 in**	**9.16 in**	**12.03 in**	**6.06 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103A**
POND NAME : **E-103A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	3.29 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.29 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	17.75 ac-ft	27.52 ac-ft	36.82 ac-ft	17.57 ac-ft
Q_{post} =	20.11 ac-ft	30.12 ac-ft	39.56 ac-ft	19.91 ac-ft
ΔQ =	**2.35 ac-ft**	**2.60 ac-ft**	**2.74 ac-ft**	**2.35 ac-ft**

Attenuation V_{req} = 2.74 ac-ft (use largest value)

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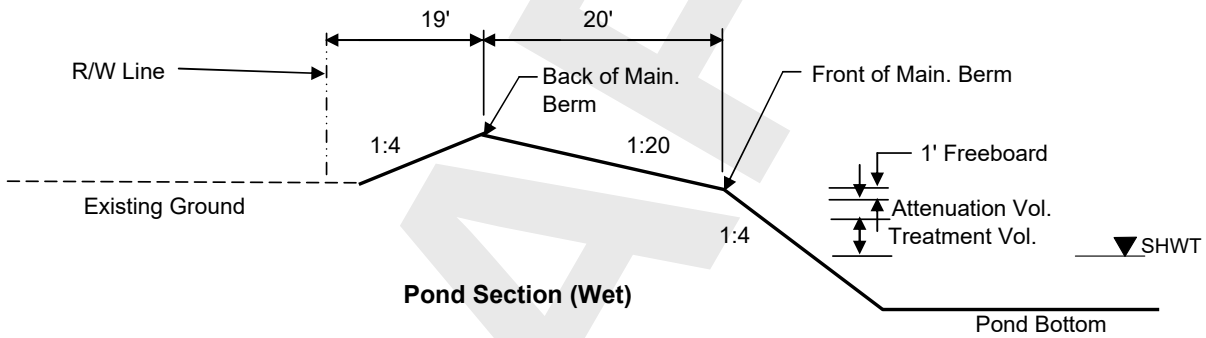
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103A**
POND NAME : **E-103A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	116.00
Pond Tie-In Width =	19.2 ft	@ 1:4	*Normal Water Elevation =	115.00
Maximum Storage Depth (**SD**) =	3.80 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	119.33

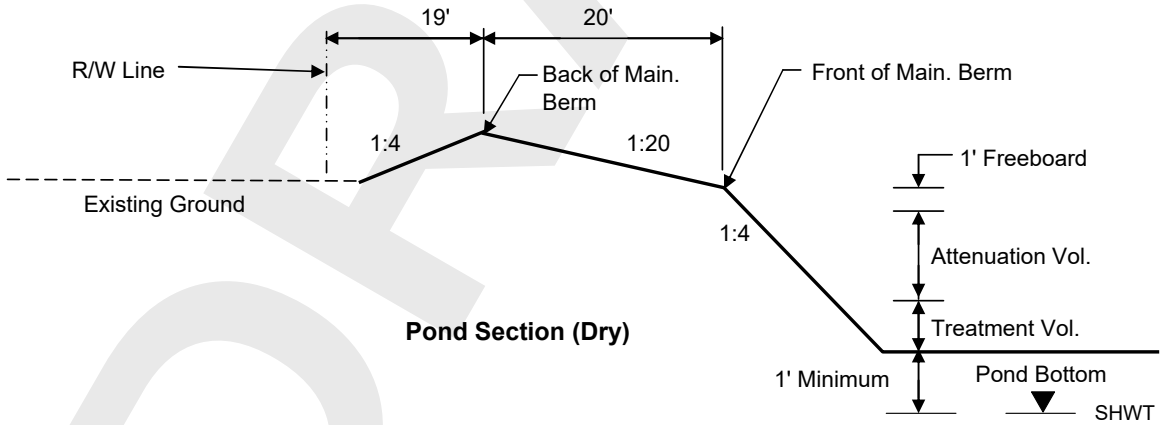
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	100 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	118.28 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103A**
POND NAME : **E-103A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
116.00	Pond R/W	3.57 ac	394.5 ft	394.0 ft	
120.80	Back of Main. Berm	2.91 ac	356.1 ft	355.6 ft	12.33 ac-ft
119.30		2.01 ac	296.1 ft	295.6 ft	8.64 ac-ft
119.80	Front of Main. Berm	2.29 ac	316.1 ft	315.6 ft	9.71 ac-ft
118.80	Provided Treat.Vol.+Att.Vol	2.18 ac	308.1 ft	307.6 ft	7.48 ac-ft
118.12	Req'd Treat.Vol+Att. Vol	2.10 ac	302.7 ft	302.2 ft	6.03 ac-ft
117.93	Estimated Storm Sewer TW	2.08 ac	301.1 ft	300.6 ft	5.63 ac-ft
116.76	Top of Treatment Vol.	1.95 ac	291.8 ft	291.3 ft	3.27 ac-ft
115.00	Normal Water Level	1.77 ac	277.7 ft	277.2 ft	0.00 ac-ft
101.00		0.63 ac	165.7 ft	165.2 ft	
97.00	Pond Bottom	0.63 ac	205.7 ft	133.2 ft	

Required Treatment+Attenuation Vol.= 6.03 ac-ft
Required Treatment+Attenuation Stage= 118.12 ft

Provided Treatment+Attenuation Vol.= 7.48 ac-ft
Provided Treatment+Attenuation Stage= 118.80 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.63 ac-ft
Estimated Storm Sewer TW EL.= 117.93 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.46 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104A**
POND NAME : **E-104A**

Station Limits: From: 5078+18 To: 5094+89

Roadway Length = 1671 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 13.43 ac
Total Roadway Area: 13.43 ac

Pond Area: Pervious Pond Area = 1.39 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **14.82 ac**
Total Area: **14.82 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	14.82 ac	1319.0
		Total:	14.82 ac	1319.0

CN = Total CN*Area / Total Area = **89.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.24 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.20 in**	**9.25 in**	**12.12 in**	**6.14 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104A**
POND NAME : **E-104A**

Station Limits: From: 5078+18 To: 5094+89

Roadway Length = 1671 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 4.91 ac
Pervious Roadway Area: 8.52 ac
Total Roadway Area: 13.43 ac

Pond Area:

Pervious Pond Area : 0.64 ac
Water Surface Area: 0.75 ac Wet Pond
Total Pond Area: 1.39 ac

Total Area:

Impervious Area: **4.91 ac**
Pervious Area: **9.16 ac**
Water Surface Area: **0.75 ac**
Total Area: **14.82 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	4.91 ac	481.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	9.16 ac	815.2
Proposed Ponds (Water Surface)	D	100	0.75 ac	75.0
		Total:	14.82 ac	1371.4

CN = Total CN*Area / Total Area = **92.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.81 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.61 in**	**9.69 in**	**12.58 in**	**6.55 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104A**
POND NAME : **E-104A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.24 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.24 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	7.65 ac-ft	11.42 ac-ft	14.97 ac-ft	7.58 ac-ft
Q_{post} =	8.17 ac-ft	11.97 ac-ft	15.53 ac-ft	8.09 ac-ft
ΔQ =	**0.51 ac-ft**	**0.55 ac-ft**	**0.56 ac-ft**	**0.51 ac-ft**

Attenuation V_{req} = 0.56 ac-ft (use largest value)

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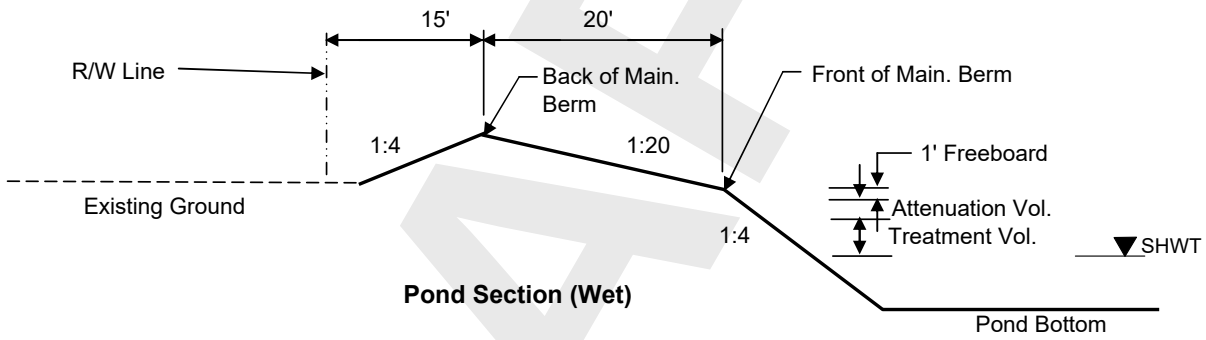
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104A**
POND NAME : **E-104A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	116.50
Pond Tie-In Width =	14.8 ft	@ 1:4	*Normal Water Elevation =	116.00
Maximum Storage Depth (**SD**) =	2.20 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	128.33

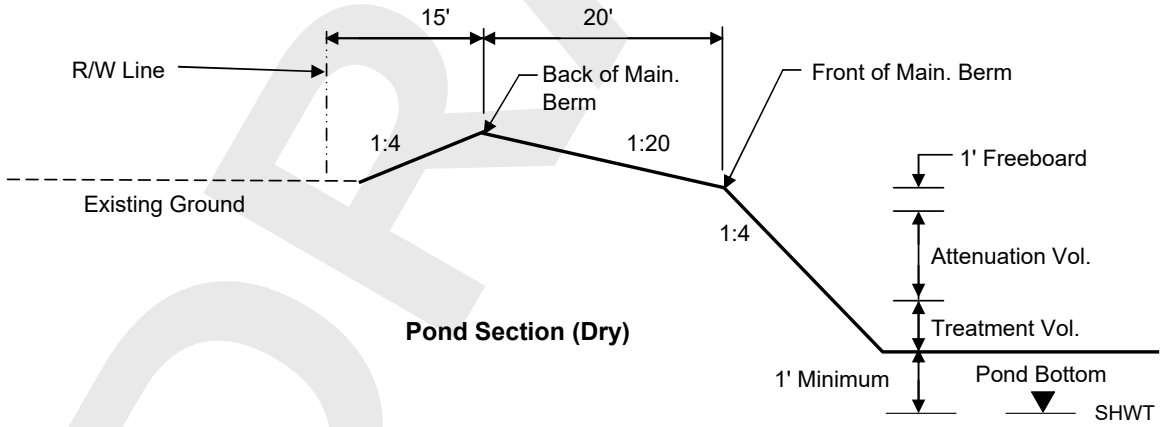
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	127.18 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104A**
POND NAME : **E-104A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
116.50	Pond R/W	1.75 ac	276.0 ft	276.0 ft	
120.20	Back of Main. Berm	1.39 ac	246.4 ft	246.4 ft	3.94 ac-ft
119.70		1.18 ac	226.4 ft	226.4 ft	3.30 ac-ft
119.20	Front of Main. Berm	0.98 ac	206.4 ft	206.4 ft	2.76 ac-ft
118.20	Provided Treat.Vol.+Att.Vol	0.90 ac	198.4 ft	198.4 ft	1.82 ac-ft
118.18	Req'd Treat.Vol+Att. Vol	0.90 ac	198.2 ft	198.2 ft	1.80 ac-ft
118.15	Estimated Storm Sewer TW	0.90 ac	198.0 ft	198.0 ft	1.77 ac-ft
117.60	Top of Treatment Vol.	0.86 ac	193.6 ft	193.6 ft	1.29 ac-ft
116.00	Normal Water Level	0.75 ac	180.8 ft	180.8 ft	0.00 ac-ft
111.00		0.46 ac	140.8 ft	140.8 ft	
106.00	Pond Bottom	0.33 ac	140.8 ft	100.8 ft	

Required Treatment+Attenuation Vol.= 1.80 ac-ft
Required Treatment+Attenuation Stage= 118.18 ft

Provided Treatment+Attenuation Vol.= 1.82 ac-ft
Provided Treatment+Attenuation Stage= 118.20 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.75 ac-ft
Estimated Storm Sewer TW EL.= 118.15 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.19 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105A**
POND NAME : **E-105A**

Station Limits: From: 5094+89 To: 5111+89

Roadway Length = 1700 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 13.66 ac
Total Roadway Area: 13.66 ac

Pond Area: Pervious Pond Area = 1.40 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **15.06 ac**
Total Area: **15.06 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	9.52 ac	847.3
WETLANDS, Cypress & Bay Heads, Areas of Periodic	D	100	5.54 ac	554.0
		Total:	15.06 ac	1401.3

CN = Total CN*Area / Total Area = **93.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **0.75 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.67 in**	**9.75 in**	**12.64 in**	**6.61 in**

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Made by: SF
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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105A**
POND NAME : **E-105A**

Station Limits: From: 5094+89 To: 5111+89

Roadway Length = 1700 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 5.00 ac
Pervious Roadway Area: 8.66 ac
Total Roadway Area: 13.66 ac

Pond Area:

Pervious Pond Area : 0.60 ac
Water Surface Area: 0.80 ac Wet Pond
Total Pond Area: 1.40 ac

Total Area:

Impervious Area: **5.00 ac**
Pervious Area: **9.26 ac**
Water Surface Area: **0.80 ac**
Total Area: **15.06 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.00 ac	489.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	9.26 ac	824.3
Proposed Ponds (Water Surface)	D	100	0.80 ac	80.3
		Total:	15.06 ac	1394.1

CN = Total CN*Area / Total Area = **92.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.80 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.62 in**	**9.69 in**	**12.58 in**	**6.56 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105A**
POND NAME : **E-105A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.25 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.25 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.37 ac-ft	12.24 ac-ft	15.87 ac-ft	8.30 ac-ft
Q_{post} =	8.30 ac-ft	12.17 ac-ft	15.79 ac-ft	8.23 ac-ft
ΔQ =	**-0.07 ac-ft**	**-0.07 ac-ft**	**-0.08 ac-ft**	**-0.07 ac-ft**

Attenuation V_{req} = -0.07 ac-ft (use largest value)

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Job Number: PBS-001-01

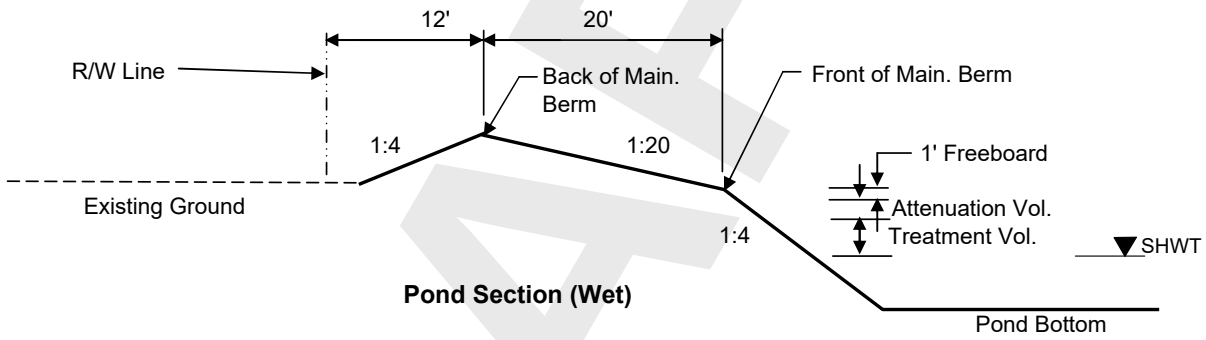
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105A**
POND NAME : **E-105A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	118.00
Pond Tie-In Width =	12.0 ft	@ 1:4	*Normal Water Elevation =	117.50
Maximum Storage Depth (**SD**) =	1.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	122.33

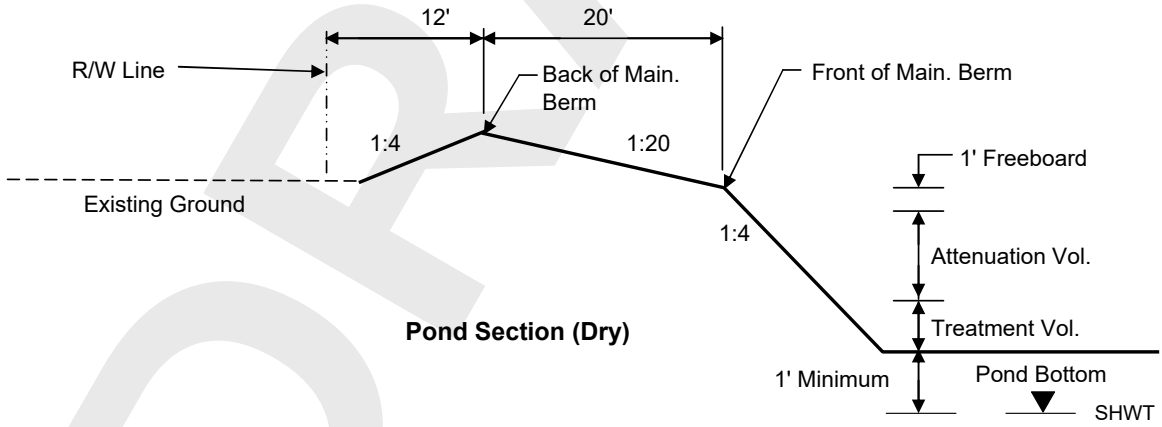
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	121.18 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105A**
POND NAME : **E-105A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
118.00	Pond R/W	1.69 ac	271.0 ft	271.0 ft	
121.00	Back of Main. Berm	1.40 ac	247.0 ft	247.0 ft	3.42 ac-ft
120.50		1.18 ac	227.0 ft	227.0 ft	2.77 ac-ft
120.00	Front of Main. Berm	0.98 ac	207.0 ft	207.0 ft	2.23 ac-ft
119.00	Provided Treat.Vol.+Att.Vol	0.91 ac	199.0 ft	199.0 ft	1.28 ac-ft
118.89	Req'd Treat.Vol+Att. Vol	0.90 ac	198.1 ft	198.1 ft	1.18 ac-ft
118.89	Estimated Storm Sewer TW	0.90 ac	198.1 ft	198.1 ft	1.18 ac-ft
118.96	Top of Treatment Vol.	0.91 ac	198.7 ft	198.7 ft	1.25 ac-ft
117.50	Normal Water Level	0.80 ac	187.0 ft	187.0 ft	0.00 ac-ft
101.00		0.07 ac	55.0 ft	55.0 ft	
97.00	Pond Bottom	0.06 ac	105.0 ft	23.0 ft	

Required Treatment+Attenuation Vol.= 1.18 ac-ft
Required Treatment+Attenuation Stage= 118.89 ft

Provided Treatment+Attenuation Vol.= 1.28 ac-ft
Provided Treatment+Attenuation Stage= 119.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.18 ac-ft
Estimated Storm Sewer TW EL.= 118.89 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.11 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106A**
POND NAME : **E-106A**

Station Limits: From: 5111+89 To: 5130+39

Roadway Length = 1850 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 14.86 ac
Total Roadway Area: 14.86 ac

Pond Area: Pervious Pond Area = 1.48 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **16.35 ac**
Total Area: **16.35 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	6.17 ac	530.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	5.31 ac	472.8
WETLANDS, Cypress & Bay Heads, Areas of Periodic	D	100	4.86 ac	486.1
		Total:	16.35 ac	1489.7

CN = Total CN*Area / Total Area = **91.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = **0.97 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.45 in**	**9.52 in**	**12.40 in**	**6.39 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106A**
POND NAME : **E-106A**

Station Limits: From: 5111+89 To: 5130+39

Roadway Length = 1850 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 5.44 ac
Pervious Roadway Area: 9.43 ac
Total Roadway Area: 14.86 ac

Pond Area:

Pervious Pond Area : 0.65 ac
Water Surface Area: 0.83 ac Wet Pond
Total Pond Area: 1.48 ac

Total Area:

Impervious Area: **5.44 ac**
Pervious Area: **10.08 ac**
Water Surface Area: **0.83 ac**
Total Area: **16.35 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.44 ac	532.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	4.19 ac	360.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	5.90 ac	524.7
Proposed Ponds (Water Surface)	D	100	0.83 ac	82.9
		Total:	16.35 ac	1500.2

CN = Total CN*Area / Total Area = **91.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.90 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.52 in**	**9.60 in**	**12.48 in**	**6.46 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106A**
POND NAME : **E-106A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.36 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.36 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.78 ac-ft	12.96 ac-ft	16.89 ac-ft	8.70 ac-ft
Q_{post} =	8.89 ac-ft	13.07 ac-ft	17.00 ac-ft	8.80 ac-ft
ΔQ =	**0.10 ac-ft**	**0.11 ac-ft**	**0.11 ac-ft**	**0.10 ac-ft**

Attenuation V_{req} = 0.11 ac-ft (use largest value)

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DATE: February 17, 2011
Job Number: PBS-001-01

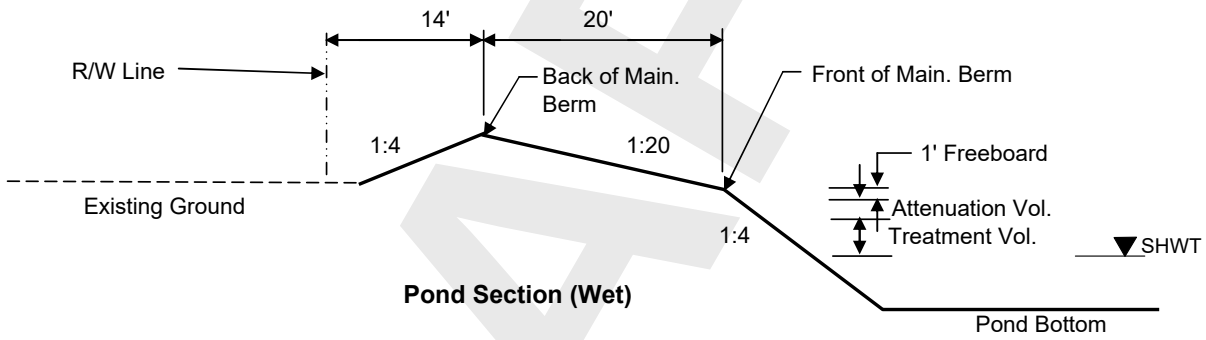
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106A**
POND NAME : **E-106A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	121.00
Pond Tie-In Width =	14.0 ft	@ 1:4	*Normal Water Elevation =	120.50
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	124.33

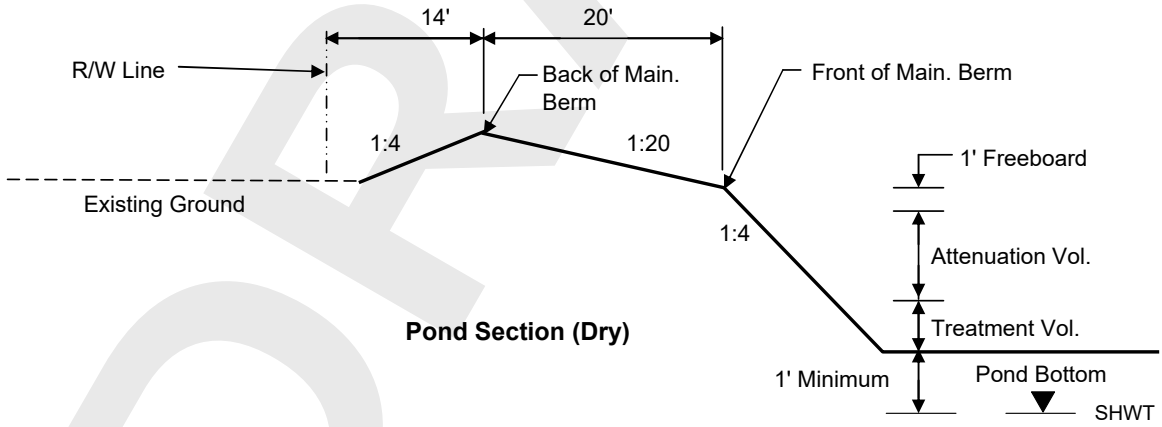
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	450 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	123.11 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106A**
POND NAME : **E-106A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
121.00	Pond R/W	1.83 ac	282.0 ft	282.0 ft	
124.50	Back of Main. Berm	1.48 ac	254.0 ft	254.0 ft	4.08 ac-ft
124.00		1.26 ac	234.0 ft	234.0 ft	3.39 ac-ft
123.50	Front of Main. Berm	1.05 ac	214.0 ft	214.0 ft	2.82 ac-ft
122.50	Provided Treat.Vol.+Att.Vol	0.97 ac	206.0 ft	206.0 ft	1.80 ac-ft
122.40	Req'd Treat.Vol+Att. Vol	0.97 ac	205.2 ft	205.2 ft	1.71 ac-ft
122.40	Estimated Storm Sewer TW	0.97 ac	205.2 ft	205.2 ft	1.71 ac-ft
122.30	Top of Treatment Vol.	0.96 ac	204.4 ft	204.4 ft	1.61 ac-ft
120.50	Normal Water Level	0.83 ac	190.0 ft	190.0 ft	0.00 ac-ft
115.50		0.52 ac	150.0 ft	150.0 ft	
110.50	Pond Bottom	0.38 ac	150.0 ft	110.0 ft	

Required Treatment+Attenuation Vol.= 1.47 ac-ft
Required Treatment+Attenuation Stage= 122.40 ft

Provided Treatment+Attenuation Vol.= 1.80 ac-ft
Provided Treatment+Attenuation Stage= 122.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.47 ac-ft
Estimated Storm Sewer TW EL.= 122.40 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.28 ac

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-107A**
POND NAME : **E-107A**

Station Limits: From: 5130+39 To: 5160+89

Roadway Length = 3050 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 24.51 ac
Total Roadway Area: 24.51 ac

Pond Area: Pervious Pond Area = 2.39 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **26.89 ac**
Total Area: **26.89 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	10.38 ac	705.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	7.85 ac	675.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	7.72 ac	686.6
WETLANDS, Cypress & Bay Heads, Areas of Periodic	D	100	0.68 ac	68.4
Existing Lakes (Water surface)	D	100	0.26 ac	26.4
		Total:	26.89 ac	2162.4

CN = Total CN*Area / Total Area = **80.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.44 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.20 in**	**8.15 in**	**10.96 in**	**5.15 in**

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-107A**
POND NAME : **E-107A**

Station Limits: From: 5130+39 To: 5160+89

Roadway Length = 3050 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 8.96 ac
Pervious Roadway Area: 15.54 ac
Total Roadway Area: 24.51 ac

Pond Area:

Pervious Pond Area : 0.95 ac
Water Surface Area: 1.44 ac Wet Pond
Total Pond Area: 2.39 ac

Total Area:

Impervious Area: **8.96 ac**
Pervious Area: **16.49 ac**
Water Surface Area: **1.44 ac**
Total Area: **26.89 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.96 ac	878.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	6.99 ac	475.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	5.28 ac	454.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	4.22 ac	375.9
Proposed Ponds (Water Surface)	D	100	1.44 ac	144.1
		Total:	26.89 ac	2327.5

CN = Total CN*Area / Total Area = **86.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.55 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.91 in**	**8.94 in**	**11.80 in**	**5.85 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-107A**
POND NAME : **E-107A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.24 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.24 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.66 ac-ft	18.26 ac-ft	24.56 ac-ft	11.54 ac-ft
Q_{post} =	13.25 ac-ft	20.03 ac-ft	26.44 ac-ft	13.12 ac-ft
ΔQ =	**1.58 ac-ft**	**1.77 ac-ft**	**1.88 ac-ft**	**1.58 ac-ft**

Attenuation V_{req} = 1.88 ac-ft (use largest value)

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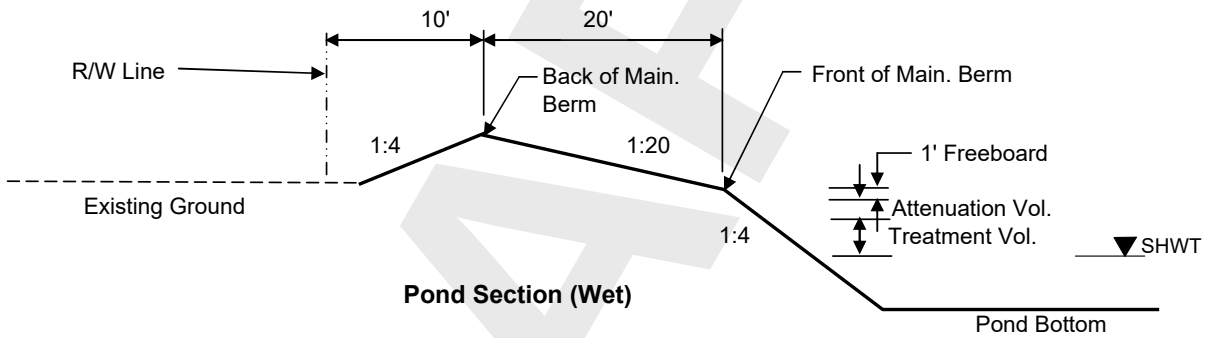
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-107A**
POND NAME : **E-107A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	121.50
Pond Tie-In Width =	10.0 ft	@ 1:4	*Normal Water Elevation =	119.50
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	124.33

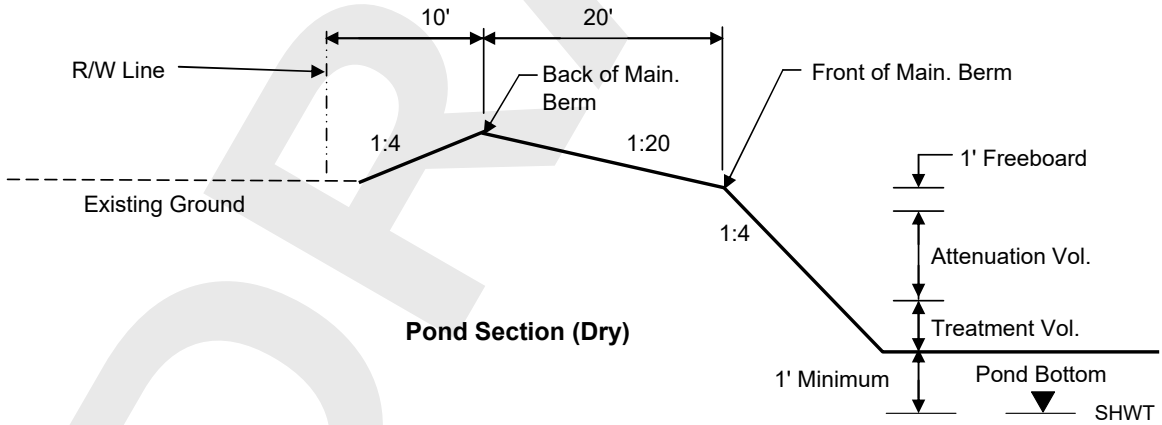
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	123.18 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-107A**
POND NAME : **E-107A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
121.50	Pond R/W	2.69 ac	342.0 ft	343.0 ft	
124.00	Back of Main. Berm	2.39 ac	322.0 ft	323.0 ft	7.59 ac-ft
124.00		2.39 ac	322.0 ft	323.0 ft	7.59 ac-ft
123.50	Front of Main. Berm	1.83 ac	282.0 ft	283.0 ft	6.53 ac-ft
122.50	Provided Treat.Vol.+Att.Vol	1.73 ac	274.0 ft	275.0 ft	4.75 ac-ft
122.36	Req'd Treat.Vol+Att. Vol	1.72 ac	272.8 ft	273.8 ft	4.50 ac-ft
122.20	Estimated Storm Sewer TW	1.70 ac	271.6 ft	272.6 ft	4.24 ac-ft
121.15	Top of Treatment Vol.	1.60 ac	263.2 ft	264.2 ft	2.51 ac-ft
119.50	Normal Water Level	1.44 ac	250.0 ft	251.0 ft	0.00 ac-ft
114.50		1.02 ac	210.0 ft	211.0 ft	
109.50	Pond Bottom	0.82 ac	210.0 ft	171.0 ft	

Required Treatment+Attenuation Vol.= 4.12 ac-ft
Required Treatment+Attenuation Stage= 122.36 ft

Provided Treatment+Attenuation Vol.= 4.75 ac-ft
Provided Treatment+Attenuation Stage= 122.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.82 ac-ft
Estimated Storm Sewer TW EL.= 122.20 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.37 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101B**
POND NAME : **E-101B**

Station Limits: From: Exist 60 Alignment To: Exist 60 Alignment

Roadway Length = 2412 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 10.75 ac
Total Roadway Area: 10.75 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 1.55 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **12.30 ac**
Total Area: **12.30 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.39 ac	17.7
Residential Areas (2.0 acre, 12% Impervious)	C	77	0.46 ac	35.1
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	4.55 ac	309.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	5.46 ac	469.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.92 ac	82.1
WETLANDS, Cypress & Bay Heads, Areas of Periodic Inundation.	D	100	0.52 ac	52.3
		Total:	12.30 ac	966.1

CN = Total CN*Area / Total Area = **78.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.73 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.00 in**	**7.91 in**	**10.70 in**	**4.94 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101B**
POND NAME : **E-101B**

Station Limits: From: Exist 60 Alignment To: Exist 60 Alignment

Roadway Length = 2412 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 4.16 ac
*Pervious Roadway Area: 6.59 ac
Total Roadway Area: 10.75 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 0.74 ac
Water Surface Area: 0.81 ac Wet Pond
Total Pond Area: 1.55 ac

Total Area:

Impervious Area: **4.16 ac**
Pervious Area: **7.33 ac**
Water Surface Area: **0.81 ac**
Total Area: **12.30 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	4.16 ac	407.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	2.94 ac	200.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	3.53 ac	303.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.86 ac	76.6
Proposed Ponds (Water Surface)	D	100	0.81 ac	80.7
		Total:	12.30 ac	1068.3

CN = Total CN*Area / Total Area = **86.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.51 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.95 in**	**8.98 in**	**11.84 in**	**5.89 in**

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101B**
POND NAME : **E-101B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.02 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.02 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	5.12 ac-ft	8.10 ac-ft	10.97 ac-ft	5.06 ac-ft
Q_{post} =	6.10 ac-ft	9.20 ac-ft	12.14 ac-ft	6.04 ac-ft
ΔQ =	**0.98 ac-ft**	**1.10 ac-ft**	**1.17 ac-ft**	**0.97 ac-ft**

Attenuation V_{req} = 1.17 ac-ft (use largest value)

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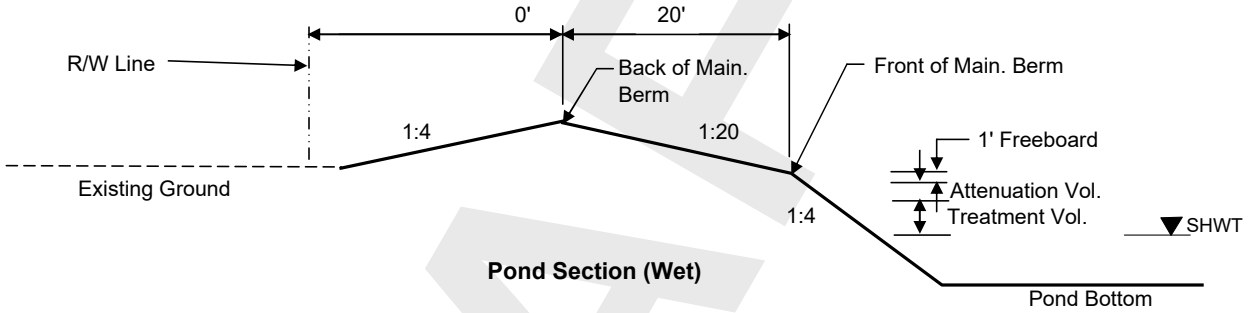
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101B**
POND NAME : **E-101B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	122.00
Pond Tie-In Width =	0.0 ft	@ 1:4	*Normal Water Elevation =	117.00
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	121.00

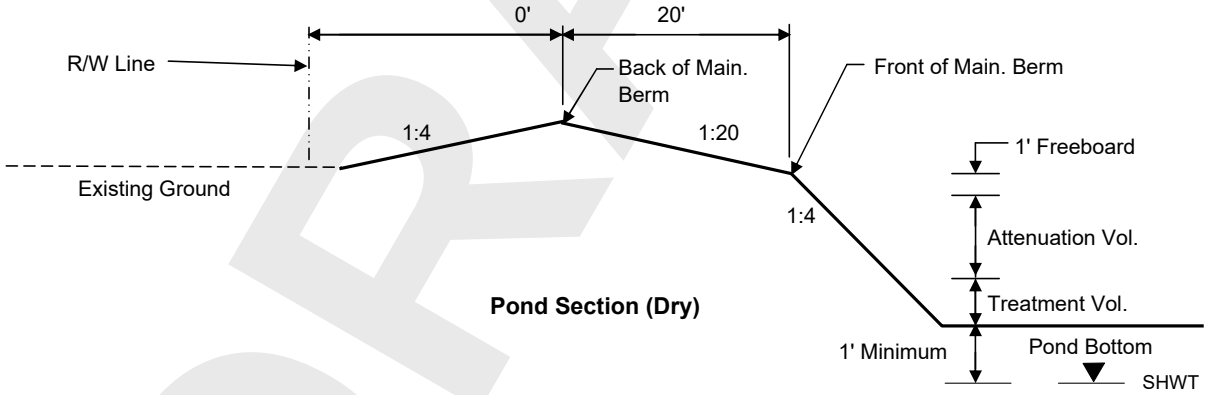
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	119.50 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-101B**
POND NAME : **E-101B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
122.00	Pond R/W	1.55 ac	259.0 ft	260.0 ft	
122.00	Back of Main. Berm	1.55 ac	259.0 ft	260.0 ft	5.13 ac-ft
121.50		1.32 ac	239.0 ft	240.0 ft	4.42 ac-ft
121.00	Front of Main. Berm	1.11 ac	219.0 ft	220.0 ft	3.81 ac-ft
120.00	Provided Treat.Vol.+Att.Vol	1.03 ac	211.0 ft	212.0 ft	2.75 ac-ft
119.45	Req'd Treat.Vol+Att. Vol	0.98 ac	206.6 ft	207.6 ft	2.19 ac-ft
119.25	Estimated Storm Sewer TW	0.97 ac	205.0 ft	206.0 ft	2.00 ac-ft
118.20	Top of Treatment Vol.	0.89 ac	196.6 ft	197.6 ft	1.02 ac-ft
117.00	Normal Water Level	0.81 ac	187.0 ft	188.0 ft	0.00 ac-ft
115.00		0.68 ac	171.0 ft	172.0 ft	
110.00	Pond Bottom	0.48 ac	159.0 ft	132.0 ft	

Required Treatment+Attenuation Vol.= 2.19 ac-ft
Required Treatment+Attenuation Stage= 119.45 ft

Provided Treatment+Attenuation Vol.= 2.75 ac-ft
Provided Treatment+Attenuation Stage= 120.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.00 ac-ft
Estimated Storm Sewer TW EL.= 119.25 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 1.93 ac

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102B**
POND NAME : **E-102B**

Station Limits: From: Exist 60 Alignment To: Exist 60 Alignment

Roadway Length = 2412 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 30.16 ac
Total Roadway Area: 30.16 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.83 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **32.99 ac**
Total Area: **32.99 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	1.03 ac	47.6
Residential Areas (2.0 acre, 12% Impervious)	C	77	1.22 ac	94.3
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	12.20 ac	829.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	14.65 ac	1259.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	2.47 ac	220.2
WETLANDS, Cypress & Bay Heads, Areas of Periodic Inundation.	D	100	1.40 ac	140.2
		Total:	32.99 ac	2591.9

CN = Total CN*Area / Total Area = **78.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.73 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.00 in**	**7.91 in**	**10.70 in**	**4.94 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102B**
POND NAME : **E-102B**

Station Limits: From: Exist 60 Alignment To: Exist 60 Alignment

Roadway Length = 2412 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 12.35 ac
*Pervious Roadway Area: 17.81 ac
Total Roadway Area: 30.16 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area :	1.06 ac	
Water Surface Area:	1.77 ac	Wet Pond
Total Pond Area:	2.83 ac	

Total Area:

Impervious Area:	**12.35 ac**
Pervious Area:	**18.87 ac**
Water Surface Area:	**1.77 ac**
Total Area:	**32.99 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	12.35 ac	1210.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	7.57 ac	514.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	9.08 ac	781.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	2.22 ac	197.3
Proposed Ponds (Water Surface)	D	100	1.77 ac	176.5
		Total:	32.99 ac	2880.1

CN = Total CN*Area / Total Area = **87.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.45 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.00 in**	**9.04 in**	**11.90 in**	**5.94 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102B**
POND NAME : **E-102B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.75 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.75 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	13.73 ac-ft	21.74 ac-ft	29.42 ac-ft	13.58 ac-ft
Q_{post} =	16.49 ac-ft	24.84 ac-ft	32.71 ac-ft	16.33 ac-ft
ΔQ =	**2.76 ac-ft**	**3.10 ac-ft**	**3.29 ac-ft**	**2.75 ac-ft**

Attenuation V_{req} = **3.29 ac-ft** (use largest value)

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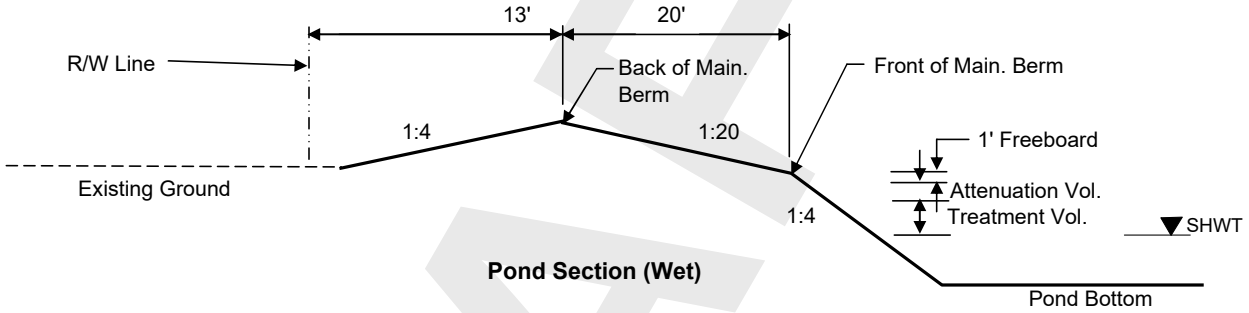
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102B**
POND NAME : **E-102B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	120.00
Pond Tie-In Width =	12.8 ft	@ 1:4	*Normal Water Elevation =	118.00
Maximum Storage Depth (**SD**) =	3.20 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	122.20

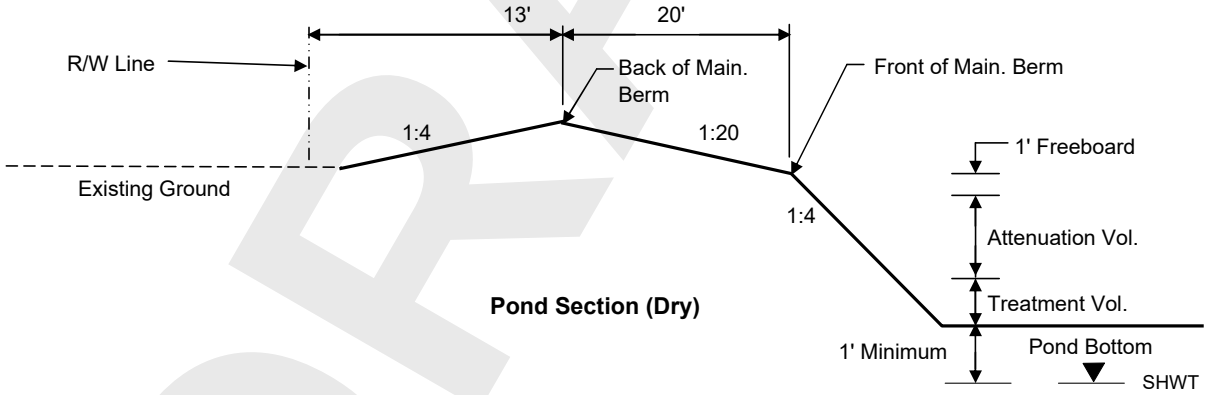
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	121.00 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-102B**
POND NAME : **E-102B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
120.00	Pond R/W	3.25 ac	377.0 ft	376.0 ft	
123.20	Back of Main. Berm	2.83 ac	351.4 ft	350.4 ft	10.87 ac-ft
122.70		2.51 ac	331.4 ft	330.4 ft	9.53 ac-ft
122.20	Front of Main. Berm	2.22 ac	311.4 ft	310.4 ft	8.35 ac-ft
121.20	Provided Treat.Vol.+Att.Vol	2.11 ac	303.4 ft	302.4 ft	6.19 ac-ft
121.13	Req'd Treat.Vol+Att. Vol	2.10 ac	302.8 ft	301.8 ft	6.04 ac-ft
120.87	Estimated Storm Sewer TW	2.07 ac	300.8 ft	299.8 ft	5.50 ac-ft
119.50	Top of Treatment Vol.	1.92 ac	289.8 ft	288.8 ft	2.76 ac-ft
118.00	Normal Water Level	1.77 ac	277.8 ft	276.8 ft	0.00 ac-ft
113.00		1.29 ac	237.8 ft	236.8 ft	
108.00	Pond Bottom	1.07 ac	237.8 ft	196.8 ft	

Required Treatment+Attenuation Vol.= 6.04 ac-ft
Required Treatment+Attenuation Stage= 121.13 ft

Provided Treatment+Attenuation Vol.= 6.19 ac-ft
Provided Treatment+Attenuation Stage= 121.20 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.50 ac-ft
Estimated Storm Sewer TW EL.= 120.87 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.07 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103B**
POND NAME : **E-103B**

Station Limits: From: 8000+00 To: 8012+19

Roadway Length = 1219 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 20.01 ac
Total Roadway Area: 20.01 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 4.84 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **24.85 ac**
Total Area: **24.85 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.78 ac	35.9
Residential Areas (2.0 acre, 12% Impervious)	C	77	0.92 ac	71.0
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	9.19 ac	624.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	11.03 ac	949.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	1.86 ac	165.9
WETLANDS, Cypress & Bay Heads, Areas of Periodic Inundation.	D	100	1.06 ac	105.6
		Total:	24.85 ac	1952.3

CN = Total CN*Area / Total Area = **78.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.73 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.00 in**	**7.91 in**	**10.70 in**	**4.94 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103B**
POND NAME : **E-103B**

Station Limits: From: 8000+00 To: 8012+19

Roadway Length = 1219 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 5.80 ac
*Pervious Roadway Area: 14.21 ac
Total Roadway Area: 20.01 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 4.84 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 4.84 ac

Total Area:

Impervious Area: **5.80 ac**
Pervious Area: **19.05 ac**
Water Surface Area: **0.00 ac**
Total Area: **24.85 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.80 ac	568.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	7.64 ac	519.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	9.17 ac	788.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	2.24 ac	199.2
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	24.85 ac	2075.6

CN = Total CN*Area / Total Area = **83.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.97 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.56 in**	**8.55 in**	**11.39 in**	**5.51 in**

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103B**
POND NAME : **E-103B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.48 ac-ft
	0.50 in	x Total Basin Area =	1.04 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.04 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	10.34 ac-ft	16.38 ac-ft	22.16 ac-ft	10.23 ac-ft
Q_{post} =	11.52 ac-ft	17.71 ac-ft	23.59 ac-ft	11.40 ac-ft
ΔQ =	**1.17 ac-ft**	**1.33 ac-ft**	**1.43 ac-ft**	**1.17 ac-ft**

Attenuation V_{req} = 1.43 ac-ft (use largest value)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

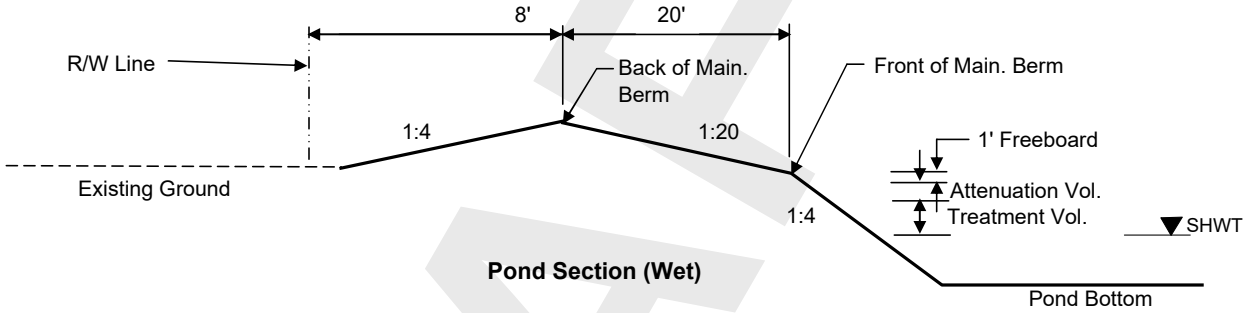
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103B**
POND NAME : **E-103B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	129.00
Pond Tie-In Width =	8.0 ft	@ 1:4	*Normal Water Elevation =	126.50
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	129.83

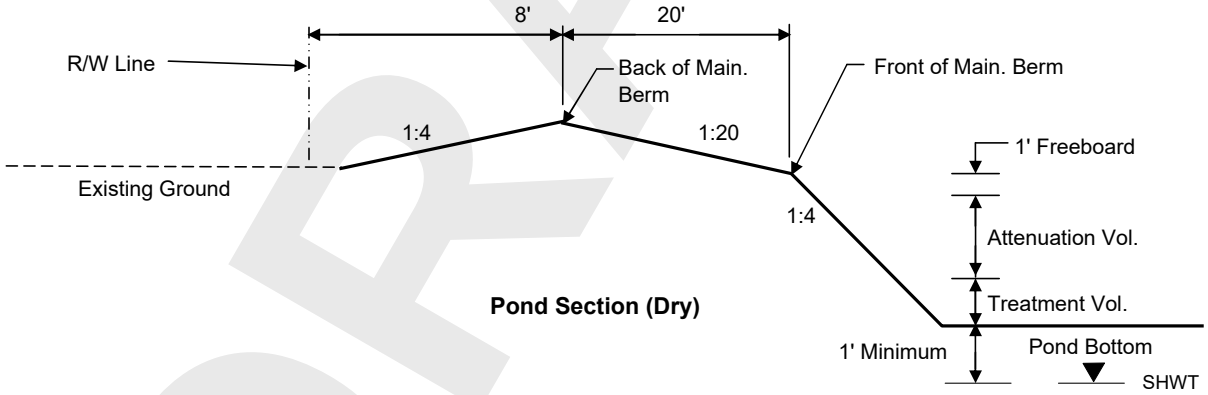
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	128.73 ft	



Pond Section (Wet)



Pond Section (Dry)

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-103B**
POND NAME : **E-103B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
129.00	Pond R/W	5.18 ac	475.0 ft	475.0 ft	
131.00	Back of Main. Berm	4.84 ac	459.0 ft	459.0 ft	14.03 ac-ft
130.50		4.42 ac	439.0 ft	439.0 ft	11.72 ac-ft
130.00	Front of Main. Berm	4.03 ac	419.0 ft	419.0 ft	9.60 ac-ft
129.00	Provided Treat.Vol.+Att.Vol	3.88 ac	411.0 ft	411.0 ft	5.65 ac-ft
128.17	Req'd Treat.Vol+Att. Vol	3.75 ac	404.3 ft	404.3 ft	2.47 ac-ft
128.10	Estimated Storm Sewer TW	3.74 ac	403.8 ft	403.8 ft	2.22 ac-ft
127.80	Top of Treatment Vol.	3.70 ac	401.4 ft	401.4 ft	1.10 ac-ft
127.50	Pond Bottom	3.65 ac	399.0 ft	399.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 2.47 ac-ft
Required Treatment+Attenuation Stage= 128.17 ft

Provided Treatment+Attenuation Vol.= 5.65 ac-ft
Provided Treatment+Attenuation Stage= 129.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.21 ac-ft
Estimated Storm Sewer TW EL.= 128.10 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.47 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104B**
POND NAME : **E-104B**

Station Limits: From: 8000+00 To: 8012+19

Roadway Length = 1219 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 41.87 ac
Total Roadway Area: 41.87 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 4.02 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **45.89 ac**
Total Area: **45.89 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	1.44 ac	66.2
Residential Areas (2.0 acre, 12% Impervious)	C	77	1.70 ac	131.2
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	16.97 ac	1154.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	20.38 ac	1752.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	3.44 ac	306.3
WETLANDS, Cypress & Bay Heads, Areas of Periodic Inundation.	D	100	1.95 ac	195.0
		Total:	45.89 ac	3605.8

CN = Total CN*Area / Total Area = **78.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.73 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.00 in**	**7.91 in**	**10.70 in**	**4.94 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104B**
POND NAME : **E-104B**

Station Limits: From: 8000+00 To: 8012+19

Roadway Length = 1219 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 13.20 ac
*Pervious Roadway Area: 28.67 ac
Total Roadway Area: 41.87 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.33 ac
Water Surface Area: 2.69 ac Wet Pond
Total Pond Area: 4.02 ac

Total Area:

Impervious Area: **13.20 ac**
Pervious Area: **30.00 ac**
Water Surface Area: **2.69 ac**
Total Area: **45.89 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	13.20 ac	1293.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	12.04 ac	818.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	14.44 ac	1241.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	3.52 ac	313.7
Proposed Ponds (Water Surface)	D	100	2.69 ac	269.3
		Total:	45.89 ac	3936.6

CN = Total CN*Area / Total Area = **85.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.66 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.82 in**	**8.84 in**	**11.70 in**	**5.76 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104B**
POND NAME : **E-104B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	3.82 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.82 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	19.10 ac-ft	30.25 ac-ft	40.93 ac-ft	18.89 ac-ft
Q_{post} =	22.27 ac-ft	33.81 ac-ft	44.73 ac-ft	22.04 ac-ft
ΔQ =	**3.16 ac-ft**	**3.56 ac-ft**	**3.80 ac-ft**	**3.15 ac-ft**

Attenuation V_{req} = 3.80 ac-ft (use largest value)

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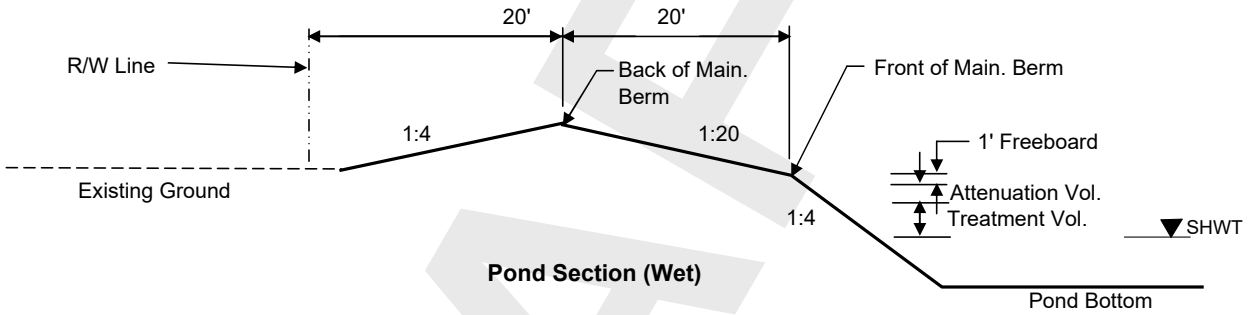
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104B**
POND NAME : **E-104B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	126.00
Pond Tie-In Width =	20.0 ft	@ 1:4	*Normal Water Elevation =	125.50
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	132.33

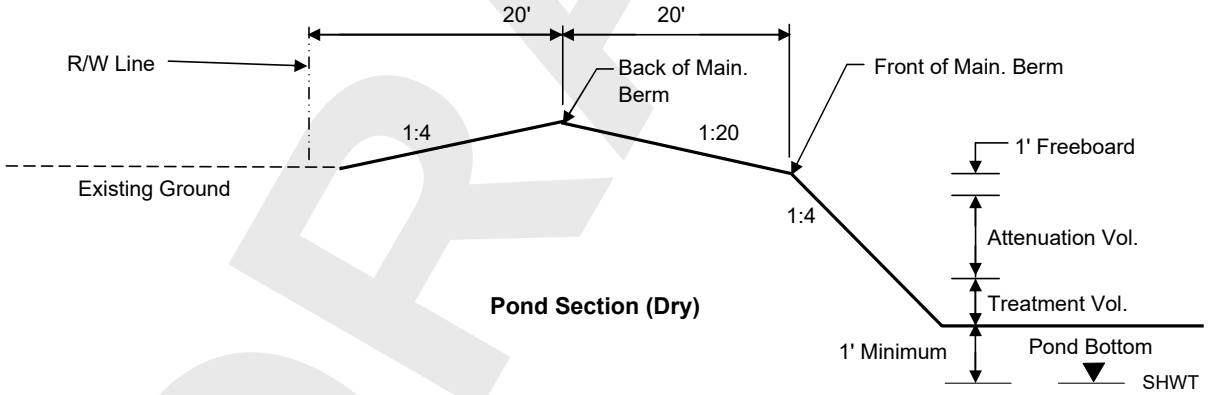
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	131.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-104B**
POND NAME : **E-104B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
126.00	Pond R/W	4.83 ac	458.0 ft	459.0 ft	
131.00	Back of Main. Berm	4.02 ac	418.0 ft	419.0 ft	17.09 ac-ft
130.50		3.65 ac	398.0 ft	399.0 ft	15.17 ac-ft
130.00	Front of Main. Berm	3.29 ac	378.0 ft	379.0 ft	13.44 ac-ft
129.00	Provided Treat.Vol.+Att.Vol	3.15 ac	370.0 ft	371.0 ft	10.22 ac-ft
128.17	Req'd Treat.Vol+Att. Vol	3.04 ac	363.3 ft	364.3 ft	7.63 ac-ft
127.95	Estimated Storm Sewer TW	3.01 ac	361.6 ft	362.6 ft	6.98 ac-ft
126.90	Top of Treatment Vol.	2.87 ac	353.2 ft	354.2 ft	3.90 ac-ft
125.50	Normal Water Level	2.69 ac	342.0 ft	343.0 ft	0.00 ac-ft
121.00		2.16 ac	306.0 ft	307.0 ft	
116.00	Pond Bottom	1.86 ac	304.0 ft	267.0 ft	

Required Treatment+Attenuation Vol.= 7.63 ac-ft
Required Treatment+Attenuation Stage= 128.17 ft

Provided Treatment+Attenuation Vol.= 10.22 ac-ft
Provided Treatment+Attenuation Stage= 129.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 6.98 ac-ft
Estimated Storm Sewer TW EL.= 127.95 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.03 ac

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105B**
POND NAME : **E-105B**

Station Limits: From: 8012+19 To: 8030+54

Roadway Length = 1835 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 14.71 ac
Total Roadway Area: 14.71 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 1.26 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **15.97 ac**
Total Area: **15.97 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.50 ac	23.0
Residential Areas (2.0 acre, 12% Impervious)	C	77	0.59 ac	45.6
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	5.91 ac	401.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	7.09 ac	609.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	1.20 ac	106.6
WETLANDS, Cypress & Bay Heads, Areas of Periodic Inundation.	D	100	0.68 ac	67.9
		Total:	15.97 ac	1254.6

CN = Total CN*Area / Total Area = **78.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.73 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.00 in**	**7.91 in**	**10.70 in**	**4.94 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105B**
POND NAME : **E-105B**

Station Limits: From: 8012+19 To: 8030+54

Roadway Length = 1835 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 5.07 ac
*Pervious Roadway Area: 9.64 ac
Total Roadway Area: 14.71 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area :	0.71 ac	
Water Surface Area:	0.54 ac	Wet Pond
Total Pond Area:	1.26 ac	

Total Area:

Impervious Area:	**5.07 ac**
Pervious Area:	**10.35 ac**
Water Surface Area:	**0.54 ac**
Total Area:	**15.97 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.07 ac	496.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	4.15 ac	282.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	4.98 ac	428.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	1.22 ac	108.3
Proposed Ponds (Water Surface)	D	100	0.54 ac	54.4
		Total:	15.97 ac	1370.5

CN = Total CN*Area / Total Area = **85.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.65 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.83 in**	**8.85 in**	**11.70 in**	**5.77 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105B**
POND NAME : **E-105B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.33 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.33 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	6.65 ac-ft	10.52 ac-ft	14.24 ac-ft	6.57 ac-ft
Q_{post} =	7.76 ac-ft	11.77 ac-ft	15.57 ac-ft	7.68 ac-ft
ΔQ =	**1.11 ac-ft**	**1.25 ac-ft**	**1.33 ac-ft**	**1.10 ac-ft**

Attenuation V_{req} = 1.33 ac-ft (use largest value)

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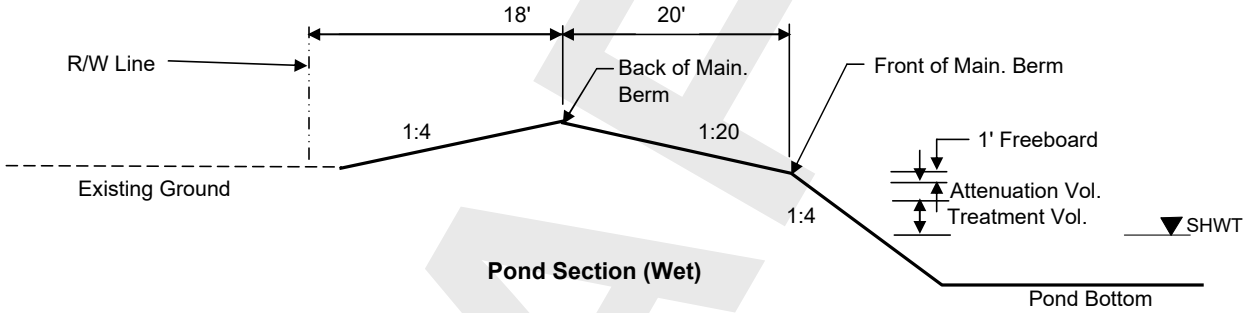
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105B**
POND NAME : **E-105B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	127.00
Pond Tie-In Width =	18.0 ft	@ 1:4	*Normal Water Elevation =	125.50
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	132.33

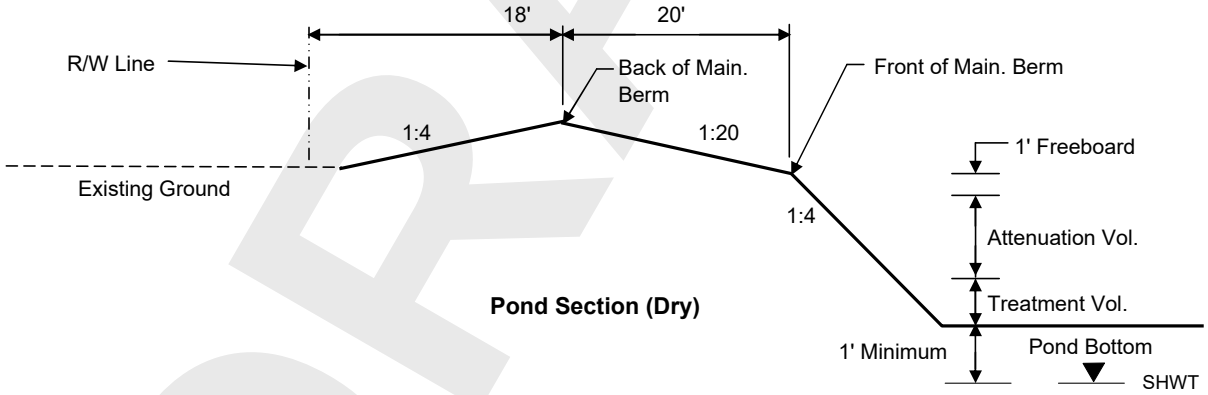
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	131.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by: _____

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-105B**
POND NAME : **E-105B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
127.00	Pond R/W	1.67 ac	270.0 ft	270.0 ft	
131.50	Back of Main. Berm	1.26 ac	234.0 ft	234.0 ft	4.55 ac-ft
131.00		1.05 ac	214.0 ft	214.0 ft	3.97 ac-ft
130.50	Front of Main. Berm	0.86 ac	194.0 ft	194.0 ft	3.49 ac-ft
129.50	Provided Treat.Vol.+Att.Vol	0.79 ac	186.0 ft	186.0 ft	2.67 ac-ft
129.49	Req'd Treat.Vol+Att. Vol	0.79 ac	185.9 ft	185.9 ft	2.66 ac-ft
129.20	Estimated Storm Sewer TW	0.77 ac	183.6 ft	183.6 ft	2.43 ac-ft
127.70	Top of Treatment Vol.	0.68 ac	171.6 ft	171.6 ft	1.34 ac-ft
125.50	Normal Water Level	0.54 ac	154.0 ft	154.0 ft	0.00 ac-ft
121.00		0.32 ac	118.0 ft	118.0 ft	
116.00	Pond Bottom	0.21 ac	116.0 ft	78.0 ft	

Required Treatment+Attenuation Vol.= 2.66 ac-ft
Required Treatment+Attenuation Stage= 129.49 ft

Provided Treatment+Attenuation Vol.= 2.67 ac-ft
Provided Treatment+Attenuation Stage= 129.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.43 ac-ft
Estimated Storm Sewer TW EL.= 129.20 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.09 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106B**
POND NAME : **E-106B**

Station Limits: From: 8030+54 To: 8069+19

Roadway Length = 3865 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 31.05 ac
Total Roadway Area: 31.05 ac

Pond Area: Pervious Pond Area = 1.97 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **33.03 ac**
Total Area: **33.03 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	C	77	3.46 ac	266.4
Residential Areas (2.0 acre, 12% Impervious)	D	82	3.15 ac	258.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	24.17 ac	2078.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	1.74 ac	154.6
WETLANDS, Cypress & Bay Heads, Areas of Periodic Inundation.	D	100	0.51 ac	50.8
		Total:	33.03 ac	2808.8

CN = Total CN*Area / Total Area = **85.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.76 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.74 in**	**8.75 in**	**11.60 in**	**5.68 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106B**
POND NAME : **E-106B**

Station Limits: From: 8030+54 To: 8069+19

Roadway Length = 3865 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 11.36 ac
Pervious Roadway Area: 19.70 ac
Total Roadway Area: 31.05 ac

Pond Area:

Pervious Pond Area : 1.97 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 1.97 ac

Total Area:

Impervious Area: **11.36 ac**
Pervious Area: **21.67 ac**
Water Surface Area: **0.00 ac**
Total Area: **33.03 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	11.36 ac	1113.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	18.13 ac	1558.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	3.54 ac	315.2
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	33.03 ac	2987.1

CN = Total CN*Area / Total Area = **90.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.06 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.37 in**	**9.43 in**	**12.31 in**	**6.31 in**

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106B**
POND NAME : **E-106B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.95 ac-ft
	0.50 in	x Total Basin Area =	1.38 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.38 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	15.79 ac-ft	24.08 ac-ft	31.92 ac-ft	15.63 ac-ft
Q_{post} =	17.52 ac-ft	25.95 ac-ft	33.88 ac-ft	17.36 ac-ft
ΔQ =	**1.73 ac-ft**	**1.88 ac-ft**	**1.96 ac-ft**	**1.73 ac-ft**

Attenuation V_{req} = 1.96 ac-ft (use largest value)

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Job Number: PBS-001-01

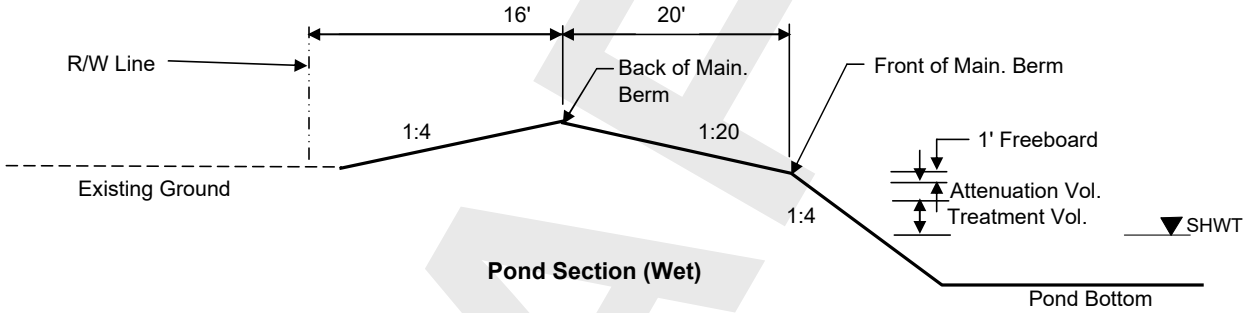
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106B**
POND NAME : **E-106B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	130.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	128.00
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	134.33

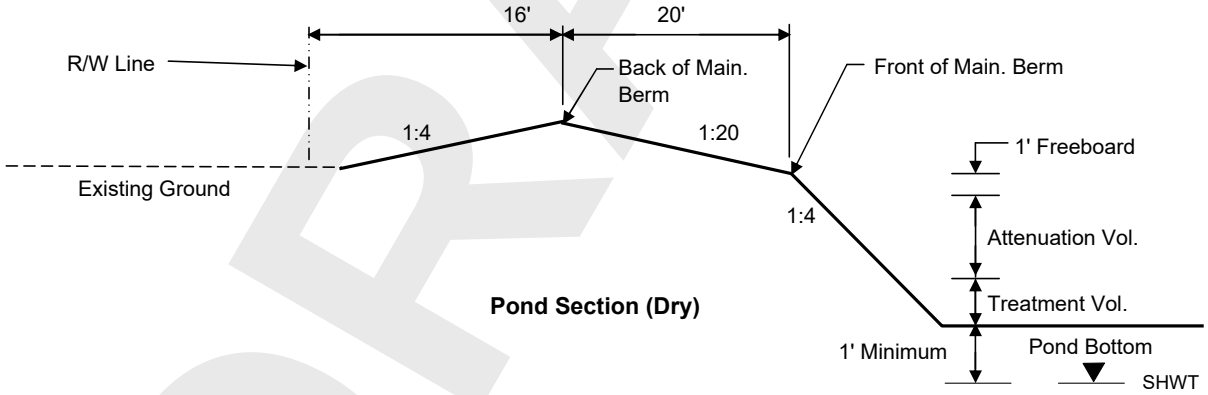
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	600 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	133.03 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-106B**
POND NAME : **E-106B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
130.00	Pond R/W	2.42 ac	325.0 ft	325.0 ft	
134.00	Back of Main. Berm	1.97 ac	293.0 ft	293.0 ft	6.88 ac-ft
133.50		1.71 ac	273.0 ft	273.0 ft	5.96 ac-ft
133.00	Front of Main. Berm	1.47 ac	253.0 ft	253.0 ft	5.17 ac-ft
132.00	Provided Treat.Vol.+Att.Vol	1.38 ac	245.0 ft	245.0 ft	3.74 ac-ft
131.71	Req'd Treat.Vol+Att. Vol	1.35 ac	242.6 ft	242.6 ft	3.34 ac-ft
131.55	Estimated Storm Sewer TW	1.34 ac	241.4 ft	241.4 ft	3.13 ac-ft
130.20	Top of Treatment Vol.	1.22 ac	230.6 ft	230.6 ft	1.41 ac-ft
129.00	Pond Bottom	1.12 ac	221.0 ft	221.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.34 ac-ft
Required Treatment+Attenuation Stage= 131.71 ft

Provided Treatment+Attenuation Vol.= 3.74 ac-ft
Provided Treatment+Attenuation Stage= 132.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.10 ac-ft
Estimated Storm Sewer TW EL.= 131.55 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.03 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-108**
POND NAME : **E-108**

Station Limits: From: 5160+89 To: 5186+89

Roadway Length = 2600 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 53.57 ac
Total Roadway Area: 53.57 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 6.41 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **59.98 ac**
Total Area: **59.98 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	17.66 ac	1518.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	42.32 ac	3766.6
		Total:	59.98 ac	5285.4

CN = Total CN*Area / Total Area = **88.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.35 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.09 in**	**9.14 in**	**12.01 in**	**6.04 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-108**
POND NAME : **E-108**

Station Limits: From: 5160+89 To: 5186+89

Roadway Length = 2600 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 25.83 ac
*Pervious Roadway Area: 27.74 ac
Total Roadway Area: 53.57 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.46 ac
Water Surface Area: 4.95 ac Wet Pond
Total Pond Area: 6.41 ac

Total Area:

Impervious Area: **25.83 ac**
Pervious Area: **29.20 ac**
Water Surface Area: **4.95 ac**
Total Area: **59.98 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	25.83 ac	2531.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	8.60 ac	739.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	20.60 ac	1833.6
Proposed Ponds (Water Surface)	D	100	4.95 ac	495.3
		Total:	59.98 ac	5599.6

CN = Total CN*Area / Total Area = **93.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.71 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.71 in**	**9.79 in**	**12.68 in**	**6.65 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-108**
POND NAME : **E-108**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	5.00 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **5.00 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	30.46 ac-ft	45.67 ac-ft	60.01 ac-ft	30.17 ac-ft
Q_{post} =	33.53 ac-ft	48.94 ac-ft	63.39 ac-ft	33.24 ac-ft
ΔQ =	**3.07 ac-ft**	**3.27 ac-ft**	**3.38 ac-ft**	**3.07 ac-ft**

Attenuation V_{req} = 3.38 ac-ft (use largest value)

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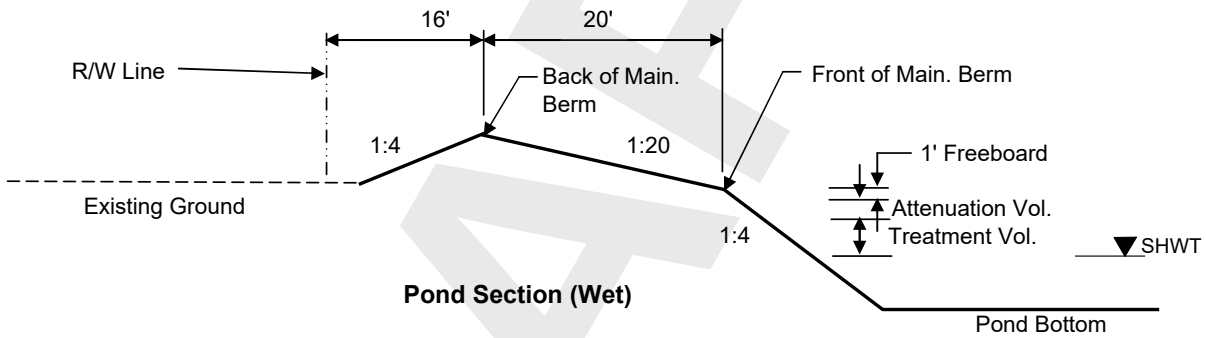
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-108**
POND NAME : **E-108**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	119.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	119.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	125.33

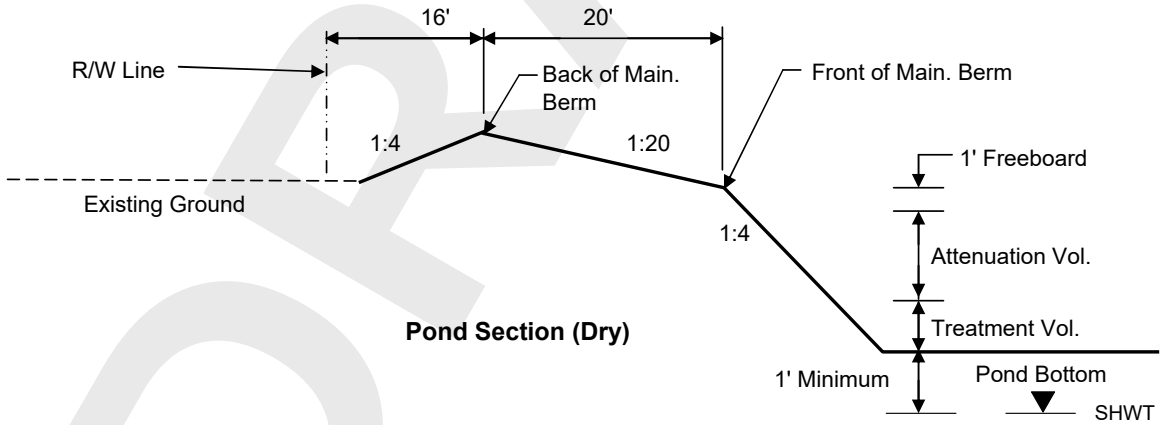
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	100 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	124.28 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-108**
POND NAME : **E-108**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
119.00	Pond R/W	7.21 ac	561.0 ft	560.0 ft	
123.00	Back of Main. Berm	6.41 ac	529.0 ft	528.0 ft	21.58 ac-ft
122.50		5.94 ac	509.0 ft	508.0 ft	18.49 ac-ft
122.00	Front of Main. Berm	5.48 ac	489.0 ft	488.0 ft	15.64 ac-ft
121.00	Provided Treat.Vol.+Att.Vol	5.30 ac	481.0 ft	480.0 ft	10.25 ac-ft
120.64	Req'd Treat.Vol+Att. Vol	5.24 ac	478.1 ft	477.1 ft	8.37 ac-ft
120.60	Estimated Storm Sewer TW	5.23 ac	477.8 ft	476.8 ft	8.15 ac-ft
120.00	Top of Treatment Vol.	5.13 ac	473.0 ft	472.0 ft	5.04 ac-ft
119.00	Normal Water Level	4.95 ac	465.0 ft	464.0 ft	0.00 ac-ft
117.00		4.62 ac	449.0 ft	448.0 ft	
113.00	Pond Bottom	4.21 ac	441.0 ft	416.0 ft	

Required Treatment+Attenuation Vol.= 8.37 ac-ft
Required Treatment+Attenuation Stage= 120.64 ft

Provided Treatment+Attenuation Vol.= 10.25 ac-ft
Provided Treatment+Attenuation Stage= 121.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 8.07 ac-ft
Estimated Storm Sewer TW EL.= 120.60 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 9.02 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-109**
POND NAME : **E-109**

Station Limits: From: 5182+52 To: 5207+72

Roadway Length = 2900 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 47.37 ac
Total Roadway Area: 47.37 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 13.22 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **60.59 ac**
Total Area: **60.59 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	4.67 ac	402.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	55.91 ac	4976.2
		Total:	60.59 ac	5378.1

CN = Total CN*Area / Total Area = **88.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.27 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.17 in**	**9.22 in**	**12.09 in**	**6.11 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-109**
POND NAME : **E-109**

Station Limits: From: 5182+52 To: 5207+72

Roadway Length = 2900 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 14.23 ac
*Pervious Roadway Area: 33.14 ac
Total Roadway Area: 47.37 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 2.01 ac
Water Surface Area: 11.21 ac Wet Pond
Total Pond Area: 13.22 ac

Total Area:

Impervious Area: **14.23 ac**
Pervious Area: **35.15 ac**
Water Surface Area: **11.21 ac**
Total Area: **60.59 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.23 ac	1394.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	2.71 ac	233.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	32.44 ac	2886.8
Proposed Ponds (Water Surface)	D	100	11.21 ac	1120.9
		Total:	60.59 ac	5635.4

CN = Total CN*Area / Total Area = **93.0**

Runoff:

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.67 in**	**9.75 in**	**12.64 in**	**6.61 in**

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.75 in

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

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-109**
POND NAME : **E-109**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	5.05 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **5.05 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	31.15 ac-ft	46.55 ac-ft	61.05 ac-ft	30.85 ac-ft
Q_{post} =	33.67 ac-ft	49.22 ac-ft	63.81 ac-ft	33.37 ac-ft
ΔQ =	**2.52 ac-ft**	**2.67 ac-ft**	**2.76 ac-ft**	**2.51 ac-ft**

Attenuation V_{req} = 2.76 ac-ft (use largest value)

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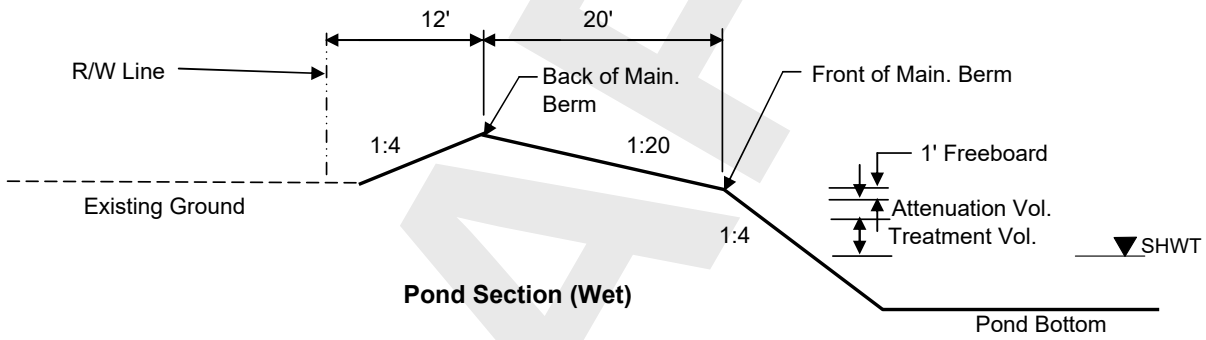
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-109**
POND NAME : **E-109**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	121.00
Pond Tie-In Width =	12.0 ft	@ 1:4	*Normal Water Elevation =	120.50
Maximum Storage Depth (**SD**) =	1.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	124.33

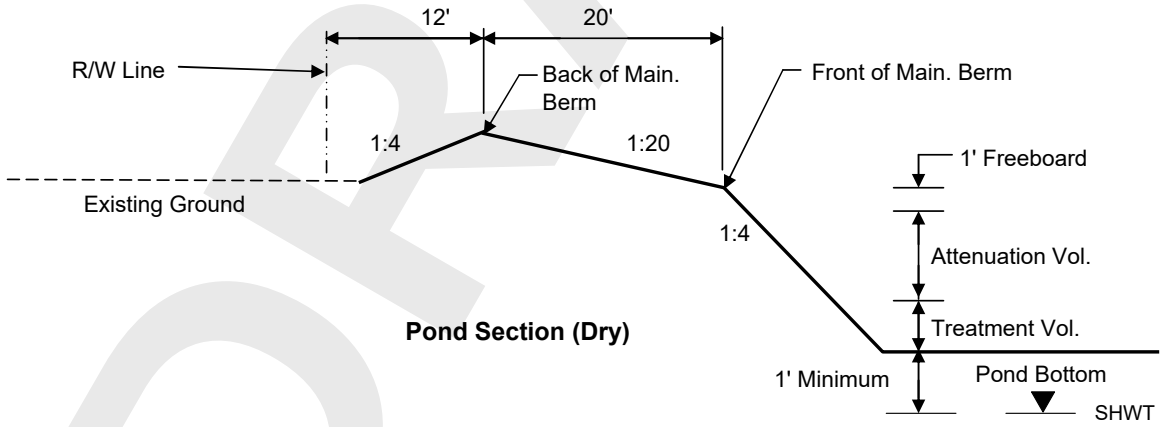
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	122.83 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-109**
POND NAME : **E-109**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
121.00	Pond R/W	14.07 ac	785.0 ft	780.5 ft	
124.00	Back of Main. Berm	13.22 ac	761.0 ft	756.5 ft	41.36 ac-ft
123.50		12.53 ac	741.0 ft	736.5 ft	34.93 ac-ft
123.00	Front of Main. Berm	11.86 ac	721.0 ft	716.5 ft	28.83 ac-ft
122.00	Provided Treat.Vol.+Att.Vol	11.60 ac	713.0 ft	708.5 ft	17.10 ac-ft
121.19	Req'd Treat.Vol+Att. Vol	11.39 ac	706.5 ft	702.0 ft	7.81 ac-ft
121.17	Estimated Storm Sewer TW	11.38 ac	706.4 ft	701.9 ft	7.57 ac-ft
120.95	Top of Treatment Vol.	11.32 ac	704.6 ft	700.1 ft	5.07 ac-ft
120.50	Normal Water Level	11.21 ac	701.0 ft	696.5 ft	0.00 ac-ft
115.50		9.96 ac	661.0 ft	656.5 ft	
110.50	Pond Bottom	9.36 ac	661.0 ft	616.5 ft	

Required Treatment+Attenuation Vol.= 7.81 ac-ft
Required Treatment+Attenuation Stage= 121.19 ft

Provided Treatment+Attenuation Vol.= 17.10 ac-ft
Provided Treatment+Attenuation Stage= 122.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.56 ac-ft
Estimated Storm Sewer TW EL.= 121.17 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 17.58 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-110**
POND NAME : **E-110**

Station Limits: From: 5207+72 To: 5245+43

Roadway Length = 3771 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 37.83 ac
Total Roadway Area: 37.83 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 7.23 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **45.06 ac**
Total Area: **45.06 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	4.48 ac	305.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	3.13 ac	269.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	37.44 ac	3332.4
		Total:	45.06 ac	3906.9

CN = Total CN*Area / Total Area = **86.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.53 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.93 in**	**8.96 in**	**11.82 in**	**5.87 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-110**
POND NAME : **E-110**

Station Limits: From: 5207+72 To: 5245+43

Roadway Length = 3771 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 14.87 ac
*Pervious Roadway Area: 22.96 ac
Total Roadway Area: 37.83 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.46 ac
Water Surface Area: 5.77 ac Wet Pond
Total Pond Area: 7.23 ac

Total Area:

Impervious Area: **14.87 ac**
Pervious Area: **24.42 ac**
Water Surface Area: **5.77 ac**
Total Area: **45.06 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.87 ac	1457.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	2.43 ac	165.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	1.70 ac	146.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	20.29 ac	1806.2
Proposed Ponds (Water Surface)	D	100	5.77 ac	576.8
		Total:	45.06 ac	4151.6

CN = Total CN*Area / Total Area = **92.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.85 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.56 in**	**9.64 in**	**12.53 in**	**6.50 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-110**
POND NAME : **E-110**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	3.76 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.76 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	22.26 ac-ft	33.64 ac-ft	44.38 ac-ft	22.05 ac-ft
Q_{post} =	24.65 ac-ft	36.20 ac-ft	47.04 ac-ft	24.43 ac-ft
ΔQ =	**2.39 ac-ft**	**2.56 ac-ft**	**2.66 ac-ft**	**2.38 ac-ft**

Attenuation V_{req} = 2.66 ac-ft (use largest value)

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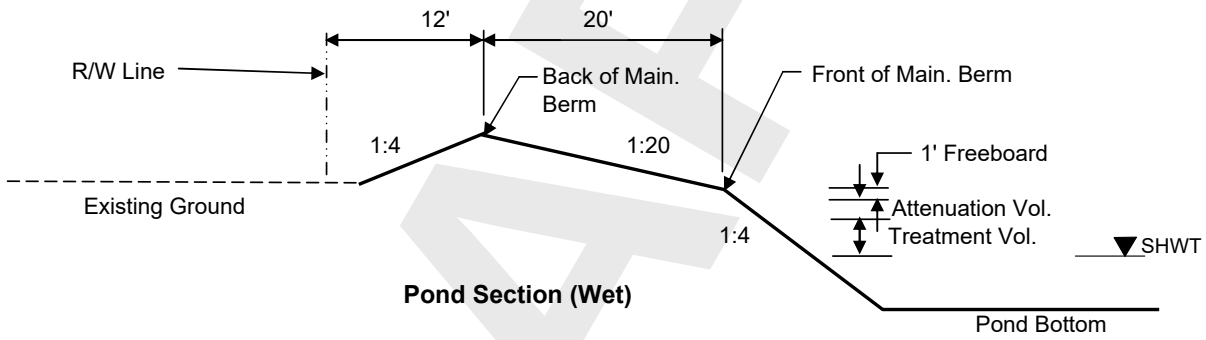
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-110**
POND NAME : **E-110**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	118.00
Pond Tie-In Width =	12.0 ft	@ 1:4	*Normal Water Elevation =	117.50
Maximum Storage Depth (**SD**) =	1.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	122.33

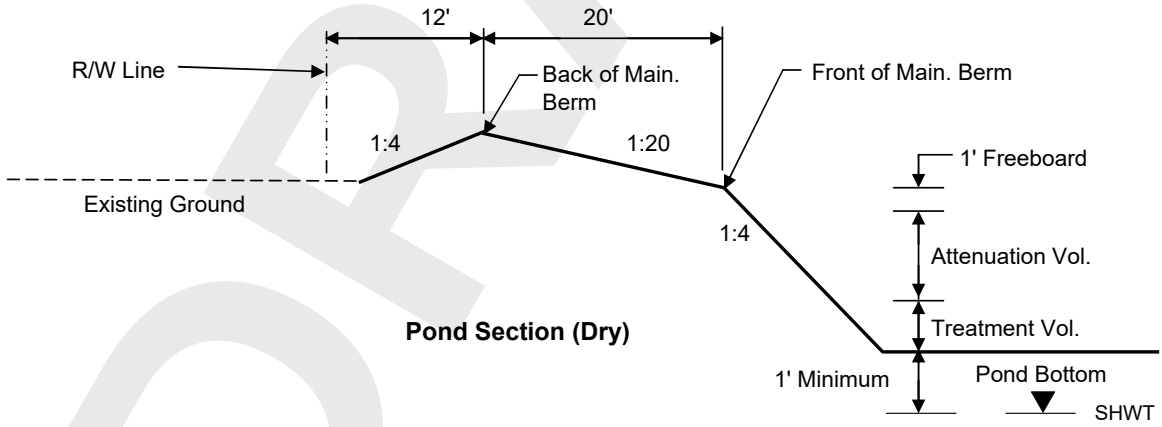
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	370 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	121.15 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-110**
POND NAME : **E-110**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
118.00	Pond R/W	7.86 ac	585.5 ft	585.0 ft	
121.00	Back of Main. Berm	7.23 ac	561.5 ft	561.0 ft	21.73 ac-ft
120.50		6.73 ac	541.5 ft	541.0 ft	18.24 ac-ft
120.00	Front of Main. Berm	6.24 ac	521.5 ft	521.0 ft	15.00 ac-ft
119.00	Provided Treat.Vol.+Att.Vol	6.05 ac	513.5 ft	513.0 ft	8.86 ac-ft
118.59	Req'd Treat.Vol+Att. Vol	5.97 ac	510.2 ft	509.7 ft	6.41 ac-ft
118.55	Estimated Storm Sewer TW	5.96 ac	509.9 ft	509.4 ft	6.16 ac-ft
118.15	Top of Treatment Vol.	5.89 ac	506.7 ft	506.2 ft	3.79 ac-ft
117.50	Normal Water Level	5.77 ac	501.5 ft	501.0 ft	0.00 ac-ft
115.50		5.41 ac	485.5 ft	485.0 ft	
110.50	Pond Bottom	4.84 ac	473.5 ft	445.0 ft	

Required Treatment+Attenuation Vol.= 6.41 ac-ft
Required Treatment+Attenuation Stage= 118.59 ft

Provided Treatment+Attenuation Vol.= 8.86 ac-ft
Provided Treatment+Attenuation Stage= 119.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 6.14 ac-ft
Estimated Storm Sewer TW EL.= 118.55 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 9.83 ac

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-111**
POND NAME : **E-111**

Station Limits: From: 5252+00 To: 5267+53

Roadway Length = 1553 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 12.48 ac
Total Roadway Area: 12.48 ac

Pond Area: Pervious Pond Area = 2.57 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **15.05 ac**
Total Area: **15.05 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.59 ac	137.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	13.45 ac	1197.3
		Total:	15.05 ac	1334.4

CN = Total CN*Area / Total Area = **88.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.28 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.16 in**	**9.21 in**	**12.08 in**	**6.10 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-111**
POND NAME : **E-111**

Station Limits: From: 5245+43 To: 5267+53

Roadway Length = 2210 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 6.49 ac
Pervious Roadway Area: 11.26 ac
Total Roadway Area: 17.76 ac

Pond Area:

Pervious Pond Area : 1.17 ac
Water Surface Area: 1.39 ac Wet Pond
Total Pond Area: 2.57 ac

Total Area:

Impervious Area: **6.49 ac**
Pervious Area: **12.44 ac**
Water Surface Area: **1.39 ac**
Total Area: **20.33 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	6.49 ac	636.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.32 ac	113.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	11.12 ac	989.6
Proposed Ponds (Water Surface)	D	100	1.39 ac	139.5
		Total:	20.33 ac	1878.8

CN = Total CN*Area / Total Area = **92.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.82 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.60 in**	**9.68 in**	**12.57 in**	**6.54 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-111**
POND NAME : **E-111**

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.69 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.69 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	7.72 ac-ft	11.55 ac-ft	15.15 ac-ft	7.65 ac-ft
Q_{post} =	11.18 ac-ft	16.39 ac-ft	21.28 ac-ft	11.08 ac-ft
ΔQ =	**3.46 ac-ft**	**4.85 ac-ft**	**6.14 ac-ft**	**3.43 ac-ft**

Attenuation V_{req} = 6.14 ac-ft (use largest value)

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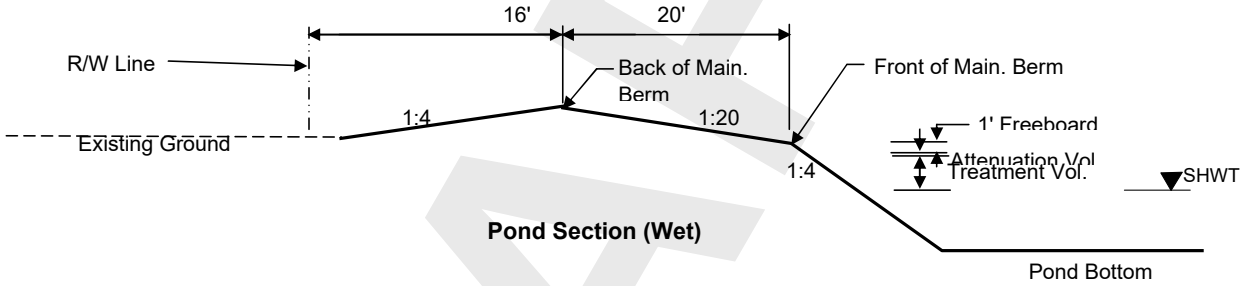
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-111**
POND NAME : **E-111**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	120.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	117.00
Maximum Storage Depth (**SD**) =	5.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	125.33

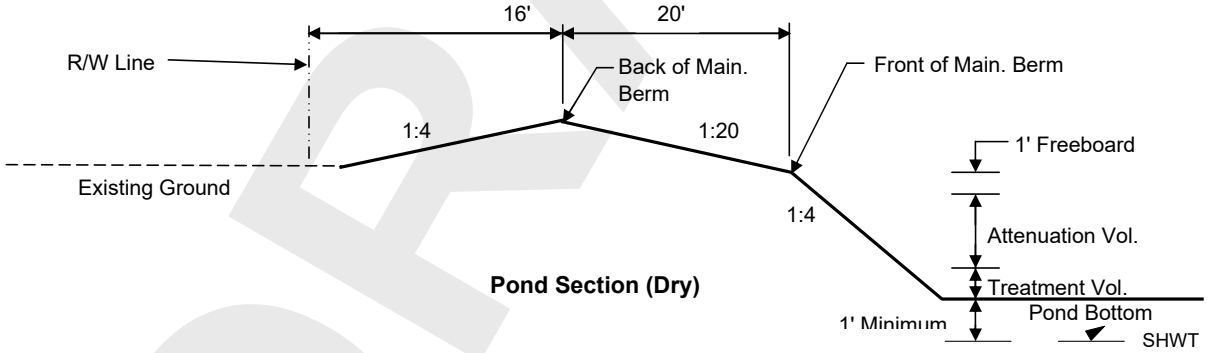
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	375 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	124.14 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-111**
POND NAME : **E-111**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
120.00	Pond R/W	3.08 ac	367.0 ft	366.0 ft	
124.00	Back of Main. Berm	2.57 ac	335.0 ft	334.0 ft	12.38 ac-ft
123.50		2.27 ac	315.0 ft	314.0 ft	11.17 ac-ft
123.00	Front of Main. Berm	1.99 ac	295.0 ft	294.0 ft	10.11 ac-ft
122.00	Provided Treat.Vol.+Att.Vol	1.88 ac	287.0 ft	286.0 ft	8.17 ac-ft
121.82	Req'd Treat.Vol+Att. Vol	1.87 ac	285.6 ft	284.6 ft	7.83 ac-ft
120.30	Estimated Storm Sewer TW	1.71 ac	273.4 ft	272.4 ft	5.12 ac-ft
118.17	Top of Treatment Vol.	1.50 ac	256.3 ft	255.3 ft	1.69 ac-ft
117.00	Normal Water Level	1.39 ac	247.0 ft	246.0 ft	0.00 ac-ft
101.00		0.32 ac	119.0 ft	118.0 ft	
97.00	Pond Bottom	0.33 ac	167.0 ft	86.0 ft	

Required Treatment+Attenuation Vol.= 7.83 ac-ft
Required Treatment+Attenuation Stage= 121.82 ft

Provided Treatment+Attenuation Vol.= 8.17 ac-ft
Provided Treatment+Attenuation Stage= 122.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.12 ac-ft
Estimated Storm Sewer TW EL.= 120.30 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.85 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-112**
POND NAME : **E-112**

Station Limits: From: 5273+30 To: 5289+73

Roadway Length = 1643 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 13.20 ac
Total Roadway Area: 13.20 ac

Pond Area: Pervious Pond Area = 3.18 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **16.38 ac**
Total Area: **16.38 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.74 ac	149.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	14.64 ac	1303.2
		Total:	16.38 ac	1452.5

CN = Total CN*Area / Total Area = **88.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.28 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.16 in**	**9.21 in**	**12.08 in**	**6.10 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-112**
POND NAME : **E-112**

Station Limits: From: 5267+53 To: 5289+73

Roadway Length = 2220 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 6.52 ac
Pervious Roadway Area: 11.31 ac
Total Roadway Area: 17.84 ac

Pond Area:

Pervious Pond Area : 1.17 ac
Water Surface Area: 2.01 ac Wet Pond
Total Pond Area: 3.18 ac

Total Area:

Impervious Area: **6.52 ac**
Pervious Area: **12.48 ac**
Water Surface Area: **2.01 ac**
Total Area: **21.01 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	6.52 ac	639.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.32 ac	113.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	11.16 ac	993.0
Proposed Ponds (Water Surface)	D	100	2.01 ac	201.1
		Total:	21.01 ac	1947.1

CN = Total CN*Area / Total Area = **92.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.79 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.63 in**	**9.71 in**	**12.59 in**	**6.57 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-112**
POND NAME : **E-112**

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.75 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.75 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.41 ac-ft	12.57 ac-ft	16.49 ac-ft	8.33 ac-ft
Q_{post} =	11.60 ac-ft	17.00 ac-ft	22.05 ac-ft	11.50 ac-ft
ΔQ =	**3.20 ac-ft**	**4.43 ac-ft**	**5.57 ac-ft**	**3.17 ac-ft**

Attenuation V_{req} = 5.57 ac-ft (use largest value)

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Job Number: PBS-001-01

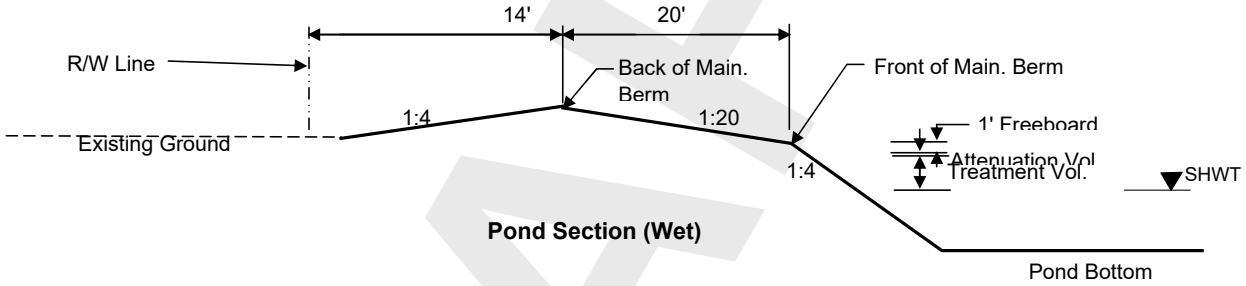
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-112**
POND NAME : **E-112**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	123.00
Pond Tie-In Width =	14.0 ft	@ 1:4	*Normal Water Elevation =	121.00
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	127.33

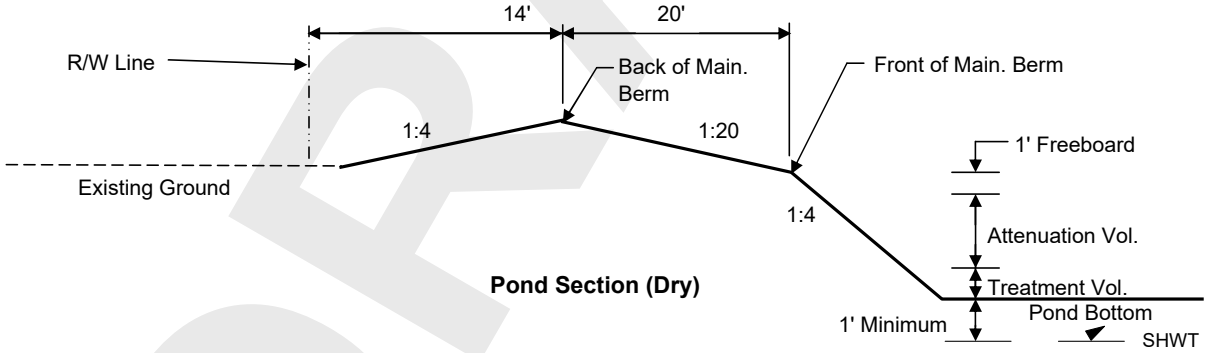
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	126.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-112**
POND NAME : **E-112**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
123.00	Pond R/W	3.67 ac	400.0 ft	400.0 ft	
126.50	Back of Main. Berm	3.18 ac	372.0 ft	372.0 ft	13.05 ac-ft
126.00		2.84 ac	352.0 ft	352.0 ft	11.54 ac-ft
125.50	Front of Main. Berm	2.53 ac	332.0 ft	332.0 ft	10.20 ac-ft
124.50	Provided Treat.Vol.+Att.Vol	2.41 ac	324.0 ft	324.0 ft	7.73 ac-ft
124.33	Req'd Treat.Vol+Att. Vol	2.39 ac	322.6 ft	322.6 ft	7.32 ac-ft
123.30	Estimated Storm Sewer TW	2.27 ac	314.4 ft	314.4 ft	4.92 ac-ft
121.85	Top of Treatment Vol.	2.10 ac	302.8 ft	302.8 ft	1.75 ac-ft
121.00	Normal Water Level	2.01 ac	296.0 ft	296.0 ft	0.00 ac-ft
101.00		0.42 ac	136.0 ft	136.0 ft	
97.00	Pond Bottom	0.48 ac	200.0 ft	104.0 ft	

Required Treatment+Attenuation Vol.= 7.32 ac-ft
Required Treatment+Attenuation Stage= 124.33 ft

Provided Treatment+Attenuation Vol.= 7.73 ac-ft
Provided Treatment+Attenuation Stage= 124.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.92 ac-ft
Estimated Storm Sewer TW EL.= 123.30 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.59 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-113**
POND NAME : **E-113**

Station Limits: From: 5296+00 To: 5301+53

Roadway Length = 553 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 4.44 ac
Total Roadway Area: 4.44 ac

Pond Area: Pervious Pond Area = 2.80 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **7.25 ac**
Total Area: **7.25 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.77 ac	66.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	6.48 ac	576.7
		Total:	7.25 ac	642.7

CN = Total CN*Area / Total Area = **88.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.28 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.16 in**	**9.21 in**	**12.08 in**	**6.10 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-113**
POND NAME : **E-113**

Station Limits: From: 5289+73 To: 5301+53

Roadway Length = 1180 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 3.47 ac
Pervious Roadway Area: 6.01 ac
Total Roadway Area: 9.48 ac

Pond Area:

Pervious Pond Area : 1.09 ac
Water Surface Area: 1.72 ac Wet Pond
Total Pond Area: 2.80 ac

Total Area:

Impervious Area: **3.47 ac**
Pervious Area: **7.10 ac**
Water Surface Area: **1.72 ac**
Total Area: **12.29 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	3.47 ac	339.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.75 ac	64.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	6.35 ac	565.0
Proposed Ponds (Water Surface)	D	100	1.72 ac	171.7
		Total:	12.29 ac	1141.2

CN = Total CN*Area / Total Area = **92.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.76 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.65 in**	**9.73 in**	**12.62 in**	**6.59 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-113**
POND NAME : **E-113**

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.02 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.02 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	3.72 ac-ft	5.56 ac-ft	7.30 ac-ft	3.68 ac-ft
Q_{post} =	6.81 ac-ft	9.97 ac-ft	12.92 ac-ft	6.75 ac-ft
ΔQ =	**3.09 ac-ft**	**4.40 ac-ft**	**5.63 ac-ft**	**3.07 ac-ft**

Attenuation V_{req} = 5.63 ac-ft (use largest value)

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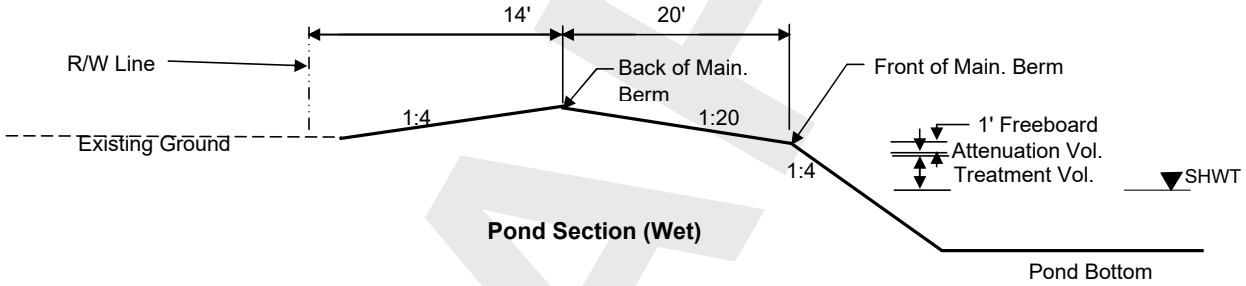
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-113**
POND NAME : **E-113**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	123.00
Pond Tie-In Width =	14.0 ft	@ 1:4	*Normal Water Elevation =	121.00
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	126.33

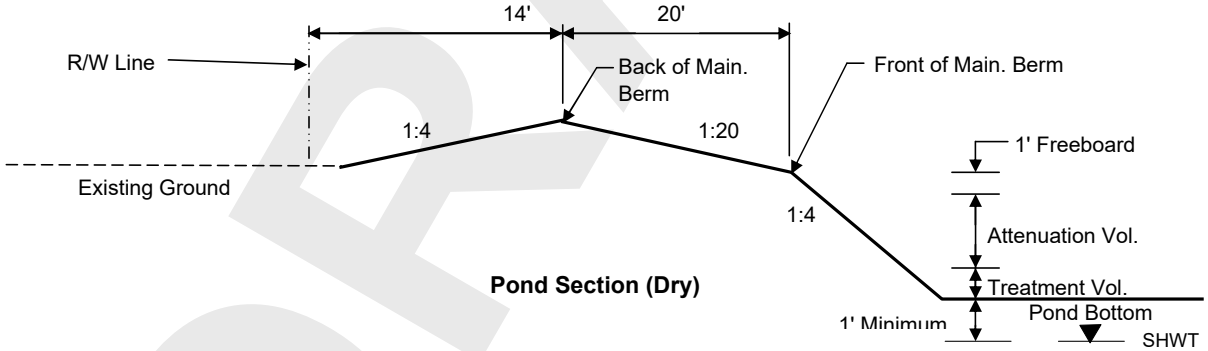
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	600 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	125.03 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-113**
POND NAME : **E-113**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
123.00	Pond R/W	3.27 ac	380.0 ft	375.0 ft	
126.50	Back of Main. Berm	2.80 ac	352.0 ft	347.0 ft	11.29 ac-ft
126.00		2.49 ac	332.0 ft	327.0 ft	9.96 ac-ft
125.50	Front of Main. Berm	2.20 ac	312.0 ft	307.0 ft	8.79 ac-ft
124.50	Provided Treat.Vol.+Att.Vol	2.09 ac	304.0 ft	299.0 ft	6.65 ac-ft
124.50	Req'd Treat.Vol+Att. Vol	2.09 ac	304.0 ft	299.0 ft	6.65 ac-ft
123.25	Estimated Storm Sewer TW	1.95 ac	294.0 ft	289.0 ft	4.12 ac-ft
121.60	Top of Treatment Vol.	1.78 ac	280.8 ft	275.8 ft	1.05 ac-ft
121.00	Normal Water Level	1.72 ac	276.0 ft	271.0 ft	0.00 ac-ft
101.00		0.30 ac	116.0 ft	111.0 ft	
97.00	Pond Bottom	0.33 ac	180.0 ft	79.0 ft	

Required Treatment+Attenuation Vol.= 6.65 ac-ft
Required Treatment+Attenuation Stage= 124.50 ft

Provided Treatment+Attenuation Vol.= 6.65 ac-ft
Provided Treatment+Attenuation Stage= 124.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.09 ac-ft
Estimated Storm Sewer TW EL.= 123.25 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.09 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-114**
POND NAME : **E-114**

Station Limits: From: 5301+53 To: 5319+14

Roadway Length = 1761 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 14.15 ac
Total Roadway Area: 14.15 ac

Pond Area: Pervious Pond Area = 1.83 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **15.98 ac**
Total Area: **15.98 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.69 ac	145.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	14.28 ac	1271.2
		Total:	15.98 ac	1416.7

CN = Total CN*Area / Total Area = **88.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.28 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.16 in**	**9.21 in**	**12.08 in**	**6.10 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-114**
POND NAME : **E-114**

Station Limits: From: 5301+53 To: 5319+14

Roadway Length = 1761 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 5.17 ac
Pervious Roadway Area: 8.97 ac
Total Roadway Area: 14.15 ac

Pond Area:

Pervious Pond Area : 0.71 ac
Water Surface Area: 1.11 ac Wet Pond
Total Pond Area: 1.83 ac

Total Area:

Impervious Area: **5.17 ac**
Pervious Area: **9.69 ac**
Water Surface Area: **1.11 ac**
Total Area: **15.98 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.17 ac	507.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.03 ac	88.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	8.66 ac	771.0
Proposed Ponds (Water Surface)	D	100	1.11 ac	111.1
		Total:	15.98 ac	1477.5

CN = Total CN*Area / Total Area = **92.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.81 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.61 in**	**9.68 in**	**12.57 in**	**6.55 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-114**
POND NAME : **E-114**

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.33 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.33 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.20 ac-ft	12.26 ac-ft	16.08 ac-ft	8.12 ac-ft
Q_{post} =	8.79 ac-ft	12.89 ac-ft	16.74 ac-ft	8.72 ac-ft
ΔQ =	**0.59 ac-ft**	**0.63 ac-ft**	**0.65 ac-ft**	**0.59 ac-ft**

Attenuation V_{req} = 0.65 ac-ft (use largest value)

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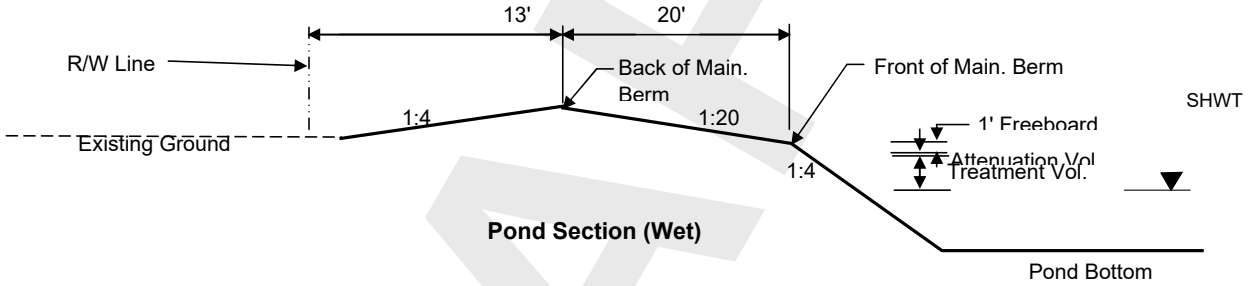
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-114**
POND NAME : **E-114**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	123.75
Pond Tie-In Width =	13.0 ft	@ 1:4	*Normal Water Elevation =	123.25
Maximum Storage Depth (**SD**) =	1.75 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	126.33

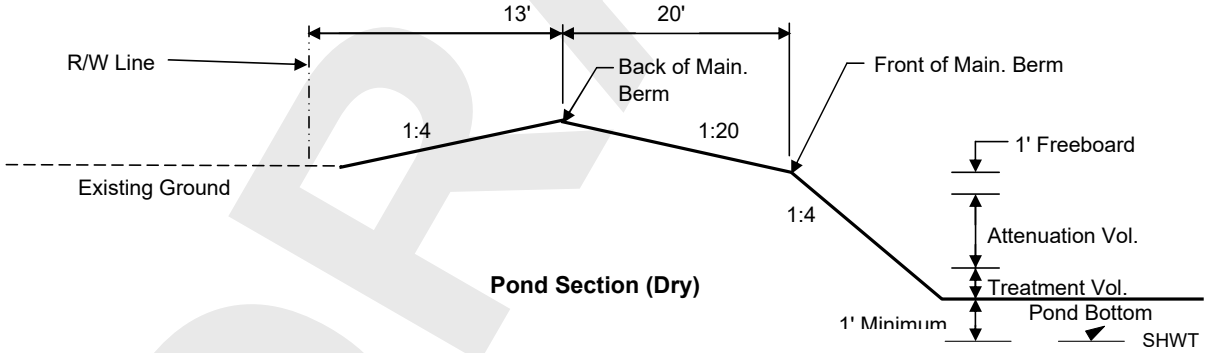
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	350 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	125.16 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-114**
POND NAME : **E-114**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
123.75	Pond R/W	2.18 ac	308.0 ft	308.0 ft	
127.00	Back of Main. Berm	1.83 ac	282.0 ft	282.0 ft	4.95 ac-ft
126.50		1.58 ac	262.0 ft	262.0 ft	4.10 ac-ft
126.00	Front of Main. Berm	1.34 ac	242.0 ft	242.0 ft	3.37 ac-ft
125.00	Provided Treat.Vol.+Att.Vol	1.26 ac	234.0 ft	234.0 ft	2.07 ac-ft
124.94	Req'd Treat.Vol+Att. Vol	1.25 ac	233.5 ft	233.5 ft	1.99 ac-ft
124.88	Estimated Storm Sewer TW	1.25 ac	233.0 ft	233.0 ft	1.92 ac-ft
124.40	Top of Treatment Vol.	1.21 ac	229.2 ft	229.2 ft	1.33 ac-ft
123.25	Normal Water Level	1.11 ac	220.0 ft	220.0 ft	0.00 ac-ft
101.00		0.04 ac	42.0 ft	42.0 ft	
97.00	Pond Bottom	0.03 ac	115.0 ft	10.0 ft	

Required Treatment+Attenuation Vol.= 1.99 ac-ft
Required Treatment+Attenuation Stage= 124.94 ft

Provided Treatment+Attenuation Vol.= 2.07 ac-ft
Provided Treatment+Attenuation Stage= 125.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.92 ac-ft
Estimated Storm Sewer TW EL.= 124.88 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.72 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-115**
POND NAME : **E-115**

Station Limits: From: 5319+14 To: 5343+43

Roadway Length = 2429 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 21.91 ac
Total Roadway Area: 21.91 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.55 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **24.46 ac**
Total Area: **24.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	2.59 ac	222.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	21.87 ac	1946.6
		Total:	24.46 ac	2169.5

CN = Total CN*Area / Total Area = **88.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.28 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.16 in**	**9.21 in**	**12.08 in**	**6.10 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-115**
POND NAME : **E-115**

Station Limits: From: 5319+14 To: 5343+43

Roadway Length = 2429 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 8.89 ac
*Pervious Roadway Area: 13.02 ac
Total Roadway Area: 21.91 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 0.89 ac
Water Surface Area: 1.67 ac Wet Pond
Total Pond Area: 2.55 ac

Total Area:

Impervious Area: **8.89 ac**
Pervious Area: **13.91 ac**
Water Surface Area: **1.67 ac**
Total Area: **24.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.89 ac	871.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.47 ac	126.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	12.43 ac	1106.5
Proposed Ponds (Water Surface)	D	100	1.67 ac	166.7
		Total:	24.46 ac	2271.2

CN = Total CN*Area / Total Area = **92.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.77 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.65 in**	**9.73 in**	**12.62 in**	**6.59 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-115**
POND NAME : **E-115**

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.04 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.04 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.56 ac-ft	18.77 ac-ft	24.63 ac-ft	12.44 ac-ft
Q_{post} =	13.55 ac-ft	19.83 ac-ft	25.72 ac-ft	13.43 ac-ft
ΔQ =	**1.00 ac-ft**	**1.06 ac-ft**	**1.09 ac-ft**	**0.99 ac-ft**

Attenuation V_{req} = **1.09 ac-ft** (use largest value)

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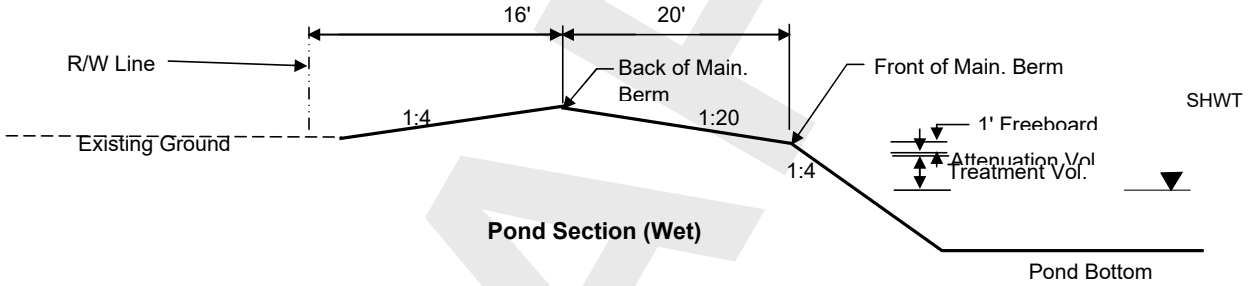
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-115**
POND NAME : **E-115**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	121.50
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	121.50
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	125.00

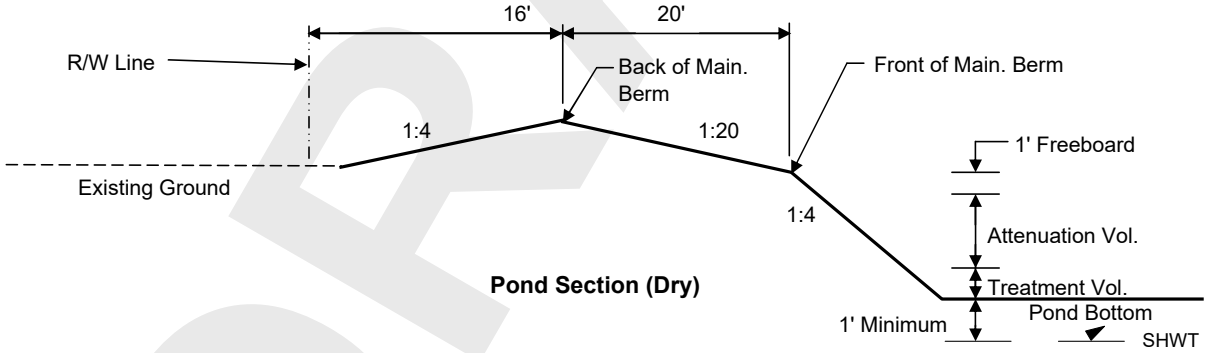
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	100 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	123.95 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-115**
POND NAME : **E-115**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
121.50	Pond R/W	3.07 ac	366.0 ft	365.0 ft	
125.50	Back of Main. Berm	2.55 ac	334.0 ft	333.0 ft	7.72 ac-ft
125.00		2.26 ac	314.0 ft	313.0 ft	6.52 ac-ft
124.50	Front of Main. Berm	1.98 ac	294.0 ft	293.0 ft	5.46 ac-ft
123.50	Provided Treat.Vol.+Att.Vol	1.87 ac	286.0 ft	285.0 ft	3.54 ac-ft
123.28	Req'd Treat.Vol+Att. Vol	1.85 ac	284.2 ft	283.2 ft	3.13 ac-ft
123.25	Estimated Storm Sewer TW	1.85 ac	284.0 ft	283.0 ft	3.07 ac-ft
122.70	Top of Treatment Vol.	1.79 ac	279.6 ft	278.6 ft	2.07 ac-ft
121.50	Normal Water Level	1.67 ac	270.0 ft	269.0 ft	0.00 ac-ft
113.50		0.97 ac	206.0 ft	205.0 ft	
108.50	Pond Bottom	0.83 ac	218.0 ft	165.0 ft	

Required Treatment+Attenuation Vol.= 3.13 ac-ft
Required Treatment+Attenuation Stage= 123.28 ft

Provided Treatment+Attenuation Vol.= 3.54 ac-ft
Provided Treatment+Attenuation Stage= 123.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.03 ac-ft
Estimated Storm Sewer TW EL.= 123.25 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.83 ac

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-116**
POND NAME : **E-116**

Station Limits: From: 5343+43 To: 5362+59

Roadway Length = 1916 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 1.77 ac
*Pervious Roadway Area: 24.06 ac
Total Roadway Area: 25.83 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.44 ac

Total Area:
Impervious Area: **1.77 ac**
Pervious Area: **26.50 ac**
Total Area: **28.27 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	1.77 ac	173.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	2.99 ac	257.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	25.27 ac	2249.3
		Total:	30.04 ac	2680.4

CN = Total CN*Area / Total Area = **89.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.21 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.22 in**	**9.28 in**	**12.15 in**	**6.17 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-116**
POND NAME : **E-116**

Station Limits: From: 5343+43 To: 5362+59

Roadway Length = 1916 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 10.97 ac
*Pervious Roadway Area: 14.86 ac
Total Roadway Area: 25.83 ac

Area calculated using shapes in CADD.

Pond Area:

Pervious Pond Area : 0.88 ac
Water Surface Area: 1.56 ac Wet Pond
Total Pond Area: 2.44 ac

Total Area:

Impervious Area: **10.97 ac**
Pervious Area: **15.74 ac**
Water Surface Area: **1.56 ac**
Total Area: **28.27 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	10.97 ac	1075.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.67 ac	143.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	14.07 ac	1252.7
Proposed Ponds (Water Surface)	D	100	1.56 ac	155.5
		Total:	28.27 ac	2626.7

CN = Total CN*Area / Total Area = **92.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.76 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.66 in**	**9.74 in**	**12.63 in**	**6.60 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-116**
POND NAME : **E-116**

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.36 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.36 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	14.66 ac-ft	21.86 ac-ft	28.63 ac-ft	14.52 ac-ft
Q_{post} =	15.68 ac-ft	22.94 ac-ft	29.75 ac-ft	15.54 ac-ft
ΔQ =	**1.02 ac-ft**	**1.08 ac-ft**	**1.12 ac-ft**	**1.02 ac-ft**

Attenuation V_{req} = **1.12 ac-ft** (use largest value)

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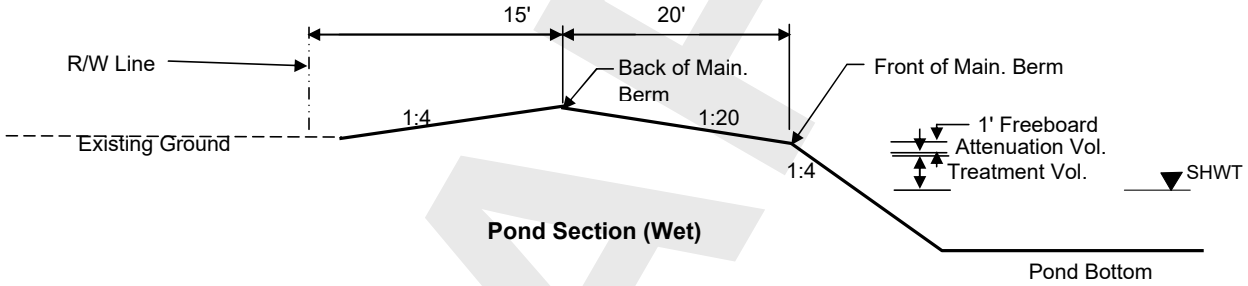
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-116**
POND NAME : **E-116**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	121.00
Pond Tie-In Width =	14.8 ft	@ 1:4	*Normal Water Elevation =	120.50
Maximum Storage Depth (**SD**) =	2.20 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	125.00

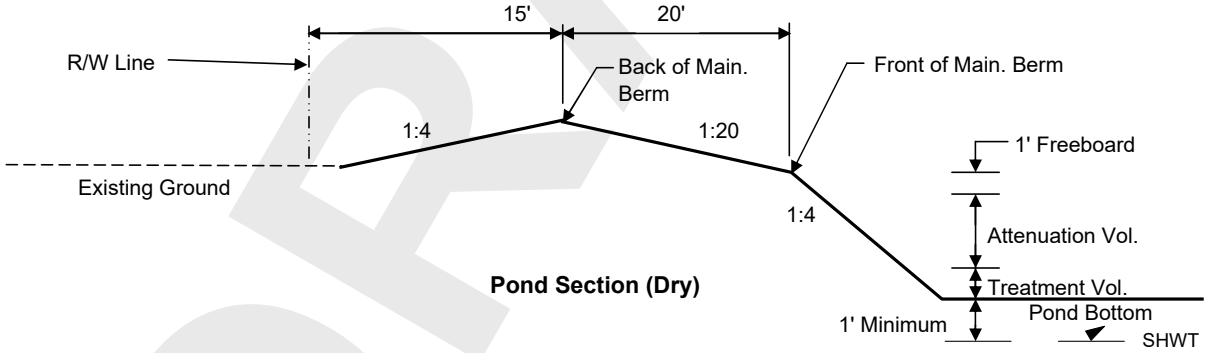
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	123.85 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-116**
POND NAME : **E-116**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
121.00	Pond R/W	2.90 ac	355.0 ft	356.0 ft	
124.70	Back of Main. Berm	2.44 ac	325.4 ft	326.4 ft	7.64 ac-ft
124.20		2.15 ac	305.4 ft	306.4 ft	6.49 ac-ft
123.70	Front of Main. Berm	1.88 ac	285.4 ft	286.4 ft	5.48 ac-ft
122.70	Provided Treat.Vol.+Att.Vol	1.77 ac	277.4 ft	278.4 ft	3.66 ac-ft
122.59	Req'd Treat.Vol+Att. Vol	1.76 ac	276.5 ft	277.5 ft	3.47 ac-ft
122.55	Estimated Storm Sewer TW	1.76 ac	276.2 ft	277.2 ft	3.39 ac-ft
121.95	Top of Treatment Vol.	1.70 ac	271.4 ft	272.4 ft	2.36 ac-ft
120.50	Normal Water Level	1.56 ac	259.8 ft	260.8 ft	0.00 ac-ft
115.50		1.11 ac	219.8 ft	220.8 ft	
110.50	Pond Bottom	0.91 ac	219.8 ft	180.8 ft	

Required Treatment+Attenuation Vol.= 3.47 ac-ft
Required Treatment+Attenuation Stage= 122.59 ft

Provided Treatment+Attenuation Vol.= 3.66 ac-ft
Provided Treatment+Attenuation Stage= 122.70 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.38 ac-ft
Estimated Storm Sewer TW EL.= 122.55 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.63 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-117**
POND NAME : **E-117**

Station Limits: From: 5362+59 To: 5416+50

Roadway Length = 5391 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Ramp Area: 0.00 ac

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 55.62 ac
Total Roadway Area: 55.62 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 4.37 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **59.99 ac**
Total Area: **59.99 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	6.36 ac	546.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	53.64 ac	4773.8
		Total:	59.99 ac	5320.4

CN = Total CN*Area / Total Area = **88.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.28 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.16 in**	**9.21 in**	**12.08 in**	**6.10 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-117**
POND NAME : **E-117**

Station Limits: From: 5362+59 To: 5416+50

Roadway Length = 5391 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Ramp Area:	7.24 ac
*Impervious Roadway Area:	15.84 ac
*Pervious Roadway Area:	32.54 ac
Total Roadway Area:	55.62 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area :	1.26 ac	
Water Surface Area:	3.12 ac	Wet Pond
Total Pond Area:	4.37 ac	

Total Area:

Impervious Area:	**23.08 ac**
Pervious Area:	**33.80 ac**
Water Surface Area:	**3.12 ac**
Total Area:	**59.99 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	23.08 ac	2262.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	3.58 ac	307.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	30.21 ac	2689.1
Proposed Ponds (Water Surface)	D	100	3.12 ac	311.7
		Total:	59.99 ac	5570.7

CN = Total CN*Area / Total Area = **92.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.77 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.65 in**	**9.73 in**	**12.62 in**	**6.59 in**

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-117**
POND NAME : **E-117**

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	5.00 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **5.00 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	30.80 ac-ft	46.04 ac-ft	60.40 ac-ft	30.50 ac-ft
Q_{post} =	33.24 ac-ft	48.64 ac-ft	63.09 ac-ft	32.95 ac-ft
ΔQ =	**2.45 ac-ft**	**2.60 ac-ft**	**2.69 ac-ft**	**2.45 ac-ft**

Attenuation V_{req} = **2.69 ac-ft** (use largest value)

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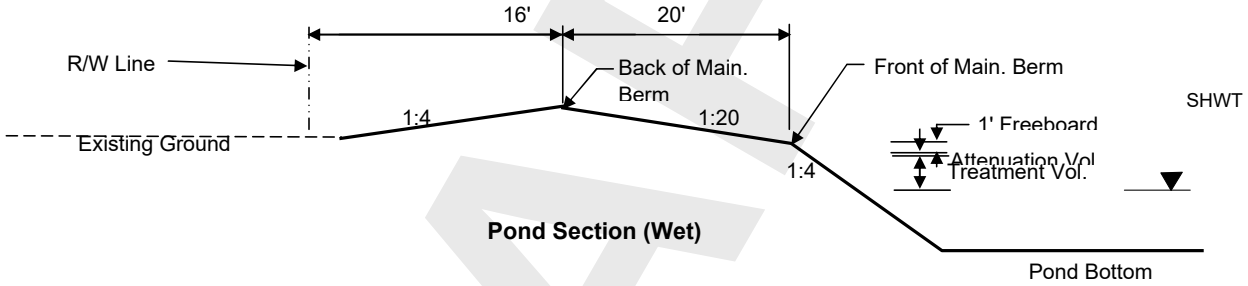
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-117**
POND NAME : **E-117**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	122.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	121.50
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	127.33

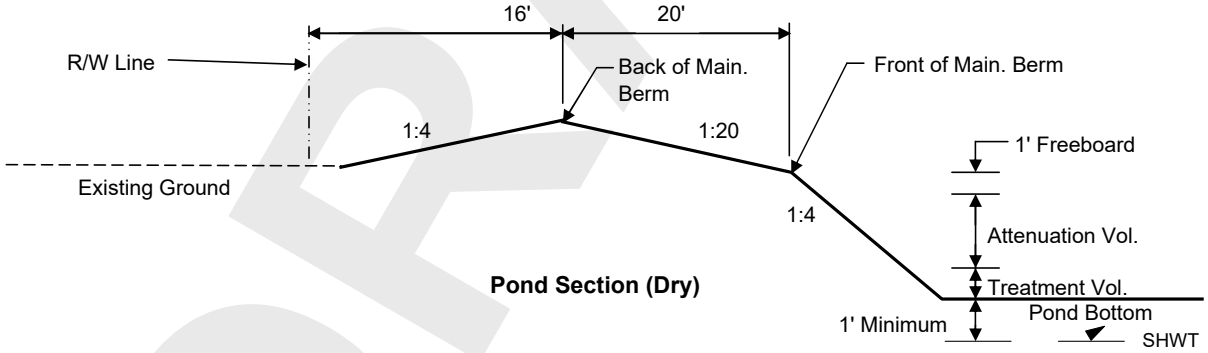
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	125.83 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-117**
POND NAME : **E-117**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
122.00	Pond R/W	5.04 ac	468.0 ft	469.0 ft	
126.00	Back of Main. Berm	4.37 ac	436.0 ft	437.0 ft	15.75 ac-ft
125.50		3.98 ac	416.0 ft	417.0 ft	13.66 ac-ft
125.00	Front of Main. Berm	3.61 ac	396.0 ft	397.0 ft	11.76 ac-ft
124.00	Provided Treat.Vol.+Att.Vol	3.46 ac	388.0 ft	389.0 ft	8.23 ac-ft
123.85	Req'd Treat.Vol+Att. Vol	3.44 ac	386.8 ft	387.8 ft	7.69 ac-ft
123.77	Estimated Storm Sewer TW	3.43 ac	386.2 ft	387.2 ft	7.44 ac-ft
123.05	Top of Treatment Vol.	3.33 ac	380.4 ft	381.4 ft	5.00 ac-ft
121.50	Normal Water Level	3.12 ac	368.0 ft	369.0 ft	0.00 ac-ft
116.50		2.48 ac	328.0 ft	329.0 ft	
111.50	Pond Bottom	2.18 ac	328.0 ft	289.0 ft	

Required Treatment+Attenuation Vol.= 7.69 ac-ft
Required Treatment+Attenuation Stage= 123.85 ft

Provided Treatment+Attenuation Vol.= 8.23 ac-ft
Provided Treatment+Attenuation Stage= 124.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.44 ac-ft
Estimated Storm Sewer TW EL.= 123.77 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.30 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-118**
POND NAME : **E-118**

Station Limits: From: 5416+50 To: 5458+00

Roadway Length = 4150 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 33.34 ac
Total Roadway Area: 33.34 ac

Pond Area: Pervious Pond Area = 2.68 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **36.02 ac**
Total Area: **36.02 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	2.20 ac	101.3
Residential Areas (2.0 acre, 12% Impervious)	C	77	2.31 ac	177.8
Industrial (72% Impervious)	A	81	0.72 ac	58.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	30.75 ac	2091.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.04 ac	3.4
		Total:	36.02 ac	2432.0

CN = Total CN*Area / Total Area = **67.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.81 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.77 in**	**6.43 in**	**9.06 in**	**3.72 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-118**
POND NAME : **E-118**

Station Limits: From: 5416+50 To: 5458+00

Roadway Length = 4150 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 12.19 ac
Pervious Roadway Area: 21.15 ac
Total Roadway Area: 33.34 ac

Pond Area:

Pervious Pond Area : 2.68 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.68 ac

Total Area:

Impervious Area: **12.19 ac**
Pervious Area: **23.83 ac**
Water Surface Area: **0.00 ac**
Total Area: **36.02 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	12.19 ac	1195.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	22.27 ac	1514.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.55 ac	133.6
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	36.02 ac	2843.3

CN = Total CN*Area / Total Area = **78.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.67 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.04 in**	**7.96 in**	**10.75 in**	**4.98 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-118**
POND NAME : **E-118**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.02 ac-ft
	0.50 in	x Total Basin Area =	1.50 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.50 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.30 ac-ft	19.30 ac-ft	27.20 ac-ft	11.16 ac-ft
Q_{post} =	15.12 ac-ft	23.88 ac-ft	32.28 ac-ft	14.95 ac-ft
ΔQ =	**3.81 ac-ft**	**4.59 ac-ft**	**5.08 ac-ft**	**3.80 ac-ft**

Attenuation V_{req} = 5.08 ac-ft (use largest value)

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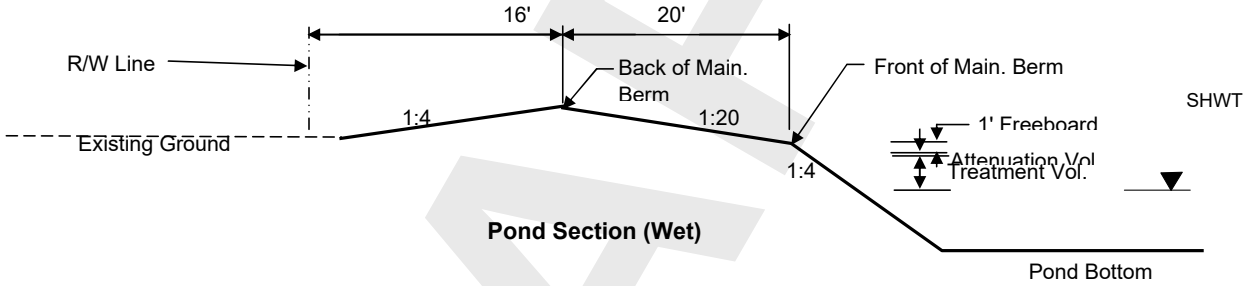
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-118**
POND NAME : **E-118**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	127.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	124.00
Maximum Storage Depth (**SD**) =	5.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	129.83

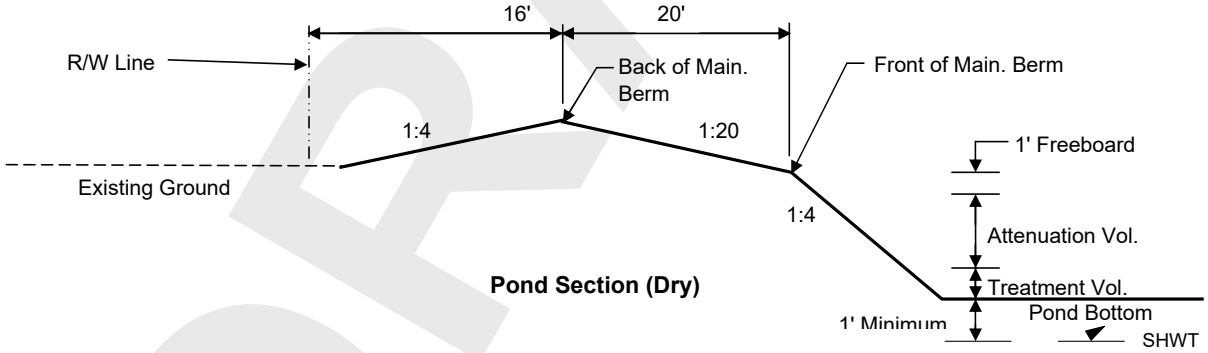
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	128.33 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-118**
POND NAME : **E-118**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
127.00	Pond R/W	3.20 ac	374.0 ft	373.0 ft	
131.00	Back of Main. Berm	2.68 ac	342.0 ft	341.0 ft	11.49 ac-ft
130.50		2.37 ac	322.0 ft	321.0 ft	10.23 ac-ft
130.00	Front of Main. Berm	2.09 ac	302.0 ft	301.0 ft	9.11 ac-ft
129.00	Provided Treat.Vol.+Att.Vol	1.98 ac	294.0 ft	293.0 ft	7.08 ac-ft
128.75	Req'd Treat.Vol+Att. Vol	1.95 ac	292.0 ft	291.0 ft	6.59 ac-ft
128.10	Estimated Storm Sewer TW	1.88 ac	286.8 ft	285.8 ft	5.35 ac-ft
125.85	Top of Treatment Vol.	1.65 ac	268.8 ft	267.8 ft	1.37 ac-ft
125.00	Pond Bottom	1.57 ac	262.0 ft	261.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 6.58 ac-ft
Required Treatment+Attenuation Stage= 128.75 ft

Provided Treatment+Attenuation Vol.= 7.08 ac-ft
Provided Treatment+Attenuation Stage= 129.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.30 ac-ft
Estimated Storm Sewer TW EL.= 128.10 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.00 ac

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-119**
POND NAME : **E-119**

Station Limits: From: 5458+00 To: 5483+69

Roadway Length = 2569 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 20.64 ac
Total Roadway Area: 20.64 ac

Pond Area: Pervious Pond Area = 2.09 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **22.73 ac**
Total Area: **22.73 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.06 ac	2.8
Industrial (72% Impervious)	A	81	0.80 ac	64.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	21.02 ac	1429.5
Existing Lakes (Water surface)	D	100	0.85 ac	84.8
		Total:	22.73 ac	1582.0

CN = Total CN*Area / Total Area = **69.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = **4.37 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.99 in**	**6.71 in**	**9.38 in**	**3.94 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-119**
POND NAME : **E-119**

Station Limits: From: 5458+00 To: 5483+69

Roadway Length = 2569 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area:	7.55 ac
Pervious Roadway Area:	13.09 ac
Total Roadway Area:	20.64 ac

Pond Area:

Pervious Pond Area :	2.09 ac	Dry Pond
Water Surface Area:	0.00 ac	
Total Pond Area:	2.09 ac	

Total Area:

Impervious Area:	**7.55 ac**
Pervious Area:	**15.18 ac**
Water Surface Area:	**0.00 ac**
Total Area:	**22.73 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.55 ac	739.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	15.18 ac	1032.5
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	22.73 ac	1772.3

CN = Total CN*Area / Total Area = **78.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.83 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.93 in**	**7.83 in**	**10.61 in**	**4.87 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-119**
POND NAME : **E-119**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.63 ac-ft
	0.50 in	x Total Basin Area =	0.95 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.95 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	7.56 ac-ft	12.71 ac-ft	17.77 ac-ft	7.47 ac-ft
Q_{post} =	9.33 ac-ft	14.83 ac-ft	20.11 ac-ft	9.23 ac-ft
ΔQ =	**1.77 ac-ft**	**2.12 ac-ft**	**2.34 ac-ft**	**1.76 ac-ft**

Attenuation V_{req} = 2.34 ac-ft (use largest value)

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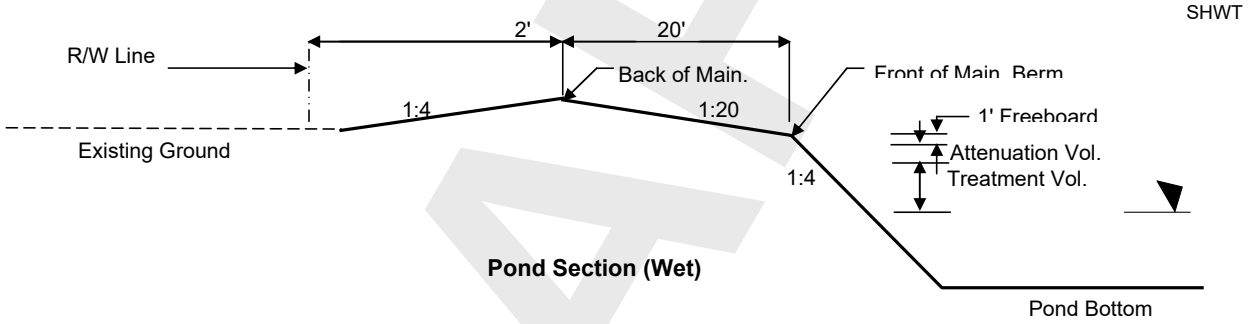
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-119**
POND NAME : **E-119**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	126.00
Pond Tie-In Width =	1.6 ft	@ 1:4	*Normal Water Elevation =	120.00
Maximum Storage Depth (**SD**) =	3.60 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	129.83

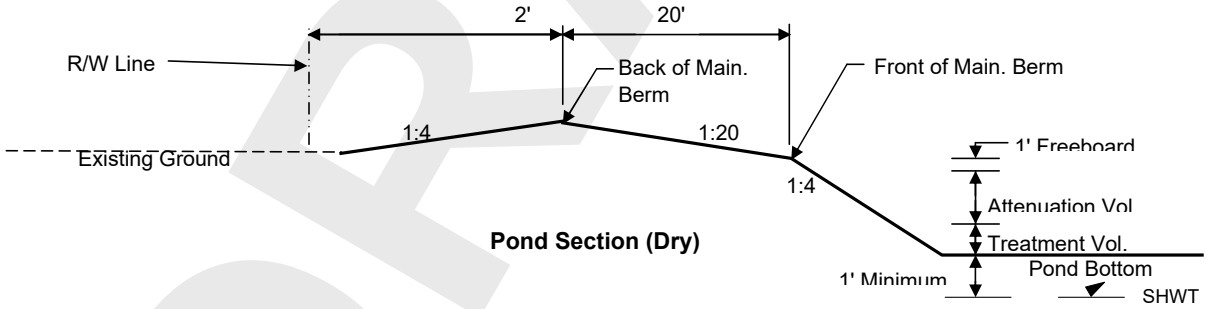
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	128.68 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-119**
POND NAME : **E-119**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
126.00	Pond R/W	2.14 ac	305.0 ft	305.0 ft	
125.60	Back of Main. Berm	2.09 ac	301.8 ft	301.8 ft	6.89 ac-ft
125.10		1.82 ac	281.8 ft	281.8 ft	5.91 ac-ft
124.60	Front of Main. Berm	1.57 ac	261.8 ft	261.8 ft	5.07 ac-ft
123.60	Provided Treat.Vol.+Att.Vol	1.48 ac	253.8 ft	253.8 ft	3.54 ac-ft
123.58	Req'd Treat.Vol+Att. Vol	1.48 ac	253.6 ft	253.6 ft	3.51 ac-ft
123.20	Estimated Storm Sewer TW	1.44 ac	250.6 ft	250.6 ft	2.95 ac-ft
121.80	Top of Treatment Vol.	1.32 ac	239.4 ft	239.4 ft	1.02 ac-ft
121.00	Pond Bottom	1.25 ac	233.0 ft	233.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.29 ac-ft
Required Treatment+Attenuation Stage= 123.58 ft

Provided Treatment+Attenuation Vol.= 3.54 ac-ft
Provided Treatment+Attenuation Stage= 123.60 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.71 ac-ft
Estimated Storm Sewer TW EL.= 123.20 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.67 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-120**
POND NAME : **E-120**

Station Limits: From: 5483+69 To: 5507+33

Roadway Length = 2364 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 18.99 ac
Total Roadway Area: 18.99 ac

Pond Area: Pervious Pond Area = 3.05 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **22.04 ac**
Total Area: **22.04 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.06 ac	2.7
Industrial (72% Impervious)	A	81	0.78 ac	62.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	20.39 ac	1386.3
Existing Lakes (Water surface)	D	100	0.82 ac	82.2
		Total:	22.04 ac	1534.1

CN = Total CN*Area / Total Area = **69.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.37 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.99 in**	**6.71 in**	**9.38 in**	**3.94 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-120**
POND NAME : **E-120**

Station Limits: From: 5483+69 To: 5507+33

Roadway Length = 2364 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area:	6.95 ac
Pervious Roadway Area:	12.05 ac
Total Roadway Area:	18.99 ac

Pond Area:

Pervious Pond Area :	3.05 ac	Dry Pond
Water Surface Area:	0.00 ac	
Total Pond Area:	3.05 ac	

Total Area:

Impervious Area:	**6.95 ac**
Pervious Area:	**15.10 ac**
Water Surface Area:	**0.00 ac**
Total Area:	**22.04 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	6.95 ac	680.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	15.10 ac	1026.7
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	22.04 ac	1707.4

CN = Total CN*Area / Total Area = **77.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.91 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.87 in**	**7.76 in**	**10.54 in**	**4.81 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-120**
POND NAME : **E-120**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.58 ac-ft
	0.50 in	x Total Basin Area =	0.92 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.92 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	7.34 ac-ft	12.33 ac-ft	17.23 ac-ft	7.24 ac-ft
Q_{post} =	8.94 ac-ft	14.26 ac-ft	19.37 ac-ft	8.84 ac-ft
ΔQ =	**1.61 ac-ft**	**1.93 ac-ft**	**2.13 ac-ft**	**1.60 ac-ft**

Attenuation V_{req} = 2.13 ac-ft (use largest value)

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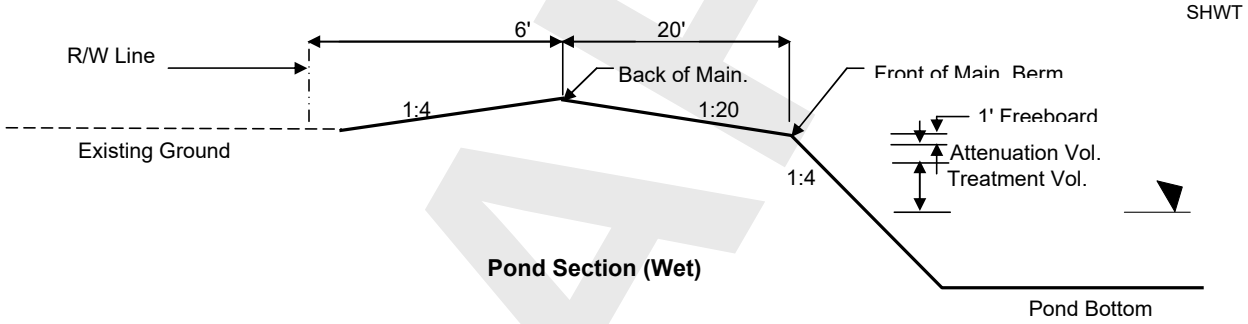
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-120**
POND NAME : **E-120**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	148.00
Pond Tie-In Width =	6.0 ft	@ 1:4	*Normal Water Elevation =	142.00
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	145.83

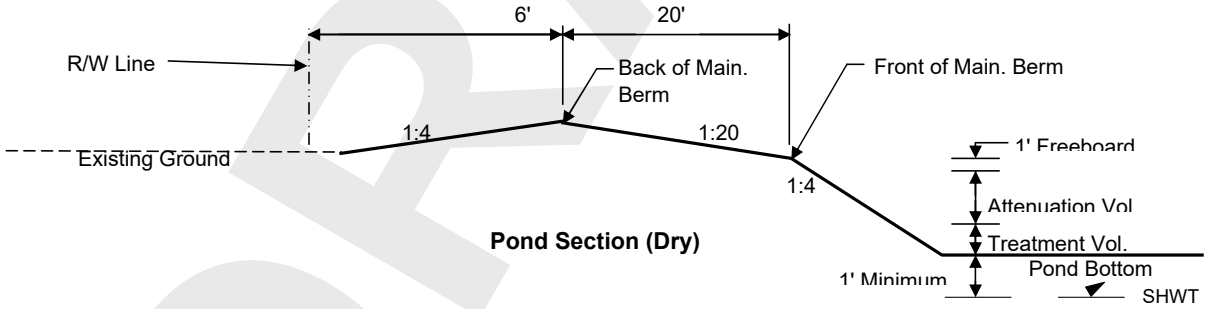
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	100 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	144.78 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-120**
POND NAME : **E-120**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
148.00	Pond R/W	3.25 ac	377.0 ft	376.0 ft	
146.50	Back of Main. Berm	3.05 ac	365.0 ft	364.0 ft	8.41 ac-ft
146.00		2.72 ac	345.0 ft	344.0 ft	6.96 ac-ft
145.50	Front of Main. Berm	2.42 ac	325.0 ft	324.0 ft	5.68 ac-ft
144.50	Provided Treat.Vol.+Att.Vol	2.30 ac	317.0 ft	316.0 ft	3.32 ac-ft
144.38	Req'd Treat.Vol+Att. Vol	2.29 ac	316.0 ft	315.0 ft	3.05 ac-ft
144.15	Estimated Storm Sewer TW	2.26 ac	314.2 ft	313.2 ft	2.52 ac-ft
143.45	Top of Treatment Vol.	2.18 ac	308.6 ft	307.6 ft	0.97 ac-ft
143.00	Pond Bottom	2.13 ac	305.0 ft	304.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.05 ac-ft
Required Treatment+Attenuation Stage= 144.38 ft

Provided Treatment+Attenuation Vol.= 3.32 ac-ft
Provided Treatment+Attenuation Stage= 144.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.52 ac-ft
Estimated Storm Sewer TW EL.= 144.15 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.07 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-121**
POND NAME : **E-121**

Station Limits: From: 5507+33 To: 5534+00

Roadway Length = 2667 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 21.43 ac
Total Roadway Area: 21.43 ac

Pond Area: Pervious Pond Area = 1.89 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **23.32 ac**
Total Area: **23.32 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	23.32 ac	1585.8
		Total:	23.32 ac	1585.8

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.96 in**	**6.49 in**	**14.33 in**	**3.77 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-121**
POND NAME : **E-121**

Station Limits: From: 5507+33 To: 5534+00

Roadway Length = 2667 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 7.84 ac
Pervious Roadway Area: 13.59 ac
Total Roadway Area: 21.43 ac

Pond Area:

Pervious Pond Area : 1.89 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 1.89 ac

Total Area:

Impervious Area: **7.84 ac**
Pervious Area: **15.48 ac**
Water Surface Area: **0.00 ac**
Total Area: **23.32 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.84 ac	768.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	15.48 ac	1052.9
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	23.32 ac	1821.0

CN = Total CN*Area / Total Area = **78.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.81 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.27 in**	**7.84 in**	**16.00 in**	**4.88 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-121**
POND NAME : **E-121**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.65 ac-ft
	0.50 in	x Total Basin Area =	0.97 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.97 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.59 ac-ft	12.62 ac-ft	27.84 ac-ft	7.33 ac-ft
Q_{post} =	14.14 ac-ft	15.25 ac-ft	31.10 ac-ft	9.49 ac-ft
ΔQ =	**2.55 ac-ft**	**2.62 ac-ft**	**3.26 ac-ft**	**2.17 ac-ft**

Attenuation V_{req} = 3.26 ac-ft (use largest value)

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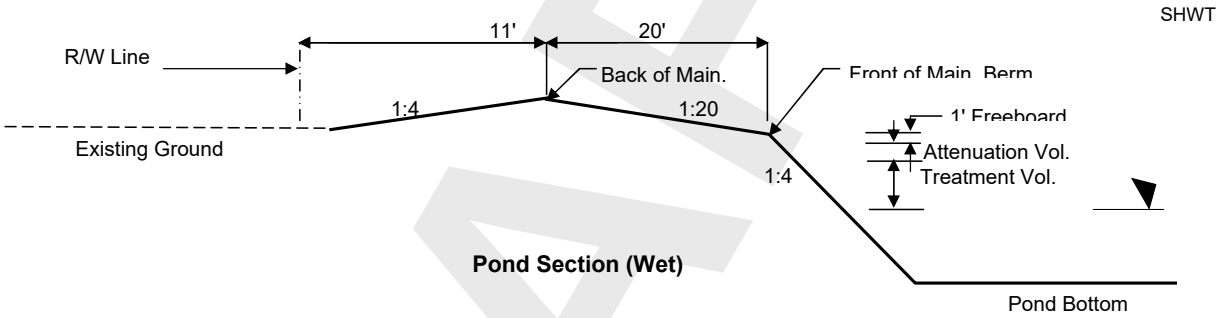
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-121**
POND NAME : **E-121**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	175.00
Pond Tie-In Width =	11.2 ft	@ 1:4	*Normal Water Elevation =	171.00
Maximum Storage Depth (**SD**) =	4.80 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	177.33

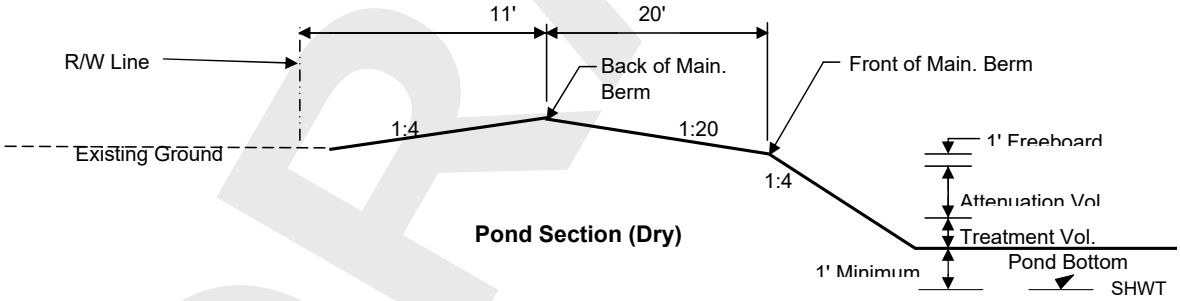
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	176.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-121**
POND NAME : **E-121**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
175.00	Pond R/W	2.20 ac	309.0 ft	310.0 ft	
177.80	Back of Main. Berm	1.89 ac	286.6 ft	287.6 ft	7.38 ac-ft
177.30		1.64 ac	266.6 ft	267.6 ft	6.50 ac-ft
176.80	Front of Main. Berm	1.40 ac	246.6 ft	247.6 ft	5.74 ac-ft
175.80	Provided Treat.Vol.+Att.Vol	1.31 ac	238.6 ft	239.6 ft	4.38 ac-ft
175.68	Req'd Treat.Vol+Att. Vol	1.30 ac	237.6 ft	238.6 ft	4.23 ac-ft
174.82	Estimated Storm Sewer TW	1.23 ac	230.8 ft	231.8 ft	3.14 ac-ft
172.94	Top of Treatment Vol.	1.07 ac	215.7 ft	216.7 ft	0.97 ac-ft
172.00	Pond Bottom	1.00 ac	208.2 ft	209.2 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 4.23 ac-ft
Required Treatment+Attenuation Stage= 175.68 ft

Provided Treatment+Attenuation Vol.= 4.38 ac-ft
Provided Treatment+Attenuation Stage= 175.80 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.14 ac-ft
Estimated Storm Sewer TW EL.= 174.82 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.75 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-122**
POND NAME : **E-122**

Station Limits: From: 5534+00 To: 5560+00

Roadway Length = 2600 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 20.89 ac
Total Roadway Area: 20.89 ac

Pond Area: Pervious Pond Area = 2.48 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **23.38 ac**
Total Area: **23.38 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	23.38 ac	1589.5
		Total:	23.38 ac	1589.5

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.96 in**	**6.49 in**	**14.33 in**	**3.77 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-122**
POND NAME : **E-122**

Station Limits: From: 5534+00 To: 5560+00

Roadway Length = 2600 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 7.64 ac
Pervious Roadway Area: 13.25 ac
Total Roadway Area: 20.89 ac

Pond Area:

Pervious Pond Area : 2.48 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.48 ac

Total Area:

Impervious Area: **7.64 ac**
Pervious Area: **15.74 ac**
Water Surface Area: **0.00 ac**
Total Area: **23.38 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.64 ac	748.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	15.74 ac	1070.0
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	23.38 ac	1818.7

CN = Total CN*Area / Total Area = **77.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.85 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.24 in**	**7.81 in**	**15.96 in**	**4.85 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-122**
POND NAME : **E-122**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.64 ac-ft
	0.50 in	x Total Basin Area =	0.97 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.97 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.61 ac-ft	12.65 ac-ft	27.91 ac-ft	7.34 ac-ft
Q_{post} =	14.10 ac-ft	15.21 ac-ft	31.09 ac-ft	9.46 ac-ft
ΔQ =	**2.49 ac-ft**	**2.56 ac-ft**	**3.18 ac-ft**	**2.11 ac-ft**

Attenuation V_{req} = 3.18 ac-ft (use largest value)

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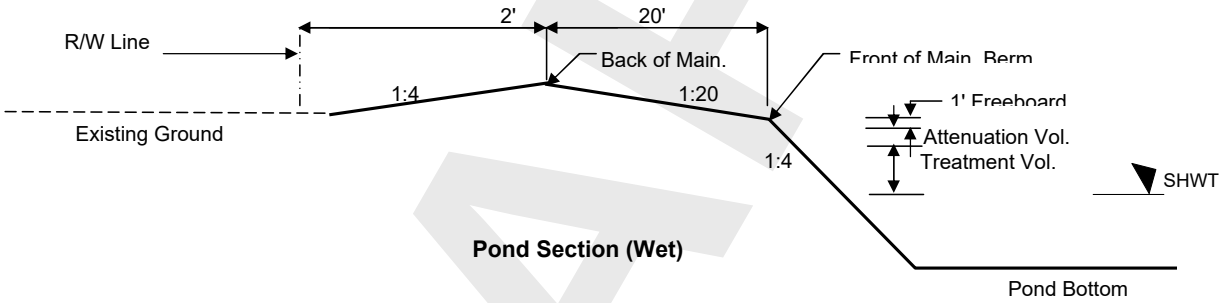
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-122**
POND NAME : **E-122**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	210.00
Pond Tie-In Width =	2.0 ft	@ 1:4	*Normal Water Elevation =	204.00
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	208.80

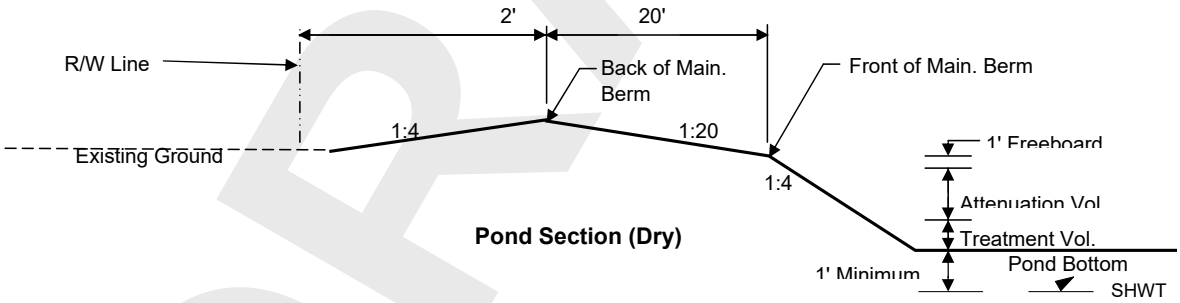
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	207.55 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-122**
POND NAME : **E-122**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
210.00	Pond R/W	2.55 ac	333.0 ft	333.0 ft	
209.50	Back of Main. Berm	2.48 ac	329.0 ft	329.0 ft	8.28 ac-ft
209.00		2.19 ac	309.0 ft	309.0 ft	7.11 ac-ft
208.50	Front of Main. Berm	1.92 ac	289.0 ft	289.0 ft	6.08 ac-ft
207.50	Provided Treat.Vol.+Att.Vol	1.81 ac	281.0 ft	281.0 ft	4.22 ac-ft
207.47	Req'd Treat.Vol+Att. Vol	1.81 ac	280.8 ft	280.8 ft	4.16 ac-ft
206.87	Estimated Storm Sewer TW	1.75 ac	275.9 ft	275.9 ft	3.09 ac-ft
205.61	Top of Treatment Vol.	1.62 ac	265.9 ft	265.9 ft	0.97 ac-ft
205.00	Pond Bottom	1.56 ac	261.0 ft	261.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 4.16 ac-ft
Required Treatment+Attenuation Stage= 207.47 ft

Provided Treatment+Attenuation Vol.= 4.22 ac-ft
Provided Treatment+Attenuation Stage= 207.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.09 ac-ft
Estimated Storm Sewer TW EL.= 206.87 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.18 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-123**
POND NAME : **E-123**

Station Limits: From: 5560+50 To: 5598+60

Roadway Length = 3810 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 30.61 ac
Total Roadway Area: 30.61 ac

Pond Area: Pervious Pond Area = 2.19 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **32.80 ac**
Total Area: **32.80 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	32.80 ac	2230.7
		Total:	32.80 ac	2230.7

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.96 in**	**6.49 in**	**14.33 in**	**3.77 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-123**
POND NAME : **E-123**

Station Limits: From: 5560+50 To: 5598+60

Roadway Length = 3810 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 11.20 ac
Pervious Roadway Area: 19.42 ac
Total Roadway Area: 30.61 ac

Pond Area:

Pervious Pond Area : 2.19 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.19 ac

Total Area:

Impervious Area: **11.20 ac**
Pervious Area: **21.61 ac**
Water Surface Area: **0.00 ac**
Total Area: **32.80 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	11.20 ac	1097.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	21.61 ac	1469.4
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	32.80 ac	2566.6

CN = Total CN*Area / Total Area = **78.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.78 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.30 in**	**7.87 in**	**16.03 in**	**4.90 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-123**
POND NAME : **E-123**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.93 ac-ft
	0.50 in	x Total Basin Area =	1.37 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.37 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	16.30 ac-ft	17.75 ac-ft	39.16 ac-ft	10.30 ac-ft
Q_{post} =	19.94 ac-ft	21.50 ac-ft	43.81 ac-ft	13.40 ac-ft
ΔQ =	**3.64 ac-ft**	**3.75 ac-ft**	**4.65 ac-ft**	**3.10 ac-ft**

Attenuation V_{req} = 4.65 ac-ft (use largest value)

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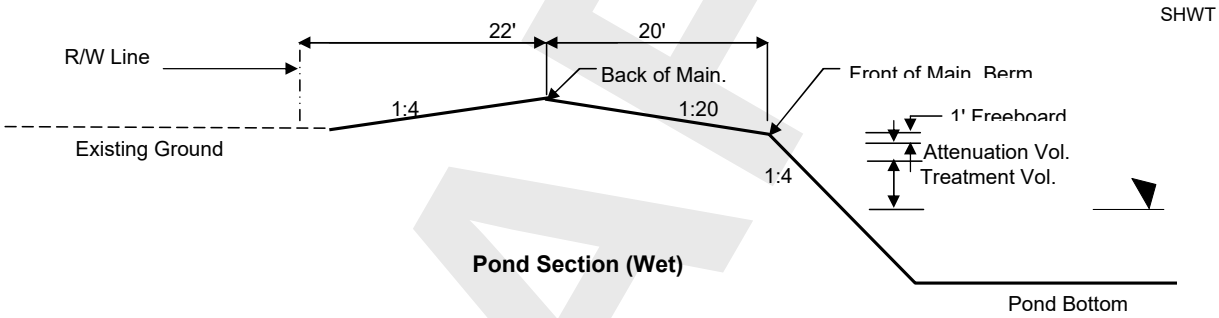
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-123**
POND NAME : **E-123**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	183.00
Pond Tie-In Width =	22.0 ft	@ 1:4	*Normal Water Elevation =	181.00
Maximum Storage Depth (**SD**) =	5.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	186.50

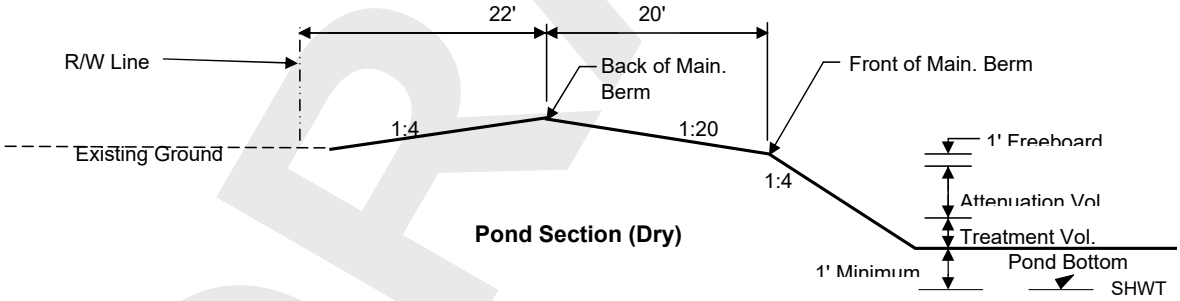
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	100 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	185.45 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-123**
POND NAME : **E-123**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
183.00	Pond R/W	2.86 ac	353.0 ft	353.0 ft	
188.50	Back of Main. Berm	2.19 ac	309.0 ft	309.0 ft	9.65 ac-ft
188.00		1.92 ac	289.0 ft	289.0 ft	8.62 ac-ft
187.50	Front of Main. Berm	1.66 ac	269.0 ft	269.0 ft	7.73 ac-ft
186.50	Provided Treat.Vol.+Att.Vol	1.56 ac	261.0 ft	261.0 ft	6.11 ac-ft
186.44	Req'd Treat.Vol+Att. Vol	1.56 ac	260.5 ft	260.5 ft	6.02 ac-ft
185.41	Estimated Storm Sewer TW	1.46 ac	252.3 ft	252.3 ft	4.47 ac-ft
183.13	Top of Treatment Vol.	1.26 ac	234.0 ft	234.0 ft	1.37 ac-ft
182.00	Pond Bottom	1.16 ac	225.0 ft	225.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 6.02 ac-ft
Required Treatment+Attenuation Stage= 186.44 ft

Provided Treatment+Attenuation Vol.= 6.11 ac-ft
Provided Treatment+Attenuation Stage= 186.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.47 ac-ft
Estimated Storm Sewer TW EL.= 185.41 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.58 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-124**
POND NAME : **E-124**

Station Limits: From: 5598+60 To: 5638+83

Roadway Length = 4023 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 32.32 ac
Total Roadway Area: 32.32 ac

Pond Area: Pervious Pond Area = 2.72 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **35.05 ac**
Total Area: **35.05 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	35.05 ac	2383.3
		Total:	35.05 ac	2383.3

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.96 in**	**6.49 in**	**14.33 in**	**3.77 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-124**
POND NAME : **E-124**

Station Limits: From: 5598+60 To: 5638+83

Roadway Length = 4023 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 11.82 ac
Pervious Roadway Area: 20.50 ac
Total Roadway Area: 32.32 ac

Pond Area:

Pervious Pond Area : 2.72 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.72 ac

Total Area:

Impervious Area: **11.82 ac**
Pervious Area: **23.23 ac**
Water Surface Area: **0.00 ac**
Total Area: **35.05 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	11.82 ac	1158.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	23.23 ac	1579.5
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	35.05 ac	2738.0

CN = Total CN*Area / Total Area = **78.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.80 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.28 in**	**7.85 in**	**16.01 in**	**4.89 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-124**
POND NAME : **E-124**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.99 ac-ft
	0.50 in	x Total Basin Area =	1.46 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.46 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	17.41 ac-ft	18.97 ac-ft	41.84 ac-ft	11.01 ac-ft
Q_{post} =	21.26 ac-ft	22.93 ac-ft	46.76 ac-ft	14.28 ac-ft
ΔQ =	**3.85 ac-ft**	**3.96 ac-ft**	**4.91 ac-ft**	**3.27 ac-ft**

Attenuation V_{req} = 4.91 ac-ft (use largest value)

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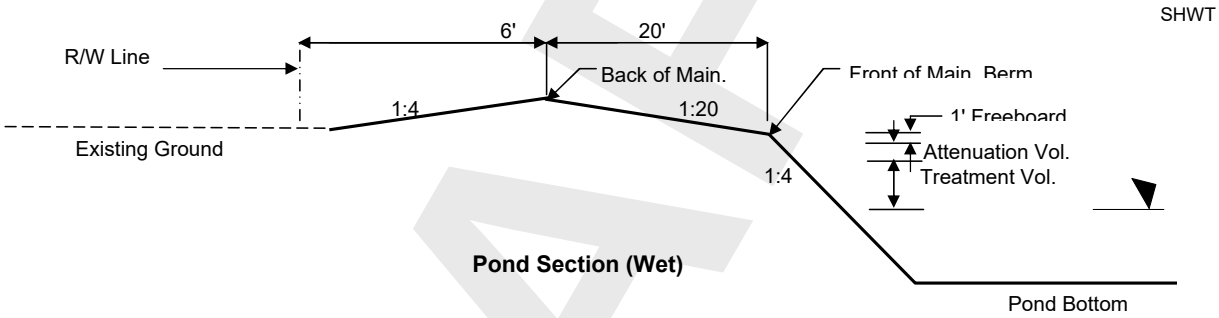
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-124**
POND NAME : **E-124**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	171.50
Pond Tie-In Width =	6.0 ft	@ 1:4	*Normal Water Elevation =	165.50
Maximum Storage Depth (**SD**) =	5.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	175.33

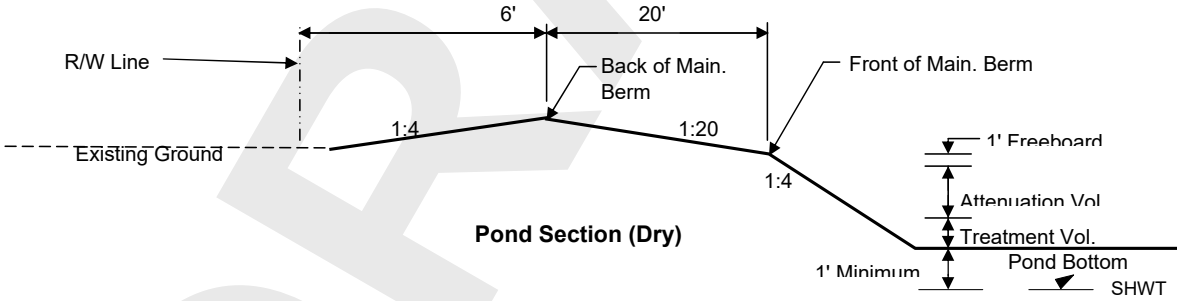
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	100 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	174.28 ft	



Pond Section (Wet)



Pond Section (Dry)

Pond Stage / Storage Calculations

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-124**
POND NAME : **E-124**

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
171.50	Pond R/W	2.92 ac	356.0 ft	357.0 ft	
173.00	Back of Main. Berm	2.72 ac	344.0 ft	345.0 ft	12.52 ac-ft
172.50		2.42 ac	324.0 ft	325.0 ft	11.24 ac-ft
172.00	Front of Main. Berm	2.13 ac	304.0 ft	305.0 ft	10.10 ac-ft
171.00	Provided Treat.Vol.+Att.Vol	2.02 ac	296.0 ft	297.0 ft	8.03 ac-ft
170.16	Req'd Treat.Vol+Att. Vol	1.93 ac	289.3 ft	290.3 ft	6.37 ac-ft
169.30	Estimated Storm Sewer TW	1.84 ac	282.4 ft	283.4 ft	4.75 ac-ft
167.41	Top of Treatment Vol.	1.65 ac	267.3 ft	268.3 ft	1.46 ac-ft
166.50	Pond Bottom	1.56 ac	260.0 ft	261.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 6.37 ac-ft
Required Treatment+Attenuation Stage= 170.16 ft

Provided Treatment+Attenuation Vol.= 8.03 ac-ft
Provided Treatment+Attenuation Stage= 171.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.73 ac-ft
Estimated Storm Sewer TW EL.= 169.30 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.65 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-125**
POND NAME : **E-125**

Station Limits: From: 5638+83 To: 5679+58

Roadway Length = 4075 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 32.74 ac
Total Roadway Area: 32.74 ac

Pond Area: Pervious Pond Area = 11.12 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **43.86 ac**
Total Area: **43.86 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Woods-grass combination (orchard or tree farm); Fair	A	43	35.52 ac	1527.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	8.34 ac	567.1
		Total:	43.86 ac	2094.6

CN = Total CN*Area / Total Area = **47.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **10.94 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**1.74 in**	**3.66 in**	**5.75 in**	**1.70 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-125**
POND NAME : **E-125**

Station Limits: From: 5638+83 To: 5679+58

Roadway Length = 4075 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Ramp Area: 0.98

Impervious Roadway Area: 11.97 ac
Pervious Roadway Area: 19.79 ac
Total Roadway Area: 32.74 ac

Pond Area:

Pervious Pond Area : 1.95 ac
Water Surface Area: 9.17 ac Wet Pond
Total Pond Area: 11.12 ac

Total Area:

Impervious Area: **12.95 ac**
Pervious Area: **21.74 ac**
Water Surface Area: **9.17 ac**
Total Area: **43.86 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	12.95 ac	1269.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	39	21.74 ac	847.8
Proposed Ponds (Water Surface)	D	100	9.17 ac	917.0
		Total:	43.86 ac	3034.3

CN = Total CN*Area / Total Area = **69.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 4.46 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.95 in**	**6.65 in**	**9.32 in**	**3.90 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-125**
POND NAME : **E-125**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	3.66 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.66 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	6.35 ac-ft	13.36 ac-ft	21.02 ac-ft	6.23 ac-ft
Q_{post} =	14.43 ac-ft	24.32 ac-ft	34.05 ac-ft	14.25 ac-ft
ΔQ =	**8.08 ac-ft**	**10.96 ac-ft**	**13.04 ac-ft**	**8.02 ac-ft**

Attenuation V_{req} = 13.04 ac-ft (use largest value)

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DATE: February 17, 2011
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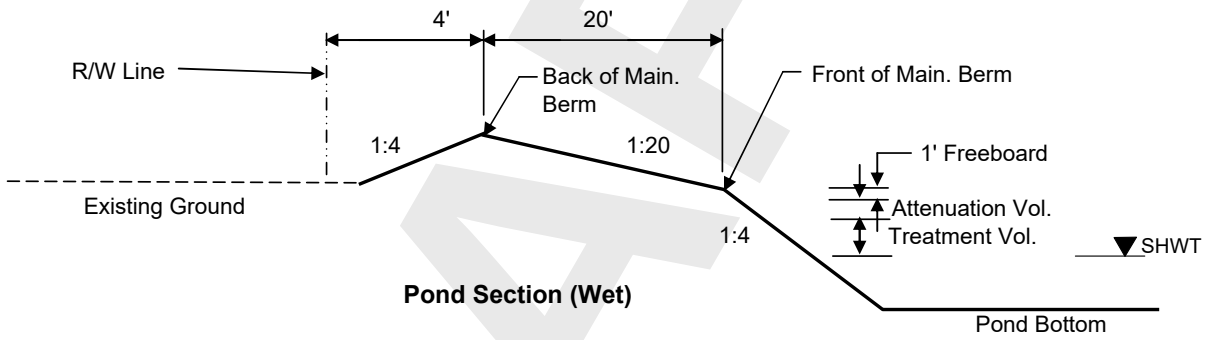
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-125**
POND NAME : **E-125**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	127.00
Pond Tie-In Width =	4.0 ft	@ 1:4	*Normal Water Elevation =	124.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	128.83

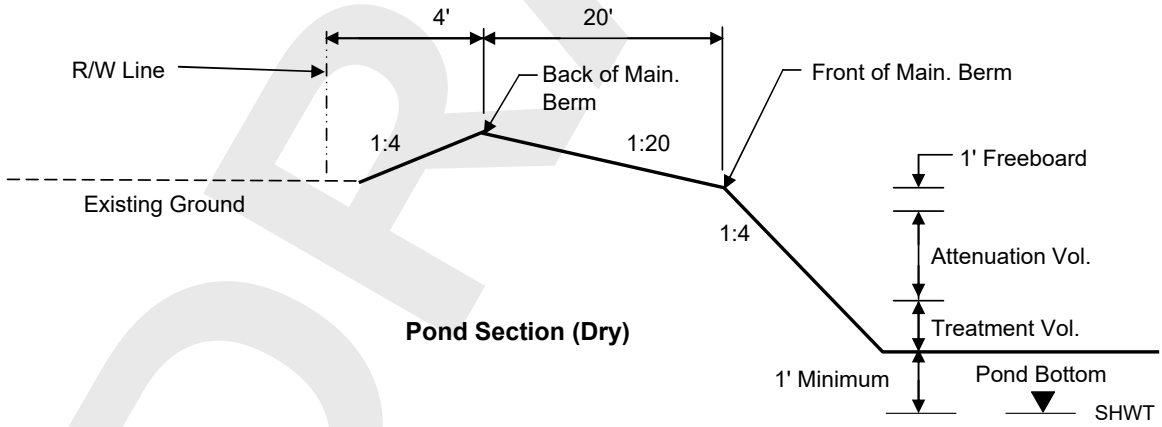
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	350 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	127.66 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-125**
POND NAME : **E-125**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
127.00	Pond R/W	11.38 ac	704.0 ft	704.0 ft	
128.00	Back of Main. Berm	11.12 ac	696.0 ft	696.0 ft	39.06 ac-ft
127.50		10.49 ac	676.0 ft	676.0 ft	33.66 ac-ft
127.00	Front of Main. Berm	9.88 ac	656.0 ft	656.0 ft	28.57 ac-ft
126.00	Provided Treat.Vol.+Att.Vol	9.64 ac	648.0 ft	648.0 ft	18.81 ac-ft
125.78	Req'd Treat.Vol+Att. Vol	9.59 ac	646.2 ft	646.2 ft	16.69 ac-ft
125.25	Estimated Storm Sewer TW	9.46 ac	642.0 ft	642.0 ft	11.67 ac-ft
124.40	Top of Treatment Vol.	9.26 ac	635.2 ft	635.2 ft	3.66 ac-ft
124.00	Normal Water Level	9.17 ac	632.0 ft	632.0 ft	0.00 ac-ft
119.00		8.05 ac	592.0 ft	592.0 ft	
114.00	Pond Bottom	7.50 ac	592.0 ft	552.0 ft	

Required Treatment+Attenuation Vol.= 16.69 ac-ft
Required Treatment+Attenuation Stage= 125.78 ft

Provided Treatment+Attenuation Vol.= 18.81 ac-ft
Provided Treatment+Attenuation Stage= 126.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 11.67 ac-ft
Estimated Storm Sewer TW EL.= 125.25 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 14.22 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-126**
POND NAME : **E-126**

Station Limits: From: 5679+58 To: 5697+58

Roadway Length = 1800 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 16.22 ac
Total Roadway Area: 16.22 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 1.65 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **17.87 ac**
Total Area: **17.87 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	17.87 ac	1215.0
		Total:	17.87 ac	1215.0

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.96 in**	**6.49 in**	**14.33 in**	**3.77 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-126**
POND NAME : **E-126**

Station Limits: From: 5679+58 To: 5697+58

Roadway Length = 1800 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 5.56 ac
*Pervious Roadway Area: 10.66 ac
Total Roadway Area: 16.22 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.65 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 1.65 ac

Total Area:

Impervious Area: **5.56 ac**
Pervious Area: **12.31 ac**
Water Surface Area: **0.00 ac**
Total Area: **17.87 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.56 ac	544.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	12.31 ac	836.9
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	17.87 ac	1381.8

CN = Total CN*Area / Total Area = **77.3**

Runoff:

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.18 in**	**7.75 in**	**15.89 in**	**4.80 in**

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.93 in

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

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-126**
POND NAME : **E-126**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.46 ac-ft
	0.50 in	x Total Basin Area =	0.74 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.74 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.88 ac-ft	9.67 ac-ft	21.33 ac-ft	5.61 ac-ft
Q_{post} =	10.69 ac-ft	11.53 ac-ft	23.65 ac-ft	7.15 ac-ft
ΔQ =	**1.81 ac-ft**	**1.86 ac-ft**	**2.32 ac-ft**	**1.54 ac-ft**

Attenuation V_{req} = 2.32 ac-ft (use largest value)

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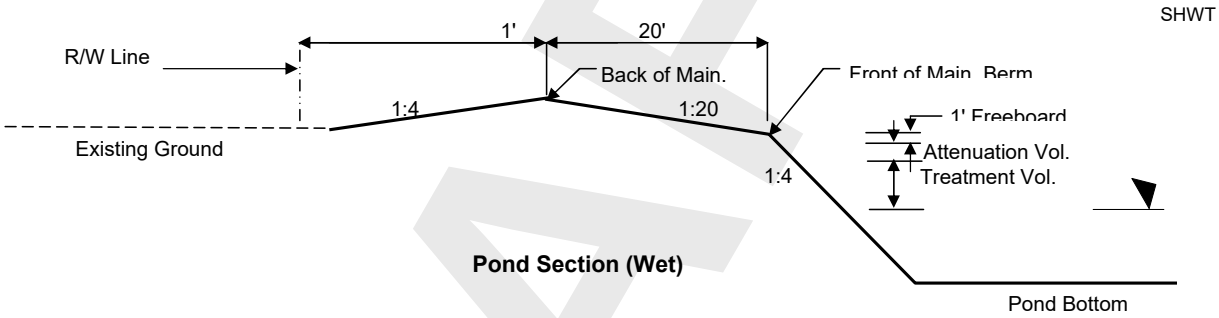
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-126**
POND NAME : **E-126**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	163.50
Pond Tie-In Width =	0.8 ft	@ 1:4	*Normal Water Elevation =	157.00
Maximum Storage Depth (**SD**) =	4.30 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	173.33

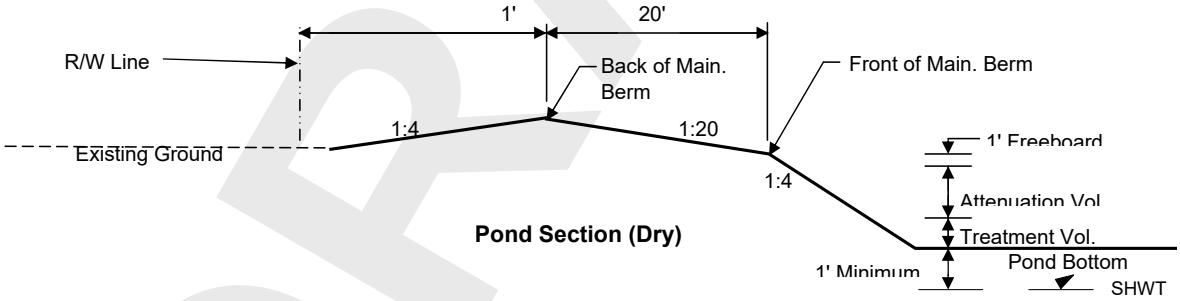
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	172.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-126**
POND NAME : **E-126**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
163.50	Pond R/W	1.67 ac	269.0 ft	270.0 ft	
163.30	Back of Main. Berm	1.65 ac	267.4 ft	268.4 ft	5.81 ac-ft
162.80		1.41 ac	247.4 ft	248.4 ft	5.04 ac-ft
162.30	Front of Main. Berm	1.19 ac	227.4 ft	228.4 ft	4.39 ac-ft
161.30	Provided Treat.Vol.+Att.Vol	1.11 ac	219.4 ft	220.4 ft	3.24 ac-ft
161.14	Req'd Treat.Vol+Att. Vol	1.10 ac	218.1 ft	219.1 ft	3.07 ac-ft
160.40	Estimated Storm Sewer TW	1.04 ac	212.2 ft	213.2 ft	2.28 ac-ft
158.83	Top of Treatment Vol.	0.92 ac	199.6 ft	200.6 ft	0.74 ac-ft
158.00	Pond Bottom	0.86 ac	193.0 ft	194.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.07 ac-ft
Required Treatment+Attenuation Stage= 161.14 ft

Provided Treatment+Attenuation Vol.= 3.24 ac-ft
Provided Treatment+Attenuation Stage= 161.30 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.28 ac-ft
Estimated Storm Sewer TW EL.= 160.40 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.08 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-127**
POND NAME : **E-127**

Station Limits: From: 5697+58 To: 5709+23

Roadway Length = 1165 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 1.45 ac
*Pervious Roadway Area: 14.95 ac
Total Roadway Area: 16.40 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 7.72 ac

Total Area:
Impervious Area: **1.45 ac**
Pervious Area: **22.67 ac**
Total Area: **24.12 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	1.45 ac	142.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	22.67 ac	1541.3
		Total:	24.12 ac	1683.4

CN = Total CN*Area / Total Area = **69.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.33 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**6.20 in**	**6.74 in**	**14.64 in**	**3.97 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-127**
POND NAME : **E-127**

Station Limits: From: 5697+58 To: 5709+23

Roadway Length = 1165 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 5.50 ac
*Pervious Roadway Area: 10.90 ac
Total Roadway Area: 16.40 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 7.72 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 7.72 ac

Total Area:

Impervious Area: **5.50 ac**
Pervious Area: **18.62 ac**
Water Surface Area: **0.00 ac**
Total Area: **24.12 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.50 ac	539.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	18.62 ac	1265.9
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	24.12 ac	1804.9

CN = Total CN*Area / Total Area = **74.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 3.36 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**6.86 in**	**7.42 in**	**15.49 in**	**4.52 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-127**
POND NAME : **E-127**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.46 ac-ft
	0.50 in	x Total Basin Area =	1.00 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.00 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.46 ac-ft	13.54 ac-ft	29.43 ac-ft	7.97 ac-ft
Q_{post} =	13.78 ac-ft	14.90 ac-ft	31.12 ac-ft	9.09 ac-ft
ΔQ =	**1.32 ac-ft**	**1.36 ac-ft**	**1.70 ac-ft**	**1.12 ac-ft**

Attenuation V_{req} = 1.70 ac-ft (use largest value)

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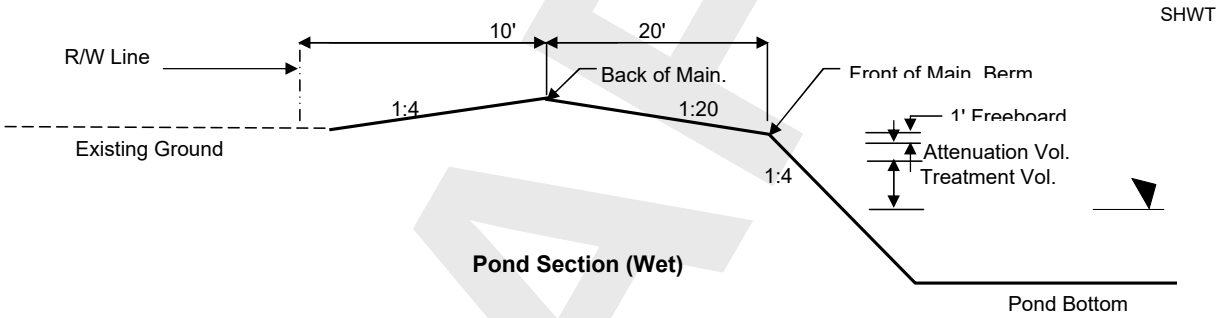
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-127**
POND NAME : **E-127**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	188.50
Pond Tie-In Width =	10.0 ft	@ 1:4	*Normal Water Elevation =	182.50
Maximum Storage Depth (**SD**) =	1.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	185.33

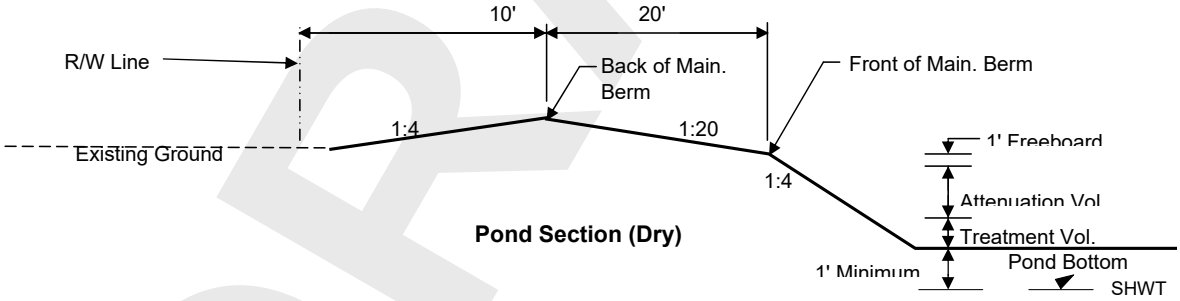
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	184.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-127**
POND NAME : **E-127**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
188.50	Pond R/W	8.26 ac	599.5 ft	600.0 ft	
186.00	Back of Main. Berm	7.72 ac	579.5 ft	580.0 ft	17.01 ac-ft
185.50		7.19 ac	559.5 ft	560.0 ft	13.28 ac-ft
185.00	Front of Main. Berm	6.69 ac	539.5 ft	540.0 ft	9.81 ac-ft
184.00	Provided Treat.Vol.+Att.Vol	6.49 ac	531.5 ft	532.0 ft	3.22 ac-ft
183.92	Req'd Treat.Vol+Att. Vol	6.48 ac	530.9 ft	531.4 ft	2.70 ac-ft
183.83	Estimated Storm Sewer TW	6.46 ac	530.1 ft	530.6 ft	2.12 ac-ft
183.66	Top of Treatment Vol.	6.42 ac	528.7 ft	529.2 ft	1.00 ac-ft
183.50	Pond Bottom	6.39 ac	527.5 ft	528.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 2.70 ac-ft
Required Treatment+Attenuation Stage= 183.92 ft

Provided Treatment+Attenuation Vol.= 3.22 ac-ft
Provided Treatment+Attenuation Stage= 184.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.12 ac-ft
Estimated Storm Sewer TW EL.= 183.83 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 10.32 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-128**
POND NAME : **E-128**

Station Limits: From: 5709+23 To: 5723+57

Roadway Length = 1434 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 1.28 ac
*Pervious Roadway Area: 19.03 ac
Total Roadway Area: 20.31 ac

Area calculated using shapes in CADD.

Pond Area: Pervious Pond Area = 9.58 ac

Total Area:
Impervious Area: **1.28 ac**
Pervious Area: **28.61 ac**
Total Area: **29.89 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	1.28 ac	125.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	28.61 ac	1945.5
		Total:	29.89 ac	2070.9

CN = Total CN*Area / Total Area = **69.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.43 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**6.13 in**	**6.67 in**	**14.55 in**	**3.91 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-128**
POND NAME : **E-128**

Station Limits: From: 5709+23 To: 5723+57

Roadway Length = 1434 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 6.32 ac
*Pervious Roadway Area: 13.99 ac
Total Roadway Area: 20.31 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 9.58 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 9.58 ac

Total Area:

Impervious Area: **6.32 ac**
Pervious Area: **23.57 ac**
Water Surface Area: **0.00 ac**
Total Area: **29.89 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	6.32 ac	619.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	23.57 ac	1602.8
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	29.89 ac	2222.1

CN = Total CN*Area / Total Area = **74.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 3.45 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**6.79 in**	**7.35 in**	**15.41 in**	**4.47 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-128**
POND NAME : **E-128**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.53 ac-ft
	0.50 in	x Total Basin Area =	1.25 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.25 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	15.27 ac-ft	16.61 ac-ft	36.25 ac-ft	9.74 ac-ft
Q_{post} =	16.92 ac-ft	18.31 ac-ft	38.37 ac-ft	11.12 ac-ft
ΔQ =	**1.65 ac-ft**	**1.70 ac-ft**	**2.13 ac-ft**	**1.39 ac-ft**

Attenuation V_{req} = 2.13 ac-ft (use largest value)

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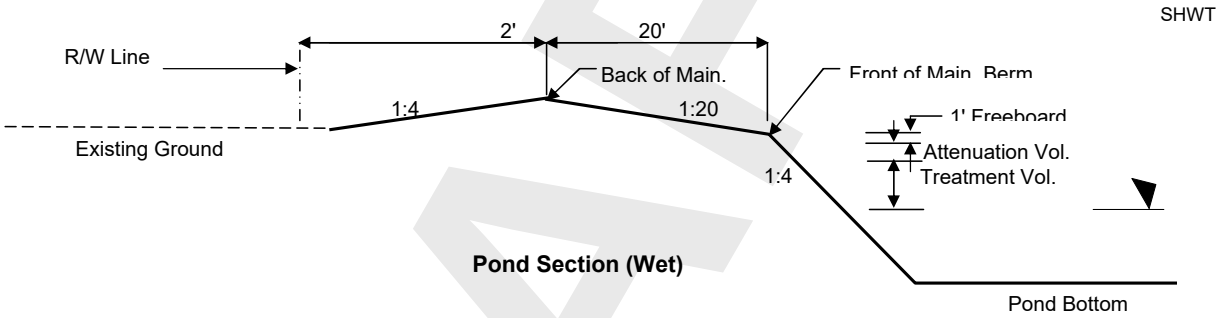
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-128**
POND NAME : **E-128**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	189.50
Pond Tie-In Width =	2.0 ft	@ 1:4	*Normal Water Elevation =	186.00
Maximum Storage Depth (**SD**) =	1.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	190.33

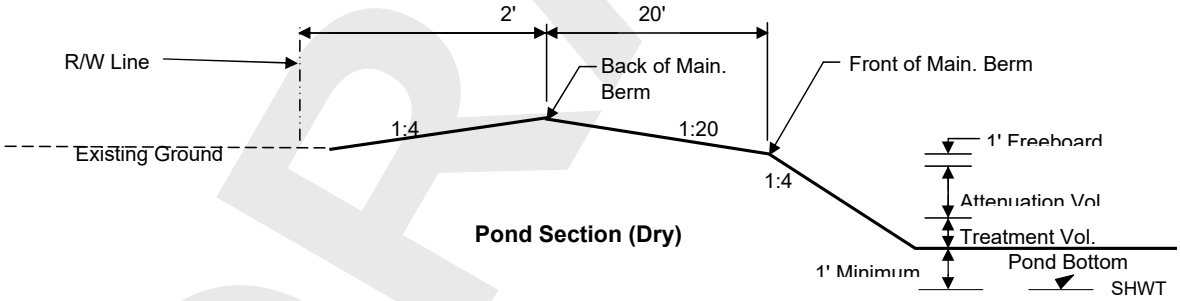
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	189.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-128**
POND NAME : **E-128**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
189.50	Pond R/W	9.70 ac	650.0 ft	650.0 ft	
189.00	Back of Main. Berm	9.58 ac	646.0 ft	646.0 ft	17.32 ac-ft
188.50		9.00 ac	626.0 ft	626.0 ft	12.68 ac-ft
188.00	Front of Main. Berm	8.43 ac	606.0 ft	606.0 ft	8.32 ac-ft
187.50	Provided Treat.Vol.+Att.Vol	8.32 ac	602.0 ft	602.0 ft	4.13 ac-ft
187.41	Req'd Treat.Vol+Att. Vol	8.30 ac	601.3 ft	601.3 ft	3.37 ac-ft
187.32	Estimated Storm Sewer TW	8.28 ac	600.6 ft	600.6 ft	2.63 ac-ft
187.15	Top of Treatment Vol.	8.24 ac	599.2 ft	599.2 ft	1.25 ac-ft
187.00	Pond Bottom	8.21 ac	598.0 ft	598.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.37 ac-ft
Required Treatment+Attenuation Stage= 187.41 ft

Provided Treatment+Attenuation Vol.= 4.13 ac-ft
Provided Treatment+Attenuation Stage= 187.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.63 ac-ft
Estimated Storm Sewer TW EL.= 187.32 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 12.12 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-129**
POND NAME : **E-129**

Station Limits: From: 5723+57 To: 5765+08

Roadway Length = 4151 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 33.35 ac
Total Roadway Area: 33.35 ac

Pond Area: Pervious Pond Area = 4.61 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **37.96 ac**
Total Area: **37.96 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Woods-grass combination (orchard or tree farm); Fair	A	43	36.88 ac	1585.8
Brush-weed-grass mixture; Fair condition (50% to 75%	A	35	0.97 ac	34.1
Woods & Wetlands Combination	A	88	0.11 ac	9.4
		Total:	37.96 ac	1629.3

CN = Total CN*Area / Total Area = **42.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **13.30 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**2.61 in**	**2.97 in**	**9.01 in**	**1.26 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-129**
POND NAME : **E-129**

Station Limits: From: 5723+57 To: 5765+08

Roadway Length = 4151 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Ramp Area: 1.90 ac

Impervious Roadway Area: 12.20 ac
Pervious Roadway Area: 19.26 ac
Total Roadway Area: 33.35 ac

Pond Area:

Pervious Pond Area : 4.61 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 4.61 ac

Total Area:

Impervious Area: **14.10 ac**
Pervious Area: **23.86 ac**
Water Surface Area: **0.00 ac**
Total Area: **37.96 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.10 ac	1381.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	39	23.86 ac	930.6
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	37.96 ac	2312.2

CN = Total CN*Area / Total Area = **60.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 6.42 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.02 in**	**5.52 in**	**13.01 in**	**3.01 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-129**
POND NAME : **E-129**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	1.17 ac-ft
	0.50 in	x Total Basin Area =	1.58 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.58 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.26 ac-ft	9.39 ac-ft	28.50 ac-ft	4.00 ac-ft
Q_{post} =	15.88 ac-ft	17.45 ac-ft	41.14 ac-ft	9.54 ac-ft
ΔQ =	**7.62 ac-ft**	**8.06 ac-ft**	**12.64 ac-ft**	**5.54 ac-ft**

Attenuation V_{req} = 12.64 ac-ft (use largest value)

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Job Number: PBS-001-01

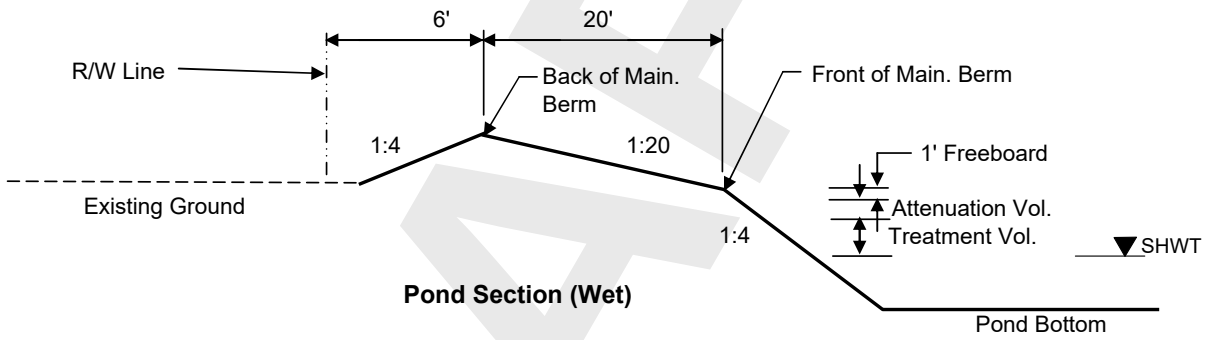
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-129**
POND NAME : **E-129**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	142.50
Pond Tie-In Width =	6.0 ft	@ 1:4	*Normal Water Elevation =	136.50
Maximum Storage Depth (**SD**) =	5.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	165.33

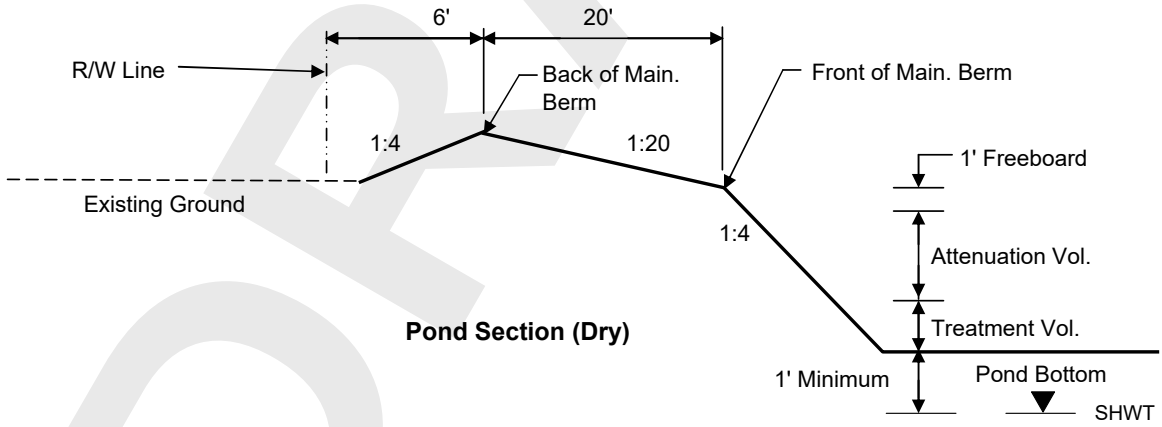
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	164.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-129**
POND NAME : **E-129**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
142.50	Pond R/W	4.86 ac	460.0 ft	460.0 ft	
144.00	Back of Main. Berm	4.61 ac	448.0 ft	448.0 ft	23.05 ac-ft
143.50		4.21 ac	428.0 ft	428.0 ft	20.84 ac-ft
143.00	Front of Main. Berm	3.82 ac	408.0 ft	408.0 ft	18.84 ac-ft
142.00	Provided Treat.Vol.+Att.Vol	3.67 ac	400.0 ft	400.0 ft	15.09 ac-ft
141.77	Req'd Treat.Vol+Att. Vol	3.64 ac	398.1 ft	398.1 ft	14.23 ac-ft
139.73	Estimated Storm Sewer TW	3.35 ac	381.8 ft	381.8 ft	7.12 ac-ft
138.01	Top of Treatment Vol.	3.11 ac	368.1 ft	368.1 ft	1.58 ac-ft
137.50	Pond Bottom	3.04 ac	364.0 ft	364.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 14.23 ac-ft
Required Treatment+Attenuation Stage= 141.77 ft

Provided Treatment+Attenuation Vol.= 15.09 ac-ft
Provided Treatment+Attenuation Stage= 142.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.12 ac-ft
Estimated Storm Sewer TW EL.= 139.73 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.07 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-130**
POND NAME : **E-130**

Station Limits: From: 5765+08 To: 5781+58

Roadway Length = 1650 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 13.26 ac
Total Roadway Area: 13.26 ac

Pond Area: Pervious Pond Area = 2.48 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **15.74 ac**
Total Area: **15.74 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Woods-grass combination (orchard or tree farm); Fair	A	43	15.31 ac	658.5
Brush-weed-grass mixture; Fair condition (50% to 75%	A	35	0.39 ac	13.5
Woods & Wetlands Combination	A	88	0.04 ac	3.7
		Total:	15.74 ac	675.7

CN = Total CN*Area / Total Area = **42.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **13.30 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**2.61 in**	**2.97 in**	**9.01 in**	**1.26 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-130**
POND NAME : **E-130**

Station Limits: From: 5765+08 To: 5781+58

Roadway Length = 1650 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 4.85 ac
Pervious Roadway Area: 8.41 ac
Total Roadway Area: 13.26 ac

Pond Area:

Pervious Pond Area : 2.48 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.48 ac

Total Area:

Impervious Area: **4.85 ac**
Pervious Area: **10.89 ac**
Water Surface Area: **0.00 ac**
Total Area: **15.74 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	4.85 ac	475.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	10.89 ac	740.8
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	15.74 ac	1215.9

CN = Total CN*Area / Total Area = **77.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.95 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.17 in**	**7.73 in**	**15.87 in**	**4.79 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-130**
POND NAME : **E-130**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.40 ac-ft
	0.50 in	x Total Basin Area =	0.66 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.66 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	3.43 ac-ft	3.89 ac-ft	11.82 ac-ft	1.66 ac-ft
Q_{post} =	9.40 ac-ft	10.15 ac-ft	20.82 ac-ft	6.28 ac-ft
ΔQ =	**5.98 ac-ft**	**6.25 ac-ft**	**9.00 ac-ft**	**4.63 ac-ft**

Attenuation V_{req} = 9.00 ac-ft (use largest value)

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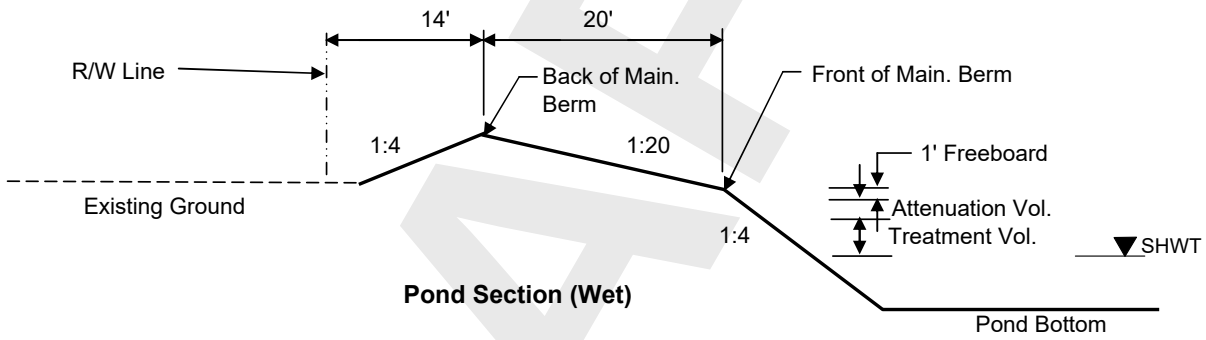
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-130**
POND NAME : **E-130**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	154.00
Pond Tie-In Width =	14.0 ft	@ 1:4	*Normal Water Elevation =	148.00
Maximum Storage Depth (**SD**) =	7.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	170.33

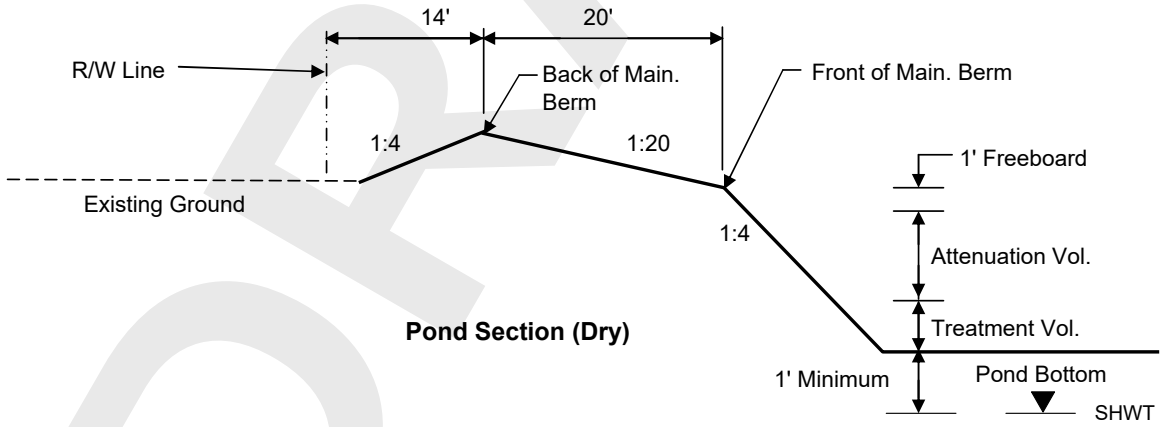
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	169.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-130**
POND NAME : **E-130**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
154.00	Pond R/W	2.93 ac	357.0 ft	357.0 ft	
157.50	Back of Main. Berm	2.48 ac	329.0 ft	329.0 ft	13.81 ac-ft
157.00		2.19 ac	309.0 ft	309.0 ft	12.64 ac-ft
156.50	Front of Main. Berm	1.92 ac	289.0 ft	289.0 ft	11.61 ac-ft
155.50	Provided Treat.Vol.+Att.Vol	1.81 ac	281.0 ft	281.0 ft	9.75 ac-ft
155.45	Req'd Treat.Vol+Att. Vol	1.81 ac	280.6 ft	280.6 ft	9.66 ac-ft
152.84	Estimated Storm Sewer TW	1.55 ac	259.7 ft	259.7 ft	5.28 ac-ft
149.54	Top of Treatment Vol.	1.25 ac	233.3 ft	233.3 ft	0.66 ac-ft
149.00	Pond Bottom	1.20 ac	229.0 ft	229.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 9.66 ac-ft
Required Treatment+Attenuation Stage= 155.45 ft

Provided Treatment+Attenuation Vol.= 9.75 ac-ft
Provided Treatment+Attenuation Stage= 155.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.28 ac-ft
Estimated Storm Sewer TW EL.= 152.84 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.66 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-131**
POND NAME : **E-131**

Station Limits: From: 5781+58 To: 5804+58

Roadway Length = 2300 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 18.48 ac
Total Roadway Area: 18.48 ac

Pond Area: Pervious Pond Area = 2.67 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **21.15 ac**
Total Area: **21.15 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Woods-grass combination (orchard or tree farm); Fair	A	43	20.55 ac	883.7
Brush-weed-grass mixture; Fair condition (50% to 75%	A	35	0.54 ac	18.9
Woods & Wetlands Combination	A	88	0.06 ac	5.2
		Total:	21.15 ac	907.8

CN = Total CN*Area / Total Area = **42.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **13.30 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**2.61 in**	**2.97 in**	**9.01 in**	**1.26 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-131**
POND NAME : **E-131**

Station Limits: From: 5781+58 To: 5804+58

Roadway Length = 2300 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 6.76 ac
Pervious Roadway Area: 11.72 ac
Total Roadway Area: 18.48 ac

Pond Area:

Pervious Pond Area : 2.67 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.67 ac

Total Area:

Impervious Area: **6.76 ac**
Pervious Area: **14.39 ac**
Water Surface Area: **0.00 ac**
Total Area: **21.15 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	6.76 ac	662.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	14.39 ac	978.6
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	21.15 ac	1640.9

CN = Total CN*Area / Total Area = **77.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.89 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.21 in**	**7.78 in**	**15.93 in**	**4.83 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-131**
POND NAME : **E-131**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.56 ac-ft
	0.50 in	x Total Basin Area =	0.88 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.88 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	4.60 ac-ft	5.23 ac-ft	15.88 ac-ft	2.23 ac-ft
Q_{post} =	12.71 ac-ft	13.71 ac-ft	28.07 ac-ft	8.51 ac-ft
ΔQ =	**8.11 ac-ft**	**8.48 ac-ft**	**12.19 ac-ft**	**6.28 ac-ft**

Attenuation V_{req} = 12.19 ac-ft (use largest value)

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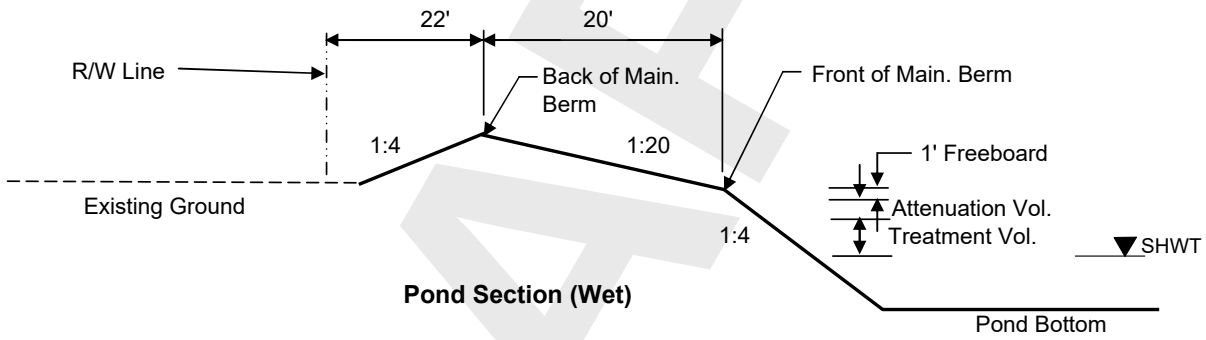
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-131**
POND NAME : **E-131**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	168.50
Pond Tie-In Width =	22.0 ft	@ 1:4	*Normal Water Elevation =	162.50
Maximum Storage Depth (**SD**) =	9.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	172.33

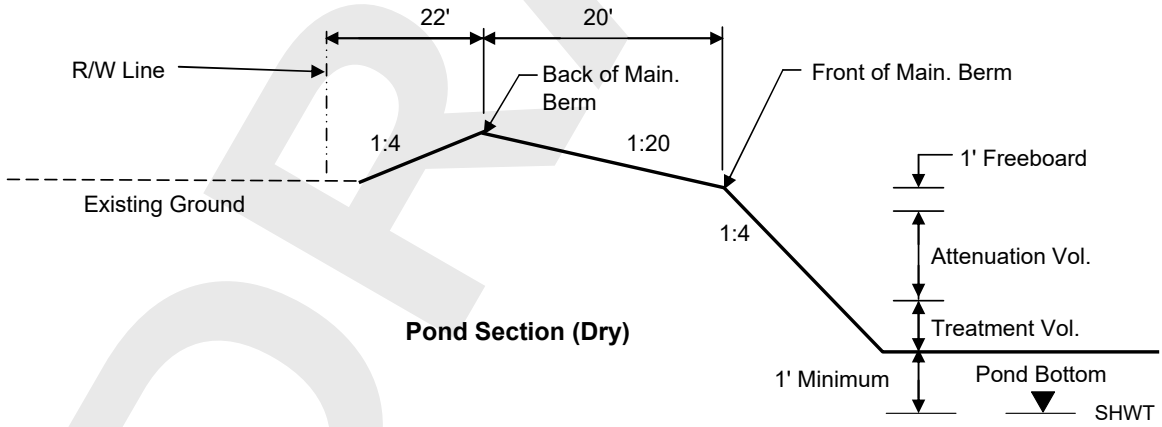
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	350 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	171.16 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-131**
POND NAME : **E-131**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
168.50	Pond R/W	3.40 ac	385.0 ft	385.0 ft	
174.00	Back of Main. Berm	2.67 ac	341.0 ft	341.0 ft	17.59 ac-ft
173.50		2.37 ac	321.0 ft	321.0 ft	16.33 ac-ft
173.00	Front of Main. Berm	2.08 ac	301.0 ft	301.0 ft	15.22 ac-ft
172.00	Provided Treat.Vol.+Att.Vol	1.97 ac	293.0 ft	293.0 ft	13.19 ac-ft
171.94	Req'd Treat.Vol+Att. Vol	1.96 ac	292.5 ft	292.5 ft	13.07 ac-ft
168.65	Estimated Storm Sewer TW	1.63 ac	266.2 ft	266.2 ft	7.16 ac-ft
164.24	Top of Treatment Vol.	1.22 ac	230.9 ft	230.9 ft	0.88 ac-ft
163.50	Pond Bottom	1.16 ac	225.0 ft	225.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 13.07 ac-ft
Required Treatment+Attenuation Stage= 171.94 ft

Provided Treatment+Attenuation Vol.= 13.19 ac-ft
Provided Treatment+Attenuation Stage= 172.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.16 ac-ft
Estimated Storm Sewer TW EL.= 168.65 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.25 ac

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DATE: February 17, 2011
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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-132**
POND NAME : **E-132**

Station Limits: From: 5804+58 To: 5831+40

Roadway Length = 2682 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 21.55 ac
Total Roadway Area: 21.55 ac

Pond Area: Pervious Pond Area = 2.51 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **24.06 ac**
Total Area: **24.06 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	24.06 ac	1636.2
		Total:	24.06 ac	1636.2

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.96 in**	**6.49 in**	**14.33 in**	**3.77 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-132**
POND NAME : **E-132**

Station Limits: From: 5804+58 To: 5831+40

Roadway Length = 2682 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 7.88 ac
Pervious Roadway Area: 13.67 ac
Total Roadway Area: 21.55 ac

Pond Area:

Pervious Pond Area : 2.51 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.51 ac

Total Area:

Impervious Area: **7.88 ac**
Pervious Area: **16.18 ac**
Water Surface Area: **0.00 ac**
Total Area: **24.06 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.88 ac	772.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	16.18 ac	1100.3
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	24.06 ac	1872.6

CN = Total CN*Area / Total Area = **77.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.85 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.24 in**	**7.81 in**	**15.96 in**	**4.86 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-132**
POND NAME : **E-132**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.66 ac-ft
	0.50 in	x Total Basin Area =	1.00 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.00 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.95 ac-ft	13.02 ac-ft	28.73 ac-ft	7.56 ac-ft
Q_{post} =	14.52 ac-ft	15.66 ac-ft	32.01 ac-ft	9.74 ac-ft
ΔQ =	**2.57 ac-ft**	**2.64 ac-ft**	**3.28 ac-ft**	**2.18 ac-ft**

Attenuation V_{req} = 3.28 ac-ft (use largest value)

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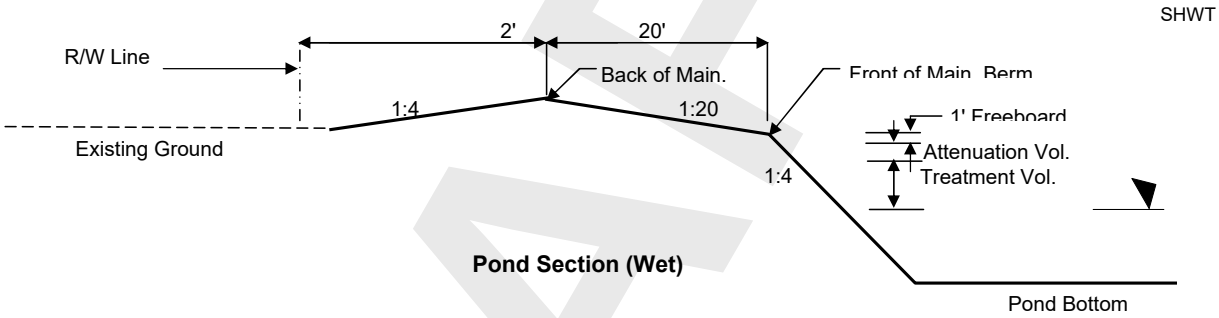
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-132**
POND NAME : **E-132**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	139.50
Pond Tie-In Width =	1.6 ft	@ 1:4	*Normal Water Elevation =	133.50
Maximum Storage Depth (**SD**) =	3.60 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	145.33

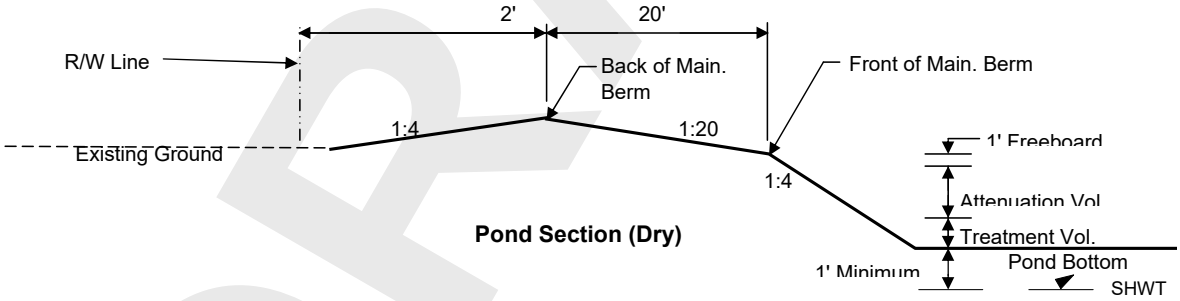
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	143.83 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-132**
POND NAME : **E-132**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
139.50	Pond R/W	2.56 ac	334.0 ft	334.0 ft	
139.10	Back of Main. Berm	2.51 ac	330.8 ft	330.8 ft	8.54 ac-ft
138.60		2.22 ac	310.8 ft	310.8 ft	7.36 ac-ft
138.10	Front of Main. Berm	1.94 ac	290.8 ft	290.8 ft	6.32 ac-ft
137.10	Provided Treat.Vol.+Att.Vol	1.84 ac	282.8 ft	282.8 ft	4.43 ac-ft
137.02	Req'd Treat.Vol+Att. Vol	1.83 ac	282.1 ft	282.1 ft	4.28 ac-ft
136.41	Estimated Storm Sewer TW	1.76 ac	277.2 ft	277.2 ft	3.18 ac-ft
135.12	Top of Treatment Vol.	1.64 ac	267.0 ft	267.0 ft	1.00 ac-ft
134.50	Pond Bottom	1.58 ac	262.0 ft	262.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 4.28 ac-ft
Required Treatment+Attenuation Stage= 137.02 ft

Provided Treatment+Attenuation Vol.= 4.43 ac-ft
Provided Treatment+Attenuation Stage= 137.10 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.18 ac-ft
Estimated Storm Sewer TW EL.= 136.41 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.20 ac

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DATE: February 17, 2011
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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-133**
POND NAME : **E-133**

Station Limits: From: 5831+40 To: 5844+91

Roadway Length = 1351 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 10.86 ac
Total Roadway Area: 10.86 ac

Pond Area: Pervious Pond Area = 1.48 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **12.34 ac**
Total Area: **12.34 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	12.34 ac	838.9
		Total:	12.34 ac	838.9

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.96 in**	**6.49 in**	**14.33 in**	**3.77 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-133**
POND NAME : **E-133**

Station Limits: From: 5831+40 To: 5844+91

Roadway Length = 1351 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 3.97 ac
Pervious Roadway Area: 6.89 ac
Total Roadway Area: 10.86 ac

Pond Area:

Pervious Pond Area : 1.48 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 1.48 ac

Total Area:

Impervious Area: **3.97 ac**
Pervious Area: **8.37 ac**
Water Surface Area: **0.00 ac**
Total Area: **12.34 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	3.97 ac	389.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	8.37 ac	568.9
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	12.34 ac	958.0

CN = Total CN*Area / Total Area = **77.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.88 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**7.22 in**	**7.79 in**	**15.94 in**	**4.84 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-133**
POND NAME : **E-133**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	0.33 ac-ft
	0.50 in	x Total Basin Area =	0.51 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.51 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	6.13 ac-ft	6.68 ac-ft	14.73 ac-ft	3.87 ac-ft
Q_{post} =	7.42 ac-ft	8.01 ac-ft	16.38 ac-ft	4.97 ac-ft
ΔQ =	**1.29 ac-ft**	**1.33 ac-ft**	**1.65 ac-ft**	**1.10 ac-ft**

Attenuation V_{req} = 1.65 ac-ft (use largest value)

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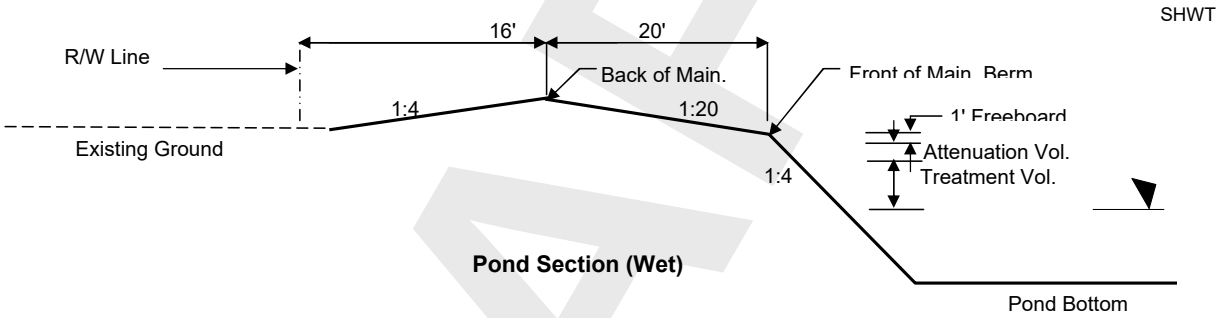
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-133**
POND NAME : **E-133**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	132.50
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	131.00
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	145.33

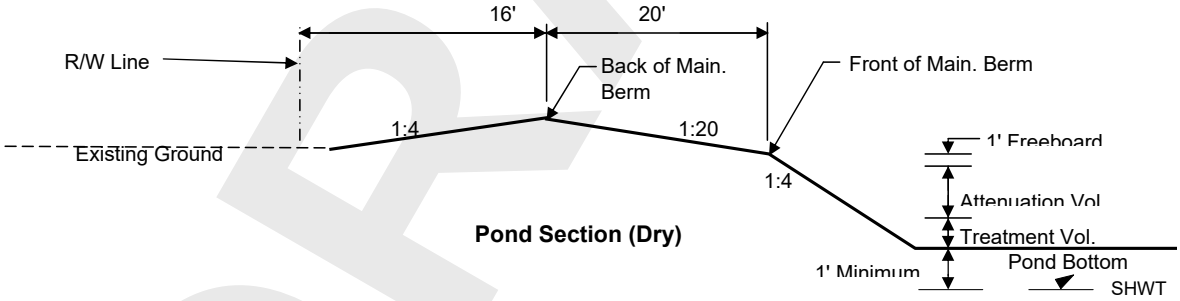
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	143.83 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-133**
POND NAME : **E-133**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
132.50	Pond R/W	1.88 ac	286.0 ft	286.0 ft	
136.50	Back of Main. Berm	1.48 ac	254.0 ft	254.0 ft	4.48 ac-ft
136.00		1.26 ac	234.0 ft	234.0 ft	3.80 ac-ft
135.50	Front of Main. Berm	1.05 ac	214.0 ft	214.0 ft	3.22 ac-ft
134.50	Provided Treat.Vol.+Att.Vol	0.97 ac	206.0 ft	206.0 ft	2.21 ac-ft
134.46	Req'd Treat.Vol+Att. Vol	0.97 ac	205.7 ft	205.7 ft	2.17 ac-ft
133.87	Estimated Storm Sewer TW	0.93 ac	201.0 ft	201.0 ft	1.61 ac-ft
132.62	Top of Treatment Vol.	0.84 ac	191.0 ft	191.0 ft	0.51 ac-ft
132.00	Pond Bottom	0.79 ac	186.0 ft	186.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 2.17 ac-ft
Required Treatment+Attenuation Stage= 134.46 ft

Provided Treatment+Attenuation Vol.= 2.21 ac-ft
Provided Treatment+Attenuation Stage= 134.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.61 ac-ft
Estimated Storm Sewer TW EL.= 133.87 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.35 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-134**
POND NAME : **E-134**

Station Limits: From: 5844+91 To: 5870+36

Roadway Length = 2545 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 36.97 ac
Total Roadway Area: 36.97 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.58 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **39.55 ac**
Total Area: **39.55 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	39.55 ac	2689.2
		Total:	39.55 ac	2689.2

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.82 in**	**6.49 in**	**9.14 in**	**3.77 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-134**
POND NAME : **E-134**

Station Limits: From: 5844+91 To: 5870+36

Roadway Length = 2545 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 14.33 ac
*Pervious Roadway Area: 22.64 ac
Total Roadway Area: 36.97 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 2.58 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.58 ac

Total Area:

Impervious Area: **14.33 ac**
Pervious Area: **25.22 ac**
Water Surface Area: **0.00 ac**
Total Area: **39.55 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.33 ac	1404.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	25.22 ac	1714.7
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	39.55 ac	3119.1

CN = Total CN*Area / Total Area = **78.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.68 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.03 in**	**7.95 in**	**10.74 in**	**4.97 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-134**
POND NAME : **E-134**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.19 ac-ft
	0.50 in	x Total Basin Area =	1.65 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.65 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.59 ac-ft	21.40 ac-ft	30.11 ac-ft	12.42 ac-ft
Q_{post} =	16.57 ac-ft	26.19 ac-ft	35.41 ac-ft	16.39 ac-ft
ΔQ =	**3.99 ac-ft**	**4.79 ac-ft**	**5.30 ac-ft**	**3.97 ac-ft**

Attenuation V_{req} = 5.30 ac-ft (use largest value)

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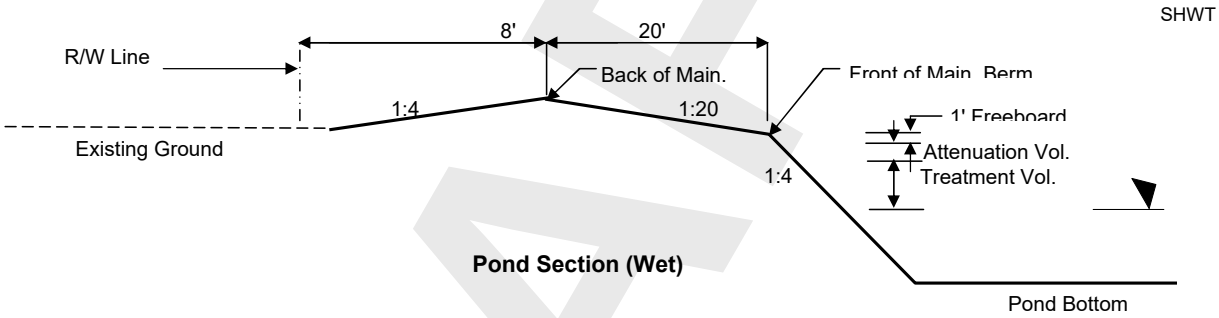
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-134**
POND NAME : **E-134**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	118.00
Pond Tie-In Width =	8.0 ft	@ 1:4	*Normal Water Elevation =	112.00
Maximum Storage Depth (**SD**) =	6.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	123.33

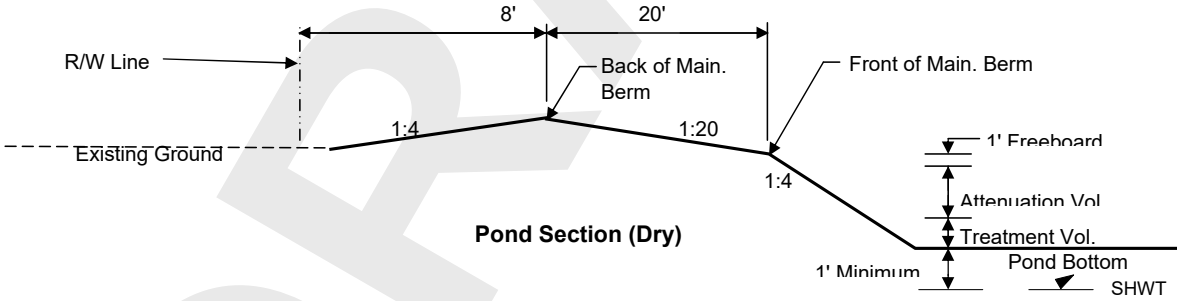
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	121.83 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-134**
POND NAME : **E-134**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
118.00	Pond R/W	2.83 ac	351.0 ft	351.0 ft	
120.00	Back of Main. Berm	2.58 ac	335.0 ft	335.0 ft	12.43 ac-ft
119.50		2.28 ac	315.0 ft	315.0 ft	11.22 ac-ft
119.00	Front of Main. Berm	2.00 ac	295.0 ft	295.0 ft	10.15 ac-ft
118.00	Provided Treat.Vol.+Att.Vol	1.89 ac	287.0 ft	287.0 ft	8.20 ac-ft
117.32	Req'd Treat.Vol+Att. Vol	1.82 ac	281.6 ft	281.6 ft	6.95 ac-ft
116.75	Estimated Storm Sewer TW	1.76 ac	277.0 ft	277.0 ft	5.92 ac-ft
114.20	Top of Treatment Vol.	1.51 ac	256.6 ft	256.6 ft	1.75 ac-ft
113.00	Pond Bottom	1.40 ac	247.0 ft	247.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 6.95 ac-ft
Required Treatment+Attenuation Stage= 117.32 ft

Provided Treatment+Attenuation Vol.= 8.20 ac-ft
Provided Treatment+Attenuation Stage= 118.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.62 ac-ft
Estimated Storm Sewer TW EL.= 116.75 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.54 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-135**
POND NAME : **E-135**

Station Limits: From: 5870+36 To: 5914+00

Roadway Length = 4364 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 42.30 ac
Total Roadway Area: 42.30 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 4.79 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **47.09 ac**
Total Area: **47.09 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	4.89 ac	224.7
Residential Areas (2.0 acre, 12% Impervious)	C	77	0.32 ac	24.7
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.04 ac	3.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	38.90 ac	2645.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.64 ac	54.7
Woods & Wetlands Combination	C	94	0.93 ac	87.8
Woods & Wetlands Combination	D	97	1.38 ac	133.7
		Total:	47.09 ac	3174.1

CN = Total CN*Area / Total Area = **67.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.84 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.75 in**	**6.41 in**	**9.04 in**	**3.70 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-135**
POND NAME : **E-135**

Station Limits: From: 5870+36 To: 5914+00

Roadway Length = 4364 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 18.20 ac
*Pervious Roadway Area: 24.10 ac
Total Roadway Area: 42.30 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 4.79 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 4.79 ac

Total Area:

Impervious Area: **18.20 ac**
Pervious Area: **28.89 ac**
Water Surface Area: **0.00 ac**
Total Area: **47.09 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	18.20 ac	1783.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	26.87 ac	1826.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.16 ac	99.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.87 ac	77.3
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	47.09 ac	3787.5

CN = Total CN*Area / Total Area = **80.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.43 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.21 in**	**8.15 in**	**10.96 in**	**5.15 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-135**
POND NAME : **E-135**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.52 ac-ft
	0.50 in	x Total Basin Area =	1.96 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.96 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	14.73 ac-ft	25.17 ac-ft	35.49 ac-ft	14.54 ac-ft
Q_{post} =	20.43 ac-ft	31.99 ac-ft	43.02 ac-ft	20.21 ac-ft
ΔQ =	**5.70 ac-ft**	**6.82 ac-ft**	**7.54 ac-ft**	**5.68 ac-ft**

Attenuation V_{req} = 7.54 ac-ft (use largest value)

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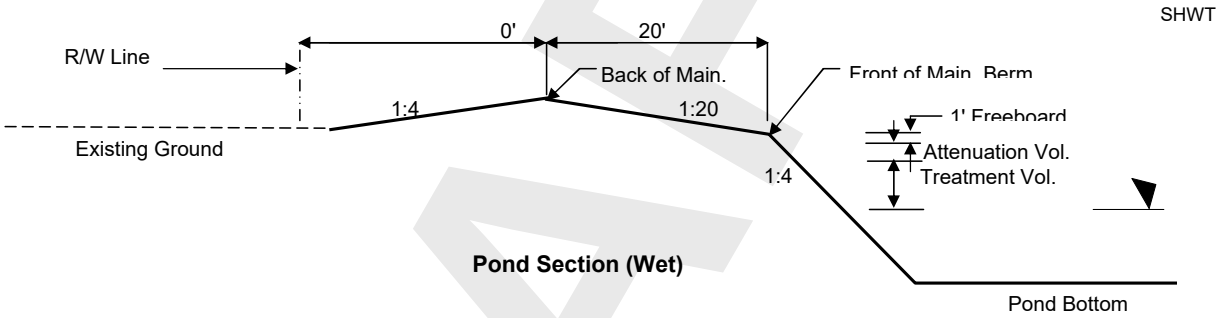
BASIN NAME : **E-135**
POND NAME : **E-135**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	105.00
Pond Tie-In Width =	0.0 ft	@ 1:4	*Normal Water Elevation =	99.00
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	110.33

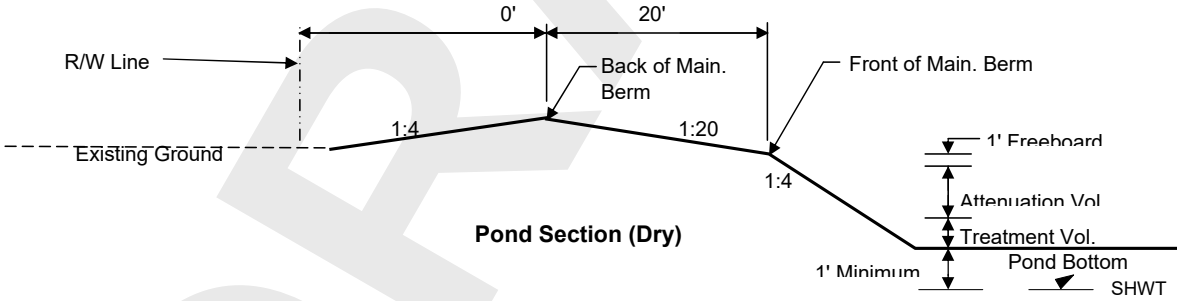
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	600 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	109.03 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-135**
POND NAME : **E-135**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
105.00	Pond R/W	4.79 ac	457.0 ft	457.0 ft	
105.00	Back of Main. Berm	4.79 ac	457.0 ft	457.0 ft	19.16 ac-ft
104.50		4.38 ac	437.0 ft	437.0 ft	16.87 ac-ft
104.00	Front of Main. Berm	3.99 ac	417.0 ft	417.0 ft	14.78 ac-ft
103.00	Provided Treat.Vol.+Att.Vol	3.84 ac	409.0 ft	409.0 ft	10.86 ac-ft
102.64	Req'd Treat.Vol+Att. Vol	3.79 ac	406.1 ft	406.1 ft	9.50 ac-ft
102.15	Estimated Storm Sewer TW	3.71 ac	402.2 ft	402.2 ft	7.65 ac-ft
100.57	Top of Treatment Vol.	3.48 ac	389.6 ft	389.6 ft	1.96 ac-ft
100.00	Pond Bottom	3.40 ac	385.0 ft	385.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 9.50 ac-ft
Required Treatment+Attenuation Stage= 102.64 ft

Provided Treatment+Attenuation Vol.= 10.86 ac-ft
Provided Treatment+Attenuation Stage= 103.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.64 ac-ft
Estimated Storm Sewer TW EL.= 102.15 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 5.99 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-135**
POND NAME : **F-135**

Station Limits: From: Exist Align To: Exist Align

Roadway Length = Varies
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 4.69 ac
Total Roadway Area: 4.69 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 0.70 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **5.39 ac**
Total Area: **5.39 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.56 ac	25.7
Residential Areas (2.0 acre, 12% Impervious)	C	77	0.04 ac	2.8
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.00 ac	0.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	4.45 ac	302.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.07 ac	6.3
Woods & Wetlands Combination	C	94	0.11 ac	10.0
Woods & Wetlands Combination	D	97	0.16 ac	15.3
		Total:	5.39 ac	362.9

CN = Total CN*Area / Total Area = **67.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.84 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.75 in**	**6.41 in**	**9.04 in**	**3.70 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-135**
POND NAME : **F-135**

Station Limits: From: Exist Align To: Exist Align

Roadway Length = Varies
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 1.51 ac
*Pervious Roadway Area: 3.18 ac
Total Roadway Area: 4.69 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 0.70 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 0.70 ac

Total Area:

Impervious Area: **1.51 ac**
Pervious Area: **3.88 ac**
Water Surface Area: **0.00 ac**
Total Area: **5.39 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	1.51 ac	148.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	3.60 ac	245.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.16 ac	13.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.12 ac	10.4
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	5.39 ac	416.7

CN = Total CN*Area / Total Area = **77.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.92 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.86 in**	**7.75 in**	**10.53 in**	**4.81 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-135**
POND NAME : **F-135**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.13 ac-ft
	0.50 in	x Total Basin Area =	0.22 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.22 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	1.68 ac-ft	2.88 ac-ft	4.06 ac-ft	1.66 ac-ft
Q_{post} =	2.18 ac-ft	3.48 ac-ft	4.73 ac-ft	2.16 ac-ft
ΔQ =	**0.50 ac-ft**	**0.60 ac-ft**	**0.67 ac-ft**	**0.49 ac-ft**

Attenuation V_{req} = **0.67 ac-ft** (use largest value)

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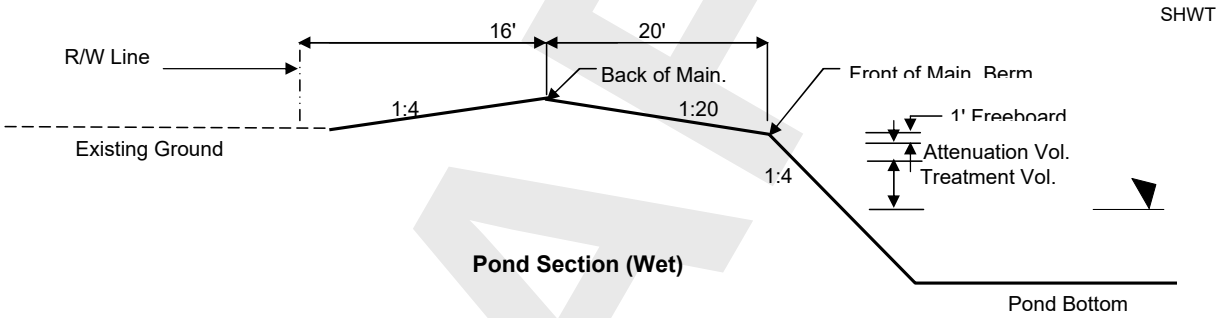
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-135**
POND NAME : **F-135**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	105.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	99.00
Maximum Storage Depth (**SD**) =	8.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	110.33

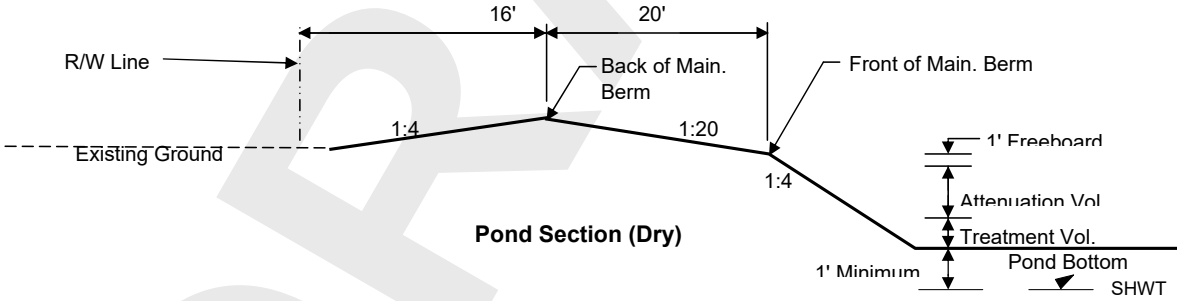
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	600 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	109.03 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-135**
POND NAME : **F-135**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
105.00	Pond R/W	0.97 ac	206.0 ft	206.0 ft	
109.00	Back of Main. Berm	0.70 ac	174.0 ft	174.0 ft	2.53 ac-ft
108.50		0.54 ac	154.0 ft	154.0 ft	2.22 ac-ft
108.00	Front of Main. Berm	0.41 ac	134.0 ft	134.0 ft	1.98 ac-ft
107.00	Provided Treat.Vol.+Att.Vol	0.36 ac	126.0 ft	126.0 ft	1.59 ac-ft
104.78	Req'd Treat.Vol+Att. Vol	0.27 ac	108.2 ft	108.2 ft	0.89 ac-ft
104.10	Estimated Storm Sewer TW	0.24 ac	102.8 ft	102.8 ft	0.72 ac-ft
101.60	Top of Treatment Vol.	0.16 ac	82.8 ft	82.8 ft	0.22 ac-ft
100.00	Pond Bottom	0.11 ac	70.0 ft	70.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 0.89 ac-ft
Required Treatment+Attenuation Stage= 104.78 ft

Provided Treatment+Attenuation Vol.= 1.59 ac-ft
Provided Treatment+Attenuation Stage= 107.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 0.72 ac-ft
Estimated Storm Sewer TW EL.= 104.10 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 1.22 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-136**
POND NAME : **E-136**

Station Limits: From: 5914+00 To: 5957+29

Roadway Length = 4329 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 34.78 ac
Total Roadway Area: 34.78 ac

Pond Area: Pervious Pond Area = 5.06 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **39.84 ac**
Total Area: **39.84 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	4.13 ac	190.1
Residential Areas (2.0 acre, 12% Impervious)	C	77	0.27 ac	20.9
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.03 ac	2.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	32.91 ac	2238.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.54 ac	46.3
Woods & Wetlands Combination	C	94	0.79 ac	74.3
Woods & Wetlands Combination	D	97	1.17 ac	113.1
		Total:	39.84 ac	2685.4

CN = Total CN*Area / Total Area = **67.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.84 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.75 in**	**6.41 in**	**9.04 in**	**3.70 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-136**
POND NAME : **E-136**

Station Limits: From: 5914+00 To: 5957+29

Roadway Length = 4329 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 12.72 ac
Pervious Roadway Area: 22.06 ac
Total Roadway Area: 34.78 ac

Pond Area:

Pervious Pond Area : 5.06 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 5.06 ac

Total Area:

Impervious Area: **12.72 ac**
Pervious Area: **27.12 ac**
Water Surface Area: **0.00 ac**
Total Area: **39.84 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	12.72 ac	1246.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	25.22 ac	1714.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.09 ac	93.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.82 ac	72.5
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	39.84 ac	3127.7

CN = Total CN*Area / Total Area = **78.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.74 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.99 in**	**7.90 in**	**10.69 in**	**4.93 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-136**
POND NAME : **E-136**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.06 ac-ft
	0.50 in	x Total Basin Area =	1.66 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.66 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.46 ac-ft	21.29 ac-ft	30.02 ac-ft	12.30 ac-ft
Q_{post} =	16.56 ac-ft	26.23 ac-ft	35.50 ac-ft	16.38 ac-ft
ΔQ =	**4.10 ac-ft**	**4.94 ac-ft**	**5.48 ac-ft**	**4.08 ac-ft**

Attenuation V_{req} = 5.48 ac-ft (use largest value)

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DATE: February 17, 2011
Job Number: PBS-001-01

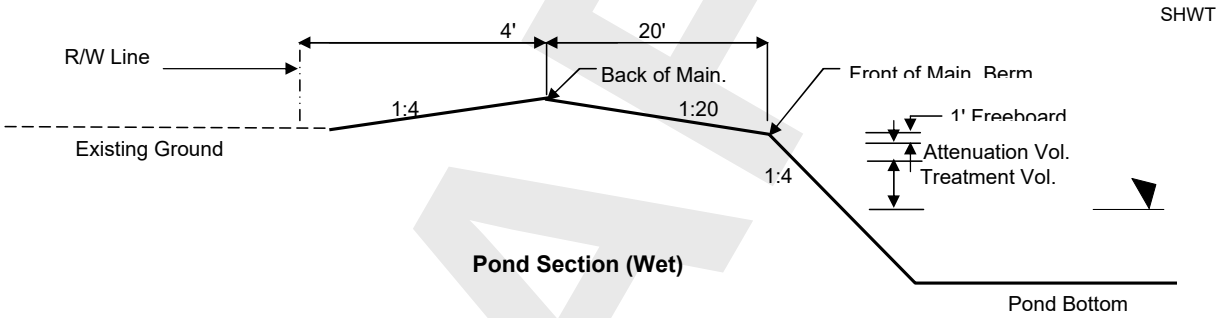
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-136**
POND NAME : **E-136**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	118.00
Pond Tie-In Width =	4.0 ft	@ 1:4	*Normal Water Elevation =	112.00
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	117.33

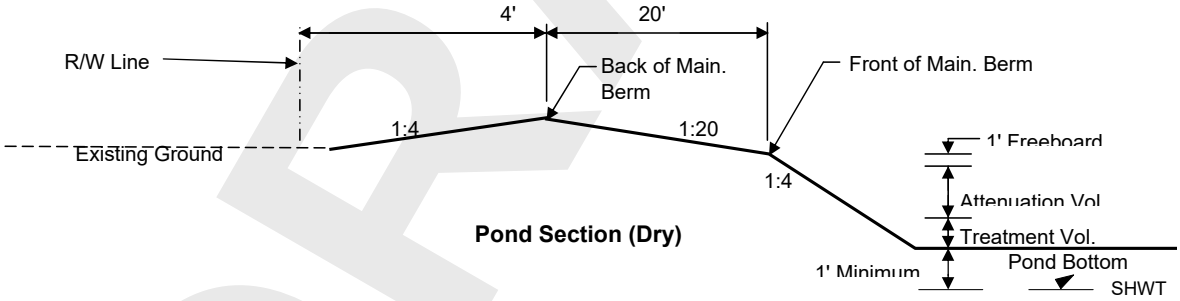
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	600 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	116.03 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-136**
POND NAME : **E-136**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
118.00	Pond R/W	5.23 ac	478.0 ft	477.0 ft	
117.00	Back of Main. Berm	5.06 ac	470.0 ft	469.0 ft	16.65 ac-ft
116.50		4.64 ac	450.0 ft	449.0 ft	14.23 ac-ft
116.00	Front of Main. Berm	4.23 ac	430.0 ft	429.0 ft	12.01 ac-ft
115.00	Provided Treat.Vol.+Att.Vol	4.08 ac	422.0 ft	421.0 ft	7.85 ac-ft
114.83	Req'd Treat.Vol+Att. Vol	4.05 ac	420.6 ft	419.6 ft	7.14 ac-ft
114.48	Estimated Storm Sewer TW	4.00 ac	417.8 ft	416.8 ft	5.74 ac-ft
113.44	Top of Treatment Vol.	3.84 ac	409.5 ft	408.5 ft	1.66 ac-ft
113.00	Pond Bottom	3.77 ac	406.0 ft	405.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 7.14 ac-ft
Required Treatment+Attenuation Stage= 114.83 ft

Provided Treatment+Attenuation Vol.= 7.85 ac-ft
Provided Treatment+Attenuation Stage= 115.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.74 ac-ft
Estimated Storm Sewer TW EL.= 114.48 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.54 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-137**
POND NAME : **E-137**

Station Limits: From: 5957+29 To: 5984+06

Roadway Length = 2677 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 32.01 ac
Total Roadway Area: 32.01 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area = 4.94 ac

Total Area:

Impervious Area: **0.00 ac**
Pervious Area: **36.95 ac**
Total Area: **36.95 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	3.95 ac	181.8
Residential Areas (2.0 acre, 12% Impervious)	C	77	0.26 ac	20.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	31.47 ac	2139.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.51 ac	44.2
Woods & Wetlands Combination	C	94	0.76 ac	71.0
		Total:	36.95 ac	2456.7

CN = Total CN*Area / Total Area = **66.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **5.04 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.66 in**	**6.29 in**	**8.90 in**	**3.61 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-137**
POND NAME : **E-137**

Station Limits: From: 5957+29 To: 5984+06

Roadway Length = 2677 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 8.45 ac
*Pervious Roadway Area: 23.56 ac
Total Roadway Area: 32.01 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 4.94 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 4.94 ac

Total Area:

Impervious Area: **8.45 ac**
Pervious Area: **28.50 ac**
Water Surface Area: **0.00 ac**
Total Area: **36.95 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.45 ac	828.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	27.32 ac	1857.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.18 ac	101.5
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	36.95 ac	2787.1

CN = Total CN*Area / Total Area = **75.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 3.26 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.64 in**	**7.50 in**	**10.25 in**	**4.59 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-137**
POND NAME : **E-137**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.70 ac-ft
	0.50 in	x Total Basin Area =	1.54 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.54 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.25 ac-ft	19.36 ac-ft	27.41 ac-ft	11.10 ac-ft
Q_{post} =	14.29 ac-ft	23.08 ac-ft	31.56 ac-ft	14.13 ac-ft
ΔQ =	**3.04 ac-ft**	**3.72 ac-ft**	**4.15 ac-ft**	**3.02 ac-ft**

Attenuation V_{req} = 4.15 ac-ft (use largest value)

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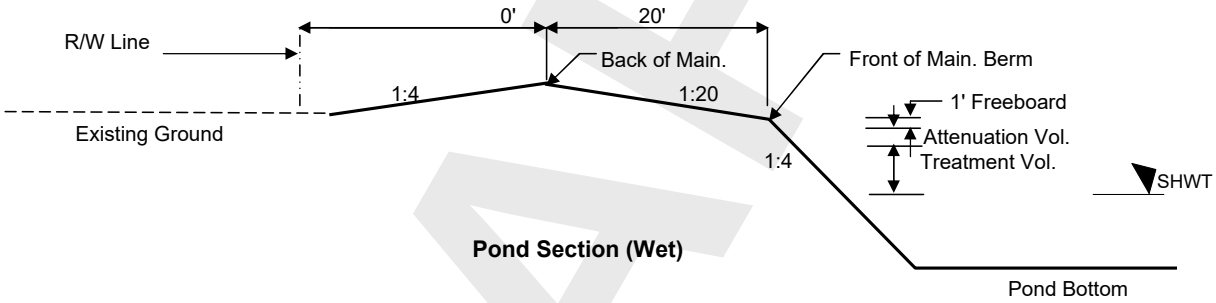
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-137**
POND NAME : **E-137**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	124.00
Pond Tie-In Width =	0.0 ft	@ 1:4	*Normal Water Elevation =	118.00
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	130.33

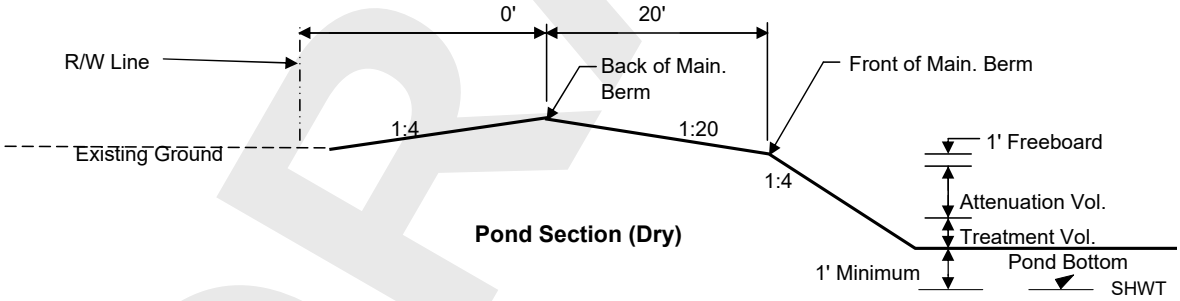
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	129.18 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-137**
POND NAME : **E-137**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
124.00	Pond R/W	4.94 ac	464.0 ft	463.5 ft	
124.00	Back of Main. Berm	4.94 ac	464.0 ft	463.5 ft	19.80 ac-ft
123.50		4.52 ac	444.0 ft	443.5 ft	17.44 ac-ft
123.00	Front of Main. Berm	4.12 ac	424.0 ft	423.5 ft	15.28 ac-ft
122.00	Provided Treat.Vol.+Att.Vol	3.97 ac	416.0 ft	415.5 ft	11.23 ac-ft
120.57	Req'd Treat.Vol+Att. Vol	3.75 ac	404.5 ft	404.0 ft	5.69 ac-ft
120.26	Estimated Storm Sewer TW	3.71 ac	402.1 ft	401.6 ft	4.56 ac-ft
119.43	Top of Treatment Vol.	3.59 ac	395.5 ft	395.0 ft	1.54 ac-ft
119.00	Pond Bottom	3.52 ac	392.0 ft	391.5 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 5.69 ac-ft
Required Treatment+Attenuation Stage= 120.57 ft

Provided Treatment+Attenuation Vol.= 11.23 ac-ft
Provided Treatment+Attenuation Stage= 122.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.56 ac-ft
Estimated Storm Sewer TW EL.= 120.26 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.17 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-138**
POND NAME : **E-138**

Station Limits: From: 5984+06 To: 5996+11

Roadway Length = 1205 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 19.12 ac
Total Roadway Area: 19.12 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 3.12 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **22.24 ac**
Total Area: **22.24 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	2.43 ac	111.7
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.02 ac	1.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	19.33 ac	1314.3
Woods & Wetlands Combination	D	97	0.46 ac	45.1
		Total:	22.24 ac	1472.5

CN = Total CN*Area / Total Area = **66.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **5.10 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.63 in**	**6.25 in**	**8.86 in**	**3.58 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-138**
POND NAME : **E-138**

Station Limits: From: 5984+06 To: 5996+11

Roadway Length = 1205 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 4.64 ac
*Pervious Roadway Area: 14.48 ac
Total Roadway Area: 19.12 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 3.12 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 3.12 ac

Total Area:

Impervious Area: **4.64 ac**
Pervious Area: **17.60 ac**
Water Surface Area: **0.00 ac**
Total Area: **22.24 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	4.64 ac	454.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	17.22 ac	1170.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.38 ac	34.0
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	22.24 ac	1659.4

CN = Total CN*Area / Total Area = **74.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 3.40 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.55 in**	**7.39 in**	**10.13 in**	**4.50 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-138**
POND NAME : **E-138**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.39 ac-ft
	0.50 in	x Total Basin Area =	0.93 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.93 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	6.72 ac-ft	11.58 ac-ft	16.41 ac-ft	6.63 ac-ft
Q_{post} =	8.43 ac-ft	13.69 ac-ft	18.78 ac-ft	8.33 ac-ft
ΔQ =	**1.71 ac-ft**	**2.11 ac-ft**	**2.36 ac-ft**	**1.71 ac-ft**

Attenuation V_{req} = 2.36 ac-ft (use largest value)

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Job Number: PBS-001-01

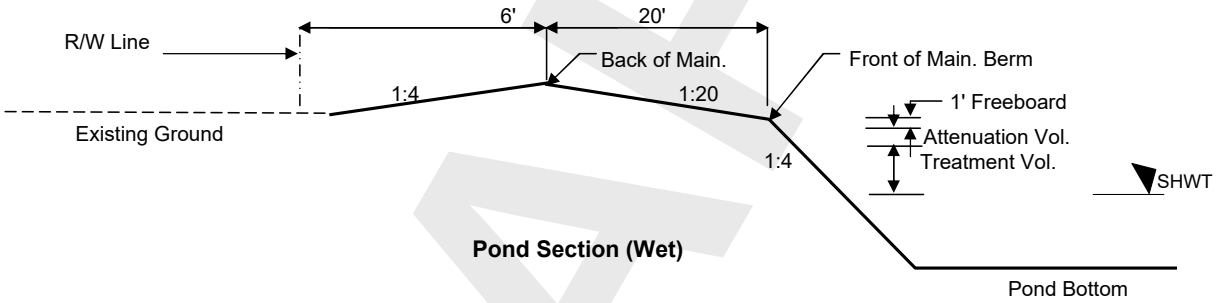
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-138**
POND NAME : **E-138**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	127.00
Pond Tie-In Width =	6.0 ft	@ 1:4	*Normal Water Elevation =	121.00
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	130.33

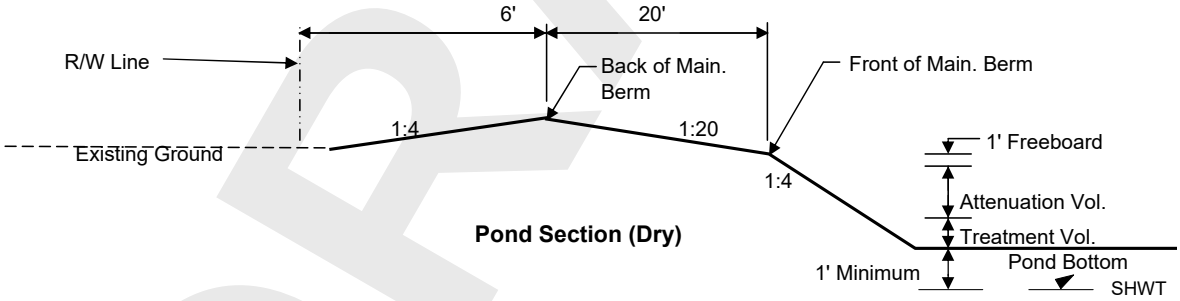
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	129.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-138**
POND NAME : **E-138**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
127.00	Pond R/W	3.32 ac	381.0 ft	380.0 ft	
125.50	Back of Main. Berm	3.12 ac	369.0 ft	368.0 ft	8.62 ac-ft
125.00		2.79 ac	349.0 ft	348.0 ft	7.14 ac-ft
124.50	Front of Main. Berm	2.48 ac	329.0 ft	328.0 ft	5.82 ac-ft
123.50	Provided Treat.Vol.+Att.Vol	2.36 ac	321.0 ft	320.0 ft	3.41 ac-ft
123.45	Req'd Treat.Vol+Att. Vol	2.35 ac	320.6 ft	319.6 ft	3.29 ac-ft
123.20	Estimated Storm Sewer TW	2.32 ac	318.6 ft	317.6 ft	2.70 ac-ft
122.50	Top of Treatment Vol.	2.24 ac	313.0 ft	312.0 ft	1.11 ac-ft
122.00	Pond Bottom	2.18 ac	309.0 ft	308.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.29 ac-ft
Required Treatment+Attenuation Stage= 123.45 ft

Provided Treatment+Attenuation Vol.= 3.41 ac-ft
Provided Treatment+Attenuation Stage= 123.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.63 ac-ft
Estimated Storm Sewer TW EL.= 123.20 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.15 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-139**
POND NAME : **E-139**

Station Limits: From: 5996+11 To: 6010+46

Roadway Length = 1435 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 13.53 ac
Total Roadway Area: 13.53 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 1.98 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **15.51 ac**
Total Area: **15.51 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	1.69 ac	77.9
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.01 ac	1.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	13.48 ac	916.9
Woods & Wetlands Combination	D	97	0.32 ac	31.5
		Total:	15.51 ac	1027.3

CN = Total CN*Area / Total Area = **66.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **5.10 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.63 in**	**6.25 in**	**8.86 in**	**3.58 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-139**
POND NAME : **E-139**

Station Limits: From: 5996+11 To: 6010+46

Roadway Length = 1435 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 8.45 ac
*Pervious Roadway Area: 5.08 ac
Total Roadway Area: 13.53 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.98 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 1.98 ac

Total Area:

Impervious Area: **8.45 ac**
Pervious Area: **7.06 ac**
Water Surface Area: **0.00 ac**
Total Area: **15.51 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.45 ac	828.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	6.91 ac	470.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.15 ac	13.6
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	15.51 ac	1311.7

CN = Total CN*Area / Total Area = **84.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.83 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.68 in**	**8.68 in**	**11.53 in**	**5.62 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-139**
POND NAME : **E-139**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.70 ac-ft
	0.50 in	x Total Basin Area =	0.65 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.70 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	4.69 ac-ft	8.08 ac-ft	11.45 ac-ft	4.62 ac-ft
Q_{post} =	7.34 ac-ft	11.23 ac-ft	14.91 ac-ft	7.27 ac-ft
ΔQ =	**2.66 ac-ft**	**3.15 ac-ft**	**3.45 ac-ft**	**2.64 ac-ft**

Attenuation V_{req} = 3.45 ac-ft (use largest value)

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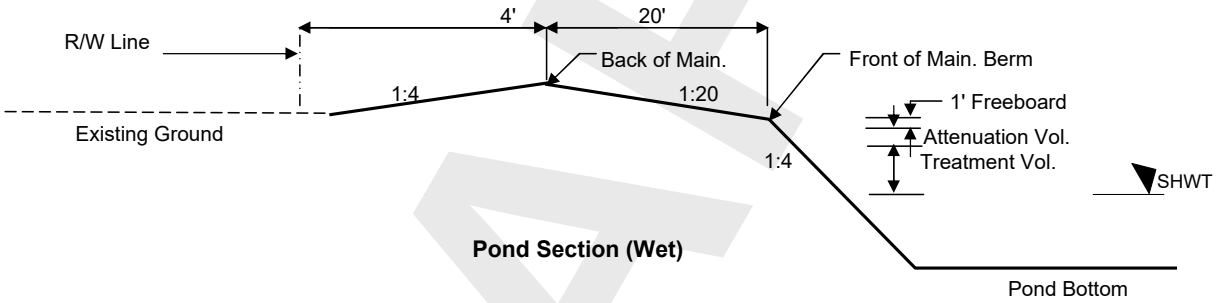
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-139**
POND NAME : **E-139**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	124.00
Pond Tie-In Width =	4.0 ft	@ 1:4	*Normal Water Elevation =	118.00
Maximum Storage Depth (**SD**) =	5.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	125.33

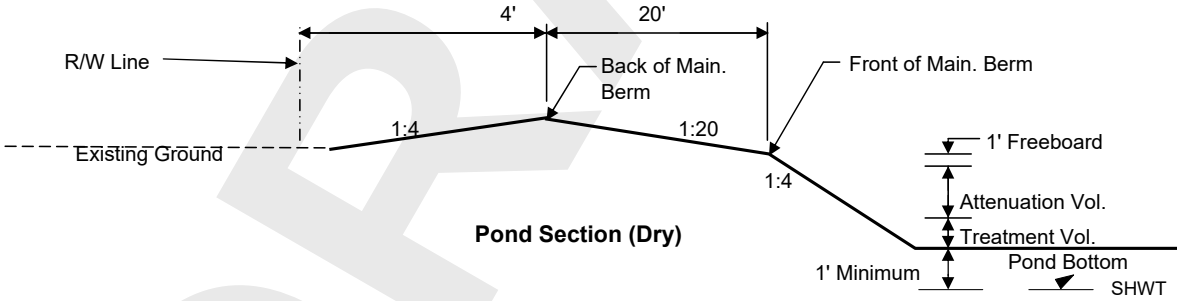
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	124.18 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-139**
POND NAME : **E-139**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
124.00	Pond R/W	2.09 ac	302.0 ft	302.0 ft	
125.00	Back of Main. Berm	1.98 ac	294.0 ft	294.0 ft	8.03 ac-ft
124.50		1.72 ac	274.0 ft	274.0 ft	7.10 ac-ft
124.00	Front of Main. Berm	1.48 ac	254.0 ft	254.0 ft	6.30 ac-ft
123.00	Provided Treat.Vol.+Att.Vol	1.39 ac	246.0 ft	246.0 ft	4.87 ac-ft
122.50	Req'd Treat.Vol+Att. Vol	1.34 ac	242.0 ft	242.0 ft	4.18 ac-ft
122.00	Estimated Storm Sewer TW	1.30 ac	238.0 ft	238.0 ft	3.52 ac-ft
119.80	Top of Treatment Vol.	1.12 ac	220.4 ft	220.4 ft	0.87 ac-ft
119.00	Pond Bottom	1.05 ac	214.0 ft	214.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 4.16 ac-ft
Required Treatment+Attenuation Stage= 122.50 ft

Provided Treatment+Attenuation Vol.= 4.87 ac-ft
Provided Treatment+Attenuation Stage= 123.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.35 ac-ft
Estimated Storm Sewer TW EL.= 122.00 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.62 ac

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DATE: February 17, 2011
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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-140**
POND NAME : **E-140**

Station Limits: From: 6010+46 To: 6037+14

Roadway Length = 2668 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 21.44 ac
Total Roadway Area: 21.44 ac

Pond Area: Pervious Pond Area = 3.65 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **25.08 ac**
Total Area: **25.08 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	25.08 ac	1705.6
		Total:	25.08 ac	1705.6

CN = Total CN*Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.71 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.82 in**	**6.49 in**	**9.14 in**	**3.77 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-140**
POND NAME : **E-140**

Station Limits: From: 6010+46 To: 6037+14

Roadway Length = 2668 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 7.84 ac
Pervious Roadway Area: 13.60 ac
Total Roadway Area: 21.44 ac

Pond Area:

Pervious Pond Area : 3.65 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 3.65 ac

Total Area:

Impervious Area: **7.84 ac**
Pervious Area: **17.24 ac**
Water Surface Area: **0.00 ac**
Total Area: **25.08 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.84 ac	768.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	17.24 ac	1172.5
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	25.08 ac	1940.8

CN = Total CN*Area / Total Area = **77.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.92 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.86 in**	**7.75 in**	**10.53 in**	**4.81 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-140**
POND NAME : **E-140**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.65 ac-ft
	0.50 in	x Total Basin Area =	1.05 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.05 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	7.98 ac-ft	13.58 ac-ft	19.10 ac-ft	7.88 ac-ft
Q_{post} =	10.16 ac-ft	16.20 ac-ft	22.01 ac-ft	10.04 ac-ft
ΔQ =	**2.18 ac-ft**	**2.63 ac-ft**	**2.92 ac-ft**	**2.17 ac-ft**

Attenuation V_{req} = **2.92 ac-ft** (use largest value)

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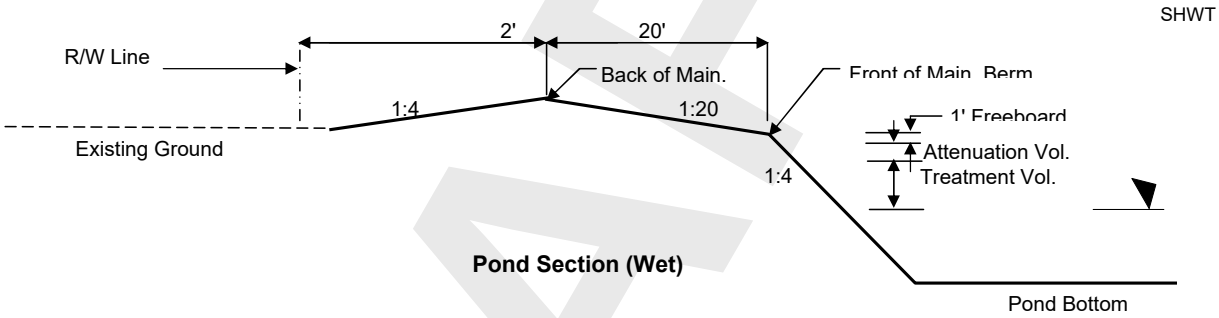
BASIN NAME : **E-140**
POND NAME : **E-140**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	125.50
Pond Tie-In Width =	2.0 ft	@ 1:4	*Normal Water Elevation =	121.00
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	134.33

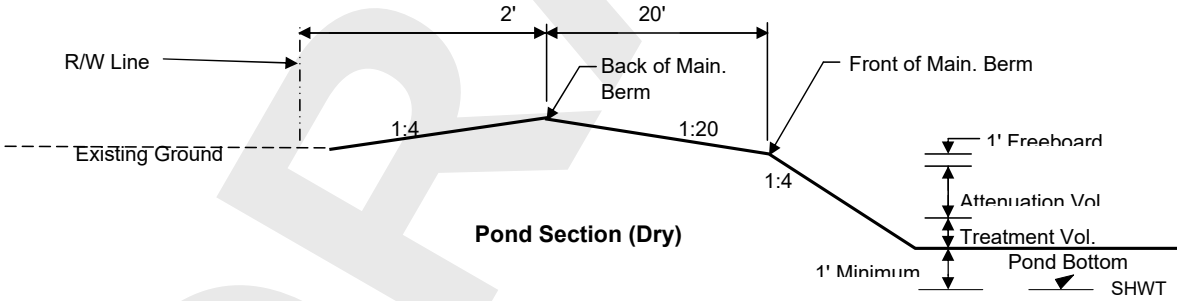
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	133.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-140**
POND NAME : **E-140**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
125.50	Pond R/W	3.72 ac	402.0 ft	403.0 ft	
126.00	Back of Main. Berm	3.65 ac	398.0 ft	399.0 ft	11.57 ac-ft
125.50		3.29 ac	378.0 ft	379.0 ft	9.83 ac-ft
125.00	Front of Main. Berm	2.95 ac	358.0 ft	359.0 ft	8.27 ac-ft
124.00	Provided Treat.Vol.+Att.Vol	2.82 ac	350.0 ft	351.0 ft	5.39 ac-ft
123.49	Req'd Treat.Vol+Att. Vol	2.75 ac	345.9 ft	346.9 ft	3.96 ac-ft
123.22	Estimated Storm Sewer TW	2.72 ac	343.7 ft	344.7 ft	3.21 ac-ft
122.41	Top of Treatment Vol.	2.62 ac	337.3 ft	338.3 ft	1.06 ac-ft
122.00	Pond Bottom	2.57 ac	334.0 ft	335.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.96 ac-ft
Required Treatment+Attenuation Stage= 123.49 ft

Provided Treatment+Attenuation Vol.= 5.39 ac-ft
Provided Treatment+Attenuation Stage= 124.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.21 ac-ft
Estimated Storm Sewer TW EL.= 123.22 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.65 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-141**
POND NAME : **E-141**

Station Limits: From: 6037+14 To: 6092+00

Roadway Length = 5486 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Offsite Area: 19.40 ac

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 44.08 ac
Total Roadway Area: 63.48 ac

Pond Area: Pervious Pond Area = 3.84 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **67.32 ac**
Total Area: **67.32 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (1/3 acre, 30% Impervious)	A	57	9.17 ac	522.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	58.15 ac	3954.3
		Total:	67.32 ac	4476.9

CN = Total CN*Area / Total Area = **66.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **5.04 in**

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**5.76 in**	**6.29 in**	**14.06 in**	**3.61 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-141**
POND NAME : **E-141**

Station Limits: From: 6037+14 To: 6092+00

Roadway Length = 5486 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Offsite Area:	19.40 ac
Impervious Roadway Area:	16.12 ac
Pervious Roadway Area:	27.96 ac
Total Roadway Area:	63.48 ac

Pond Area:

Pervious Pond Area :	3.84 ac	Dry Pond
Water Surface Area:	0.00 ac	
Total Pond Area:	3.84 ac	

Total Area:

Impervious Area:	**16.12 ac**
Pervious Area:	**51.20 ac**
Water Surface Area:	**0.00 ac**
Total Area:	**67.32 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	16.12 ac	1579.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	51.20 ac	3481.5
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	67.32 ac	5061.4

CN = Total CN*Area / Total Area = **75.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 3.30 in

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

	Permitting Agency Event (100yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/240hr	Storm Sewer Design
Precipitation (P) =	10.00 in	10.60 in	19.00 in	7.44 in
Runoff (Q) =	**6.90 in**	**7.46 in**	**15.54 in**	**4.56 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-141**
POND NAME : **E-141**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Closed**

Dry Retention	**1.00 in**	x Impervious Areas =	1.34 ac-ft
	0.50 in	x Total Basin Area =	2.80 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.80 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	32.34 ac-ft	35.29 ac-ft	78.86 ac-ft	20.24 ac-ft
Q_{post} =	38.71 ac-ft	41.86 ac-ft	87.19 ac-ft	25.58 ac-ft
ΔQ =	**6.38 ac-ft**	**6.58 ac-ft**	**8.33 ac-ft**	**5.34 ac-ft**

Attenuation V_{req} = 8.33 ac-ft (use largest value)

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

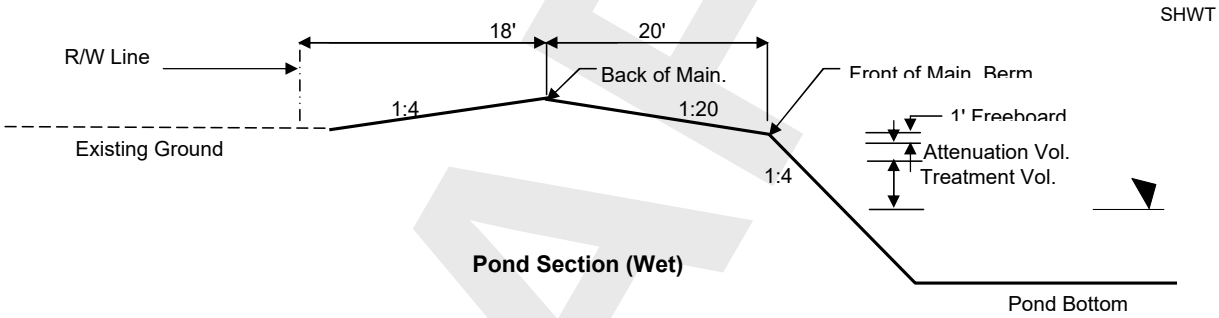
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-141**
POND NAME : **E-141**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	124.00
Pond Tie-In Width =	18.0 ft	@ 1:4	*Normal Water Elevation =	121.00
Maximum Storage Depth (**SD**) =	5.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	130.33

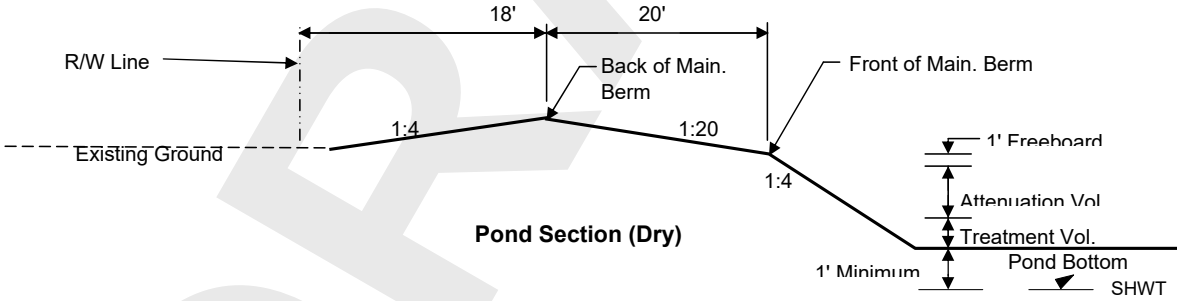
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	128.83 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-141**
POND NAME : **E-141**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
124.00	Pond R/W	4.55 ac	445.0 ft	445.0 ft	
128.50	Back of Main. Berm	3.84 ac	409.0 ft	409.0 ft	18.70 ac-ft
128.00		3.47 ac	389.0 ft	389.0 ft	16.88 ac-ft
127.50	Front of Main. Berm	3.13 ac	369.0 ft	369.0 ft	15.23 ac-ft
126.50	Provided Treat.Vol.+Att.Vol	2.99 ac	361.0 ft	361.0 ft	12.17 ac-ft
126.15	Req'd Treat.Vol+Att. Vol	2.95 ac	358.2 ft	358.2 ft	11.14 ac-ft
125.12	Estimated Storm Sewer TW	2.81 ac	349.9 ft	349.9 ft	8.15 ac-ft
123.13	Top of Treatment Vol.	2.56 ac	334.0 ft	334.0 ft	2.80 ac-ft
122.00	Pond Bottom	2.42 ac	325.0 ft	325.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 11.14 ac-ft
Required Treatment+Attenuation Stage= 126.15 ft

Provided Treatment+Attenuation Vol.= 12.17 ac-ft
Provided Treatment+Attenuation Stage= 126.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 8.15 ac-ft
Estimated Storm Sewer TW EL.= 125.12 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 5.68 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-142**
POND NAME : **E-142**

Station Limits: From: 6092+00 To: 6120+00

Roadway Length = 2800 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 22.50 ac
Total Roadway Area: 22.50 ac

Pond Area: Pervious Pond Area = 3.01 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **25.51 ac**
Total Area: **25.51 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (1/3 acre, 30% Impervious)	A	57	2.97 ac	169.2
Woods & Wetlands Combination	A	88	0.23 ac	20.4
Woods & Wetlands Combination	D	97	0.04 ac	4.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	20.76 ac	1411.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	1.50 ac	133.8
		Total:	25.51 ac	1739.2

CN = Total CN*Area / Total Area = **68.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.67 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.84 in**	**6.52 in**	**9.16 in**	**3.79 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-142**
POND NAME : **E-142**

Station Limits: From: 6092+00 To: 6120+00

Roadway Length = 2800 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 8.23 ac
Pervious Roadway Area: 14.27 ac
Total Roadway Area: 22.50 ac

Pond Area:

Pervious Pond Area : 1.18 ac
Water Surface Area: 1.83 ac Wet Pond
Total Pond Area: 3.01 ac

Total Area:

Impervious Area: **8.23 ac**
Pervious Area: **15.45 ac**
Water Surface Area: **1.83 ac**
Total Area: **25.51 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.23 ac	806.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	14.40 ac	979.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	1.05 ac	93.6
Proposed Ponds (Water Surface)	D	100	1.83 ac	182.6
		Total:	25.51 ac	2061.7

CN = Total CN*Area / Total Area = **80.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.37 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.25 in**	**8.20 in**	**11.02 in**	**5.20 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-142**
POND NAME : **E-142**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.13 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.13 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.16 ac-ft	13.86 ac-ft	19.48 ac-ft	8.06 ac-ft
Q_{post} =	11.17 ac-ft	17.44 ac-ft	23.42 ac-ft	11.05 ac-ft
ΔQ =	**3.00 ac-ft**	**3.58 ac-ft**	**3.94 ac-ft**	**2.99 ac-ft**

Attenuation V_{req} = 3.94 ac-ft (use largest value)

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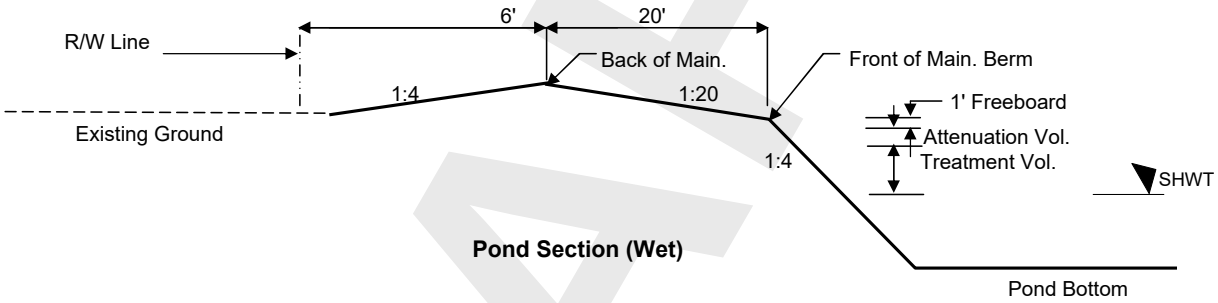
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-142**
POND NAME : **E-142**

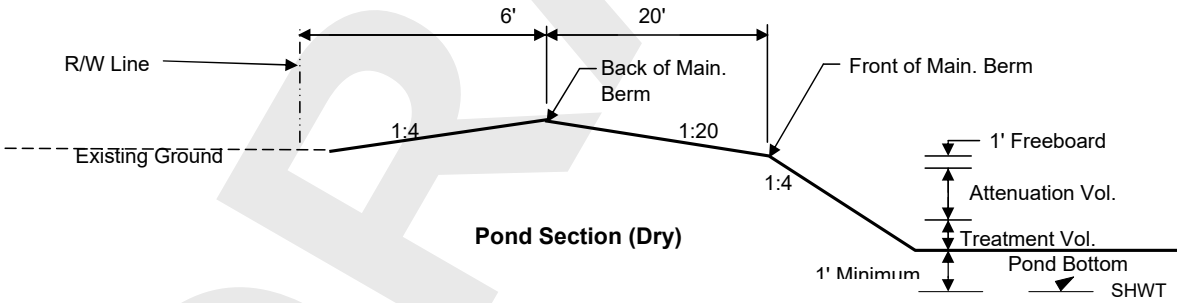
Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	89.50
Pond Tie-In Width =	6.0 ft	@ 1:4	*Normal Water Elevation =	85.00
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	90.33

Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	88.83 ft	





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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-142**
POND NAME : **E-142**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
89.50	Pond R/W	3.21 ac	374.0 ft	374.0 ft	
91.00	Back of Main. Berm	3.01 ac	362.0 ft	362.0 ft	13.18 ac-ft
90.50		2.69 ac	342.0 ft	342.0 ft	11.75 ac-ft
90.00	Front of Main. Berm	2.38 ac	322.0 ft	322.0 ft	10.49 ac-ft
89.00	Provided Treat.Vol.+Att.Vol	2.26 ac	314.0 ft	314.0 ft	8.16 ac-ft
88.75	Req'd Treat.Vol+Att. Vol	2.23 ac	312.0 ft	312.0 ft	7.60 ac-ft
88.22	Estimated Storm Sewer TW	2.17 ac	307.7 ft	307.7 ft	6.42 ac-ft
86.40	Top of Treatment Vol.	1.97 ac	293.2 ft	293.2 ft	2.66 ac-ft
85.00	Normal Water Level	1.83 ac	282.0 ft	282.0 ft	0.00 ac-ft
99.50		3.64 ac	398.0 ft	398.0 ft	
94.50	Pond Bottom	2.63 ac	320.0 ft	358.0 ft	

Required Treatment+Attenuation Vol.= 6.07 ac-ft
Required Treatment+Attenuation Stage= 88.75 ft

Provided Treatment+Attenuation Vol.= 8.16 ac-ft
Provided Treatment+Attenuation Stage= 89.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.12 ac-ft
Estimated Storm Sewer TW EL.= 88.22 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.01 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-143**
POND NAME : **E-143**

Station Limits: From: 6120+00 To: 6145+55

Roadway Length = 2555 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 20.53 ac
Total Roadway Area: 20.53 ac

Pond Area: Pervious Pond Area = 2.62 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **23.15 ac**
Total Area: **23.15 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.37 ac	17.1
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.06 ac	4.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	8.51 ac	578.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	1.24 ac	110.8
Existing Lakes (Water surface)	A	100	0.01 ac	0.6
Existing Lakes (Water surface)	D	100	12.96 ac	1296.0
		Total:	23.15 ac	2008.0

CN = Total CN*Area / Total Area = **86.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.53 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.93 in**	**8.96 in**	**11.82 in**	**5.87 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-143**
POND NAME : **E-143**

Station Limits: From: 6120+00 To: 6145+55

Roadway Length = 2555 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 7.51 ac
Pervious Roadway Area: 13.02 ac
Total Roadway Area: 20.53 ac

Pond Area:

Pervious Pond Area : 0.90 ac
Water Surface Area: 1.72 ac Wet Pond
Total Pond Area: 2.62 ac

Total Area:

Impervious Area: **7.51 ac**
Pervious Area: **13.92 ac**
Water Surface Area: **1.72 ac**
Total Area: **23.15 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.51 ac	735.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	5.34 ac	363.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	8.58 ac	763.4
Proposed Ponds (Water Surface)	D	100	1.72 ac	172.4
		Total:	23.15 ac	2034.8

CN = Total CN*Area / Total Area = **87.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.38 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.07 in**	**9.11 in**	**11.98 in**	**6.01 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-143**
POND NAME : **E-143**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.93 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.93 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.45 ac-ft	17.29 ac-ft	22.81 ac-ft	11.33 ac-ft
Q_{post} =	11.71 ac-ft	17.57 ac-ft	23.11 ac-ft	11.59 ac-ft
ΔQ =	**0.26 ac-ft**	**0.28 ac-ft**	**0.30 ac-ft**	**0.26 ac-ft**

Attenuation V_{req} = 0.30 ac-ft (use largest value)

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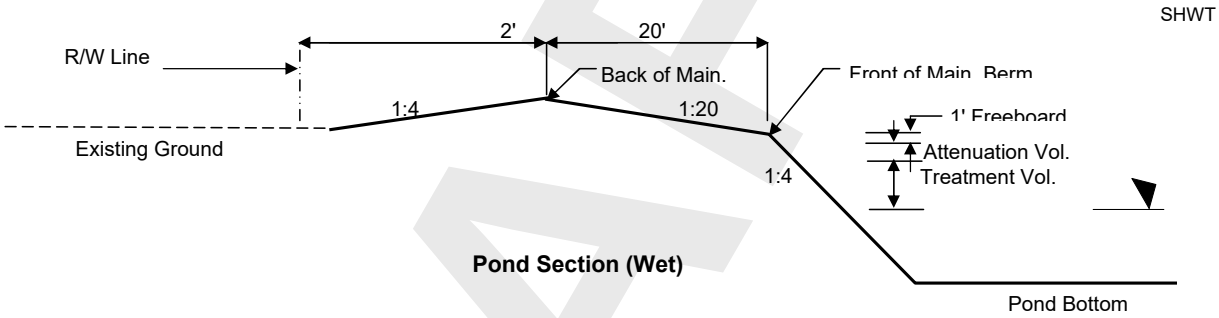
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-143**
POND NAME : **E-143**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	91.50
Pond Tie-In Width =	2.0 ft	@ 1:4	*Normal Water Elevation =	88.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	91.33

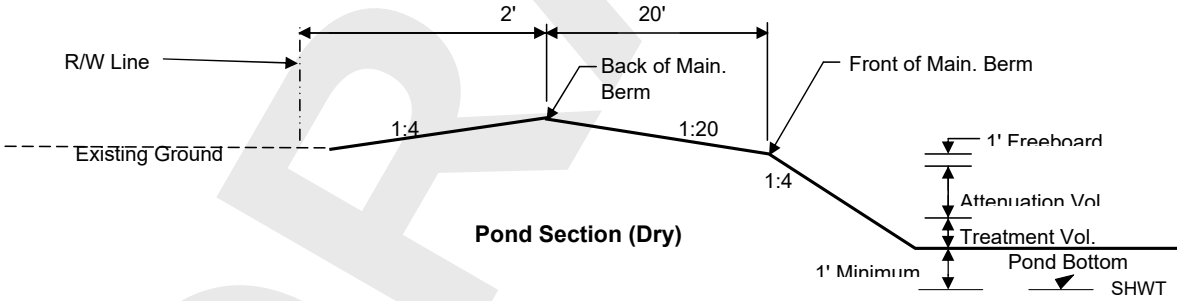
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	90.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-143**
POND NAME : **E-143**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
91.50	Pond R/W	2.69 ac	342.0 ft	342.0 ft	
92.00	Back of Main. Berm	2.62 ac	338.0 ft	338.0 ft	7.96 ac-ft
91.50		2.32 ac	318.0 ft	318.0 ft	6.73 ac-ft
91.00	Front of Main. Berm	2.04 ac	298.0 ft	298.0 ft	5.64 ac-ft
90.00	Provided Treat.Vol.+Att.Vol	1.93 ac	290.0 ft	290.0 ft	3.65 ac-ft
89.25	Req'd Treat.Vol+Att. Vol	1.85 ac	284.0 ft	284.0 ft	2.23 ac-ft
89.23	Estimated Storm Sewer TW	1.85 ac	283.8 ft	283.8 ft	2.19 ac-ft
88.75	Top of Treatment Vol.	1.80 ac	280.0 ft	280.0 ft	1.32 ac-ft
88.00	Normal Water Level	1.72 ac	274.0 ft	274.0 ft	0.00 ac-ft
101.00		3.28 ac	378.0 ft	378.0 ft	
97.00	Pond Bottom	2.46 ac	310.0 ft	346.0 ft	

Required Treatment+Attenuation Vol.= 2.23 ac-ft
Required Treatment+Attenuation Stage= 89.25 ft

Provided Treatment+Attenuation Vol.= 3.65 ac-ft
Provided Treatment+Attenuation Stage= 90.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.19 ac-ft
Estimated Storm Sewer TW EL.= 89.23 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.36 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-144**
POND NAME : **E-144**

Station Limits: From: 6145+55 To: 6159+02

Roadway Length = 1347 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 10.82 ac
Total Roadway Area: 10.82 ac

Pond Area: Pervious Pond Area = 1.74 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **12.56 ac**
Total Area: **12.56 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.55 ac	25.1
Residential Areas (2.0 acre, 12% Impervious)	C	77	0.72 ac	55.3
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.06 ac	5.1
Woods-grass combination (orchard or tree farm); Fair condition	A	43	1.35 ac	57.9
Woods-grass combination (orchard or tree farm); Fair condition	D	82	0.41 ac	33.5
Woods & Wetlands Combination	A	88	0.46 ac	40.4
Woods & Wetlands Combination	C	94	0.49 ac	46.4
Woods & Wetlands Combination	D	97	8.53 ac	827.0
		Total:	12.56 ac	1090.7

CN = Total CN*Area / Total Area = **86.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.51 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.95 in**	**8.98 in**	**11.84 in**	**5.89 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-144**
POND NAME : **E-144**

Station Limits: From: 6145+55 To: 6159+02

Roadway Length = 1347 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 3.96 ac
Pervious Roadway Area: 6.86 ac
Total Roadway Area: 10.82 ac

Pond Area:

Pervious Pond Area : 0.71 ac
Water Surface Area: 1.02 ac Wet Pond
Total Pond Area: 1.74 ac

Total Area:

Impervious Area: **3.96 ac**
Pervious Area: **7.58 ac**
Water Surface Area: **1.02 ac**
Total Area: **12.56 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	3.96 ac	387.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	1.42 ac	96.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	0.73 ac	62.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	5.43 ac	483.2
Proposed Ponds (Water Surface)	D	100	1.02 ac	102.2
		Total:	12.56 ac	1132.6

CN = Total CN*Area / Total Area = **90.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.09 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.34 in**	**9.40 in**	**12.28 in**	**6.28 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-144**
POND NAME : **E-144**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.05 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.05 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	6.22 ac-ft	9.39 ac-ft	12.39 ac-ft	6.16 ac-ft
Q_{post} =	6.63 ac-ft	9.84 ac-ft	12.85 ac-ft	6.57 ac-ft
ΔQ =	**0.41 ac-ft**	**0.44 ac-ft**	**0.46 ac-ft**	**0.41 ac-ft**

Attenuation V_{req} = 0.46 ac-ft (use largest value)

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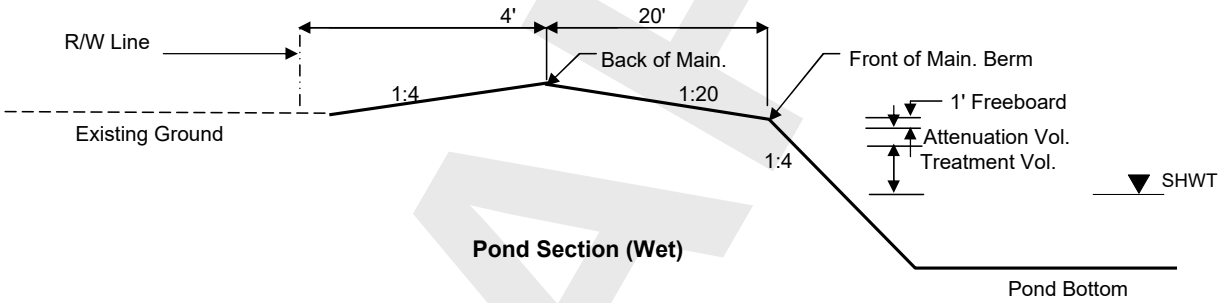
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-144**
POND NAME : **E-144**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	116.00
Pond Tie-In Width =	4.0 ft	@ 1:4	*Normal Water Elevation =	111.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	125.33

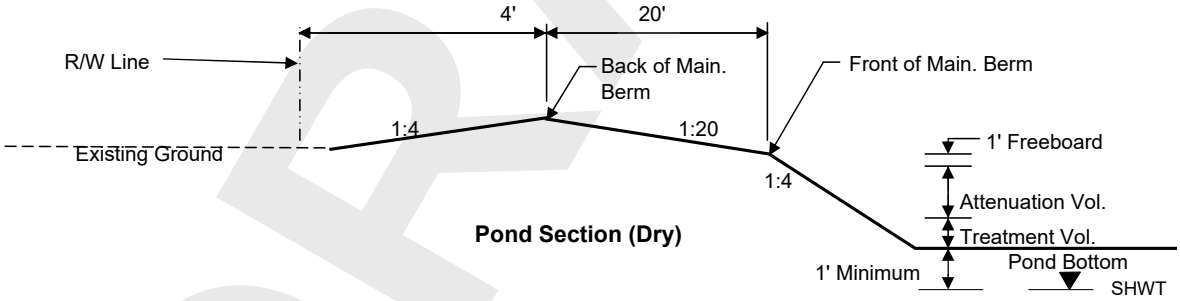
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	100 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	124.28 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-144**
POND NAME : **E-144**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
116.00	Pond R/W	1.84 ac	283.0 ft	283.0 ft	
115.00	Back of Main. Berm	1.74 ac	275.0 ft	275.0 ft	4.93 ac-ft
114.50		1.49 ac	255.0 ft	255.0 ft	4.12 ac-ft
114.00	Front of Main. Berm	1.27 ac	235.0 ft	235.0 ft	3.43 ac-ft
113.00	Provided Treat.Vol.+Att.Vol	1.18 ac	227.0 ft	227.0 ft	2.20 ac-ft
112.40	Req'd Treat.Vol+Att. Vol	1.13 ac	222.2 ft	222.2 ft	1.51 ac-ft
112.35	Estimated Storm Sewer TW	1.13 ac	221.8 ft	221.8 ft	1.45 ac-ft
112.00	Top of Treatment Vol.	1.10 ac	219.0 ft	219.0 ft	1.06 ac-ft
111.00	Normal Water Level	1.02 ac	211.0 ft	211.0 ft	0.00 ac-ft
93.00		0.10 ac	67.0 ft	67.0 ft	
88.00	Pond Bottom	0.07 ac	119.0 ft	27.0 ft	

Required Treatment+Attenuation Vol.= 1.51 ac-ft
Required Treatment+Attenuation Stage= 112.40 ft

Provided Treatment+Attenuation Vol.= 2.20 ac-ft
Provided Treatment+Attenuation Stage= 113.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.45 ac-ft
Estimated Storm Sewer TW EL.= 112.35 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.30 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-145**
POND NAME : **E-145**

Station Limits: From: 6159+02 To: 6186+00

Roadway Length = 2698 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 21.68 ac
Total Roadway Area: 21.68 ac

Pond Area: Pervious Pond Area = 3.42 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **25.09 ac**
Total Area: **25.09 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	1.09 ac	50.1
Residential Areas (2.0 acre, 12% Impervious)	C	77	1.44 ac	110.6
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.12 ac	10.2
Woods-grass combination (orchard or tree farm); Fair condition	A	43	2.69 ac	115.7
Woods-grass combination (orchard or tree farm); Fair condition	D	82	0.82 ac	67.0
Woods & Wetlands Combination	A	88	0.92 ac	80.6
Woods & Wetlands Combination	C	94	0.99 ac	92.7
Woods & Wetlands Combination	D	97	17.03 ac	1652.4
		Total:	25.09 ac	2179.3

CN = Total CN*Area / Total Area = **86.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.51 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.95 in**	**8.98 in**	**11.84 in**	**5.89 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-145**
POND NAME : **E-145**

Station Limits: From: 6159+02 To: 6186+00

Roadway Length = 2698 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Ramp Area:	0.44
Impervious Roadway Area:	7.93 ac
Pervious Roadway Area:	13.31 ac
Total Roadway Area:	21.68 ac

Pond Area:

Pervious Pond Area :	0.98 ac	
Water Surface Area:	2.44 ac	Wet Pond
Total Pond Area:	3.42 ac	

Total Area:

Impervious Area:	**8.37 ac**
Pervious Area:	**14.29 ac**
Water Surface Area:	**2.44 ac**
Total Area:	**25.09 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.37 ac	820.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	2.67 ac	181.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.38 ac	118.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	10.24 ac	911.1
Proposed Ponds (Water Surface)	D	100	2.44 ac	243.6
		Total:	25.09 ac	2275.2

CN = Total CN*Area / Total Area = **90.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.03 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.39 in**	**9.46 in**	**12.34 in**	**6.33 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-145**
POND NAME : **E-145**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.09 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.09 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.43 ac-ft	18.77 ac-ft	24.76 ac-ft	12.31 ac-ft
Q_{post} =	13.37 ac-ft	19.78 ac-ft	25.80 ac-ft	13.24 ac-ft
ΔQ =	**0.93 ac-ft**	**1.01 ac-ft**	**1.05 ac-ft**	**0.93 ac-ft**

Attenuation V_{req} = 1.05 ac-ft (use largest value)

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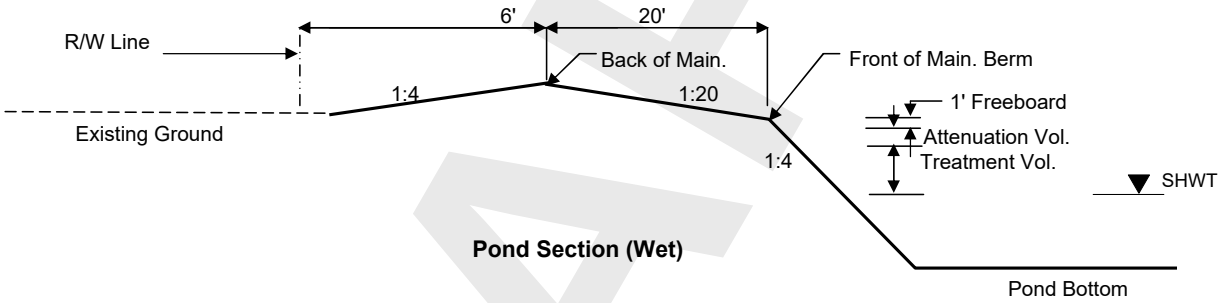
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-145**
POND NAME : **E-145**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	115.50
Pond Tie-In Width =	6.0 ft	@ 1:4	*Normal Water Elevation =	113.50
Maximum Storage Depth (**SD**) =	1.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	117.33

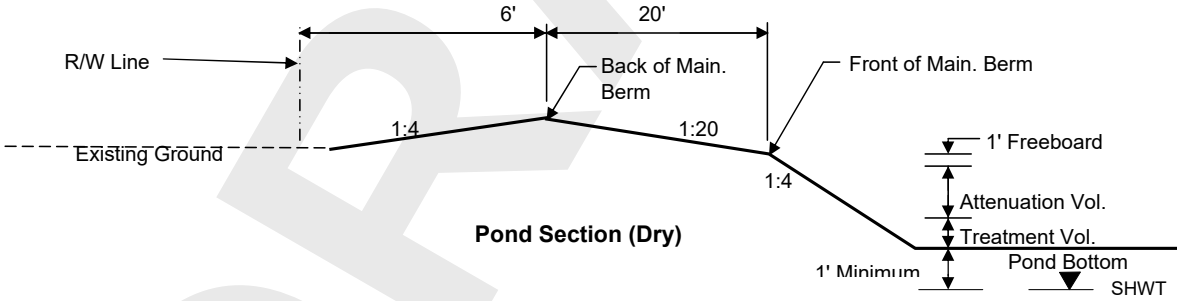
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	116.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-145**
POND NAME : **E-145**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
115.50	Pond R/W	3.63 ac	397.5 ft	398.0 ft	
117.00	Back of Main. Berm	3.42 ac	385.5 ft	386.0 ft	9.55 ac-ft
116.50		3.07 ac	365.5 ft	366.0 ft	7.93 ac-ft
116.00	Front of Main. Berm	2.74 ac	345.5 ft	346.0 ft	6.47 ac-ft
115.00	Provided Treat.Vol.+Att.Vol	2.62 ac	337.5 ft	338.0 ft	3.79 ac-ft
114.75	Req'd Treat.Vol+Att. Vol	2.59 ac	335.5 ft	336.0 ft	3.14 ac-ft
114.71	Estimated Storm Sewer TW	2.58 ac	335.2 ft	335.7 ft	3.04 ac-ft
114.35	Top of Treatment Vol.	2.54 ac	332.3 ft	332.8 ft	2.11 ac-ft
113.50	Normal Water Level	2.44 ac	325.5 ft	326.0 ft	0.00 ac-ft
94.50		0.69 ac	173.5 ft	174.0 ft	
89.50	Pond Bottom	0.71 ac	229.5 ft	134.0 ft	

Required Treatment+Attenuation Vol.= 3.14 ac-ft
Required Treatment+Attenuation Stage= 114.75 ft

Provided Treatment+Attenuation Vol.= 3.79 ac-ft
Provided Treatment+Attenuation Stage= 115.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.02 ac-ft
Estimated Storm Sewer TW EL.= 114.71 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.54 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-146**
POND NAME : **E-146**

Station Limits: From: 6186+00 To: 6212+00

Roadway Length = 2600 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 19.31 ac
Total Roadway Area: 19.31 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.69 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **22.00 ac**
Total Area: **22.00 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.79 ac	36.5
Residential Areas (2.0 acre, 12% Impervious)	D	82	2.42 ac	198.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	0.95 ac	64.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.16 ac	14.6
Pasture, grassland or range; Fair condition (50% to 75% ground cover	A	49	3.06 ac	150.0
Pasture, grassland or range; Fair condition (50% to 75% ground cover	C	79	3.06 ac	241.8
Pasture, grassland or range; Fair condition (50% to 75% ground cover	D	84	0.95 ac	80.2
Woods-grass combination (orchard or tree farm); Fair condition	A	43	3.53 ac	151.8
Woods-grass combination (orchard or tree farm); Fair condition	C	76	0.19 ac	14.7
Woods-grass combination (orchard or tree farm); Fair condition	D	82	4.26 ac	349.1
Woods & Wetlands Combination	C	94	0.03 ac	2.5
Woods & Wetlands Combination	D	97	2.59 ac	250.9
		Total:	22.00 ac	1555.3

CN = Total CN*Area / Total Area = **70.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.15 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.11 in**	**6.86 in**	**9.55 in**	**4.06 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-146**
POND NAME : **E-146**

Station Limits: From: 6186+00 To: 6212+00

Roadway Length = 2600 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 8.59 ac
*Pervious Roadway Area: 10.72 ac
Total Roadway Area: 19.31 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.09 ac
Water Surface Area: 1.60 ac Wet Pond
Total Pond Area: 2.69 ac

Total Area:

Impervious Area: **8.59 ac**
Pervious Area: **11.81 ac**
Water Surface Area: **1.60 ac**
Total Area: **22.00 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.59 ac	841.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	4.48 ac	304.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	1.76 ac	151.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	5.57 ac	496.0
Proposed Ponds (Water Surface)	D	100	1.60 ac	159.9
		Total:	22.00 ac	1953.7

CN = Total CN*Area / Total Area = **88.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.26 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.17 in**	**9.22 in**	**12.10 in**	**6.11 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-146**
POND NAME : **E-146**

PROPOSED CONDITION

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.83 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.83 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	7.54 ac-ft	12.58 ac-ft	17.50 ac-ft	7.45 ac-ft
Q_{post} =	11.32 ac-ft	16.91 ac-ft	22.18 ac-ft	11.21 ac-ft
ΔQ =	**3.78 ac-ft**	**4.33 ac-ft**	**4.67 ac-ft**	**3.76 ac-ft**

Attenuation V_{req} = 4.67 ac-ft (use largest value)

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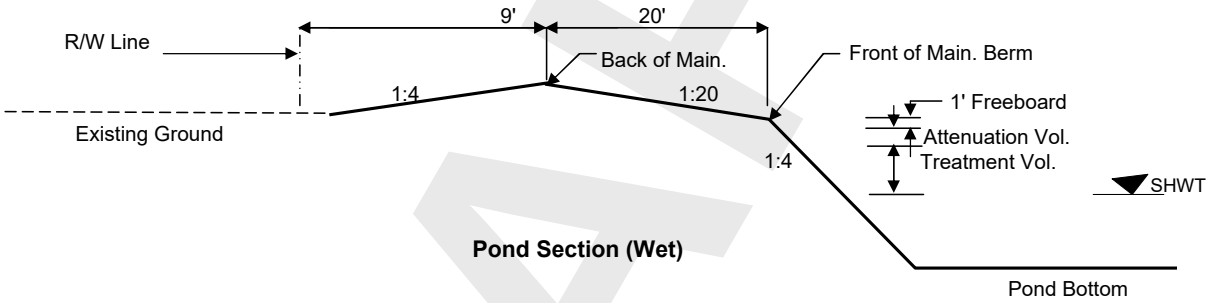
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-146**
POND NAME : **E-146**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	105.00
Pond Tie-In Width =	9.2 ft	@ 1:4	*Normal Water Elevation =	101.50
Maximum Storage Depth (**SD**) =	3.80 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	109.83

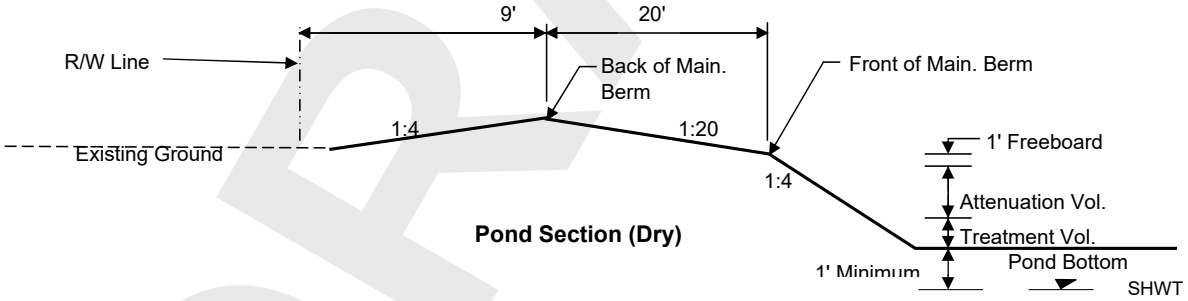
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	108.68 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-146**
POND NAME : **E-146**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
105.00	Pond R/W	2.99 ac	360.5 ft	361.0 ft	
107.30	Back of Main. Berm	2.69 ac	342.1 ft	342.6 ft	11.24 ac-ft
106.80		2.39 ac	322.1 ft	322.6 ft	9.97 ac-ft
106.30	Front of Main. Berm	2.10 ac	302.1 ft	302.6 ft	8.85 ac-ft
105.30	Provided Treat.Vol.+Att.Vol	1.99 ac	294.1 ft	294.6 ft	6.81 ac-ft
105.15	Req'd Treat.Vol+Att. Vol	1.97 ac	292.9 ft	293.4 ft	6.51 ac-ft
104.69	Estimated Storm Sewer TW	1.92 ac	289.2 ft	289.7 ft	5.60 ac-ft
102.61	Top of Treatment Vol.	1.71 ac	272.6 ft	273.1 ft	1.84 ac-ft
101.50	Normal Water Level	1.60 ac	263.7 ft	264.2 ft	0.00 ac-ft
101.50		1.60 ac	263.7 ft	264.2 ft	
96.50	Pond Bottom	1.25 ac	243.7 ft	224.2 ft	

Required Treatment+Attenuation Vol.= 6.51 ac-ft
Required Treatment+Attenuation Stage= 105.15 ft

Provided Treatment+Attenuation Vol.= 6.81 ac-ft
Provided Treatment+Attenuation Stage= 105.30 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.60 ac-ft
Estimated Storm Sewer TW EL.= 104.69 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.73 ac

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DATE: February 17, 2011
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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-147**
POND NAME : **E-147**

Station Limits: From: 6212+00 To: 6246+60

Roadway Length = 3460 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 48.13 ac
Total Roadway Area: 48.13 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 7.55 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **55.68 ac**
Total Area: **55.68 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	2.01 ac	92.4
Residential Areas (2.0 acre, 12% Impervious)	D	82	6.12 ac	502.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	2.42 ac	164.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.42 ac	36.9
Pasture, grassland or range; Fair condition (50% to 75% ground cover	A	49	7.75 ac	379.5
Pasture, grassland or range; Fair condition (50% to 75% ground cover	C	79	7.75 ac	611.9
Pasture, grassland or range; Fair condition (50% to 75% ground cover	D	84	2.42 ac	202.9
Woods-grass combination (orchard or tree farm); Fair condition	A	43	8.93 ac	384.2
Woods-grass combination (orchard or tree farm); Fair condition	C	76	0.49 ac	37.3
Woods-grass combination (orchard or tree farm); Fair condition	D	82	10.77 ac	883.5
Woods & Wetlands Combination	C	94	0.07 ac	6.2
Woods & Wetlands Combination	D	97	6.55 ac	635.1
		Total:	55.68 ac	3936.2

CN = Total CN*Area / Total Area = **70.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.15 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.11 in**	**6.86 in**	**9.55 in**	**4.06 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-147**
POND NAME : **E-147**

Station Limits: From: 6212+00 To: 6246+60

Roadway Length = 3460 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 19.66 ac
*Pervious Roadway Area: 28.47 ac
Total Roadway Area: 48.13 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.78 ac
Water Surface Area: 5.77 ac Wet Pond
Total Pond Area: 7.55 ac

Total Area:

Impervious Area: **19.66 ac**
Pervious Area: **30.25 ac**
Water Surface Area: **5.77 ac**
Total Area: **55.68 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	19.66 ac	1926.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	11.46 ac	779.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	4.51 ac	387.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	14.27 ac	1270.3
Proposed Ponds (Water Surface)	D	100	5.77 ac	577.4
		Total:	55.68 ac	4941.7

CN = Total CN*Area / Total Area = **88.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.27 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.17 in**	**9.22 in**	**12.09 in**	**6.11 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-147**
POND NAME : **E-147**

PROPOSED CONDITION

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	4.64 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **4.64 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	19.09 ac-ft	31.83 ac-ft	44.30 ac-ft	18.85 ac-ft
Q_{post} =	28.62 ac-ft	42.77 ac-ft	56.10 ac-ft	28.35 ac-ft
ΔQ =	**9.53 ac-ft**	**10.94 ac-ft**	**11.80 ac-ft**	**9.49 ac-ft**

Attenuation V_{req} = 11.80 ac-ft (use largest value)

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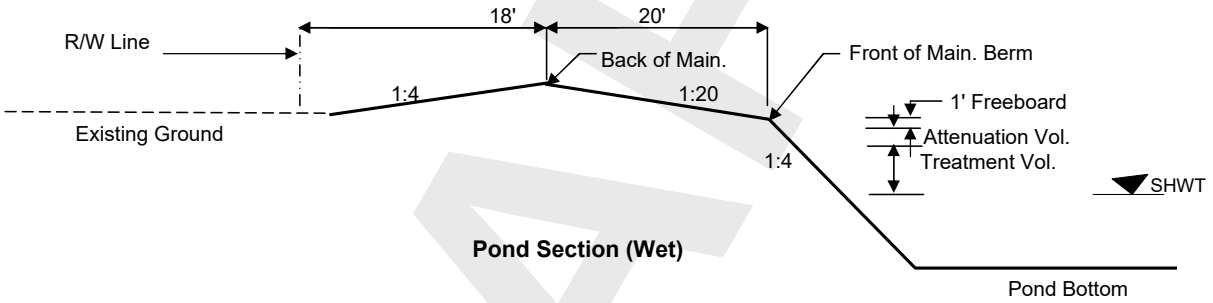
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-147**
POND NAME : **E-147**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	107.00
Pond Tie-In Width =	18.0 ft	@ 1:4	*Normal Water Elevation =	106.50
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	113.33

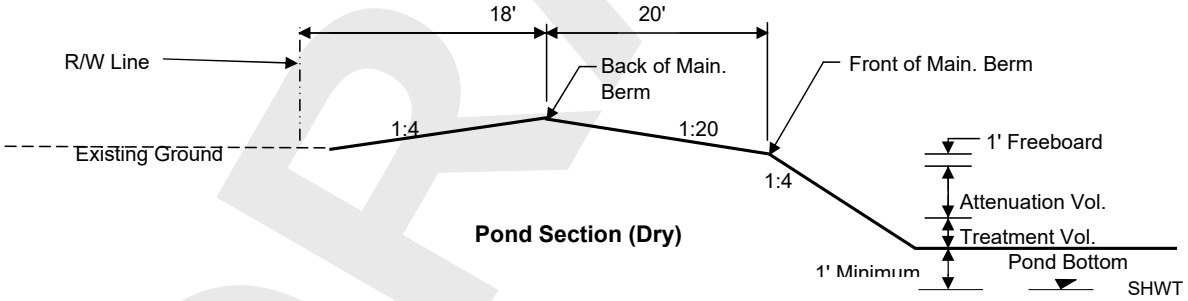
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	111.83 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-147**
POND NAME : **E-147**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
107.00	Pond R/W	8.53 ac	610.0 ft	609.0 ft	
111.50	Back of Main. Berm	7.55 ac	574.0 ft	573.0 ft	31.64 ac-ft
111.00		7.03 ac	554.0 ft	553.0 ft	27.99 ac-ft
110.50	Front of Main. Berm	6.53 ac	534.0 ft	533.0 ft	24.60 ac-ft
109.50	Provided Treat.Vol.+Att.Vol	6.34 ac	526.0 ft	525.0 ft	18.16 ac-ft
109.25	Req'd Treat.Vol+Att. Vol	6.29 ac	524.0 ft	523.0 ft	16.59 ac-ft
108.87	Estimated Storm Sewer TW	6.22 ac	521.0 ft	520.0 ft	14.21 ac-ft
107.30	Top of Treatment Vol.	5.92 ac	508.4 ft	507.4 ft	4.68 ac-ft
106.50	Normal Water Level	5.77 ac	502.0 ft	501.0 ft	0.00 ac-ft
101.50		4.89 ac	462.0 ft	461.0 ft	
96.50	Pond Bottom	4.47 ac	462.0 ft	421.0 ft	

Required Treatment+Attenuation Vol.= 16.44 ac-ft
Required Treatment+Attenuation Stage= 109.25 ft

Provided Treatment+Attenuation Vol.= 18.16 ac-ft
Provided Treatment+Attenuation Stage= 109.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 14.13 ac-ft
Estimated Storm Sewer TW EL.= 108.87 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 10.66 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-148**
POND NAME : **E-148**

Station Limits: From: 6226+00 To: 6246+60

Roadway Length = 2060 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 29.85 ac
Total Roadway Area: 29.85 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 3.63 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **33.48 ac**
Total Area: **33.48 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	1.21 ac	55.6
Residential Areas (2.0 acre, 12% Impervious)	D	82	3.68 ac	301.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	1.45 ac	98.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.25 ac	22.2
Pasture, grassland or range; Fair condition (50% to 75% ground cover	A	49	4.66 ac	228.2
Pasture, grassland or range; Fair condition (50% to 75% ground cover	C	79	4.66 ac	367.9
Pasture, grassland or range; Fair condition (50% to 75% ground cover	D	84	1.45 ac	122.0
Woods-grass combination (orchard or tree farm); Fair condition	A	43	5.37 ac	231.0
Woods-grass combination (orchard or tree farm); Fair condition	C	76	0.29 ac	22.4
Woods-grass combination (orchard or tree farm); Fair condition	D	82	6.48 ac	531.2
Woods & Wetlands Combination	C	94	0.04 ac	3.7
Woods & Wetlands Combination	D	97	3.94 ac	381.8
		Total:	33.48 ac	2366.6

CN = Total CN*Area / Total Area = **70.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.15 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.11 in**	**6.86 in**	**9.55 in**	**4.06 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-148**
POND NAME : **E-148**

Station Limits: From: 6226+00 To: 6246+60

Roadway Length = 2060 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 9.93 ac
*Pervious Roadway Area: 19.92 ac
Total Roadway Area: 29.85 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.31 ac
Water Surface Area: 2.31 ac Wet Pond
Total Pond Area: 3.63 ac

Total Area:

Impervious Area: **9.93 ac**
Pervious Area: **21.23 ac**
Water Surface Area: **2.31 ac**
Total Area: **33.48 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	9.93 ac	973.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	8.05 ac	547.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	3.17 ac	272.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	10.02 ac	891.7
Proposed Ponds (Water Surface)	D	100	2.31 ac	231.4
		Total:	33.48 ac	2915.8

CN = Total CN*Area / Total Area = **87.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.48 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.98 in**	**9.01 in**	**11.87 in**	**5.92 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-148**
POND NAME : **E-148**

PROPOSED CONDITION

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.79 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.79 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	11.48 ac-ft	19.14 ac-ft	26.63 ac-ft	11.33 ac-ft
Q_{post} =	16.67 ac-ft	25.13 ac-ft	33.12 ac-ft	16.51 ac-ft
ΔQ =	**5.19 ac-ft**	**5.99 ac-ft**	**6.49 ac-ft**	**5.17 ac-ft**

Attenuation V_{req} = 6.49 ac-ft (use largest value)

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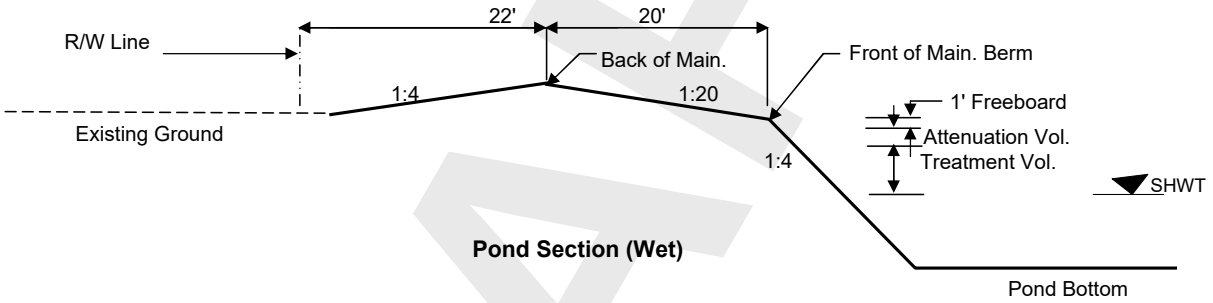
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-148**
POND NAME : **E-148**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	110.00
Pond Tie-In Width =	22.0 ft	@ 1:4	*Normal Water Elevation =	109.50
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	114.33

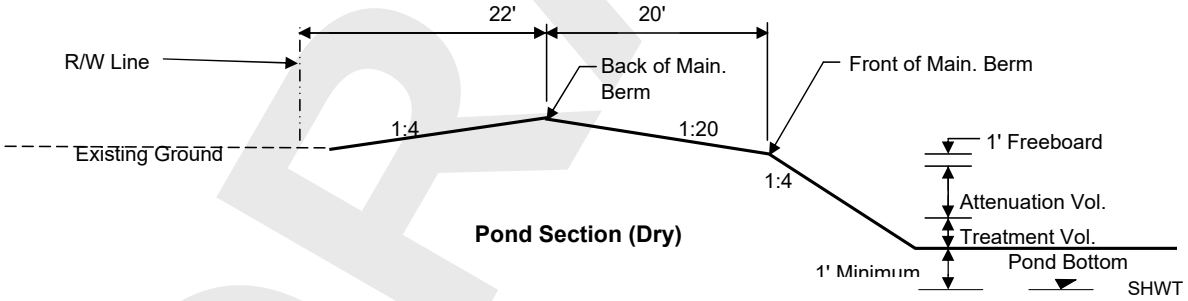
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	800 ft	
Estimated Energy Losses =	0.4 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	112.93 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-148**
POND NAME : **E-148**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
110.00	Pond R/W	4.47 ac	442.0 ft	441.0 ft	
115.50	Back of Main. Berm	3.63 ac	398.0 ft	397.0 ft	16.37 ac-ft
115.00		3.27 ac	378.0 ft	377.0 ft	14.64 ac-ft
114.50	Front of Main. Berm	2.93 ac	358.0 ft	357.0 ft	13.09 ac-ft
113.50	Provided Treat.Vol.+Att.Vol	2.80 ac	350.0 ft	349.0 ft	10.22 ac-ft
113.16	Req'd Treat.Vol+Att. Vol	2.76 ac	347.3 ft	346.3 ft	9.28 ac-ft
112.70	Estimated Storm Sewer TW	2.70 ac	343.6 ft	342.6 ft	8.02 ac-ft
110.70	Top of Treatment Vol.	2.46 ac	327.6 ft	326.6 ft	2.86 ac-ft
109.50	Normal Water Level	2.31 ac	318.0 ft	317.0 ft	0.00 ac-ft
101.50		1.48 ac	254.0 ft	253.0 ft	
96.50	Pond Bottom	1.30 ac	266.0 ft	213.0 ft	

Required Treatment+Attenuation Vol.= 9.28 ac-ft
Required Treatment+Attenuation Stage= 113.16 ft

Provided Treatment+Attenuation Vol.= 10.22 ac-ft
Provided Treatment+Attenuation Stage= 113.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.96 ac-ft
Estimated Storm Sewer TW EL.= 112.70 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 5.59 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-149**
POND NAME : **E-149**

Station Limits: From: 6246+60 To: 6282+00

Roadway Length = 3540 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 36.84 ac
Total Roadway Area: 36.84 ac

Pond Area: Pervious Pond Area = 5.46 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **42.30 ac**
Total Area: **42.30 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	1.53 ac	70.2
Residential Areas (2.0 acre, 12% Impervious)	D	82	4.65 ac	381.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	1.83 ac	124.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	0.32 ac	28.1
Pasture, grassland or range; Fair condition (50% to 75% ground cover	A	49	5.88 ac	288.3
Pasture, grassland or range; Fair condition (50% to 75% ground cover	C	79	5.88 ac	464.8
Pasture, grassland or range; Fair condition (50% to 75% ground cover	D	84	1.83 ac	154.1
Woods-grass combination (orchard or tree farm); Fair condition	A	43	6.79 ac	291.8
Woods-grass combination (orchard or tree farm); Fair condition	C	76	0.37 ac	28.3
Woods-grass combination (orchard or tree farm); Fair condition	D	82	8.18 ac	671.1
Woods & Wetlands Combination	C	94	0.05 ac	4.7
Woods & Wetlands Combination	D	97	4.97 ac	482.4
		Total:	42.30 ac	2990.0

CN = Total CN*Area / Total Area = **70.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.15 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.11 in**	**6.86 in**	**9.55 in**	**4.06 in**

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-149**
POND NAME : **E-149**

Station Limits: From: 6246+60 To: 6282+00

Roadway Length = 3540 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 14.06 ac
Pervious Roadway Area: 22.78 ac
Total Roadway Area: 36.84 ac

Pond Area:

Pervious Pond Area : 5.46 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 5.46 ac

Total Area:

Impervious Area: **14.06 ac**
Pervious Area: **28.24 ac**
Water Surface Area: **0.00 ac**
Total Area: **42.30 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.06 ac	1377.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	A	68	10.70 ac	727.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	C	86	4.21 ac	362.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor	D	89	13.32 ac	1185.8
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	42.30 ac	3653.5

CN = Total CN*Area / Total Area = **86.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.58 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.89 in**	**8.92 in**	**11.78 in**	**5.83 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-149**
POND NAME : **E-149**

PROPOSED CONDITION

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.17 ac-ft
	0.50 in	x Total Basin Area =	1.76 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.76 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	14.50 ac-ft	24.18 ac-ft	33.65 ac-ft	14.32 ac-ft
Q_{post} =	20.77 ac-ft	31.43 ac-ft	41.51 ac-ft	20.56 ac-ft
ΔQ =	**6.27 ac-ft**	**7.25 ac-ft**	**7.86 ac-ft**	**6.24 ac-ft**

Attenuation V_{req} = 7.86 ac-ft (use largest value)

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Job Number: PBS-001-01

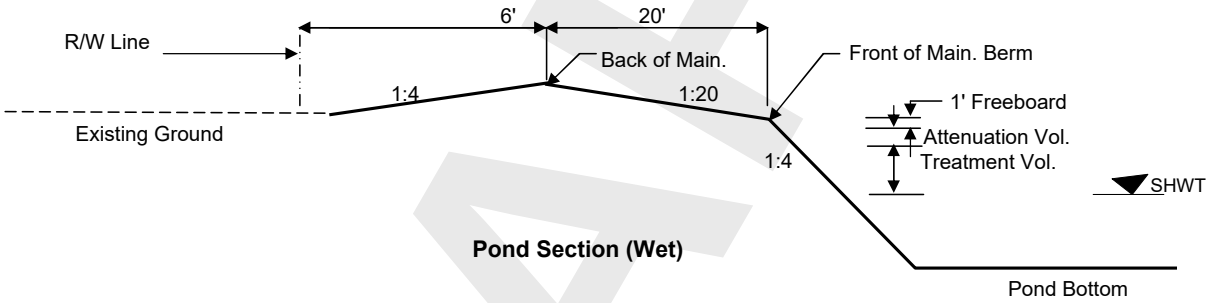
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-149**
POND NAME : **E-149**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	122.00
Pond Tie-In Width =	6.0 ft	@ 1:4	*Normal Water Elevation =	118.00
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	127.33

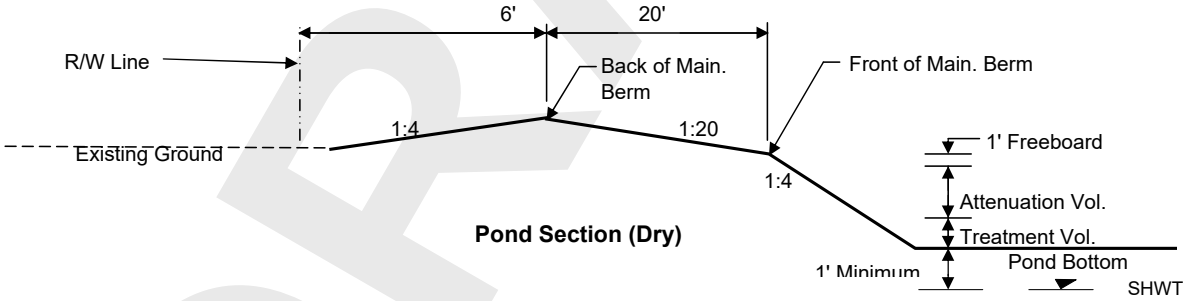
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	126.13 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-149**
POND NAME : **E-149**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
122.00	Pond R/W	5.73 ac	499.0 ft	500.0 ft	
123.50	Back of Main. Berm	5.46 ac	487.0 ft	488.0 ft	20.13 ac-ft
123.00		5.02 ac	467.0 ft	468.0 ft	17.51 ac-ft
122.50	Front of Main. Berm	4.60 ac	447.0 ft	448.0 ft	15.11 ac-ft
121.50	Provided Treat.Vol.+Att.Vol	4.43 ac	439.0 ft	440.0 ft	10.59 ac-ft
121.30	Req'd Treat.Vol+Att. Vol	4.40 ac	437.4 ft	438.4 ft	9.71 ac-ft
120.95	Estimated Storm Sewer TW	4.35 ac	434.6 ft	435.6 ft	8.18 ac-ft
119.50	Top of Treatment Vol.	4.12 ac	423.0 ft	424.0 ft	2.04 ac-ft
119.00	Pond Bottom	4.04 ac	419.0 ft	420.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 9.62 ac-ft
Required Treatment+Attenuation Stage= 121.30 ft

Provided Treatment+Attenuation Vol.= 10.59 ac-ft
Provided Treatment+Attenuation Stage= 121.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 8.00 ac-ft
Estimated Storm Sewer TW EL.= 120.95 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 7.16 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-150**
POND NAME : **E-150**

Station Limits: From: 6282+00 To: 6306+00

Roadway Length = 2400 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Offsite Area: 1.10 ac

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 19.28 ac
Total Roadway Area: 20.38 ac

Pond Area: Pervious Pond Area = 2.94 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **23.32 ac**
Total Area: **23.32 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	A	49	10.29 ac	504.3
Pasture, grassland or range; Fair condition (50% to 75%	D	84	13.03 ac	1094.5
		Total:	23.32 ac	1598.8

CN = Total CN*Area / Total Area = **68.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.59 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.88 in**	**6.57 in**	**9.22 in**	**3.83 in**

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-150**
POND NAME : **E-150**

Station Limits: From: 6282+00 To: 6306+00

Roadway Length = 2400 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Offsite Area: 1.10 ac

Impervious Roadway Area: 7.05 ac
Pervious Roadway Area: 12.23 ac
Total Roadway Area: 20.38 ac

Pond Area:

Pervious Pond Area : 1.12 ac
Water Surface Area: 1.82 ac Wet Pond
Total Pond Area: 2.94 ac

Total Area:

Impervious Area: **7.05 ac**
Pervious Area: **14.45 ac**
Water Surface Area: **1.82 ac**
Total Area: **23.32 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.05 ac	691.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	7.29 ac	496.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	7.15 ac	636.6
Proposed Ponds (Water Surface)	D	100	1.82 ac	182.2
		Total:	23.32 ac	2006.0

CN = Total CN*Area / Total Area = **86.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.63 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.85 in**	**8.87 in**	**11.73 in**	**5.79 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-150**
POND NAME : **E-150**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.94 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.94 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	7.54 ac-ft	12.77 ac-ft	17.92 ac-ft	7.44 ac-ft
Q_{post} =	11.37 ac-ft	17.24 ac-ft	22.79 ac-ft	11.26 ac-ft
ΔQ =	**3.83 ac-ft**	**4.47 ac-ft**	**4.87 ac-ft**	**3.81 ac-ft**

Attenuation V_{req} = 4.87 ac-ft (use largest value)

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DATE: February 17, 2011
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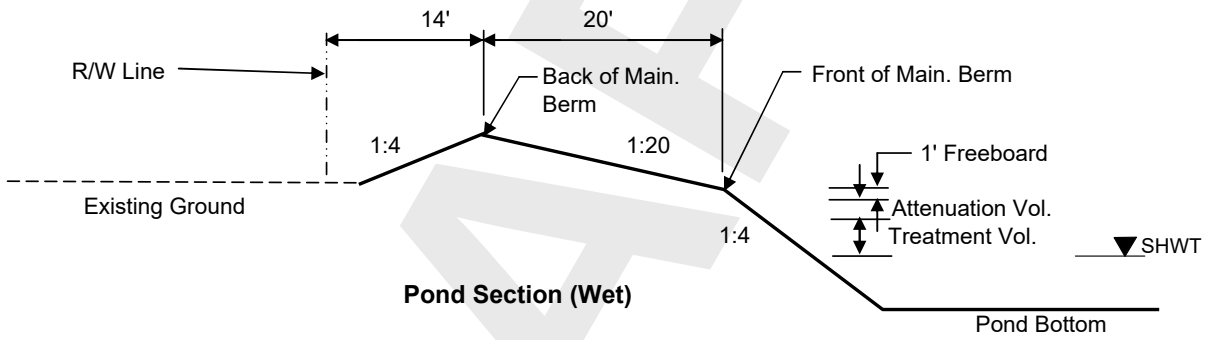
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-150**
POND NAME : **E-150**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	114.00
Pond Tie-In Width =	14.0 ft	@ 1:4	*Normal Water Elevation =	112.00
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	116.33

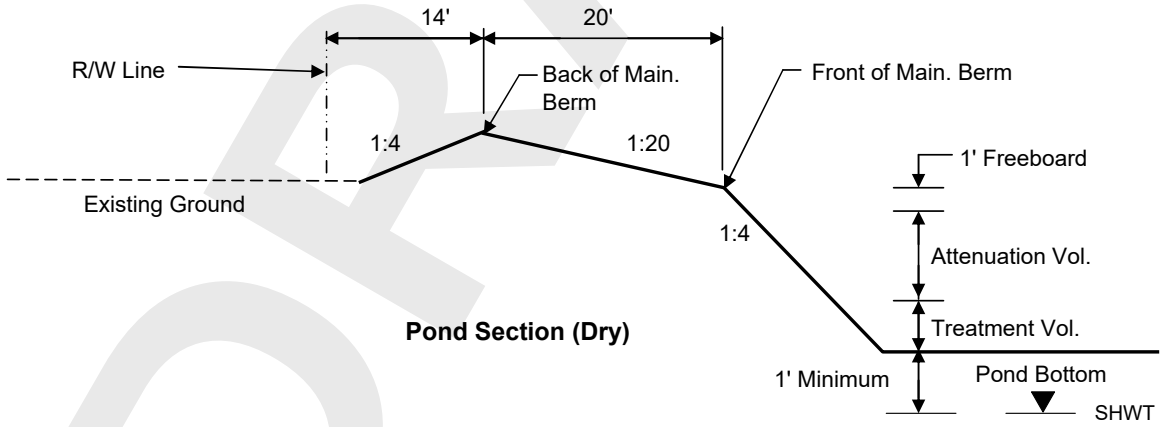
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	115.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-150**
POND NAME : **E-150**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
114.00	Pond R/W	3.42 ac	385.5 ft	386.0 ft	
117.50	Back of Main. Berm	2.94 ac	357.5 ft	358.0 ft	11.92 ac-ft
117.00		2.62 ac	337.5 ft	338.0 ft	10.53 ac-ft
116.50	Front of Main. Berm	2.32 ac	317.5 ft	318.0 ft	9.30 ac-ft
115.50	Provided Treat.Vol.+Att.Vol	2.20 ac	309.5 ft	310.0 ft	7.04 ac-ft
115.40	Req'd Treat.Vol+Att. Vol	2.19 ac	308.7 ft	309.2 ft	6.82 ac-ft
114.95	Estimated Storm Sewer TW	2.14 ac	305.1 ft	305.6 ft	5.84 ac-ft
113.10	Top of Treatment Vol.	1.94 ac	290.3 ft	290.8 ft	2.07 ac-ft
112.00	Normal Water Level	1.82 ac	281.5 ft	282.0 ft	0.00 ac-ft
107.00		1.34 ac	241.5 ft	242.0 ft	
102.00	Pond Bottom	1.12 ac	241.5 ft	202.0 ft	

Required Treatment+Attenuation Vol.= 6.81 ac-ft
Required Treatment+Attenuation Stage= 115.40 ft

Provided Treatment+Attenuation Vol.= 7.04 ac-ft
Provided Treatment+Attenuation Stage= 115.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.76 ac-ft
Estimated Storm Sewer TW EL.= 114.95 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.27 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-151**
POND NAME : **E-151**

Station Limits: From: 6306+00 To: 6345+67

Roadway Length = 3967 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 31.87 ac
Total Roadway Area: 31.87 ac

Pond Area: Pervious Pond Area = 2.48 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **34.36 ac**
Total Area: **34.36 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	D	84	29.61 ac	2487.5
Woods; Fair condition (Woods grazed but not burned, and	C	73	0.17 ac	12.3
Woods; Fair condition (Woods grazed but not burned, and	D	79	4.58 ac	361.6
		Total:	34.36 ac	2861.4

CN = Total CN*Area / Total Area = **83.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.01 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.53 in**	**8.52 in**	**11.36 in**	**5.48 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-151**
POND NAME : **E-151**

Station Limits: From: 6306+00 To: 6345+67

Roadway Length = 3967 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 11.66 ac
Pervious Roadway Area: 20.22 ac
Total Roadway Area: 31.87 ac

Pond Area:

Pervious Pond Area : 1.06 ac
Water Surface Area: 1.42 ac Wet Pond
Total Pond Area: 2.48 ac

Total Area:

Impervious Area: **11.66 ac**
Pervious Area: **21.28 ac**
Water Surface Area: **1.42 ac**
Total Area: **34.36 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	11.66 ac	1142.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	0.11 ac	9.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	21.17 ac	1884.0
Proposed Ponds (Water Surface)	D	100	1.42 ac	142.3
		Total:	34.36 ac	3178.4

CN = Total CN*Area / Total Area = **92.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.81 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.61 in**	**9.69 in**	**12.57 in**	**6.55 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-151**
POND NAME : **E-151**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.86 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.86 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	15.84 ac-ft	24.40 ac-ft	32.52 ac-ft	15.68 ac-ft
Q_{post} =	18.92 ac-ft	27.73 ac-ft	36.00 ac-ft	18.75 ac-ft
ΔQ =	**3.08 ac-ft**	**3.33 ac-ft**	**3.48 ac-ft**	**3.07 ac-ft**

Attenuation V_{req} = 3.48 ac-ft (use largest value)

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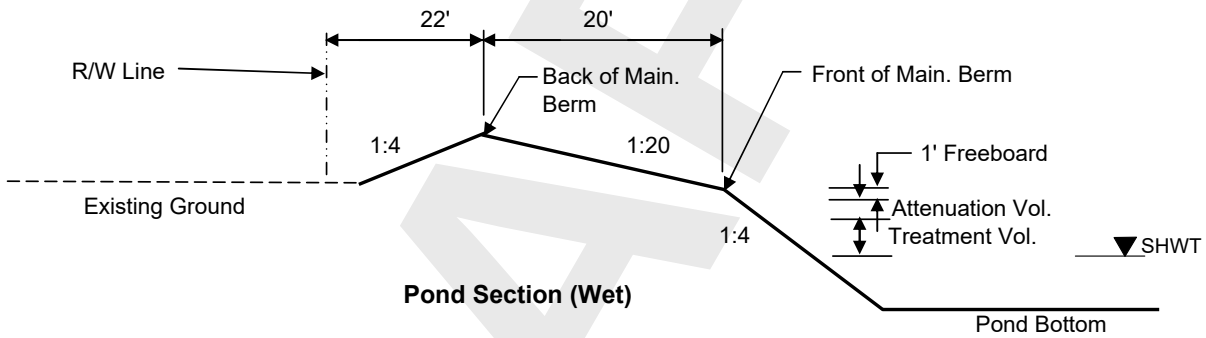
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-151**
POND NAME : **E-151**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	111.00
Pond Tie-In Width =	22.0 ft	@ 1:4	*Normal Water Elevation =	110.50
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	115.83

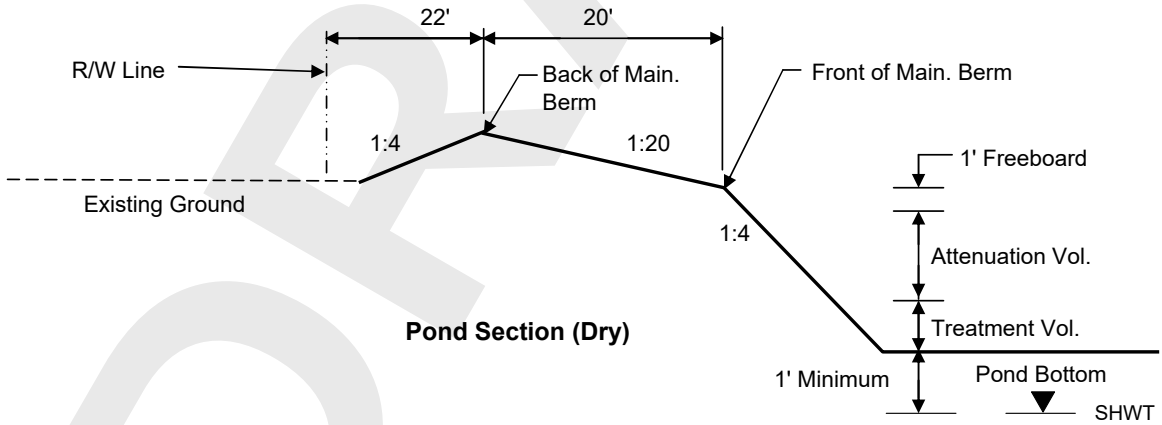
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	800 ft	
Estimated Energy Losses =	0.4 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	114.43 ft	



Pond Section (Wet)



Pond Section (Dry)

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-151**
POND NAME : **E-151**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
111.00	Pond R/W	3.19 ac	373.0 ft	373.0 ft	
116.50	Back of Main. Berm	2.48 ac	329.0 ft	329.0 ft	10.52 ac-ft
116.00		2.19 ac	309.0 ft	309.0 ft	9.35 ac-ft
115.50	Front of Main. Berm	1.92 ac	289.0 ft	289.0 ft	8.32 ac-ft
114.50	Provided Treat.Vol.+Att.Vol	1.81 ac	281.0 ft	281.0 ft	6.46 ac-ft
114.44	Req'd Treat.Vol+Att. Vol	1.81 ac	280.5 ft	280.5 ft	6.34 ac-ft
114.21	Estimated Storm Sewer TW	1.78 ac	278.6 ft	278.6 ft	5.93 ac-ft
112.39	Top of Treatment Vol.	1.60 ac	264.1 ft	264.1 ft	2.86 ac-ft
110.50	Normal Water Level	1.42 ac	249.0 ft	249.0 ft	0.00 ac-ft
105.50		1.00 ac	209.0 ft	209.0 ft	
100.50	Pond Bottom	0.81 ac	209.0 ft	169.0 ft	

Required Treatment+Attenuation Vol.= 6.34 ac-ft
Required Treatment+Attenuation Stage= 114.44 ft

Provided Treatment+Attenuation Vol.= 6.46 ac-ft
Provided Treatment+Attenuation Stage= 114.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.93 ac-ft
Estimated Storm Sewer TW EL.= 114.21 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.99 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-152**
POND NAME : **E-152**

Station Limits: From: 6345+67 To: 6375+67

Roadway Length = 3000 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 24.10 ac
Total Roadway Area: 24.10 ac

Pond Area: Pervious Pond Area = 3.60 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **27.70 ac**
Total Area: **27.70 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	A	49	2.78 ac	136.2
Pasture, grassland or range; Fair condition (50% to 75%	C	79	0.23 ac	17.9
Pasture, grassland or range; Fair condition (50% to 75%	D	84	11.66 ac	979.5
Woods; Fair condition (Woods grazed but not burned, and	C	73	1.26 ac	91.9
Woods; Fair condition (Woods grazed but not burned, and	D	79	3.48 ac	274.6
Woods & Wetlands Combination	C	94	0.26 ac	24.0
Woods & Wetlands Combination	D	97	8.05 ac	780.7
		Total:	27.70 ac	2304.8

CN = Total CN*Area / Total Area = **83.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.02 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.52 in**	**8.51 in**	**11.35 in**	**5.47 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-152**
POND NAME : **E-152**

Station Limits: From: 6345+67 To: 6375+67

Roadway Length = 3000 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 8.82 ac
Pervious Roadway Area: 15.29 ac
Total Roadway Area: 24.10 ac

Pond Area:

Pervious Pond Area : 1.07 ac
Water Surface Area: 2.53 ac Wet Pond
Total Pond Area: 3.60 ac

Total Area:

Impervious Area: **8.82 ac**
Pervious Area: **16.36 ac**
Water Surface Area: **2.53 ac**
Total Area: **27.70 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.82 ac	863.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	1.89 ac	128.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	1.18 ac	101.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	13.29 ac	1183.0
Proposed Ponds (Water Surface)	D	100	2.53 ac	253.0
		Total:	27.70 ac	2529.7

CN = Total CN*Area / Total Area = **91.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.95 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.47 in**	**9.54 in**	**12.42 in**	**6.41 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-152**
POND NAME : **E-152**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.31 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.31 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.75 ac-ft	19.65 ac-ft	26.19 ac-ft	12.62 ac-ft
Q_{post} =	14.93 ac-ft	22.02 ac-ft	28.68 ac-ft	14.80 ac-ft
ΔQ =	**2.18 ac-ft**	**2.37 ac-ft**	**2.48 ac-ft**	**2.18 ac-ft**

Attenuation V_{req} = 2.48 ac-ft (use largest value)

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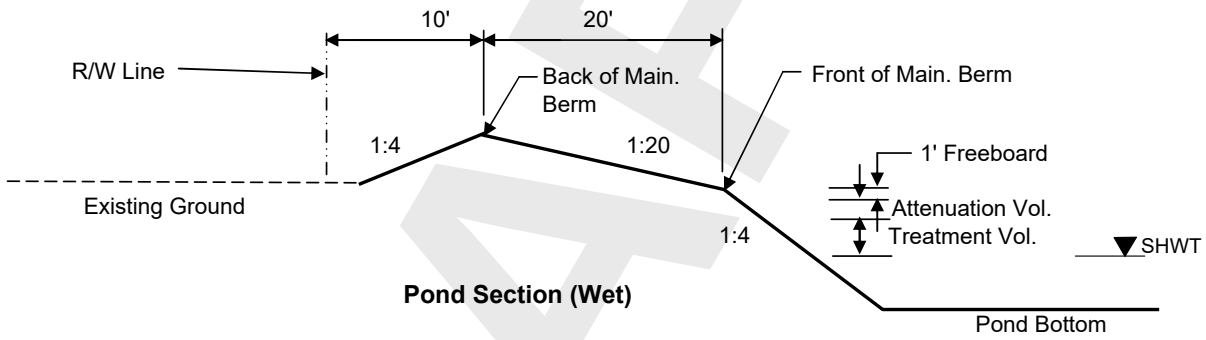
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-152**
POND NAME : **E-152**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	115.00
Pond Tie-In Width =	10.0 ft	@ 1:4	*Normal Water Elevation =	113.50
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.33

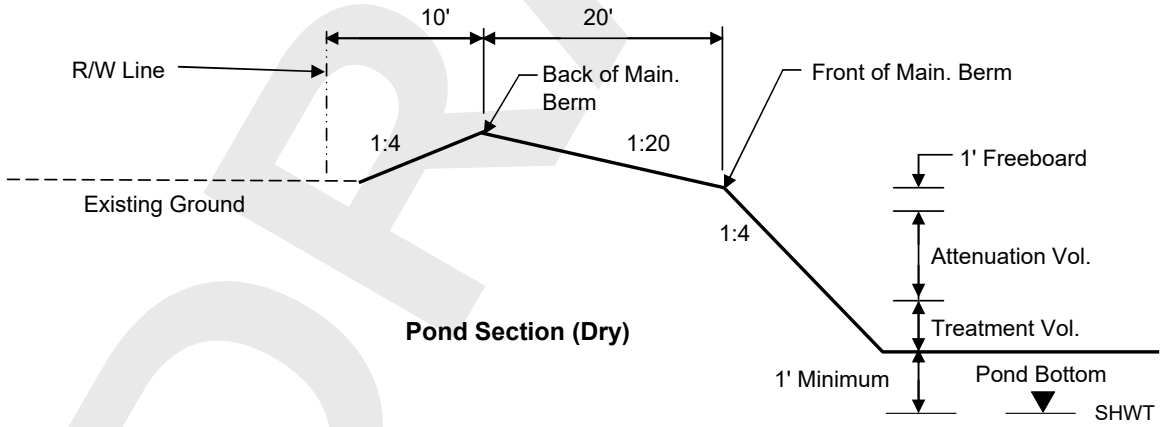
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	119.18 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-152**
POND NAME : **E-152**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
115.00	Pond R/W	3.97 ac	416.0 ft	416.0 ft	
117.50	Back of Main. Berm	3.60 ac	396.0 ft	396.0 ft	11.42 ac-ft
116.00		2.59 ac	336.0 ft	336.0 ft	6.78 ac-ft
116.50	Front of Main. Berm	2.91 ac	356.0 ft	356.0 ft	8.15 ac-ft
115.50	Provided Treat.Vol.+Att.Vol	2.78 ac	348.0 ft	348.0 ft	5.31 ac-ft
115.31	Req'd Treat.Vol+Att. Vol	2.76 ac	346.5 ft	346.5 ft	4.79 ac-ft
115.20	Estimated Storm Sewer TW	2.74 ac	345.6 ft	345.6 ft	4.48 ac-ft
114.40	Top of Treatment Vol.	2.64 ac	339.2 ft	339.2 ft	2.33 ac-ft
113.50	Normal Water Level	2.53 ac	332.0 ft	332.0 ft	0.00 ac-ft
108.50		1.96 ac	292.0 ft	292.0 ft	
103.50	Pond Bottom	1.69 ac	292.0 ft	252.0 ft	

Required Treatment+Attenuation Vol.= 4.79 ac-ft
Required Treatment+Attenuation Stage= 115.31 ft

Provided Treatment+Attenuation Vol.= 5.31 ac-ft
Provided Treatment+Attenuation Stage= 115.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.48 ac-ft
Estimated Storm Sewer TW EL.= 115.20 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.97 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-153**
POND NAME : **E-153**

Station Limits: From: 6375+67 To: 6385+67

Roadway Length = 1000 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 8.03 ac
Total Roadway Area: 8.03 ac

Pond Area: Pervious Pond Area = 2.01 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **10.04 ac**
Total Area: **10.04 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	A	49	0.93 ac	45.4
Pasture, grassland or range; Fair condition (50% to 75%	C	79	0.08 ac	6.0
Pasture, grassland or range; Fair condition (50% to 75%	D	84	4.69 ac	394.3
Woods; Fair condition (Woods grazed but not burned, and	C	73	0.42 ac	30.6
Woods; Fair condition (Woods grazed but not burned, and	D	79	1.16 ac	91.5
Woods & Wetlands Combination	C	94	0.09 ac	8.0
Woods & Wetlands Combination	D	97	2.68 ac	260.2
		Total:	10.04 ac	836.0

CN = Total CN*Area / Total Area = **83.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.01 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.53 in**	**8.52 in**	**11.35 in**	**5.47 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-153**
POND NAME : **E-153**

Station Limits: From: 6375+67 To: 6385+67

Roadway Length = 1000 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 2.94 ac
Pervious Roadway Area: 5.10 ac
Total Roadway Area: 8.03 ac

Pond Area:

Pervious Pond Area : 0.71 ac
Water Surface Area: 1.29 ac Wet Pond
Total Pond Area: 2.01 ac

Total Area:

Impervious Area: **2.94 ac**
Pervious Area: **5.81 ac**
Water Surface Area: **1.29 ac**
Total Area: **10.04 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	2.94 ac	288.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.67 ac	45.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	0.42 ac	36.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	4.72 ac	420.2
Proposed Ponds (Water Surface)	D	100	1.29 ac	129.2
		Total:	10.04 ac	919.0

CN = Total CN*Area / Total Area = **91.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.93 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.49 in**	**9.56 in**	**12.45 in**	**6.43 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-153**
POND NAME : **E-153**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	0.84 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.84 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	4.63 ac-ft	7.13 ac-ft	9.50 ac-ft	4.58 ac-ft
Q_{post} =	5.43 ac-ft	8.00 ac-ft	10.42 ac-ft	5.38 ac-ft
ΔQ =	**0.81 ac-ft**	**0.88 ac-ft**	**0.92 ac-ft**	**0.80 ac-ft**

Attenuation V_{req} = 0.92 ac-ft (use largest value)

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DATE: February 17, 2011
Job Number: PBS-001-01

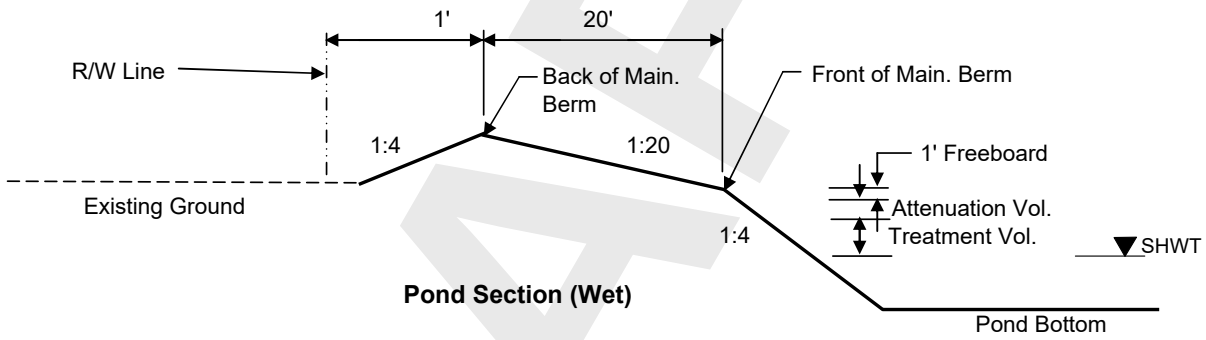
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-153**
POND NAME : **E-153**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	117.50
Pond Tie-In Width =	0.8 ft	@ 1:4	*Normal Water Elevation =	114.00
Maximum Storage Depth (**SD**) =	1.30 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	118.33

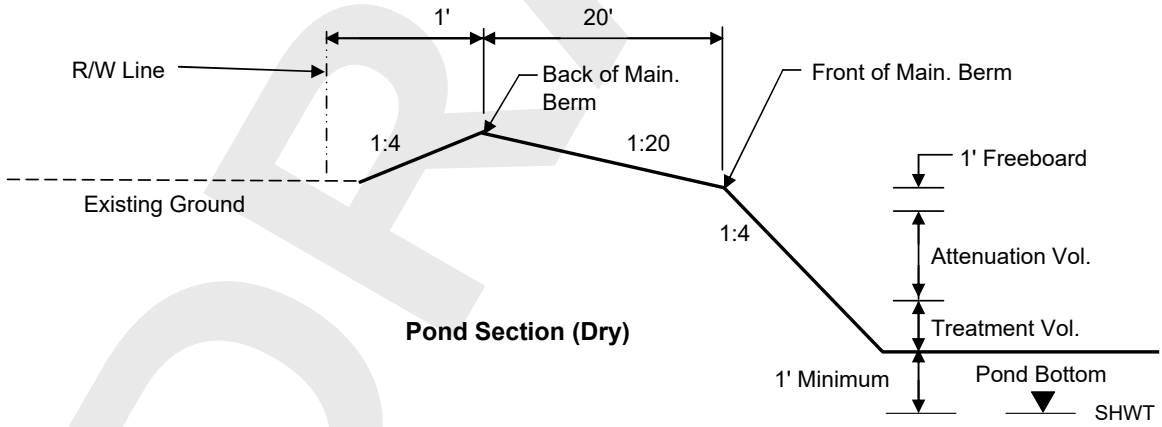
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	117.13 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-153**
POND NAME : **E-153**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
117.50	Pond R/W	2.03 ac	297.5 ft	297.0 ft	
117.30	Back of Main. Berm	2.01 ac	295.9 ft	295.4 ft	4.96 ac-ft
116.80		1.74 ac	275.9 ft	275.4 ft	4.02 ac-ft
116.30	Front of Main. Berm	1.50 ac	255.9 ft	255.4 ft	3.21 ac-ft
115.30	Provided Treat.Vol.+Att.Vol	1.41 ac	247.9 ft	247.4 ft	1.75 ac-ft
115.30	Req'd Treat.Vol+Att. Vol	1.41 ac	247.9 ft	247.4 ft	1.75 ac-ft
115.25	Estimated Storm Sewer TW	1.40 ac	247.5 ft	247.0 ft	1.68 ac-ft
114.65	Top of Treatment Vol.	1.35 ac	242.7 ft	242.2 ft	0.86 ac-ft
114.00	Normal Water Level	1.29 ac	237.5 ft	237.0 ft	0.00 ac-ft
109.00		0.89 ac	197.5 ft	197.0 ft	
104.00	Pond Bottom	0.71 ac	197.5 ft	157.0 ft	

Required Treatment+Attenuation Vol.= 1.75 ac-ft
Required Treatment+Attenuation Stage= 115.30 ft

Provided Treatment+Attenuation Vol.= 1.75 ac-ft
Provided Treatment+Attenuation Stage= 115.30 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.64 ac-ft
Estimated Storm Sewer TW EL.= 115.25 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.54 ac

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-154**
POND NAME : **E-154**

Station Limits: From: 6385+67 To: 6412+17

Roadway Length = 2650 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 21.29 ac
Total Roadway Area: 21.29 ac

Pond Area: Pervious Pond Area = 3.46 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **24.75 ac**
Total Area: **24.75 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	A	49	8.23 ac	403.4
Pasture, grassland or range; Fair condition (50% to 75%	D	84	2.76 ac	231.4
Brush-weed-grass mixture; Fair condition (50% to 75%	D	77	1.08 ac	83.3
Woods & Wetlands Combination	A	88	0.02 ac	1.7
Woods & Wetlands Combination	D	97	7.67 ac	743.7
Depressional areas & existing storage	D	90	5.00 ac	449.8
		Total:	24.75 ac	1913.2

CN = Total CN*Area / Total Area = **77.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.94 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.85 in**	**7.74 in**	**10.52 in**	**4.80 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-154**
POND NAME : **E-154**

Station Limits: From: 6385+67 To: 6412+17

Roadway Length = 2650 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 7.79 ac
Pervious Roadway Area: 13.51 ac
Total Roadway Area: 21.29 ac

Pond Area:

Pervious Pond Area : 1.06 ac
Water Surface Area: 2.40 ac Wet Pond
Total Pond Area: 3.46 ac

Total Area:

Impervious Area: **7.79 ac**
Pervious Area: **14.56 ac**
Water Surface Area: **2.40 ac**
Total Area: **24.75 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.79 ac	763.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	5.64 ac	383.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	8.92 ac	793.9
Proposed Ponds (Water Surface)	D	100	2.40 ac	240.1
		Total:	24.75 ac	2180.9

CN = Total CN*Area / Total Area = **88.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.35 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.09 in**	**9.14 in**	**12.01 in**	**6.03 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-154**
POND NAME : **E-154**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.06 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.06 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	10.01 ac-ft	15.97 ac-ft	21.70 ac-ft	9.89 ac-ft
Q_{post} =	12.57 ac-ft	18.85 ac-ft	24.76 ac-ft	12.45 ac-ft
ΔQ =	**2.56 ac-ft**	**2.88 ac-ft**	**3.07 ac-ft**	**2.55 ac-ft**

Attenuation V_{req} = 3.07 ac-ft (use largest value)

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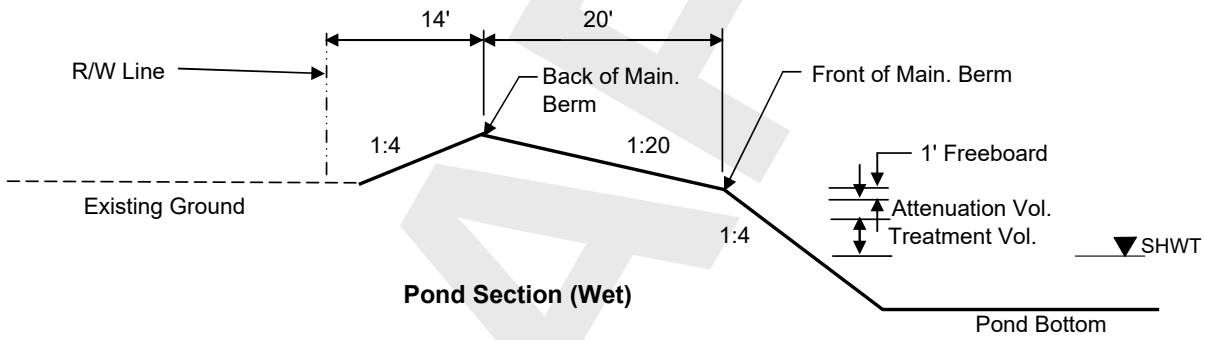
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-154**
POND NAME : **E-154**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	116.00
Pond Tie-In Width =	14.4 ft	@ 1:4	*Normal Water Elevation =	115.50
Maximum Storage Depth (**SD**) =	2.10 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.33

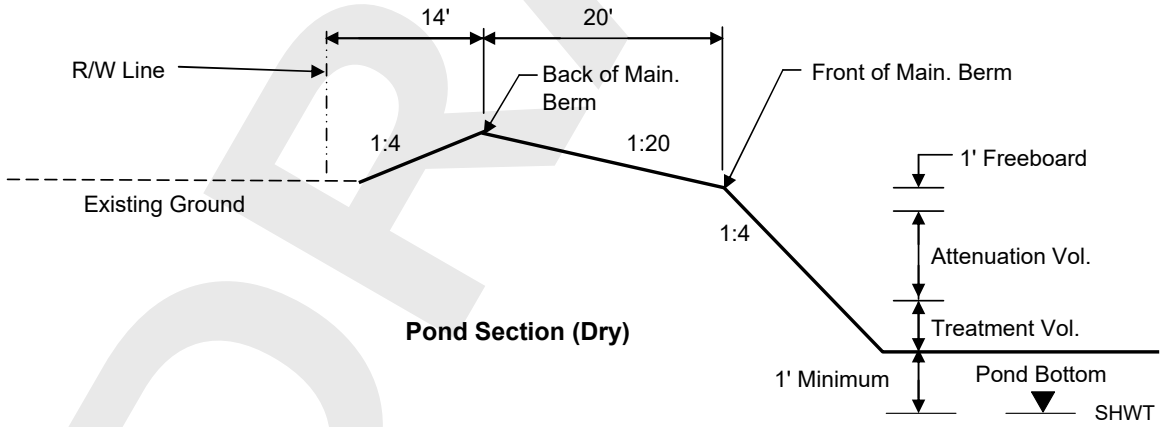
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	350 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	119.16 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-154**
POND NAME : **E-154**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
116.00	Pond R/W	3.99 ac	417.0 ft	417.0 ft	
119.60	Back of Main. Berm	3.46 ac	388.2 ft	388.2 ft	11.15 ac-ft
119.10		3.11 ac	368.2 ft	368.2 ft	9.50 ac-ft
118.60	Front of Main. Berm	2.78 ac	348.2 ft	348.2 ft	8.03 ac-ft
117.60	Provided Treat.Vol.+Att.Vol	2.66 ac	340.2 ft	340.2 ft	5.31 ac-ft
117.54	Req'd Treat.Vol+Att. Vol	2.65 ac	339.7 ft	339.7 ft	5.15 ac-ft
117.35	Estimated Storm Sewer TW	2.63 ac	338.2 ft	338.2 ft	4.65 ac-ft
116.35	Top of Treatment Vol.	2.50 ac	330.2 ft	330.2 ft	2.08 ac-ft
115.50	Normal Water Level	2.40 ac	323.4 ft	323.4 ft	0.00 ac-ft
110.50		1.84 ac	283.4 ft	283.4 ft	
105.50	Pond Bottom	1.58 ac	283.4 ft	243.4 ft	

Required Treatment+Attenuation Vol.= 5.13 ac-ft
Required Treatment+Attenuation Stage= 117.54 ft

Provided Treatment+Attenuation Vol.= 5.31 ac-ft
Provided Treatment+Attenuation Stage= 117.60 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.62 ac-ft
Estimated Storm Sewer TW EL.= 117.35 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.99 ac

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-155**
POND NAME : **E-155**

Station Limits: From: 6412+17 To: 6433+47

Roadway Length = 2130 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 17.11 ac
Total Roadway Area: 17.11 ac

Pond Area: Pervious Pond Area = 2.34 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **19.46 ac**
Total Area: **19.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	D	84	2.19 ac	184.3
Brush-weed-grass mixture; Fair condition (50% to 75%	D	77	3.31 ac	255.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.60 ac	40.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	5.41 ac	481.8
Woods; Good condition (Woods are protected from grazing	A	30	1.93 ac	57.8
Woods; Good condition (Woods are protected from grazing	D	77	0.27 ac	20.7
Woods & Wetlands Combination	D	97	5.74 ac	557.1
		Total:	19.46 ac	1597.4

CN = Total CN*Area / Total Area = **82.1**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.18 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.40 in**	**8.37 in**	**11.20 in**	**5.34 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-155**
POND NAME : **E-155**

Station Limits: From: 6412+17 To: 6433+47

Roadway Length = 2130 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 6.26 ac
Pervious Roadway Area: 10.86 ac
Total Roadway Area: 17.11 ac

Pond Area:

Pervious Pond Area : 0.94 ac
Water Surface Area: 1.40 ac Wet Pond
Total Pond Area: 2.34 ac

Total Area:

Impervious Area: **6.26 ac**
Pervious Area: **11.80 ac**
Water Surface Area: **1.40 ac**
Total Area: **19.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	6.26 ac	613.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	1.74 ac	118.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	10.06 ac	895.2
Proposed Ponds (Water Surface)	D	100	1.40 ac	139.9
		Total:	19.46 ac	1766.8

CN = Total CN*Area / Total Area = **90.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.01 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.41 in**	**9.48 in**	**12.36 in**	**6.35 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-155**
POND NAME : **E-155**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.62 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.62 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.75 ac-ft	13.57 ac-ft	18.15 ac-ft	8.66 ac-ft
Q_{post} =	10.39 ac-ft	15.36 ac-ft	20.03 ac-ft	10.29 ac-ft
ΔQ =	**1.64 ac-ft**	**1.79 ac-ft**	**1.88 ac-ft**	**1.63 ac-ft**

Attenuation V_{req} = 1.88 ac-ft (use largest value)

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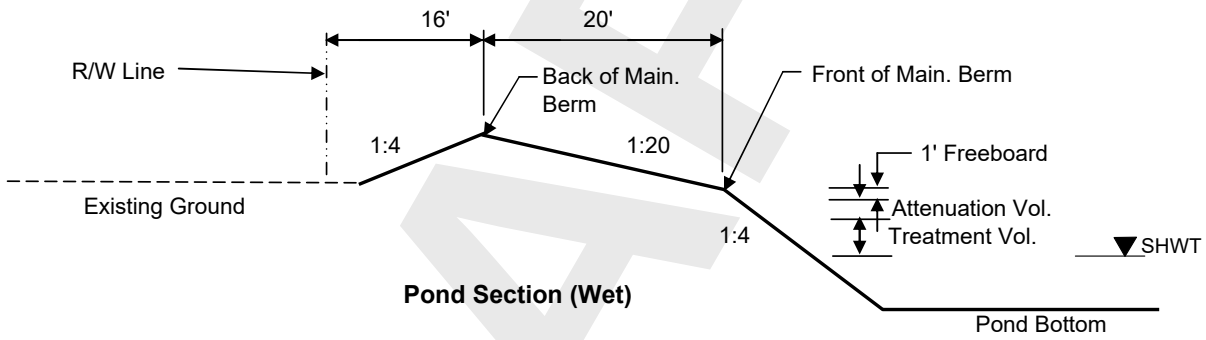
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-155**
POND NAME : **E-155**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	117.00
Pond Tie-In Width =	15.6 ft	@ 1:4	*Normal Water Elevation =	116.50
Maximum Storage Depth (**SD**) =	2.40 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.33

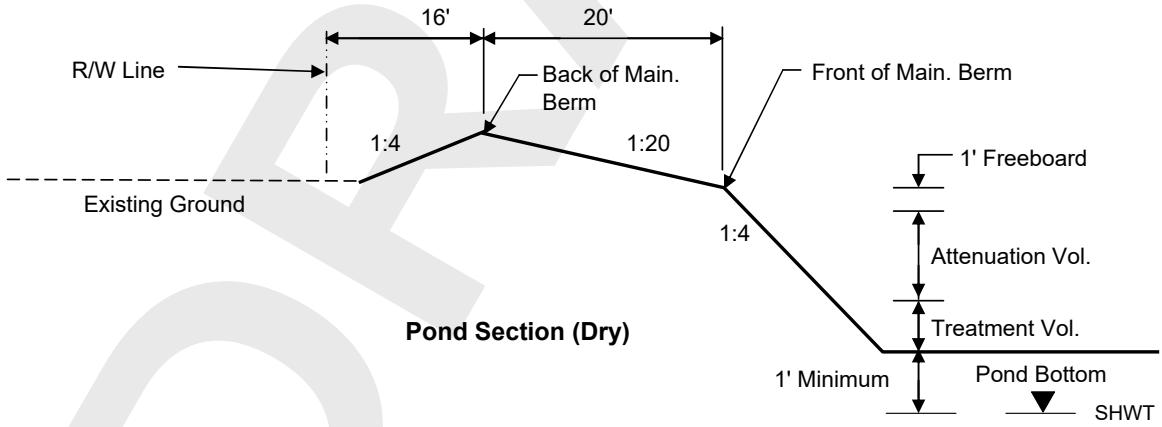
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	700 ft	
Estimated Energy Losses =	0.4 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	118.98 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-155**
POND NAME : **E-155**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
117.00	Pond R/W	2.85 ac	256.0 ft	485.0 ft	
120.90	Back of Main. Berm	2.34 ac	224.8 ft	453.8 ft	7.40 ac-ft
120.40		2.04 ac	204.8 ft	433.8 ft	6.30 ac-ft
119.90	Front of Main. Berm	1.76 ac	184.8 ft	413.8 ft	5.35 ac-ft
118.90	Provided Treat.Vol.+Att.Vol	1.65 ac	176.8 ft	405.8 ft	3.65 ac-ft
118.81	Req'd Treat.Vol+Att. Vol	1.64 ac	176.1 ft	405.1 ft	3.50 ac-ft
118.70	Estimated Storm Sewer TW	1.63 ac	175.2 ft	404.2 ft	3.32 ac-ft
117.65	Top of Treatment Vol.	1.52 ac	166.8 ft	395.8 ft	1.68 ac-ft
116.50	Normal Water Level	1.40 ac	157.6 ft	386.6 ft	0.00 ac-ft
111.50		0.94 ac	117.6 ft	346.6 ft	
106.50	Pond Bottom	0.83 ac	117.6 ft	306.6 ft	

Required Treatment+Attenuation Vol.= 3.50 ac-ft
Required Treatment+Attenuation Stage= 118.81 ft

Provided Treatment+Attenuation Vol.= 3.65 ac-ft
Provided Treatment+Attenuation Stage= 118.90 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.26 ac-ft
Estimated Storm Sewer TW EL.= 118.70 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.56 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-156**
POND NAME : **E-156**

Station Limits: From: 6433+47 To: 6490+27

Roadway Length = 5680 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 45.64 ac
Total Roadway Area: 45.64 ac

Pond Area: Pervious Pond Area = 5.83 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **51.46 ac**
Total Area: **51.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	A	49	5.26 ac	257.6
Pasture, grassland or range; Fair condition (50% to 75%	C	79	0.64 ac	50.8
Pasture, grassland or range; Fair condition (50% to 75%	D	84	20.94 ac	1758.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	1.10 ac	74.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	6.43 ac	572.1
Woods; Good condition (Woods are protected from grazing	A	30	0.92 ac	27.7
Existing Lakes (Water surface)	D	100	2.36 ac	235.9
Woods & Wetlands Combination	A	88	0.26 ac	22.9
Woods & Wetlands Combination	C	94	0.16 ac	15.0
Woods & Wetlands Combination	D	97	13.40 ac	1300.2
		Total:	51.47 ac	4315.6

CN = Total CN*Area / Total Area = **83.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.93 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.60 in**	**8.59 in**	**11.44 in**	**5.54 in**

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-156**
POND NAME : **E-156**

Station Limits: From: 6433+47 To: 6490+27

Roadway Length = 5680 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 16.69 ac
Pervious Roadway Area: 28.95 ac
Total Roadway Area: 45.64 ac

Pond Area:

Pervious Pond Area : 1.39 ac
Water Surface Area: 4.44 ac Wet Pond
Total Pond Area: 5.83 ac

Total Area:

Impervious Area: **16.69 ac**
Pervious Area: **30.33 ac**
Water Surface Area: **4.44 ac**
Total Area: **51.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	16.69 ac	1635.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	5.01 ac	340.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	0.53 ac	45.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	24.79 ac	2206.5
Proposed Ponds (Water Surface)	D	100	4.44 ac	443.9
		Total:	51.46 ac	4672.6

CN = Total CN*Area / Total Area = **90.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.01 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.41 in**	**9.47 in**	**12.35 in**	**6.35 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-156**
POND NAME : **E-156**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	4.29 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **4.29 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	24.01 ac-ft	36.86 ac-ft	49.04 ac-ft	23.77 ac-ft
Q_{post} =	27.48 ac-ft	40.63 ac-ft	52.99 ac-ft	27.22 ac-ft
ΔQ =	**3.46 ac-ft**	**3.77 ac-ft**	**3.94 ac-ft**	**3.46 ac-ft**

Attenuation V_{req} = 3.94 ac-ft (use largest value)

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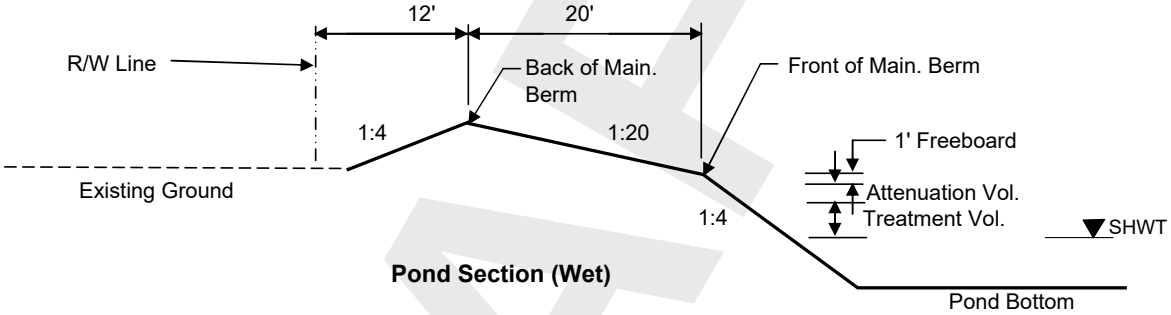
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-156**
POND NAME : **E-156**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	117.00
Pond Tie-In Width =	12.0 ft	@ 1:4	*Normal Water Elevation =	116.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.33

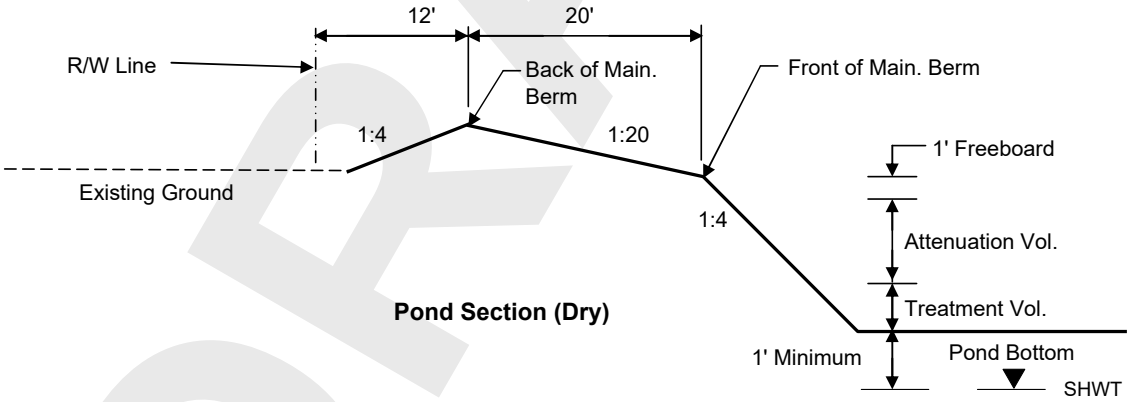
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	700 ft	
Estimated Energy Losses =	0.4 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	118.98 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-156**
POND NAME : **E-156**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
117.00	Pond R/W	6.39 ac	527.0 ft	528.5 ft	
120.00	Back of Main. Berm	5.83 ac	503.0 ft	504.5 ft	19.44 ac-ft
119.50		5.37 ac	483.0 ft	484.5 ft	16.64 ac-ft
119.00	Front of Main. Berm	4.94 ac	463.0 ft	464.5 ft	14.06 ac-ft
118.00	Provided Treat.Vol.+Att.Vol	4.77 ac	455.0 ft	456.5 ft	9.21 ac-ft
117.80	Req'd Treat.Vol+Att. Vol	4.73 ac	453.4 ft	454.9 ft	8.26 ac-ft
117.70	Estimated Storm Sewer TW	4.72 ac	452.6 ft	454.1 ft	7.78 ac-ft
116.95	Top of Treatment Vol.	4.59 ac	446.6 ft	448.1 ft	4.29 ac-ft
116.00	Normal Water Level	4.44 ac	439.0 ft	440.5 ft	0.00 ac-ft
111.00		3.67 ac	399.0 ft	400.5 ft	
106.00	Pond Bottom	3.30 ac	399.0 ft	360.5 ft	

Required Treatment+Attenuation Vol.= 8.23 ac-ft
Required Treatment+Attenuation Stage= 117.80 ft

Provided Treatment+Attenuation Vol.= 9.21 ac-ft
Provided Treatment+Attenuation Stage= 118.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.75 ac-ft
Estimated Storm Sewer TW EL.= 117.70 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 7.99 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-157**
POND NAME : **E-157**

Station Limits: From: 6490+27 To: 6550+38

Roadway Length = 6011 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 46.82 ac
Total Roadway Area: 46.82 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 4.83 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **51.65 ac**
Total Area: **51.65 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	1.48 ac	100.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	5.97 ac	513.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	4.24 ac	377.6
Pasture, grassland or range; Fair condition (50% to 75%	A	49	4.69 ac	229.8
Pasture, grassland or range; Fair condition (50% to 75%	C	79	7.13 ac	563.1
Pasture, grassland or range; Fair condition (50% to 75%	D	84	0.67 ac	56.4
Woods-grass combination (orchard or tree farm); Fair	A	43	4.77 ac	205.0
Woods-grass combination (orchard or tree farm); Fair	C	76	2.73 ac	207.8
Woods-grass combination (orchard or tree farm); Fair	D	82	0.53 ac	43.1
Woods & Wetlands Combination	A	88	0.77 ac	67.6
Woods & Wetlands Combination	C	94	2.48 ac	233.2
Woods & Wetlands Combination	D	97	16.19 ac	1570.5
		Total:	51.65 ac	4168.4

CN = Total CN*Area / Total Area = **80.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.39 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.24 in**	**8.19 in**	**11.00 in**	**5.18 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-157**
POND NAME : **E-157**

Station Limits: From: 6490+27 To: 6550+38

Roadway Length = 6011 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 11.89 ac
*Pervious Roadway Area: 34.93 ac
Total Roadway Area: 46.82 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.33 ac
Water Surface Area: 3.51 ac Wet Pond
Total Pond Area: 4.83 ac

Total Area:

Impervious Area: **11.89 ac**
Pervious Area: **36.26 ac**
Water Surface Area: **3.51 ac**
Total Area: **51.65 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	11.89 ac	1165.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	9.06 ac	616.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	10.44 ac	898.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	16.75 ac	1490.7
Proposed Ponds (Water Surface)	D	100	3.51 ac	350.5
		Total:	51.65 ac	4520.9

CN = Total CN*Area / Total Area = **87.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.43 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.02 in**	**9.06 in**	**11.93 in**	**5.97 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-157**
POND NAME : **E-157**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	4.30 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **4.30 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	22.55 ac-ft	35.24 ac-ft	47.35 ac-ft	22.30 ac-ft
Q_{post} =	25.93 ac-ft	39.01 ac-ft	51.34 ac-ft	25.68 ac-ft
ΔQ =	**3.39 ac-ft**	**3.77 ac-ft**	**3.99 ac-ft**	**3.38 ac-ft**

Attenuation V_{req} = 3.99 ac-ft (use largest value)

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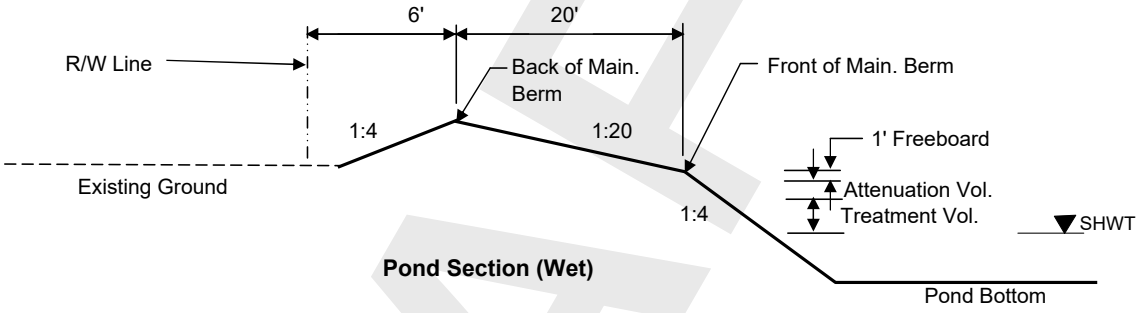
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-157**
POND NAME : **E-157**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	118.50
Pond Tie-In Width =	6.0 ft	@ 1:4	*Normal Water Elevation =	115.50
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.33

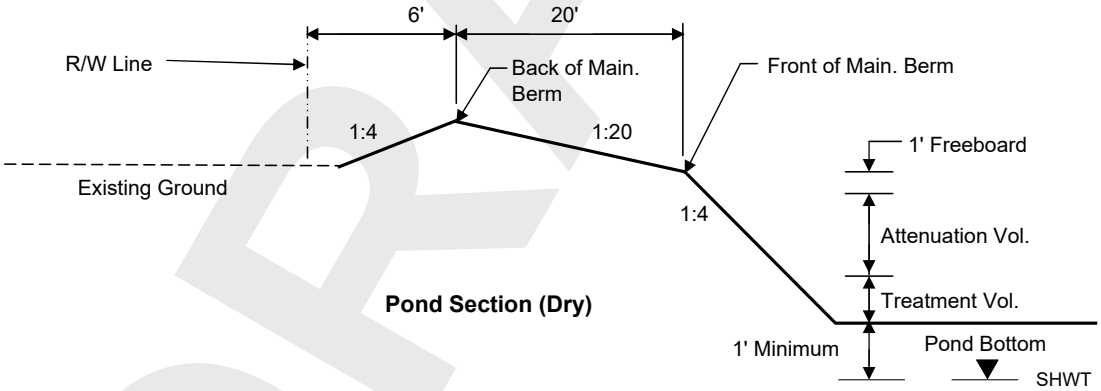
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1500 ft	
Estimated Energy Losses =	0.8 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	118.58 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-157**
POND NAME : **E-157**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
118.50	Pond R/W	5.09 ac	471.0 ft	470.5 ft	
120.00	Back of Main. Berm	4.83 ac	459.0 ft	458.5 ft	17.59 ac-ft
119.50		4.42 ac	439.0 ft	438.5 ft	15.28 ac-ft
119.00	Front of Main. Berm	4.03 ac	419.0 ft	418.5 ft	13.17 ac-ft
118.00	Provided Treat.Vol.+Att.Vol	3.87 ac	411.0 ft	410.5 ft	9.22 ac-ft
117.80	Req'd Treat.Vol+Att. Vol	3.84 ac	409.4 ft	408.9 ft	8.45 ac-ft
117.60	Estimated Storm Sewer TW	3.81 ac	407.8 ft	407.3 ft	7.68 ac-ft
116.70	Top of Treatment Vol.	3.68 ac	400.6 ft	400.1 ft	4.31 ac-ft
115.50	Normal Water Level	3.51 ac	391.0 ft	390.5 ft	0.00 ac-ft
110.50		2.82 ac	351.0 ft	350.5 ft	
105.50	Pond Bottom	2.50 ac	351.0 ft	310.5 ft	

Required Treatment+Attenuation Vol.= 8.29 ac-ft
Required Treatment+Attenuation Stage= 117.80 ft

Provided Treatment+Attenuation Vol.= 9.22 ac-ft
Provided Treatment+Attenuation Stage= 118.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.68 ac-ft
Estimated Storm Sewer TW EL.= 117.60 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.36 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-158**
POND NAME : **E-158**

Station Limits: From: 6490+27 To: 6550+38

Roadway Length = 6011 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 30.68 ac
Total Roadway Area: 30.68 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 4.20 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **34.88 ac**
Total Area: **34.88 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.97 ac	65.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	3.91 ac	336.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	2.78 ac	247.4
Pasture, grassland or range; Fair condition (50% to 75%	A	49	3.07 ac	150.6
Pasture, grassland or range; Fair condition (50% to 75%	C	79	5.70 ac	450.3
Pasture, grassland or range; Fair condition (50% to 75%	D	84	0.44 ac	37.0
Woods-grass combination (orchard or tree farm); Fair	A	43	3.12 ac	134.3
Woods-grass combination (orchard or tree farm); Fair	C	76	1.79 ac	136.2
Woods-grass combination (orchard or tree farm); Fair	D	82	0.34 ac	28.2
Woods & Wetlands Combination	A	88	0.50 ac	44.3
Woods & Wetlands Combination	C	94	1.63 ac	152.8
Woods & Wetlands Combination	D	97	10.61 ac	1029.1
		Total:	34.88 ac	2812.8

CN = Total CN*Area / Total Area = **80.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.40 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.23 in**	**8.18 in**	**10.99 in**	**5.18 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-158**
POND NAME : **E-158**

Station Limits: From: 6490+27 To: 6550+38

Roadway Length = 6011 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 10.03 ac
*Pervious Roadway Area: 20.65 ac
Total Roadway Area: 30.68 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.23 ac
Water Surface Area: 2.97 ac Wet Pond
Total Pond Area: 4.20 ac

Total Area:

Impervious Area: **10.03 ac**
Pervious Area: **21.88 ac**
Water Surface Area: **2.97 ac**
Total Area: **34.88 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	10.03 ac	982.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	5.47 ac	371.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	6.30 ac	541.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	10.11 ac	899.5
Proposed Ponds (Water Surface)	D	100	2.97 ac	296.7
		Total:	34.88 ac	3093.1

CN = Total CN*Area / Total Area = **88.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.28 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.16 in**	**9.21 in**	**12.08 in**	**6.10 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-158**
POND NAME : **E-158**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.91 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.91 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	15.21 ac-ft	23.78 ac-ft	31.95 ac-ft	15.04 ac-ft
Q_{post} =	17.90 ac-ft	26.77 ac-ft	35.11 ac-ft	17.73 ac-ft
ΔQ =	**2.70 ac-ft**	**2.99 ac-ft**	**3.16 ac-ft**	**2.69 ac-ft**

Attenuation V_{req} = 3.16 ac-ft (use largest value)

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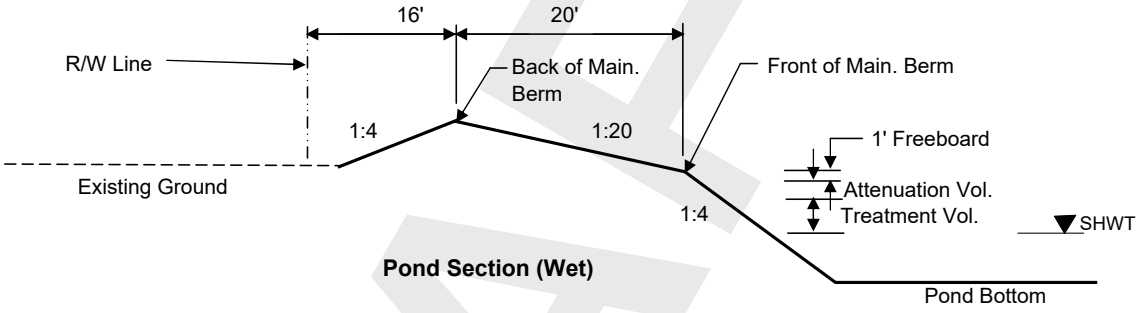
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-158**
POND NAME : **E-158**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	117.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	116.50
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.33

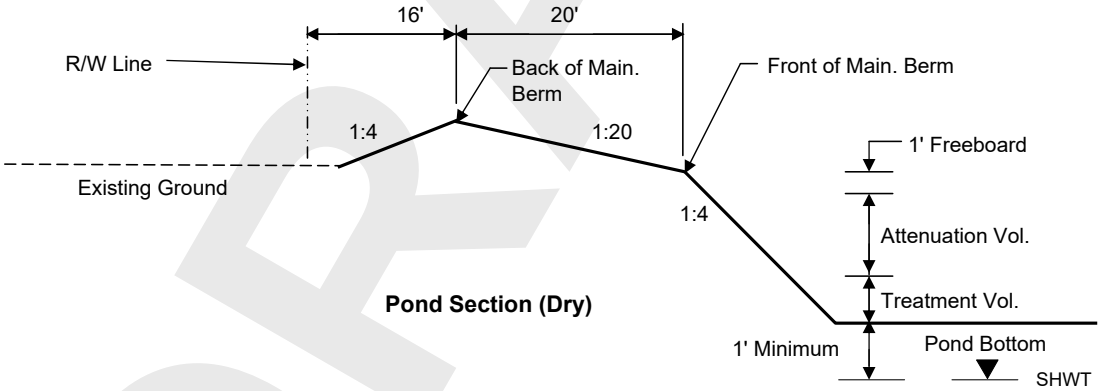
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1500 ft	
Estimated Energy Losses =	0.8 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	118.58 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-158**
POND NAME : **E-158**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
117.00	Pond R/W	4.85 ac	460.0 ft	459.0 ft	
121.00	Back of Main. Berm	4.20 ac	428.0 ft	427.0 ft	15.03 ac-ft
120.50		3.81 ac	408.0 ft	407.0 ft	13.03 ac-ft
120.00	Front of Main. Berm	3.45 ac	388.0 ft	387.0 ft	11.21 ac-ft
119.00	Provided Treat.Vol.+Att.Vol	3.31 ac	380.0 ft	379.0 ft	7.84 ac-ft
118.46	Req'd Treat.Vol+Att. Vol	3.23 ac	375.7 ft	374.7 ft	6.07 ac-ft
118.31	Estimated Storm Sewer TW	3.21 ac	374.5 ft	373.5 ft	5.60 ac-ft
117.46	Top of Treatment Vol.	3.10 ac	367.7 ft	366.7 ft	2.91 ac-ft
116.50	Normal Water Level	2.97 ac	360.0 ft	359.0 ft	0.00 ac-ft
110.50		2.23 ac	312.0 ft	311.0 ft	
105.50	Pond Bottom	1.97 ac	316.0 ft	271.0 ft	

Required Treatment+Attenuation Vol.= 6.07 ac-ft
Required Treatment+Attenuation Stage= 118.46 ft

Provided Treatment+Attenuation Vol.= 7.84 ac-ft
Provided Treatment+Attenuation Stage= 119.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.60 ac-ft
Estimated Storm Sewer TW EL.= 118.31 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.06 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-159**
POND NAME : **E-159**

Station Limits: From: Ramp Alignment To: Ramp Alignment

Roadway Length = 3800 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 156.20 ac
Total Roadway Area: 156.20 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 17.70 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **173.90 ac**
Total Area: **173.90 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	4.93 ac	335.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	19.93 ac	1714.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	14.15 ac	1259.6
Pasture, grassland or range; Fair condition (50% to 75%	A	49	15.65 ac	766.7
Pasture, grassland or range; Fair condition (50% to 75%	C	79	25.36 ac	2003.3
Pasture, grassland or range; Fair condition (50% to 75%	D	84	2.24 ac	188.1
Woods-grass combination (orchard or tree farm); Fair	A	43	15.91 ac	683.9
Woods-grass combination (orchard or tree farm); Fair	C	76	9.12 ac	693.2
Woods-grass combination (orchard or tree farm); Fair	D	82	1.75 ac	143.7
Woods & Wetlands Combination	A	88	2.56 ac	225.7
Woods & Wetlands Combination	C	94	8.28 ac	778.1
Woods & Wetlands Combination	D	97	54.01 ac	5239.4
		Total:	173.90 ac	14031.2

CN = Total CN*Area / Total Area = **80.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.39 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.24 in**	**8.19 in**	**11.00 in**	**5.18 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-159**
POND NAME : **E-159**

Station Limits: From: Ramp Alignment To: Ramp Alignment

Roadway Length = 3800 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 10.28 ac
*Pervious Roadway Area: 145.92 ac
Total Roadway Area: 156.20 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 17.70 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 17.70 ac

Total Area:

Impervious Area: **10.28 ac**
Pervious Area: **163.62 ac**
Water Surface Area: **0.00 ac**
Total Area: **173.90 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	10.28 ac	1007.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	40.90 ac	2781.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	47.13 ac	4052.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	75.59 ac	6727.2
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	173.90 ac	14569.0

CN = Total CN*Area / Total Area = **83.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.94 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.59 in**	**8.59 in**	**11.43 in**	**5.53 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-159**
POND NAME : **E-159**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.86 ac-ft
	0.50 in	x Total Basin Area =	7.25 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **7.25 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	75.88 ac-ft	118.62 ac-ft	159.40 ac-ft	75.07 ac-ft
Q_{post} =	81.02 ac-ft	124.41 ac-ft	165.58 ac-ft	80.19 ac-ft
ΔQ =	**5.14 ac-ft**	**5.79 ac-ft**	**6.18 ac-ft**	**5.12 ac-ft**

Attenuation V_{req} = **6.18 ac-ft** (use largest value)

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Job Number: PBS-001-01

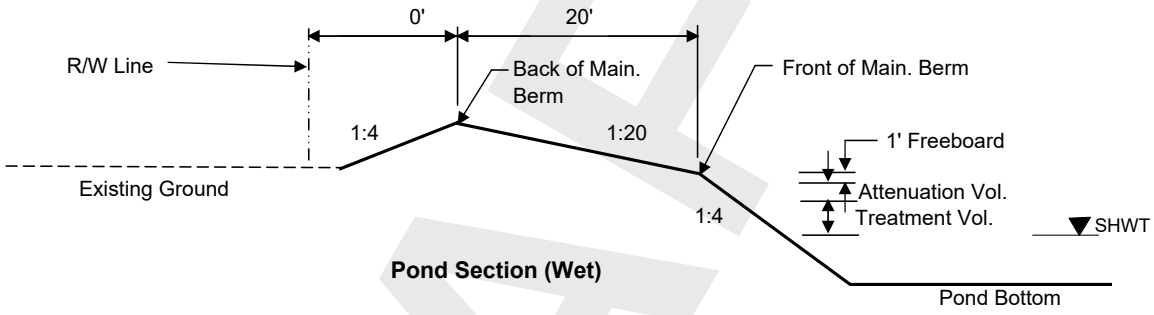
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-159**
POND NAME : **E-159**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	124.00
Pond Tie-In Width =	0.0 ft	@ 1:4	*Normal Water Elevation =	119.50
Maximum Storage Depth (**SD**) =	2.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	123.33

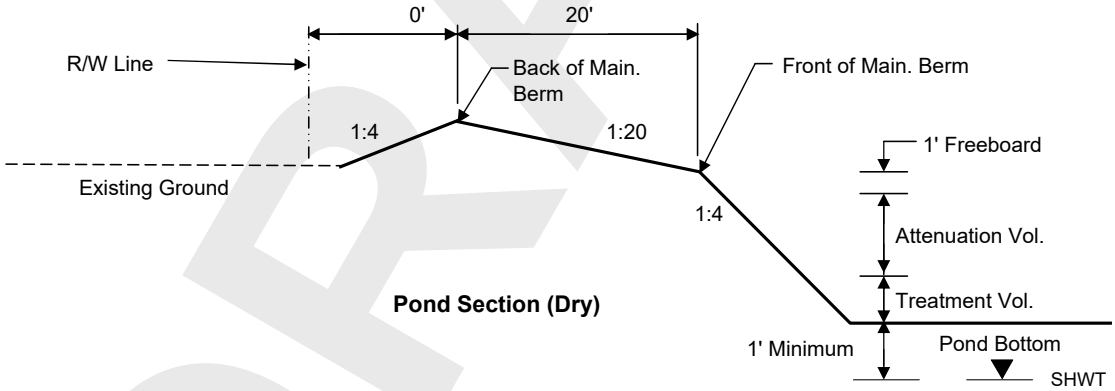
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1500 ft	
Estimated Energy Losses =	0.8 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	121.58 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **E-159**
POND NAME : **E-159**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
124.00	Pond R/W	17.70 ac	878.0 ft	878.0 ft	
124.00	Back of Main. Berm	17.70 ac	878.0 ft	878.0 ft	56.25 ac-ft
123.50		16.90 ac	858.0 ft	858.0 ft	47.60 ac-ft
123.00	Front of Main. Berm	16.12 ac	838.0 ft	838.0 ft	39.35 ac-ft
122.00	Provided Treat.Vol.+Att.Vol	15.81 ac	830.0 ft	830.0 ft	23.38 ac-ft
121.37	Req'd Treat.Vol+Att. Vol	15.62 ac	824.9 ft	824.9 ft	13.42 ac-ft
121.30	Estimated Storm Sewer TW	15.60 ac	824.4 ft	824.4 ft	12.37 ac-ft
120.97	Top of Treatment Vol.	15.50 ac	821.8 ft	821.8 ft	7.25 ac-ft
120.50	Pond Bottom	15.36 ac	818.0 ft	818.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 13.42 ac-ft
Required Treatment+Attenuation Stage= 121.37 ft

Provided Treatment+Attenuation Vol.= 23.38 ac-ft
Provided Treatment+Attenuation Stage= 122.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 12.37 ac-ft
Estimated Storm Sewer TW EL.= 121.30 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 22.12 ac

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APPENDIX C

Western Leg

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101A**
POND NAME : **W-101A**

Station Limits: From: Exist Align To: Exist Align

Roadway Length = 1980 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 3.34 ac
Pervious Roadway Area: 11.45 ac
Total Roadway Area: 14.79 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 1.30 ac

Total Area:
Impervious Area: **3.34 ac**
Pervious Area: **12.75 ac**
Total Area: **16.09 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	3.34 ac	327.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	12.29 ac	1057.0
WETLANDS, Cypress & Bay Heads, Areas of Periodic	D	100	0.46 ac	46.0
		Total:	16.09 ac	1430.3

CN = Total CN*Area / Total Area = **88.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.25 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.18 in**	**9.23 in**	**12.11 in**	**6.13 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101A**
POND NAME : **W-101A**

Station Limits: From: Exist Align To: Exist Align

Roadway Length = 1980 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Ramp Area: 2.41 ac

*Impervious Roadway Area: 1.17 ac
Pervious Roadway Area: 11.21 ac
Total Roadway Area: 14.79 ac

Area calculated using shapes in CADD.

Pond Area:

Pervious Pond Area : 0.61 ac
Water Surface Area: 0.70 ac Wet Pond
Total Pond Area: 1.30 ac

Total Area:

Impervious Area: **3.58 ac**
Pervious Area: **11.82 ac**
Water Surface Area: **0.70 ac**
Total Area: **16.09 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	3.58 ac	350.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	11.36 ac	976.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	0.46 ac	40.9
Proposed Ponds (Water Surface)	D	100	0.70 ac	69.5
		Total:	16.09 ac	1437.8

CN = Total CN*Area / Total Area = **89.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.19 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.24 in**	**9.29 in**	**12.17 in**	**6.18 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101A**
POND NAME : **W-101A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.34 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.34 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	8.29 ac-ft	12.38 ac-ft	16.24 ac-ft	8.21 ac-ft
Q_{post} =	8.37 ac-ft	12.46 ac-ft	16.32 ac-ft	8.29 ac-ft
ΔQ =	**0.07 ac-ft**	**0.08 ac-ft**	**0.08 ac-ft**	**0.07 ac-ft**

Attenuation V_{req} = 0.08 ac-ft (use largest value)

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DATE: February 17, 2011
Job Number: PBS-001-01

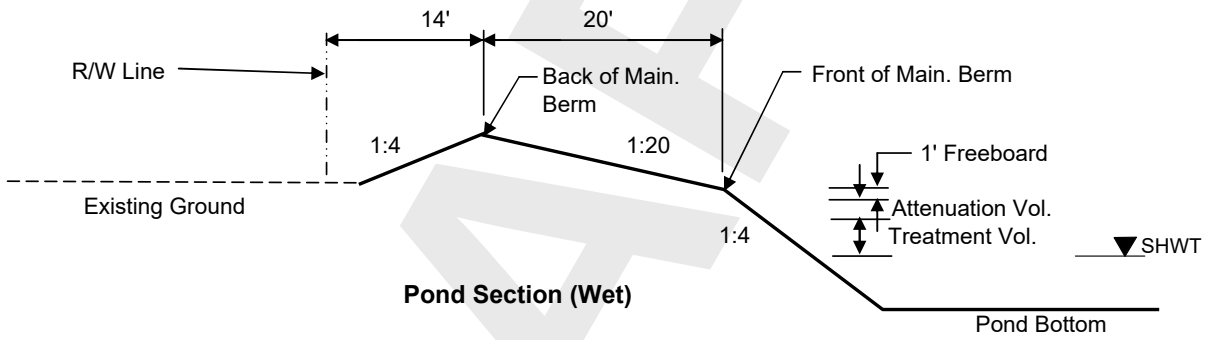
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101A**
POND NAME : **W-101A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	102.00
Pond Tie-In Width =	14.0 ft	@ 1:4	*Normal Water Elevation =	101.50
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	113.33

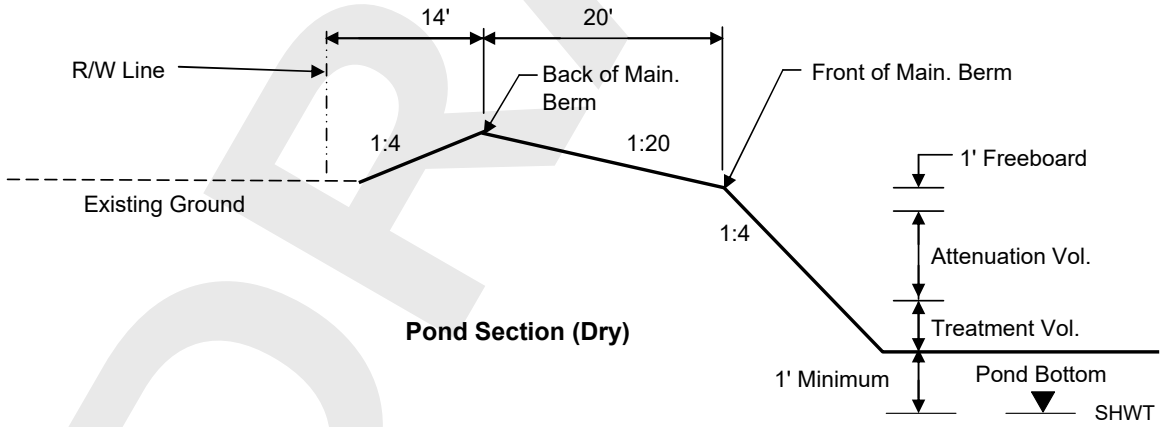
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	850 ft	
Estimated Energy Losses =	0.4 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	111.91 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101A**
POND NAME : **W-101A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
102.00	Pond R/W	1.62 ac	266.0 ft	266.0 ft	
105.50	Back of Main. Berm	1.30 ac	238.0 ft	238.0 ft	3.48 ac-ft
105.00		1.09 ac	218.0 ft	218.0 ft	2.89 ac-ft
104.50	Front of Main. Berm	0.90 ac	198.0 ft	198.0 ft	2.39 ac-ft
103.50	Provided Treat.Vol.+Att.Vol	0.83 ac	190.0 ft	190.0 ft	1.52 ac-ft
103.38	Req'd Treat.Vol+Att. Vol	0.82 ac	189.0 ft	189.0 ft	1.42 ac-ft
103.37	Estimated Storm Sewer TW	0.82 ac	188.9 ft	188.9 ft	1.41 ac-ft
103.28	Top of Treatment Vol.	0.81 ac	188.2 ft	188.2 ft	1.34 ac-ft
101.50	Normal Water Level	0.70 ac	174.0 ft	174.0 ft	0.00 ac-ft
96.50		0.41 ac	134.0 ft	134.0 ft	
91.50	Pond Bottom	0.29 ac	134.0 ft	94.0 ft	

Required Treatment+Attenuation Vol.= 1.42 ac-ft
Required Treatment+Attenuation Stage= 103.38 ft

Provided Treatment+Attenuation Vol.= 1.52 ac-ft
Provided Treatment+Attenuation Stage= 103.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.41 ac-ft
Estimated Storm Sewer TW EL.= 103.37 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 2.03 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102A**
POND NAME : **W-102A**

Station Limits: From: Exist 60 Align To: Exist 60 Align

Roadway Length = 1000 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 26.02 ac
Total Roadway Area: 26.02 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 3.06 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **29.08 ac**
Total Area: **29.08 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	7.95 ac	779.1
Residential Areas (2.0 acre, 12% Impervious)	C	77	9.71 ac	747.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	11.19 ac	962.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	0.23 ac	20.4
		Total:	29.08 ac	2509.4

CN = Total CN*Area / Total Area = **86.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.59 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.88 in**	**8.91 in**	**11.77 in**	**5.82 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102A**
POND NAME : **W-102A**

Station Limits: From: Exist 60 Align To: Exist 60 Align

Roadway Length = 1000 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 10.91 ac
Pervious Roadway Area: 15.11 ac
Total Roadway Area: 26.02 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 3.06 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 3.06 ac

Total Area:

Impervious Area: **10.91 ac**
Pervious Area: **18.17 ac**
Water Surface Area: **0.00 ac**
Total Area: **29.08 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	10.91 ac	1069.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	18.01 ac	1549.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	0.16 ac	13.9
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	29.08 ac	2632.1

CN = Total CN*Area / Total Area = **90.5**

Runoff:

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.37 in**	**9.44 in**	**12.32 in**	**6.32 in**

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.05 in

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

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102A**
POND NAME : **W-102A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.91 ac-ft
	0.50 in	x Total Basin Area =	1.21 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.21 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	14.25 ac-ft	21.58 ac-ft	28.51 ac-ft	14.11 ac-ft
Q_{post} =	15.45 ac-ft	22.87 ac-ft	29.85 ac-ft	15.30 ac-ft
ΔQ =	**1.19 ac-ft**	**1.29 ac-ft**	**1.34 ac-ft**	**1.19 ac-ft**

Attenuation V_{req} = 1.34 ac-ft (use largest value)

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DATE: February 17, 2011
Job Number: PBS-001-01

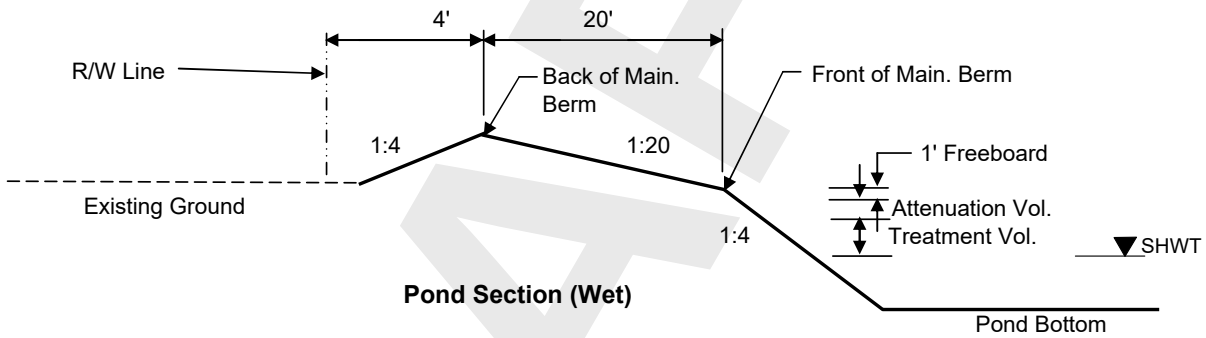
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102A**
POND NAME : **W-102A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	113.00
Pond Tie-In Width =	4.0 ft	@ 1:4	*Normal Water Elevation =	109.00
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	113.33

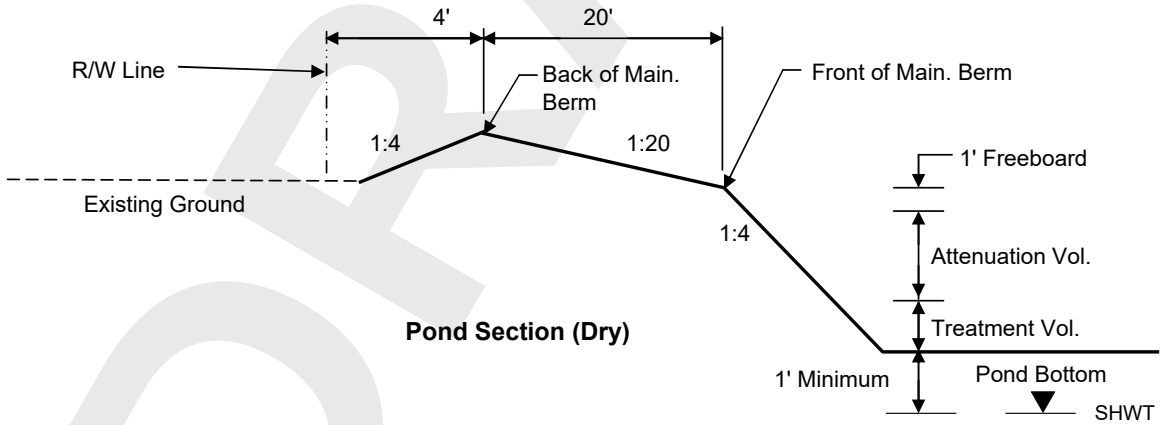
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1050 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	111.81 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102A**
POND NAME : **W-102A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
113.00	Pond R/W	3.19 ac	373.0 ft	373.0 ft	
114.00	Back of Main. Berm	3.06 ac	365.0 ft	365.0 ft	8.43 ac-ft
113.50		2.73 ac	345.0 ft	345.0 ft	6.99 ac-ft
113.00	Front of Main. Berm	2.42 ac	325.0 ft	325.0 ft	5.70 ac-ft
112.00	Provided Treat.Vol.+Att.Vol	2.31 ac	317.0 ft	317.0 ft	3.33 ac-ft
111.67	Req'd Treat.Vol+Att. Vol	2.27 ac	314.4 ft	314.4 ft	2.58 ac-ft
111.65	Estimated Storm Sewer TW	2.27 ac	314.2 ft	314.2 ft	2.53 ac-ft
111.10	Top of Treatment Vol.	2.20 ac	309.8 ft	309.8 ft	1.30 ac-ft
110.50	Pond Bottom	2.14 ac	305.0 ft	305.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 2.55 ac-ft
Required Treatment+Attenuation Stage= 111.67 ft

Provided Treatment+Attenuation Vol.= 3.33 ac-ft
Provided Treatment+Attenuation Stage= 112.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.40 ac-ft
Estimated Storm Sewer TW EL.= 111.65 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.99 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103A**
POND NAME : **W-103A**

Station Limits: From: 9000+00 To: 9011+00

Roadway Length = 1100 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 36.75 ac
Total Roadway Area: 36.75 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.89 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **39.64 ac**
Total Area: **39.64 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	7.95 ac	779.1
Residential Areas (2.0 acre, 12% Impervious)	C	77	9.71 ac	747.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	21.66 ac	1862.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	0.32 ac	28.9
		Total:	39.64 ac	3418.3

CN = Total CN*Area / Total Area = **86.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.60 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.87 in**	**8.90 in**	**11.76 in**	**5.82 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103A**
POND NAME : **W-103A**

Station Limits: From: 9000+00 To: 9011+00

Roadway Length = 1100 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 14.72 ac
Pervious Roadway Area: 22.03 ac
Total Roadway Area: 36.75 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 2.89 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.89 ac

Total Area:

Impervious Area: **14.72 ac**
Pervious Area: **24.92 ac**
Water Surface Area: **0.00 ac**
Total Area: **39.64 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.72 ac	1442.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	24.71 ac	2125.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	0.21 ac	19.1
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	39.64 ac	3586.6

CN = Total CN*Area / Total Area = **90.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.05 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.37 in**	**9.43 in**	**12.31 in**	**6.31 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103A**
POND NAME : **W-103A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.23 ac-ft
	0.50 in	x Total Basin Area =	1.65 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.65 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	19.40 ac-ft	29.40 ac-ft	38.84 ac-ft	19.21 ac-ft
Q_{post} =	21.04 ac-ft	31.16 ac-ft	40.68 ac-ft	20.85 ac-ft
ΔQ =	**1.64 ac-ft**	**1.77 ac-ft**	**1.84 ac-ft**	**1.63 ac-ft**

Attenuation V_{req} = 1.84 ac-ft (use largest value)

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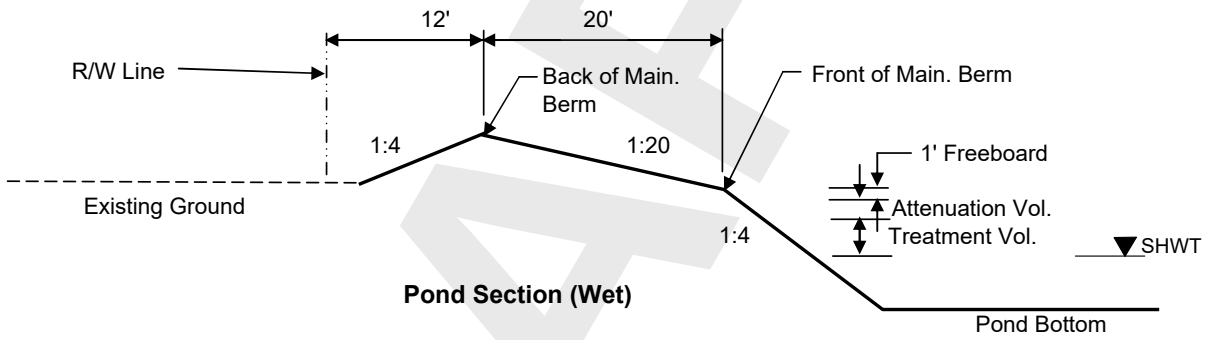
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103A**
POND NAME : **W-103A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	109.00
Pond Tie-In Width =	12.0 ft	@ 1:4	*Normal Water Elevation =	106.50
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	113.33

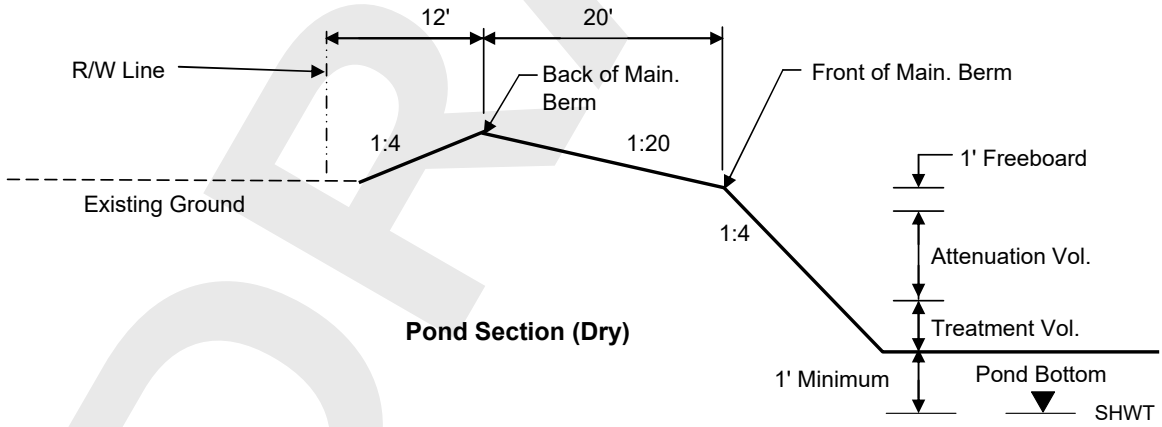
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1050 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	111.81 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103A**
POND NAME : **W-103A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
109.00	Pond R/W	3.30 ac	379.0 ft	379.0 ft	
112.00	Back of Main. Berm	2.89 ac	355.0 ft	355.0 ft	9.87 ac-ft
111.50		2.58 ac	335.0 ft	335.0 ft	8.50 ac-ft
111.00	Front of Main. Berm	2.28 ac	315.0 ft	315.0 ft	7.29 ac-ft
110.00	Provided Treat.Vol.+Att.Vol	2.16 ac	307.0 ft	307.0 ft	5.06 ac-ft
109.30	Req'd Treat.Vol+Att. Vol	2.09 ac	301.4 ft	301.4 ft	3.58 ac-ft
109.16	Estimated Storm Sewer TW	2.07 ac	300.3 ft	300.3 ft	3.29 ac-ft
108.40	Top of Treatment Vol.	1.99 ac	294.2 ft	294.2 ft	1.75 ac-ft
107.50	Pond Bottom	1.89 ac	287.0 ft	287.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.49 ac-ft
Required Treatment+Attenuation Stage= 109.30 ft

Provided Treatment+Attenuation Vol.= 5.06 ac-ft
Provided Treatment+Attenuation Stage= 110.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.28 ac-ft
Estimated Storm Sewer TW EL.= 109.16 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.12 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104A**
POND NAME : **W-104A**

Station Limits: From: 9011+00 To: 9026+65

Roadway Length = 1565 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 19.78 ac
Total Roadway Area: 19.78 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 1.03 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **20.81 ac**
Total Area: **20.81 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	13.92 ac	1196.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	2.41 ac	214.5
		Total:	16.33 ac	1411.3

CN = Total CN*Area / Total Area = **86.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.57 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.90 in**	**8.93 in**	**11.78 in**	**5.84 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104A**
POND NAME : **W-104A**

Station Limits: From: 9011+00 To: 9026+65

Roadway Length = 1565 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 7.97 ac
Pervious Roadway Area: 11.81 ac
Total Roadway Area: 19.78 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.03 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 1.03 ac

Total Area:

Impervious Area: **7.97 ac**
Pervious Area: **12.84 ac**
Water Surface Area: **0.00 ac**
Total Area: **20.81 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.97 ac	781.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	10.81 ac	930.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	2.02 ac	179.9
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	20.81 ac	1891.0

CN = Total CN*Area / Total Area = **90.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.00 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.42 in**	**9.49 in**	**12.37 in**	**6.36 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104A**
POND NAME : **W-104A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.66 ac-ft
	0.50 in	x Total Basin Area =	0.87 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.87 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	10.23 ac-ft	15.48 ac-ft	20.43 ac-ft	10.13 ac-ft
Q_{post} =	11.13 ac-ft	16.45 ac-ft	21.44 ac-ft	11.03 ac-ft
ΔQ =	**0.90 ac-ft**	**0.97 ac-ft**	**1.01 ac-ft**	**0.90 ac-ft**

Attenuation V_{req} = 1.01 ac-ft (use largest value)

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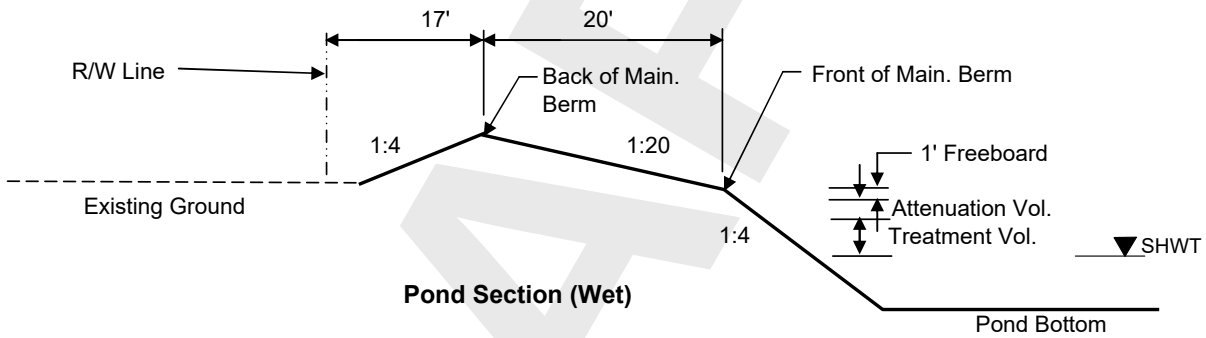
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104A**
POND NAME : **W-104A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	110.00
Pond Tie-In Width =	16.8 ft	@ 1:4	*Normal Water Elevation =	107.50
Maximum Storage Depth (**SD**) =	4.70 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	114.33

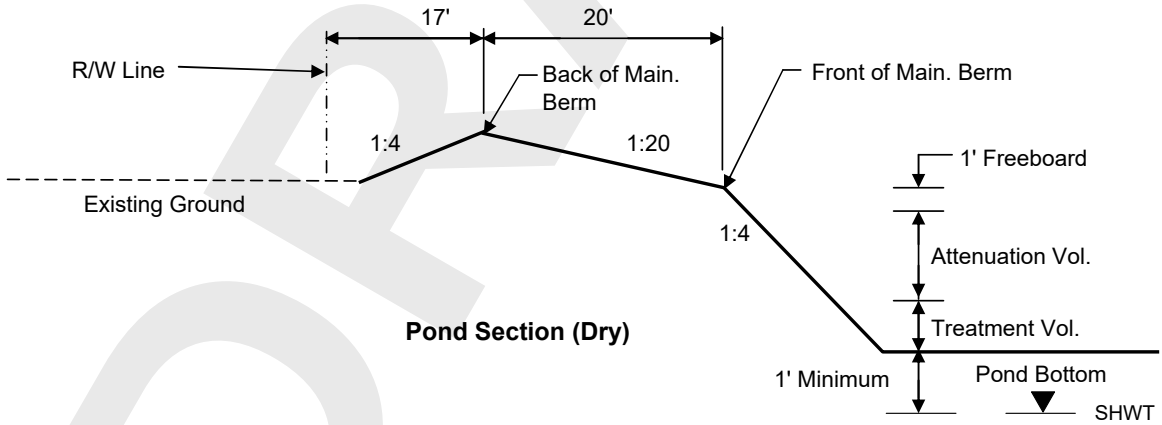
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1050 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	112.81 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104A**
POND NAME : **W-104A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
110.00	Pond R/W	1.38 ac	245.0 ft	245.0 ft	
114.20	Back of Main. Berm	1.03 ac	211.4 ft	211.4 ft	3.37 ac-ft
113.70		0.84 ac	191.4 ft	191.4 ft	2.91 ac-ft
113.20	Front of Main. Berm	0.67 ac	171.4 ft	171.4 ft	2.53 ac-ft
112.20	Provided Treat.Vol.+Att.Vol	0.61 ac	163.4 ft	163.4 ft	1.88 ac-ft
111.64	Req'd Treat.Vol+Att. Vol	0.58 ac	158.9 ft	158.9 ft	1.55 ac-ft
111.48	Estimated Storm Sewer TW	0.57 ac	157.6 ft	157.6 ft	1.46 ac-ft
110.07	Top of Treatment Vol.	0.49 ac	146.4 ft	146.4 ft	0.71 ac-ft
108.50	Pond Bottom	0.41 ac	133.8 ft	133.8 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 1.88 ac-ft
Required Treatment+Attenuation Stage= 111.64 ft

Provided Treatment+Attenuation Vol.= 1.88 ac-ft
Provided Treatment+Attenuation Stage= 112.20 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.77 ac-ft
Estimated Storm Sewer TW EL.= 111.48 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 1.72 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-101A**
POND NAME : **F-101A**

Station Limits: From: Frontage Road To: Frontage Road

Roadway Length = 1000 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 10.09 ac
Total Roadway Area: 10.09 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 0.89 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **10.98 ac**
Total Area: **10.98 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	10.52 ac	904.4
WETLANDS, Cypress & Bay Heads, Areas of Periodic	D	100	0.46 ac	46.0
		Total:	10.98 ac	950.4

CN = Total CN*Area / Total Area = **86.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.55 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.92 in**	**8.94 in**	**11.80 in**	**5.86 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-101A**
POND NAME : **F-101A**

Station Limits: From: Frontage Road To: Frontage Road

Roadway Length = 1980 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 2.15 ac
Pervious Roadway Area: 7.94 ac
Total Roadway Area: 10.09 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 0.53 ac
Water Surface Area: 0.36 ac Wet Pond
Total Pond Area: 0.89 ac

Total Area:

Impervious Area: **2.15 ac**
Pervious Area: **8.47 ac**
Water Surface Area: **0.36 ac**
Total Area: **10.98 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	2.15 ac	210.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	8.01 ac	688.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	0.46 ac	40.9
Proposed Ponds (Water Surface)	D	100	0.36 ac	35.6
		Total:	10.98 ac	976.1

CN = Total CN*Area / Total Area = **88.9**

Runoff:

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.19 in**	**9.24 in**	**12.11 in**	**6.13 in**

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.24 in

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

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-101A**
POND NAME : **F-101A**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	0.91 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.91 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	5.41 ac-ft	8.18 ac-ft	10.80 ac-ft	5.36 ac-ft
Q_{post} =	5.66 ac-ft	8.45 ac-ft	11.08 ac-ft	5.61 ac-ft
ΔQ =	**0.25 ac-ft**	**0.27 ac-ft**	**0.28 ac-ft**	**0.25 ac-ft**

Attenuation V_{req} = 0.28 ac-ft (use largest value)

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DATE: February 17, 2011
Job Number: PBS-001-01

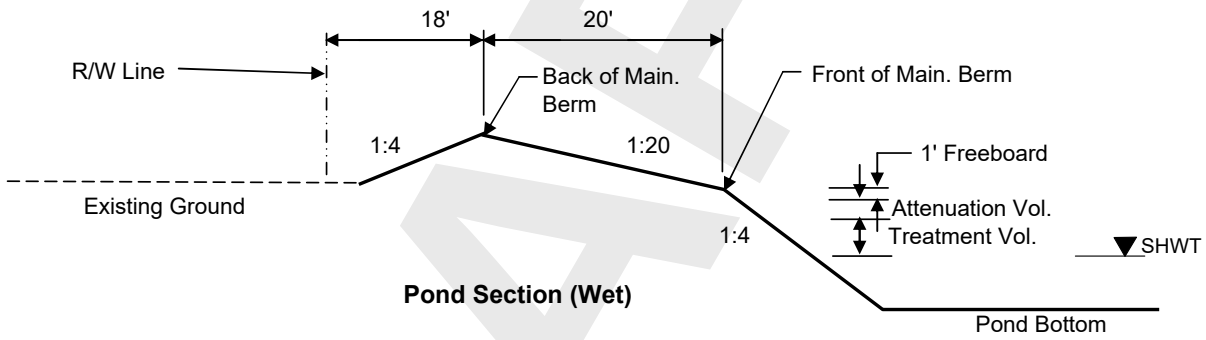
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-101A**
POND NAME : **F-101A**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	104.00
Pond Tie-In Width =	18.0 ft	@ 1:4	*Normal Water Elevation =	103.50
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	113.33

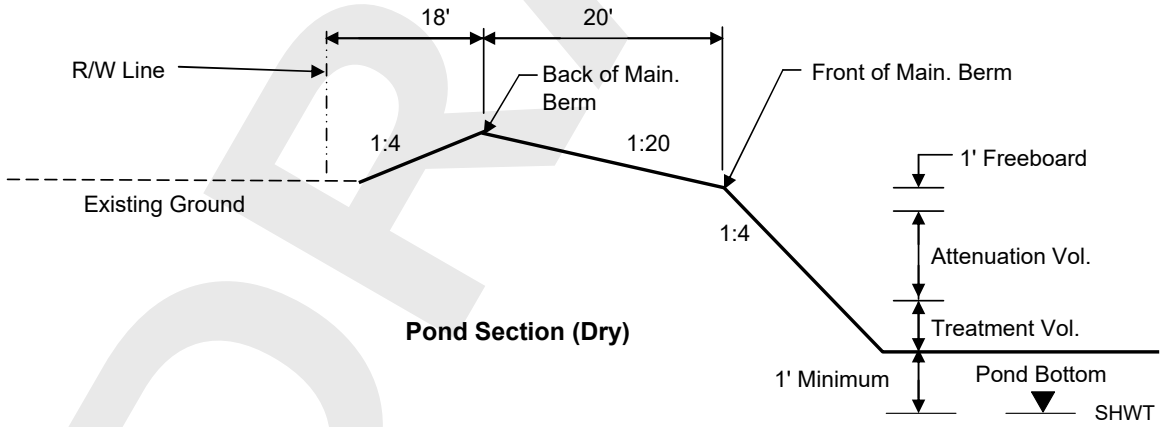
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	900 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	111.88 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **F-101A**
POND NAME : **F-101A**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
104.00	Pond R/W	1.24 ac	233.0 ft	232.0 ft	
108.50	Back of Main. Berm	0.89 ac	197.0 ft	196.0 ft	2.54 ac-ft
108.00		0.72 ac	177.0 ft	176.0 ft	2.14 ac-ft
107.50	Front of Main. Berm	0.56 ac	157.0 ft	156.0 ft	1.82 ac-ft
106.50	Provided Treat.Vol.+Att.Vol	0.51 ac	149.0 ft	148.0 ft	1.29 ac-ft
106.32	Req'd Treat.Vol+Att. Vol	0.50 ac	147.6 ft	146.6 ft	1.20 ac-ft
106.24	Estimated Storm Sewer TW	0.49 ac	146.9 ft	145.9 ft	1.16 ac-ft
105.80	Top of Treatment Vol.	0.47 ac	143.4 ft	142.4 ft	0.95 ac-ft
103.50	Normal Water Level	0.36 ac	125.0 ft	124.0 ft	0.00 ac-ft
97.50		0.13 ac	77.0 ft	76.0 ft	
93.50	Pond Bottom	0.09 ac	85.0 ft	44.0 ft	

Required Treatment+Attenuation Vol.= 1.20 ac-ft
Required Treatment+Attenuation Stage= 106.32 ft

Provided Treatment+Attenuation Vol.= 1.29 ac-ft
Provided Treatment+Attenuation Stage= 106.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.16 ac-ft
Estimated Storm Sewer TW EL.= 106.24 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 1.55 ac

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101B**
POND NAME : **W-101B**

Station Limits: From: 2000+00 To: 2017+34

Roadway Length = 1734 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 10.30 ac
Total Roadway Area: 10.30 ac

Pond Area: Pervious Pond Area = 0.99 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **11.29 ac**
Total Area: **11.29 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	9.81 ac	873.4
WETLANDS, Cypress & Bay Heads, Areas of Periodic	D	100	1.48 ac	148.0
		Total:	11.29 ac	1021.4

CN = Total CN*Area / Total Area = **90.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.06 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.37 in**	**9.43 in**	**12.31 in**	**6.31 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101B**
POND NAME : **W-101B**

Station Limits: From: 2000+00 To: 2017+34

Roadway Length = 1734 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 5.25 ac
Pervious Roadway Area: 5.05 ac
Total Roadway Area: 10.30 ac

Pond Area:

Pervious Pond Area : 0.57 ac
Water Surface Area: 0.42 ac Wet Pond
Total Pond Area: 0.99 ac

Total Area:

Impervious Area: **5.25 ac**
Pervious Area: **5.62 ac**
Water Surface Area: **0.42 ac**
Total Area: **11.29 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.25 ac	514.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	5.62 ac	500.1
Proposed Ponds (Water Surface)	D	100	0.42 ac	42.5
		Total:	11.29 ac	1057.0

CN = Total CN*Area / Total Area = **93.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.68 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.74 in**	**9.82 in**	**12.71 in**	**6.68 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101B**
POND NAME : **W-101B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	0.94 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.94 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	5.99 ac-ft	8.87 ac-ft	11.58 ac-ft	5.94 ac-ft
Q_{post} =	6.34 ac-ft	9.24 ac-ft	11.96 ac-ft	6.28 ac-ft
ΔQ =	**0.35 ac-ft**	**0.37 ac-ft**	**0.38 ac-ft**	**0.35 ac-ft**

Attenuation V_{req} = 0.38 ac-ft (use largest value)

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DATE: February 17, 2011
Job Number: PBS-001-01

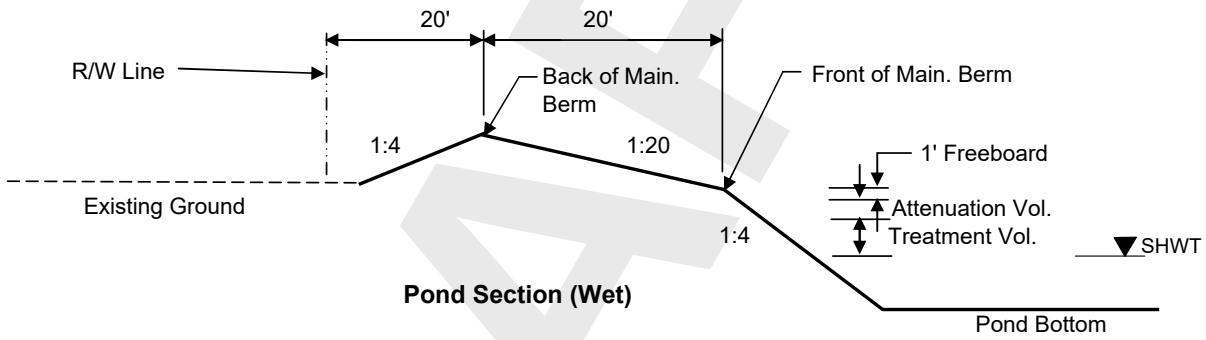
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101B**
POND NAME : **W-101B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	115.00
Pond Tie-In Width =	20.0 ft	@ 1:4	*Normal Water Elevation =	115.00
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.00

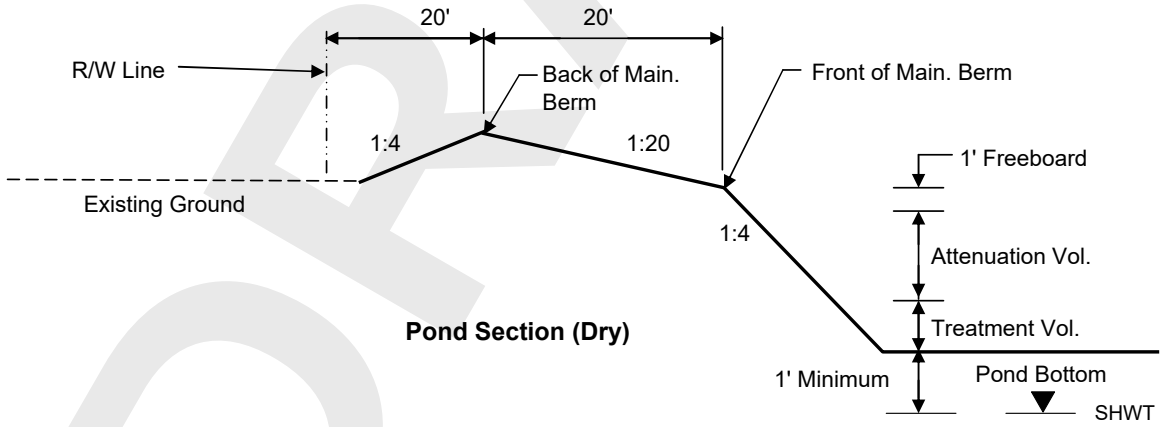
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	118.80 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-101B**
POND NAME : **W-101B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
115.00	Pond R/W	1.41 ac	248.0 ft	248.0 ft	
120.00	Back of Main. Berm	0.99 ac	208.0 ft	208.0 ft	2.95 ac-ft
119.50		0.81 ac	188.0 ft	188.0 ft	2.50 ac-ft
119.00	Front of Main. Berm	0.65 ac	168.0 ft	168.0 ft	2.13 ac-ft
118.00	Provided Treat.Vol.+Att.Vol	0.59 ac	160.0 ft	160.0 ft	1.51 ac-ft
117.80	Req'd Treat.Vol+Att. Vol	0.58 ac	158.4 ft	158.4 ft	1.40 ac-ft
117.55	Estimated Storm Sewer TW	0.56 ac	156.4 ft	156.4 ft	1.26 ac-ft
117.00	Top of Treatment Vol.	0.53 ac	152.0 ft	152.0 ft	0.96 ac-ft
115.00	Normal Water Level	0.42 ac	136.0 ft	136.0 ft	0.00 ac-ft
116.50		0.50 ac	148.0 ft	148.0 ft	
111.50	Pond Bottom	0.30 ac	122.0 ft	108.0 ft	

Required Treatment+Attenuation Vol.= 1.32 ac-ft
Required Treatment+Attenuation Stage= 117.80 ft

Provided Treatment+Attenuation Vol.= 1.51 ac-ft
Provided Treatment+Attenuation Stage= 118.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.29 ac-ft
Estimated Storm Sewer TW EL.= 117.55 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 1.76 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102B**
POND NAME : **W-102B**

Station Limits: From: 2000+00 To: 2017+34

Roadway Length = 1734 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 10.42 ac
Total Roadway Area: 10.42 ac

Pond Area: Pervious Pond Area = 0.93 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **11.35 ac**
Total Area: **11.35 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	9.87 ac	878.2
WETLANDS, Cypress & Bay Heads, Areas of Periodic	D	100	1.48 ac	148.0
		Total:	11.35 ac	1026.2

CN = Total CN*Area / Total Area = **90.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = **1.06 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.36 in**	**9.43 in**	**12.31 in**	**6.31 in**

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102B**
POND NAME : **W-102B**

Station Limits: From: 2000+00 To: 2017+34

Roadway Length = 1734 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 5.06 ac
Pervious Roadway Area: 5.36 ac
Total Roadway Area: 10.42 ac

Pond Area:

Pervious Pond Area : 0.55 ac
Water Surface Area: 0.38 ac Wet Pond
Total Pond Area: 0.93 ac

Total Area:

Impervious Area: **5.06 ac**
Pervious Area: **5.91 ac**
Water Surface Area: **0.38 ac**
Total Area: **11.35 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.06 ac	495.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	5.91 ac	525.6
Proposed Ponds (Water Surface)	D	100	0.38 ac	38.2
		Total:	11.35 ac	1059.7

CN = Total CN*Area / Total Area = **93.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.71 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.71 in**	**9.79 in**	**12.69 in**	**6.65 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102B**
POND NAME : **W-102B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	0.95 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **0.95 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	6.02 ac-ft	8.92 ac-ft	11.64 ac-ft	5.96 ac-ft
Q_{post} =	6.35 ac-ft	9.26 ac-ft	12.00 ac-ft	6.29 ac-ft
ΔQ =	**0.33 ac-ft**	**0.35 ac-ft**	**0.36 ac-ft**	**0.33 ac-ft**

Attenuation V_{req} = 0.36 ac-ft (use largest value)

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DATE: February 17, 2011
Job Number: PBS-001-01

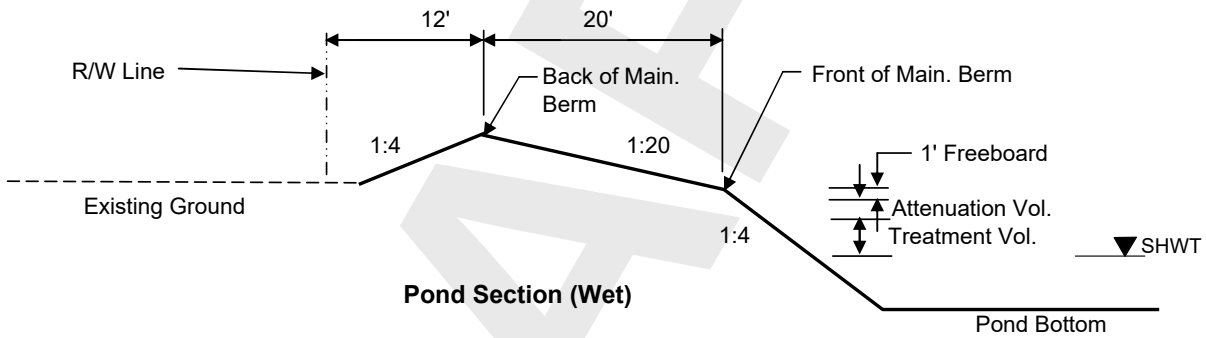
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102B**
POND NAME : **W-102B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	112.00
Pond Tie-In Width =	12.0 ft	@ 1:4	*Normal Water Elevation =	110.00
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	118.00

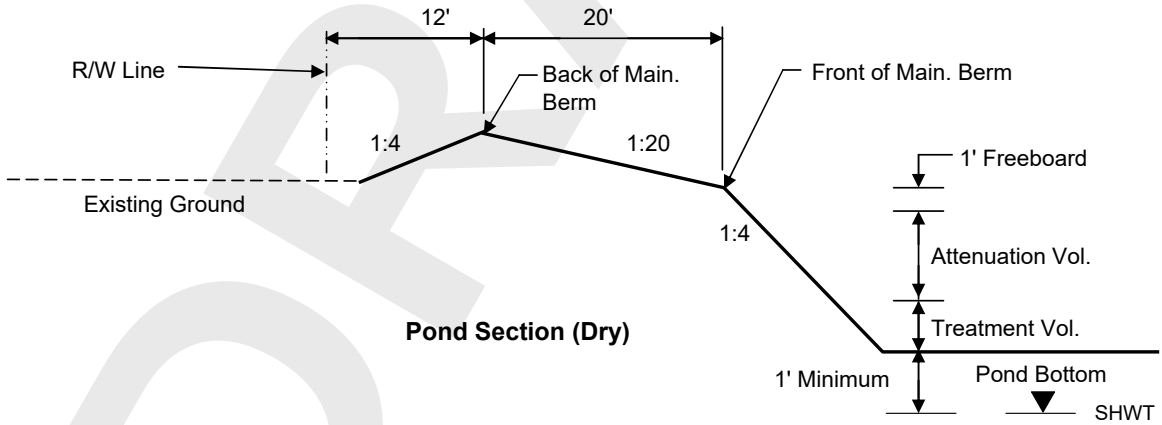
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	116.80 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-102B**
POND NAME : **W-102B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
112.00	Pond R/W	1.16 ac	225.0 ft	225.0 ft	
115.00	Back of Main. Berm	0.93 ac	201.0 ft	201.0 ft	2.70 ac-ft
114.50		0.75 ac	181.0 ft	181.0 ft	2.28 ac-ft
114.00	Front of Main. Berm	0.60 ac	161.0 ft	161.0 ft	1.94 ac-ft
113.00	Provided Treat.Vol.+Att.Vol	0.54 ac	153.0 ft	153.0 ft	1.38 ac-ft
112.85	Req'd Treat.Vol+Att. Vol	0.53 ac	151.8 ft	151.8 ft	1.30 ac-ft
112.80	Estimated Storm Sewer TW	0.53 ac	151.4 ft	151.4 ft	1.27 ac-ft
112.20	Top of Treatment Vol.	0.49 ac	146.6 ft	146.6 ft	0.96 ac-ft
110.00	Normal Water Level	0.38 ac	129.0 ft	129.0 ft	0.00 ac-ft
116.50		0.75 ac	181.0 ft	181.0 ft	
111.50	Pond Bottom	0.44 ac	135.0 ft	141.0 ft	

Required Treatment+Attenuation Vol.= 1.30 ac-ft
Required Treatment+Attenuation Stage= 112.85 ft

Provided Treatment+Attenuation Vol.= 1.38 ac-ft
Provided Treatment+Attenuation Stage= 113.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.27 ac-ft
Estimated Storm Sewer TW EL.= 112.80 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 1.45 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103B**
POND NAME : **W-103B**

Station Limits: From: 2017+34 To: 2056+38

Roadway Length = 3904 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 32.62 ac
Total Roadway Area: 32.62 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.13 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **34.75 ac**
Total Area: **34.75 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	34.75 ac	3092.6
		Total:	34.75 ac	3092.6

CN = Total CN*Area / Total Area = **89.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.24 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.20 in**	**9.25 in**	**12.12 in**	**6.14 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103B**
POND NAME : **W-103B**

Station Limits: From: 2017+34 To: 2056+38

Roadway Length = 3904 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 12.58 ac
Pervious Roadway Area: 20.04 ac
Total Roadway Area: 32.62 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 0.93 ac
Water Surface Area: 1.20 ac Wet Pond
Total Pond Area: 2.13 ac

Total Area:

Impervious Area: **12.58 ac**
Pervious Area: **20.97 ac**
Water Surface Area: **1.20 ac**
Total Area: **34.75 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	12.58 ac	1232.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	20.97 ac	1866.3
Proposed Ponds (Water Surface)	D	100	1.20 ac	119.9
		Total:	34.75 ac	3219.0

CN = Total CN*Area / Total Area = **92.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.79 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.62 in**	**9.70 in**	**12.59 in**	**6.56 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103B**
POND NAME : **W-103B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.90 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.90 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	17.94 ac-ft	26.78 ac-ft	35.10 ac-ft	17.77 ac-ft
Q_{post} =	19.18 ac-ft	28.10 ac-ft	36.46 ac-ft	19.01 ac-ft
ΔQ =	**1.24 ac-ft**	**1.31 ac-ft**	**1.36 ac-ft**	**1.23 ac-ft**

Attenuation V_{req} = 1.36 ac-ft (use largest value)

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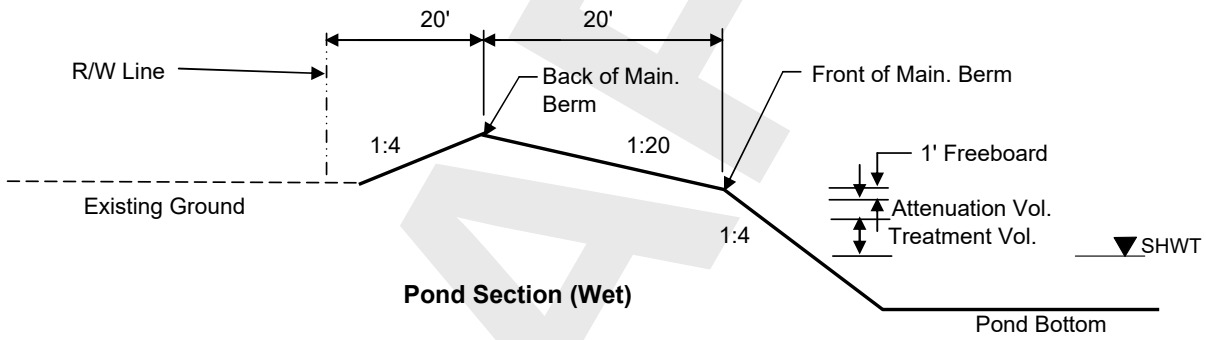
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103B**
POND NAME : **W-103B**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	109.00
Pond Tie-In Width =	20.0 ft	@ 1:4	*Normal Water Elevation =	108.50
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	113.00

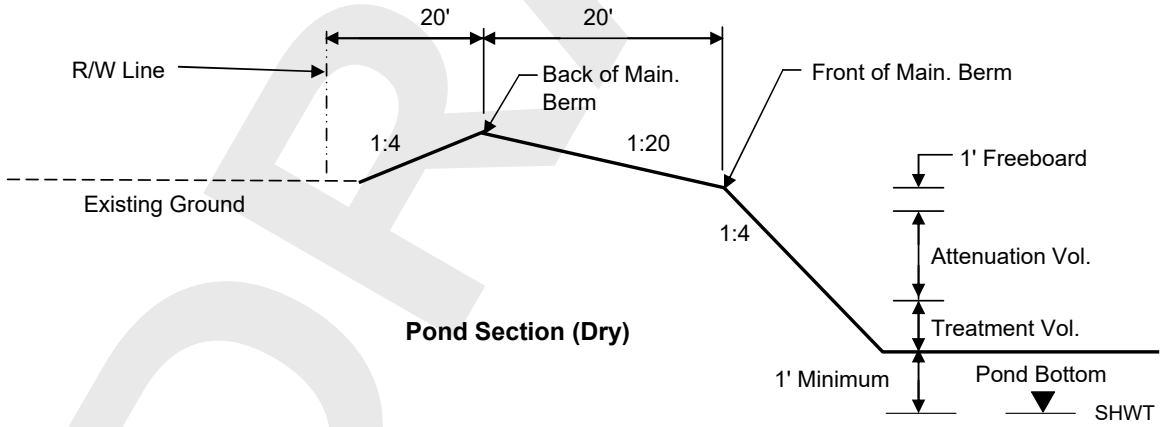
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	111.85 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-103B**
POND NAME : **W-103B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
109.00	Pond R/W	2.72 ac	345.0 ft	344.0 ft	
114.00	Back of Main. Berm	2.13 ac	305.0 ft	304.0 ft	8.15 ac-ft
113.50		1.86 ac	285.0 ft	284.0 ft	7.16 ac-ft
113.00	Front of Main. Berm	1.61 ac	265.0 ft	264.0 ft	6.29 ac-ft
112.00	Provided Treat.Vol.+Att.Vol	1.51 ac	257.0 ft	256.0 ft	4.73 ac-ft
111.68	Req'd Treat.Vol+Att. Vol	1.48 ac	254.4 ft	253.4 ft	4.25 ac-ft
111.60	Estimated Storm Sewer TW	1.47 ac	253.8 ft	252.8 ft	4.13 ac-ft
110.74	Top of Treatment Vol.	1.39 ac	246.9 ft	245.9 ft	2.90 ac-ft
108.50	Normal Water Level	1.20 ac	229.0 ft	228.0 ft	0.00 ac-ft
106.50		1.04 ac	213.0 ft	212.0 ft	
101.50	Pond Bottom	0.79 ac	201.0 ft	172.0 ft	

Required Treatment+Attenuation Vol.= 4.25 ac-ft
Required Treatment+Attenuation Stage= 111.68 ft

Provided Treatment+Attenuation Vol.= 4.73 ac-ft
Provided Treatment+Attenuation Stage= 112.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.13 ac-ft
Estimated Storm Sewer TW EL.= 111.60 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.41 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104B**
POND NAME : **W-104B**

Station Limits: From: 2056+38 To: 2082+48

Roadway Length = 2610 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 20.97 ac
Total Roadway Area: 20.97 ac

Pond Area: Pervious Pond Area = 4.37 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **25.34 ac**
Total Area: **25.34 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	20.89 ac	1859.5
Residential Areas (2.0 acre, 12% Impervious)	D	82	4.45 ac	364.9
		Total:	25.34 ac	2224.4

CN = Total CN*Area / Total Area = **87.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.39 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.05 in**	**9.09 in**	**11.96 in**	**5.99 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104B**
POND NAME : **W-104B**

Station Limits: From: 2056+38 To: 2082+48

Roadway Length = 2610 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Ramp Area: 0.34 ac

Impervious Roadway Area: 7.67 ac
Pervious Roadway Area: 12.96 ac
Total Roadway Area: 20.97 ac

Pond Area:

Pervious Pond Area : 1.06 ac
Water Surface Area: 3.31 ac Wet Pond
Total Pond Area: 4.37 ac

Total Area:

Impervious Area: **8.01 ac**
Pervious Area: **14.03 ac**
Water Surface Area: **3.31 ac**
Total Area: **25.34 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	8.01 ac	784.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	14.03 ac	1248.3
Proposed Ponds (Water Surface)	D	100	3.31 ac	330.9
		Total:	25.34 ac	2364.1

CN = Total CN*Area / Total Area = **93.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.72 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.70 in**	**9.78 in**	**12.67 in**	**6.64 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104B**
POND NAME : **W-104B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.11 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.11 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.78 ac-ft	19.21 ac-ft	25.26 ac-ft	12.66 ac-ft
Q_{post} =	14.15 ac-ft	20.66 ac-ft	26.76 ac-ft	14.02 ac-ft
ΔQ =	**1.37 ac-ft**	**1.45 ac-ft**	**1.50 ac-ft**	**1.36 ac-ft**

Attenuation V_{req} = 1.50 ac-ft (use largest value)

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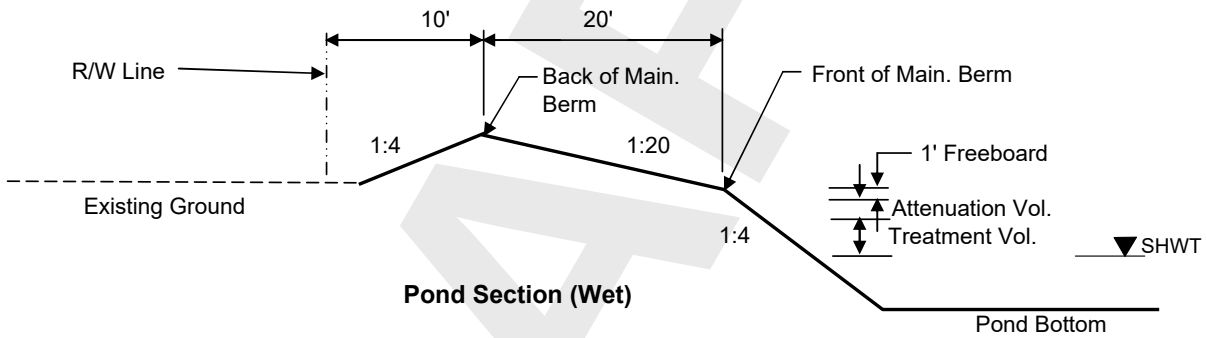
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104B**
POND NAME : **W-104B**

Maintenance Area Width =	20.0 ft	@ 1:20	Existing Ground Elevation =	108.00
Pond Tie-In Width =	10.4 ft	@ 1:4	Normal Water Elevation =	107.50
Maximum Storage Depth (**SD**) =	1.10 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	110.33

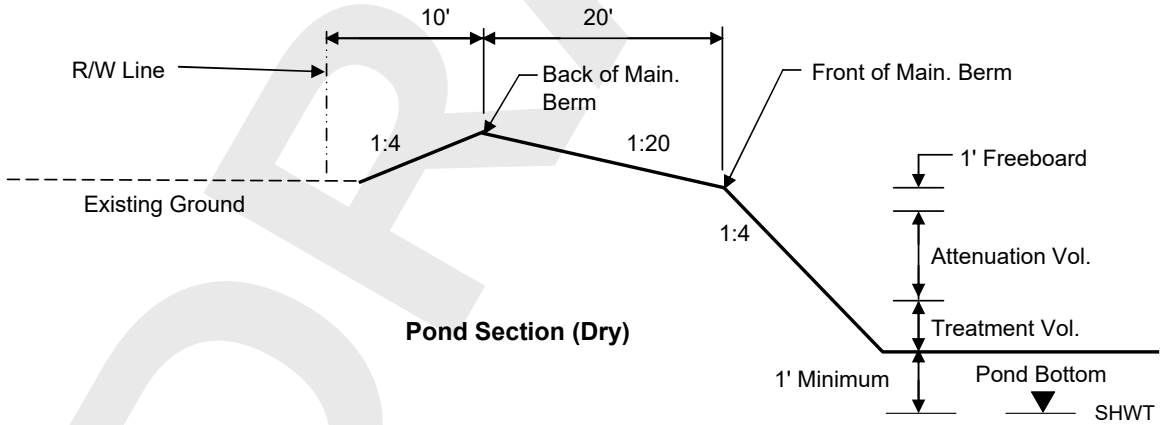
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1000 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	108.83 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-104B**
POND NAME : **W-104B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
108.00	Pond R/W	4.80 ac	457.0 ft	457.5 ft	
110.60	Back of Main. Berm	4.37 ac	436.2 ft	436.7 ft	11.25 ac-ft
110.10		3.98 ac	416.2 ft	416.7 ft	9.16 ac-ft
109.60	Front of Main. Berm	3.61 ac	396.2 ft	396.7 ft	7.26 ac-ft
108.60	Provided Treat.Vol.+Att.Vol	3.46 ac	388.2 ft	388.7 ft	3.72 ac-ft
108.57	Req'd Treat.Vol+Att. Vol	3.46 ac	387.9 ft	388.4 ft	3.61 ac-ft
108.55	Estimated Storm Sewer TW	3.46 ac	387.8 ft	388.3 ft	3.55 ac-ft
108.20	Top of Treatment Vol.	3.41 ac	385.0 ft	385.5 ft	2.35 ac-ft
107.50	Normal Water Level	3.31 ac	379.4 ft	379.9 ft	0.00 ac-ft
101.00		2.46 ac	327.4 ft	327.9 ft	
97.00	Pond Bottom	2.29 ac	337.4 ft	295.9 ft	

Required Treatment+Attenuation Vol.= 3.61 ac-ft
Required Treatment+Attenuation Stage= 108.57 ft

Provided Treatment+Attenuation Vol.= 3.72 ac-ft
Provided Treatment+Attenuation Stage= 108.60 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.47 ac-ft
Estimated Storm Sewer TW EL.= 108.55 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 6.00 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-105B**
POND NAME : **W-105B**

Station Limits: From: 2082+48 To: 2101+88

Roadway Length = 1940 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 15.59 ac
Total Roadway Area: 15.59 ac

Pond Area: Pervious Pond Area = 3.15 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **18.74 ac**
Total Area: **18.74 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	1.92 ac	165.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	16.82 ac	1496.8
		Total:	18.74 ac	1661.9

CN = Total CN*Area / Total Area = **88.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.27 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.16 in**	**9.21 in**	**12.08 in**	**6.10 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-105B**
POND NAME : **W-105B**

Station Limits: From: 2082+48 To: 2101+88

Roadway Length = 1940 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Ramp Area: 1.22 ac

Impervious Roadway Area: 5.70 ac
Pervious Roadway Area: 8.67 ac
Total Roadway Area: 15.59 ac

Pond Area:

Pervious Pond Area : 0.90 ac
Water Surface Area: 2.25 ac Wet Pond
Total Pond Area: 3.15 ac

Total Area:

Impervious Area: **6.92 ac**
Pervious Area: **9.57 ac**
Water Surface Area: **2.25 ac**
Total Area: **18.74 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	6.92 ac	678.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	1.18 ac	101.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	8.39 ac	746.9
Proposed Ponds (Water Surface)	D	100	2.25 ac	224.6
		Total:	18.74 ac	1751.1

CN = Total CN*Area / Total Area = **93.5**

Runoff:

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.72 in**	**9.80 in**	**12.69 in**	**6.66 in**

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.70 in

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

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-105B**
POND NAME : **W-105B**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.56 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.56 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	9.62 ac-ft	14.38 ac-ft	18.87 ac-ft	9.53 ac-ft
Q_{post} =	10.49 ac-ft	15.31 ac-ft	19.82 ac-ft	10.40 ac-ft
ΔQ =	**0.87 ac-ft**	**0.93 ac-ft**	**0.96 ac-ft**	**0.87 ac-ft**

Attenuation V_{req} = 0.96 ac-ft (use largest value)

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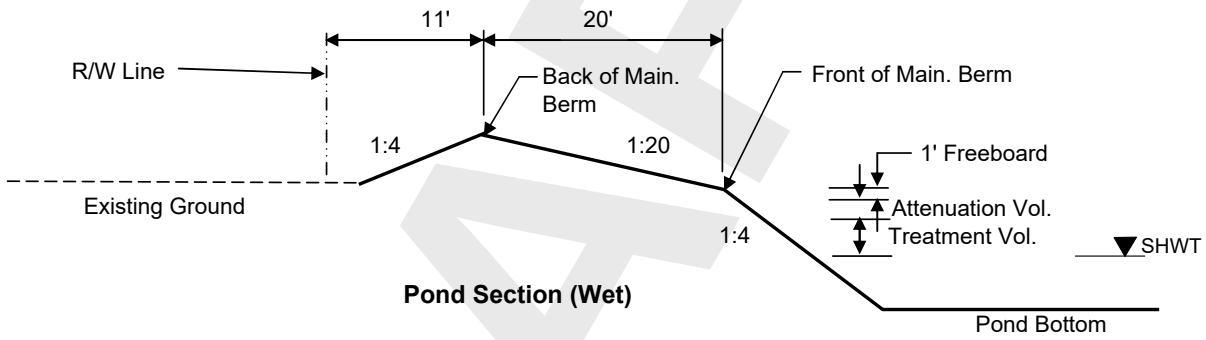
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-105B**
POND NAME : **W-105B**

Maintenance Area Width =	20.0 ft	@ 1:20	Existing Ground Elevation =	112.00
Pond Tie-In Width =	10.8 ft	@ 1:4	Normal Water Elevation =	111.50
Maximum Storage Depth (**SD**) =	1.20 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	116.83

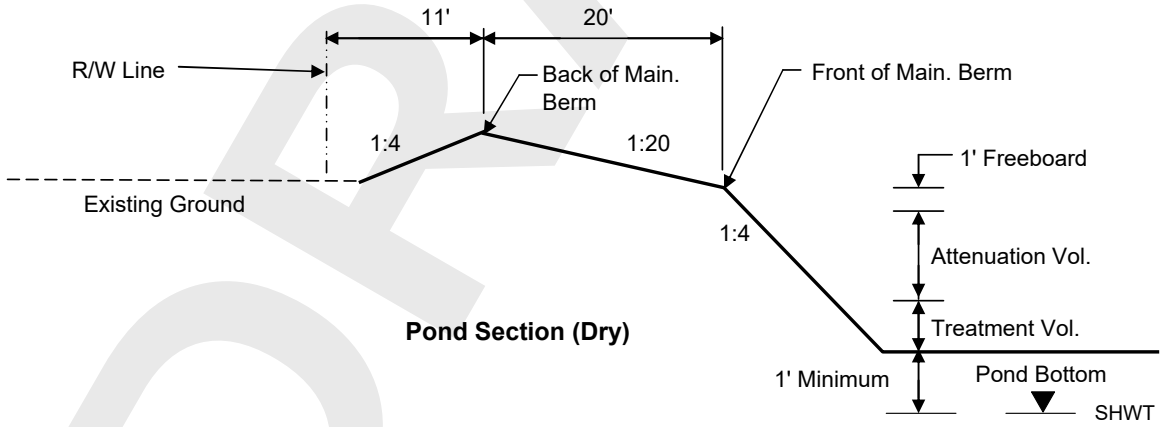
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	115.73 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-105B**
POND NAME : **W-105B**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
112.00	Pond R/W	3.53 ac	392.0 ft	392.0 ft	
114.70	Back of Main. Berm	3.15 ac	370.4 ft	370.4 ft	8.05 ac-ft
114.20		2.82 ac	350.4 ft	350.4 ft	6.56 ac-ft
113.70	Front of Main. Berm	2.51 ac	330.4 ft	330.4 ft	5.23 ac-ft
112.70	Provided Treat.Vol.+Att.Vol	2.39 ac	322.4 ft	322.4 ft	2.78 ac-ft
112.59	Req'd Treat.Vol+Att. Vol	2.37 ac	321.5 ft	321.5 ft	2.52 ac-ft
112.56	Estimated Storm Sewer TW	2.37 ac	321.2 ft	321.2 ft	2.43 ac-ft
112.18	Top of Treatment Vol.	2.33 ac	318.3 ft	318.3 ft	1.56 ac-ft
111.50	Normal Water Level	2.25 ac	312.8 ft	312.8 ft	0.00 ac-ft
106.50		1.71 ac	272.8 ft	272.8 ft	
101.50	Pond Bottom	1.46 ac	272.8 ft	232.8 ft	

Required Treatment+Attenuation Vol.= 2.52 ac-ft
Required Treatment+Attenuation Stage= 112.59 ft

Provided Treatment+Attenuation Vol.= 2.78 ac-ft
Provided Treatment+Attenuation Stage= 112.70 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.43 ac-ft
Estimated Storm Sewer TW EL.= 112.56 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.41 ac

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-106**
POND NAME : **W-106**

Station Limits: From: 2101+88 To: 2117+11

Roadway Length = 1523 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 33.55 ac
Total Roadway Area: 33.55 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 6.32 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **39.87 ac**
Total Area: **39.87 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.55 ac	37.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	1.79 ac	153.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	37.53 ac	3339.8
		Total:	39.87 ac	3531.1

CN = Total CN*Area / Total Area = **88.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.29 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.15 in**	**9.20 in**	**12.07 in**	**6.09 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-106**
POND NAME : **W-106**

Station Limits: From: 2101+88 To: 2117+11

Roadway Length = 1523 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 12.96 ac
Pervious Roadway Area: 20.59 ac
Total Roadway Area: 33.55 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.36 ac
Water Surface Area: 4.95 ac Wet Pond
Total Pond Area: 6.32 ac

Total Area:

Impervious Area: **12.96 ac**
Pervious Area: **21.95 ac**
Water Surface Area: **4.95 ac**
Total Area: **39.87 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	12.96 ac	1270.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.36 ac	24.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	1.17 ac	100.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	20.42 ac	1817.5
Proposed Ponds (Water Surface)	D	100	4.95 ac	495.3
		Total:	39.87 ac	3708.1

CN = Total CN*Area / Total Area = **93.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.75 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.67 in**	**9.75 in**	**12.64 in**	**6.61 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-106**
POND NAME : **W-106**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	3.32 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.32 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	20.42 ac-ft	30.55 ac-ft	40.09 ac-ft	20.23 ac-ft
Q_{post} =	22.15 ac-ft	32.39 ac-ft	41.99 ac-ft	21.96 ac-ft
ΔQ =	**1.73 ac-ft**	**1.84 ac-ft**	**1.90 ac-ft**	**1.73 ac-ft**

Attenuation V_{req} = 1.90 ac-ft (use largest value)

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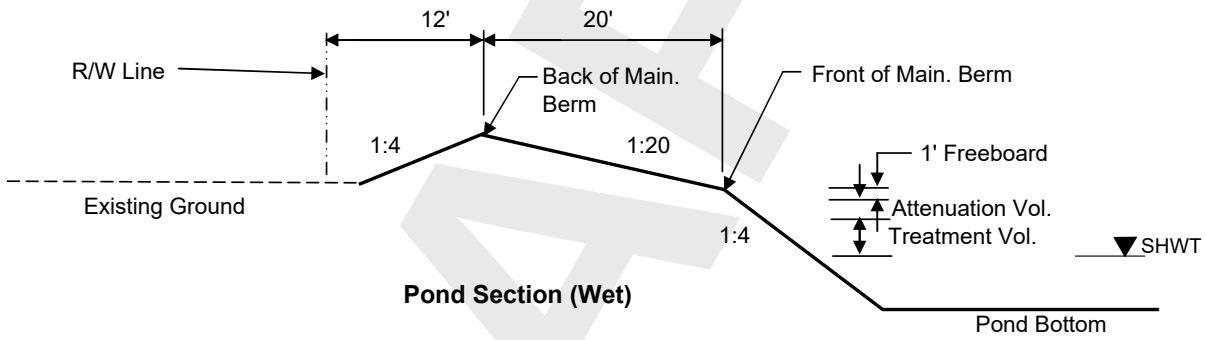
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-106**
POND NAME : **W-106**

Maintenance Area Width =	20.0 ft	@ 1:20	Existing Ground Elevation =	113.00
Pond Tie-In Width =	12.0 ft	@ 1:4	Normal Water Elevation =	112.50
Maximum Storage Depth (**SD**) =	1.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	115.00

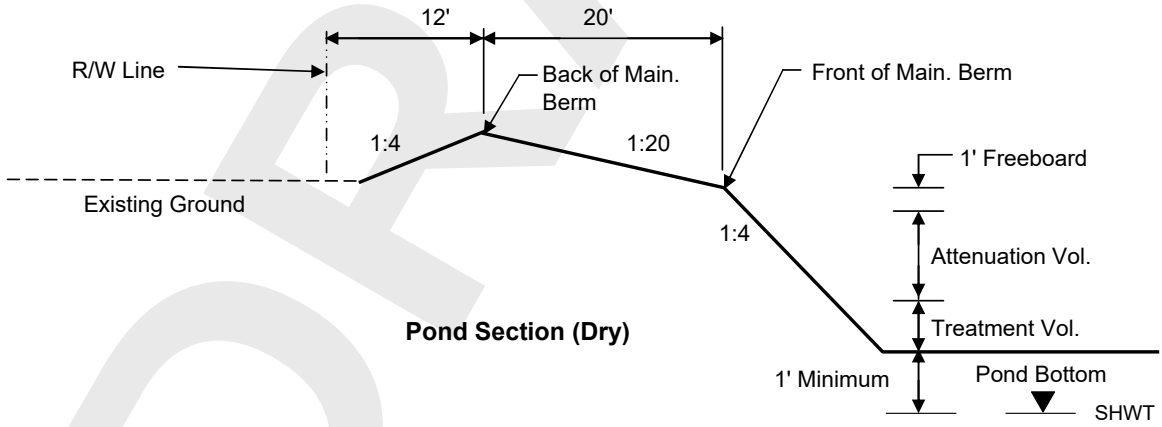
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	300 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	113.85 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-106**
POND NAME : **W-106**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
113.00	Pond R/W	6.91 ac	549.0 ft	548.0 ft	
116.00	Back of Main. Berm	6.32 ac	525.0 ft	524.0 ft	18.77 ac-ft
115.50		5.84 ac	505.0 ft	504.0 ft	15.73 ac-ft
115.00	Front of Main. Berm	5.39 ac	485.0 ft	484.0 ft	12.92 ac-ft
114.00	Provided Treat.Vol.+Att.Vol	5.21 ac	477.0 ft	476.0 ft	7.62 ac-ft
113.54	Req'd Treat.Vol+Att. Vol	5.13 ac	473.3 ft	472.3 ft	5.22 ac-ft
113.51	Estimated Storm Sewer TW	5.13 ac	473.1 ft	472.1 ft	5.09 ac-ft
113.15	Top of Treatment Vol.	5.06 ac	470.2 ft	469.2 ft	3.26 ac-ft
112.50	Normal Water Level	4.95 ac	465.0 ft	464.0 ft	0.00 ac-ft
101.90		3.31 ac	380.2 ft	379.2 ft	
98.90	Pond Bottom	3.35 ac	410.6 ft	355.2 ft	

Required Treatment+Attenuation Vol.= 5.22 ac-ft
Required Treatment+Attenuation Stage= 113.54 ft

Provided Treatment+Attenuation Vol.= 7.62 ac-ft
Provided Treatment+Attenuation Stage= 114.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 5.05 ac-ft
Estimated Storm Sewer TW EL.= 113.51 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 8.63 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-107**
POND NAME : **W-107**

Station Limits: From: 2117+11 To: 2153+68

Roadway Length = 3551 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 63.41 ac
Total Roadway Area: 63.41 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 21.13 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **84.54 ac**
Total Area: **84.54 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	4.17 ac	358.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	80.37 ac	7152.8
		Total:	84.54 ac	7511.6

CN = Total CN*Area / Total Area = **88.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.25 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.18 in**	**9.23 in**	**12.10 in**	**6.12 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-107**
POND NAME : **W-107**

Station Limits: From: 2117+11 To: 2153+68

Roadway Length = 3551 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 23.32 ac
Pervious Roadway Area: 40.09 ac
Total Roadway Area: 63.41 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 2.30 ac
Water Surface Area: 18.84 ac Wet Pond
Total Pond Area: 21.13 ac

Total Area:

Impervious Area: **23.32 ac**
Pervious Area: **42.39 ac**
Water Surface Area: **18.84 ac**
Total Area: **84.54 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	23.32 ac	2285.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	2.79 ac	239.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	39.60 ac	3524.1
Proposed Ponds (Water Surface)	D	100	18.84 ac	1883.5
		Total:	84.54 ac	7932.8

CN = Total CN*Area / Total Area = **93.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.66 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.77 in**	**9.85 in**	**12.74 in**	**6.71 in**

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-107**
POND NAME : **W-107**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	7.05 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **7.05 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	43.53 ac-ft	65.03 ac-ft	85.27 ac-ft	43.12 ac-ft
Q_{post} =	47.66 ac-ft	69.40 ac-ft	89.77 ac-ft	47.24 ac-ft
ΔQ =	**4.13 ac-ft**	**4.37 ac-ft**	**4.50 ac-ft**	**4.12 ac-ft**

Attenuation V_{req} = 4.50 ac-ft (use largest value)

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Job Number: PBS-001-01

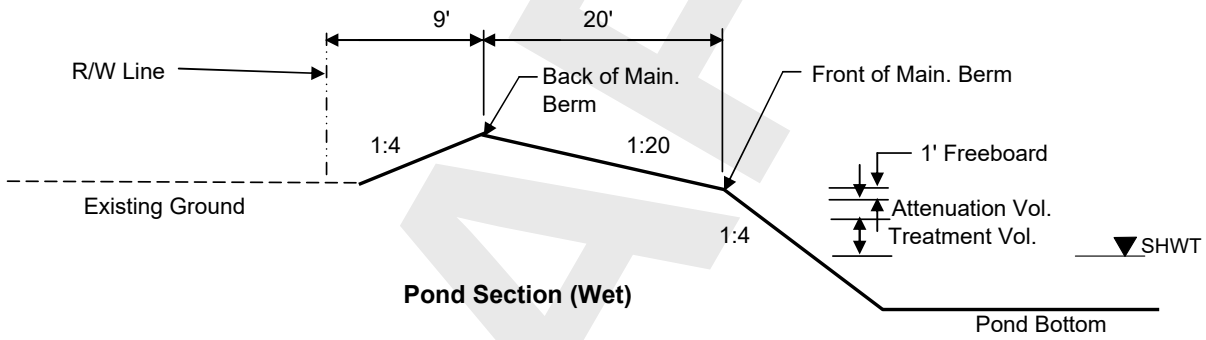
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-107**
POND NAME : **W-107**

Maintenance Area Width =	20.0 ft	@ 1:20	Existing Ground Elevation =	110.00
Pond Tie-In Width =	8.8 ft	@ 1:4	Normal Water Elevation =	109.50
Maximum Storage Depth (**SD**) =	0.70 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	112.83

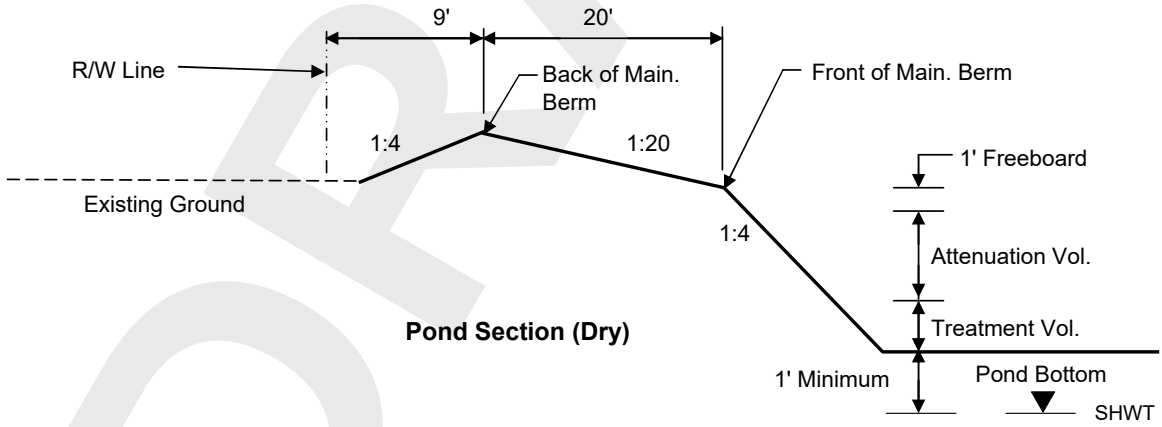
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	600 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	111.53 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-107**
POND NAME : **W-107**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
110.00	Pond R/W	21.91 ac	977.0 ft	977.0 ft	
112.20	Back of Main. Berm	21.13 ac	959.4 ft	959.4 ft	52.77 ac-ft
111.70		20.26 ac	939.4 ft	939.4 ft	42.42 ac-ft
111.20	Front of Main. Berm	19.41 ac	919.4 ft	919.4 ft	32.50 ac-ft
110.20	Provided Treat.Vol.+Att.Vol	19.07 ac	911.4 ft	911.4 ft	13.27 ac-ft
110.11	Req'd Treat.Vol+Att. Vol	19.04 ac	910.7 ft	910.7 ft	11.55 ac-ft
110.09	Estimated Storm Sewer TW	19.03 ac	910.5 ft	910.5 ft	11.17 ac-ft
109.90	Top of Treatment Vol.	18.97 ac	909.0 ft	909.0 ft	7.56 ac-ft
109.50	Normal Water Level	18.84 ac	905.8 ft	905.8 ft	0.00 ac-ft
102.00		16.42 ac	845.8 ft	845.8 ft	
99.00	Pond Bottom	16.30 ac	863.8 ft	821.8 ft	

Required Treatment+Attenuation Vol.= 11.55 ac-ft
Required Treatment+Attenuation Stage= 110.11 ft

Provided Treatment+Attenuation Vol.= 13.27 ac-ft
Provided Treatment+Attenuation Stage= 110.20 ft

Estimated Treat. Vol.+Storm Sewer Att.= 11.17 ac-ft
Estimated Storm Sewer TW EL.= 110.09 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 27.39 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-108**
POND NAME : **W-108**

Station Limits: From: 2153+68 To: 2185+83

Roadway Length = 3215 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 25.83 ac
Total Roadway Area: 25.83 ac

Pond Area: Pervious Pond Area = 2.59 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **28.42 ac**
Total Area: **28.42 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	12.38 ac	1064.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	12.22 ac	1087.9
Woods & Wetlands Combination	D	97	3.82 ac	370.5
		Total:	28.42 ac	2523.1

CN = Total CN*Area / Total Area = **88.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.27 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.17 in**	**9.22 in**	**12.09 in**	**6.11 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-108**
POND NAME : **W-108**

Station Limits: From: 2153+68 To: 2185+83

Roadway Length = 3215 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 9.45 ac
Pervious Roadway Area: 16.38 ac
Total Roadway Area: 25.83 ac

Pond Area:

Pervious Pond Area : 0.89 ac
Water Surface Area: 1.70 ac Wet Pond
Total Pond Area: 2.59 ac

Total Area:

Impervious Area: **9.45 ac**
Pervious Area: **17.28 ac**
Water Surface Area: **1.70 ac**
Total Area: **28.42 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	9.45 ac	925.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	8.28 ac	712.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	9.00 ac	800.8
Proposed Ponds (Water Surface)	D	100	1.70 ac	169.8
		Total:	28.42 ac	2608.6

CN = Total CN*Area / Total Area = **91.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.90 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.52 in**	**9.60 in**	**12.48 in**	**6.46 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-108**
POND NAME : **W-108**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.37 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.37 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	14.61 ac-ft	21.84 ac-ft	28.64 ac-ft	14.48 ac-ft
Q_{post} =	15.45 ac-ft	22.73 ac-ft	29.56 ac-ft	15.31 ac-ft
ΔQ =	**0.83 ac-ft**	**0.89 ac-ft**	**0.92 ac-ft**	**0.83 ac-ft**

Attenuation V_{req} = 0.92 ac-ft (use largest value)

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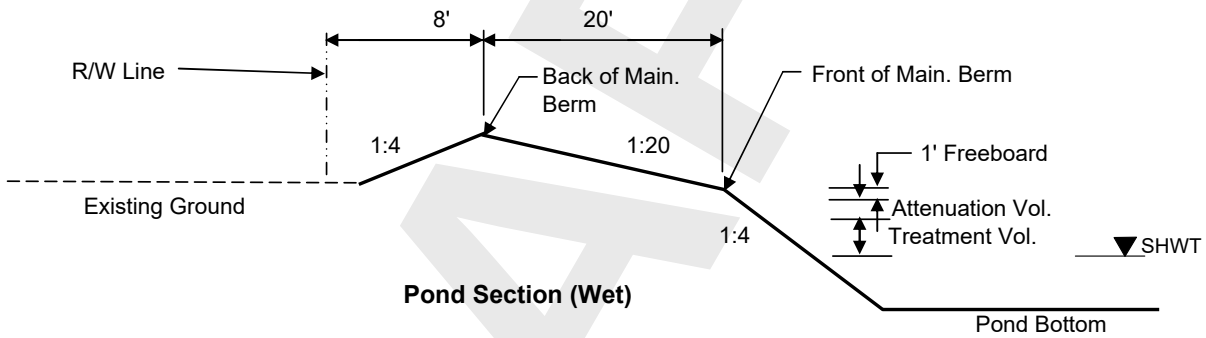
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-108**
POND NAME : **W-108**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	106.00
Pond Tie-In Width =	8.0 ft	@ 1:4	*Normal Water Elevation =	104.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	108.83

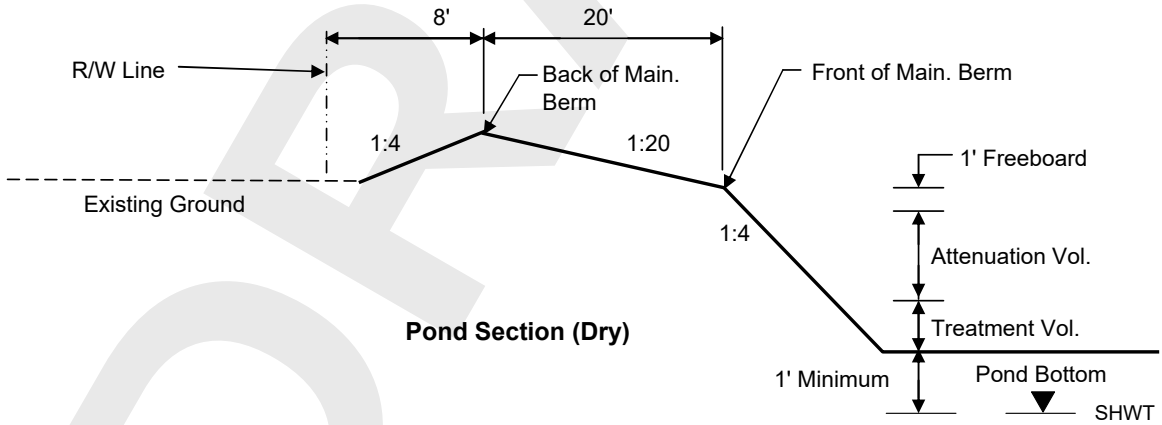
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1900 ft	
Estimated Energy Losses =	1.0 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	106.88 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-108**
POND NAME : **W-108**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
106.00	Pond R/W	2.84 ac	352.0 ft	352.0 ft	
108.00	Back of Main. Berm	2.59 ac	336.0 ft	336.0 ft	7.86 ac-ft
107.50		2.29 ac	316.0 ft	316.0 ft	6.63 ac-ft
107.00	Front of Main. Berm	2.01 ac	296.0 ft	296.0 ft	5.56 ac-ft
106.00	Provided Treat.Vol.+Att.Vol	1.90 ac	288.0 ft	288.0 ft	3.60 ac-ft
105.84	Req'd Treat.Vol+Att. Vol	1.89 ac	286.7 ft	286.7 ft	3.29 ac-ft
105.80	Estimated Storm Sewer TW	1.88 ac	286.4 ft	286.4 ft	3.22 ac-ft
105.35	Top of Treatment Vol.	1.84 ac	282.8 ft	282.8 ft	2.39 ac-ft
104.00	Normal Water Level	1.70 ac	272.0 ft	272.0 ft	0.00 ac-ft
97.50		1.11 ac	220.0 ft	220.0 ft	
92.50	Pond Bottom	0.93 ac	226.0 ft	180.0 ft	

Required Treatment+Attenuation Vol.= 3.29 ac-ft
Required Treatment+Attenuation Stage= 105.84 ft

Provided Treatment+Attenuation Vol.= 3.60 ac-ft
Provided Treatment+Attenuation Stage= 106.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.20 ac-ft
Estimated Storm Sewer TW EL.= 105.80 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.56 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-109**
POND NAME : **W-109**

Station Limits: From: 2185+83 To: 2230+00

Roadway Length = 4417 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 35.49 ac
Total Roadway Area: 35.49 ac

Pond Area: Pervious Pond Area = 1.95 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **37.44 ac**
Total Area: **37.44 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.06 ac	4.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	4.20 ac	361.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	33.14 ac	2949.4
Residential Areas (1/8 acre or less, 65% Impervious)	C	90	0.04 ac	3.4
		Total:	37.44 ac	3318.2

CN = Total CN*Area / Total Area = **88.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.28 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.15 in**	**9.20 in**	**12.07 in**	**6.10 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-109**
POND NAME : **W-109**

Station Limits: From: 2185+83 To: 2230+00

Roadway Length = 4417 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 12.98 ac
Pervious Roadway Area: 22.51 ac
Total Roadway Area: 35.49 ac

Pond Area:

Pervious Pond Area : 0.92 ac
Water Surface Area: 1.03 ac Wet Pond
Total Pond Area: 1.95 ac

Total Area:

Impervious Area: **12.98 ac**
Pervious Area: **23.43 ac**
Water Surface Area: **1.03 ac**
Total Area: **37.44 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	12.98 ac	1272.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.04 ac	2.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	2.63 ac	226.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	20.77 ac	1848.1
Proposed Ponds (Water Surface)	D	100	1.03 ac	102.7
		Total:	37.44 ac	3451.5

CN = Total CN*Area / Total Area = **92.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.85 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.57 in**	**9.65 in**	**12.53 in**	**6.51 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-109**
POND NAME : **W-109**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	3.12 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.12 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	19.20 ac-ft	28.71 ac-ft	37.67 ac-ft	19.02 ac-ft
Q_{post} =	20.50 ac-ft	30.10 ac-ft	39.11 ac-ft	20.32 ac-ft
ΔQ =	**1.30 ac-ft**	**1.39 ac-ft**	**1.44 ac-ft**	**1.30 ac-ft**

Attenuation V_{req} = 1.44 ac-ft (use largest value)

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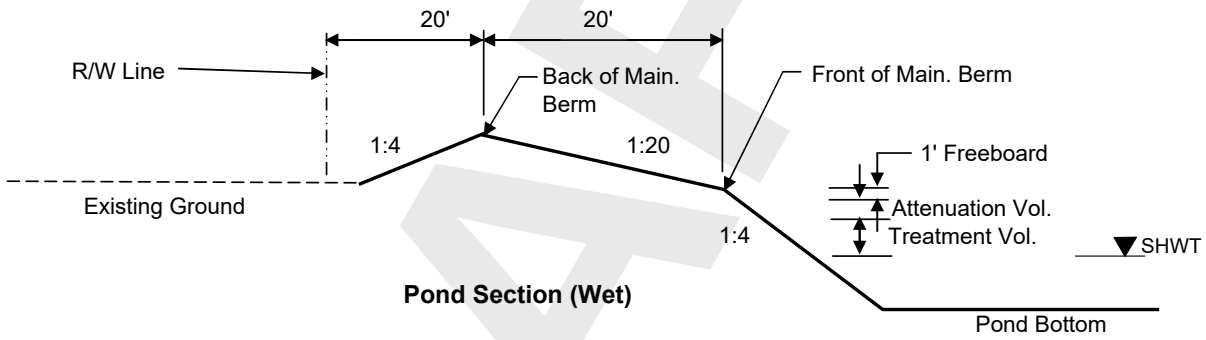
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-109**
POND NAME : **W-109**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	105.50
Pond Tie-In Width =	20.0 ft	@ 1:4	*Normal Water Elevation =	104.50
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	111.33

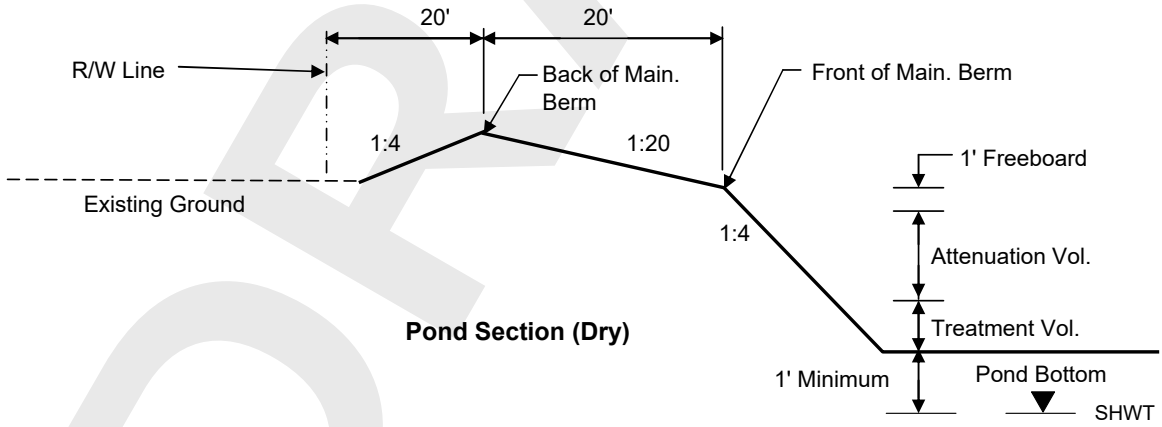
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	110.13 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-109**
POND NAME : **W-109**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
105.50	Pond R/W	2.52 ac	332.0 ft	331.0 ft	
110.50	Back of Main. Berm	1.95 ac	292.0 ft	291.0 ft	7.87 ac-ft
110.00		1.69 ac	272.0 ft	271.0 ft	6.96 ac-ft
109.50	Front of Main. Berm	1.45 ac	252.0 ft	251.0 ft	6.17 ac-ft
108.50	Provided Treat.Vol.+Att.Vol	1.36 ac	244.0 ft	243.0 ft	4.77 ac-ft
108.35	Req'd Treat.Vol+Att. Vol	1.35 ac	242.8 ft	241.8 ft	4.56 ac-ft
108.25	Estimated Storm Sewer TW	1.34 ac	242.0 ft	241.0 ft	4.42 ac-ft
107.24	Top of Treatment Vol.	1.25 ac	233.9 ft	232.9 ft	3.12 ac-ft
104.50	Normal Water Level	1.03 ac	212.0 ft	211.0 ft	0.00 ac-ft
99.50		0.68 ac	172.0 ft	171.0 ft	
94.50	Pond Bottom	0.52 ac	172.0 ft	131.0 ft	

Required Treatment+Attenuation Vol.= 4.56 ac-ft
Required Treatment+Attenuation Stage= 108.35 ft

Provided Treatment+Attenuation Vol.= 4.77 ac-ft
Provided Treatment+Attenuation Stage= 108.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.42 ac-ft
Estimated Storm Sewer TW EL.= 108.25 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.15 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-110**
POND NAME : **W-110**

Station Limits: From: 2230+00 To: 2270+00

Roadway Length = 4000 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 34.68 ac
Total Roadway Area: 34.68 ac

Pond Area: Pervious Pond Area = 3.82 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **38.50 ac**
Total Area: **38.50 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.06 ac	4.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	4.32 ac	371.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	34.08 ac	3032.9
Residential Areas (1/8 acre or less, 65% Impervious)	C	90	0.04 ac	3.5
		Total:	38.50 ac	3412.1

CN = Total CN*Area / Total Area = **88.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.28 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.15 in**	**9.20 in**	**12.07 in**	**6.10 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-110**
POND NAME : **W-110**

Station Limits: From: 2230+00 To: 2270+00

Roadway Length = 4000 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Ramp Area: 2.54 ac

Impervious Roadway Area: 11.75 ac
Pervious Roadway Area: 20.39 ac
Total Roadway Area: 34.68 ac

Pond Area:

Pervious Pond Area : 1.10 ac
Water Surface Area: 2.72 ac Wet Pond
Total Pond Area: 3.82 ac

Total Area:

Impervious Area: **14.29 ac**
Pervious Area: **21.49 ac**
Water Surface Area: **2.72 ac**
Total Area: **38.50 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.29 ac	1400.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	0.03 ac	2.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	2.41 ac	207.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	19.04 ac	1694.8
Proposed Ponds (Water Surface)	D	100	2.72 ac	271.7
		Total:	38.50 ac	3577.0

CN = Total CN*Area / Total Area = **92.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.76 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.66 in**	**9.74 in**	**12.63 in**	**6.60 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-110**
POND NAME : **W-110**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	3.21 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.21 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	19.74 ac-ft	29.52 ac-ft	38.74 ac-ft	19.56 ac-ft
Q_{post} =	21.36 ac-ft	31.24 ac-ft	40.51 ac-ft	21.17 ac-ft
ΔQ =	**1.61 ac-ft**	**1.71 ac-ft**	**1.77 ac-ft**	**1.61 ac-ft**

Attenuation V_{req} = 1.77 ac-ft (use largest value)

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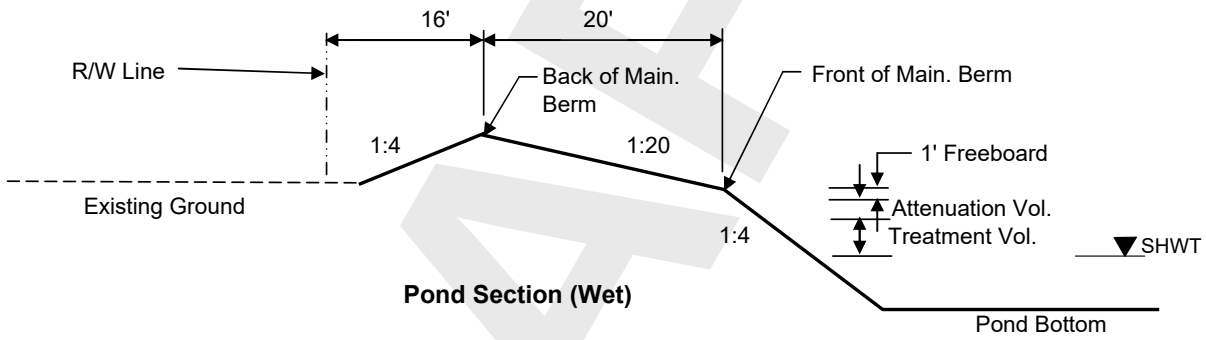
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-110**
POND NAME : **W-110**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	99.00
Pond Tie-In Width =	16.0 ft	@ 1:4	*Normal Water Elevation =	99.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	105.33

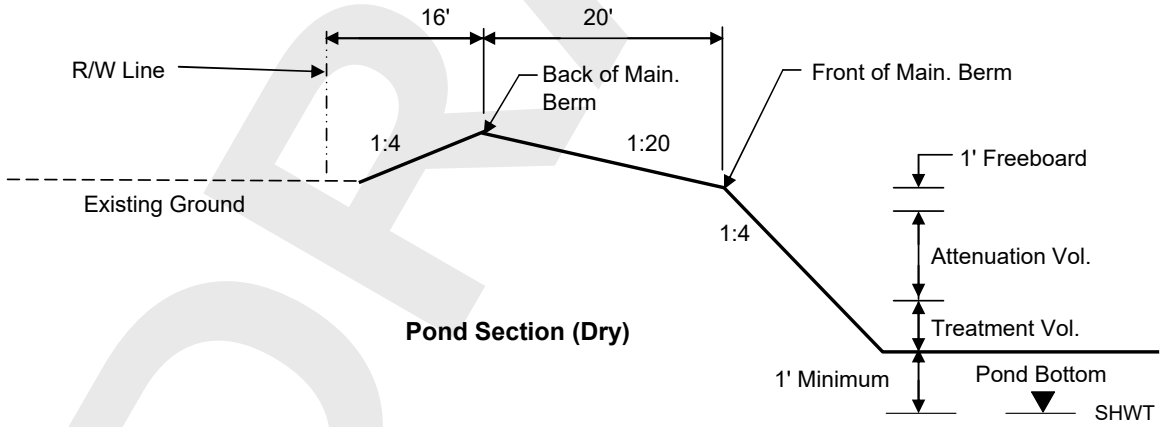
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	150 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	104.26 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-110**
POND NAME : **W-110**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
99.00	Pond R/W	4.44 ac	440.0 ft	440.0 ft	
103.00	Back of Main. Berm	3.82 ac	408.0 ft	408.0 ft	12.19 ac-ft
102.50		3.46 ac	388.0 ft	388.0 ft	10.37 ac-ft
102.00	Front of Main. Berm	3.11 ac	368.0 ft	368.0 ft	8.73 ac-ft
101.00	Provided Treat.Vol.+Att.Vol	2.98 ac	360.0 ft	360.0 ft	5.69 ac-ft
100.76	Req'd Treat.Vol+Att. Vol	2.94 ac	358.1 ft	358.1 ft	4.98 ac-ft
100.71	Estimated Storm Sewer TW	2.94 ac	357.7 ft	357.7 ft	4.83 ac-ft
100.15	Top of Treatment Vol.	2.86 ac	353.2 ft	353.2 ft	3.21 ac-ft
99.00	Normal Water Level	2.72 ac	344.0 ft	344.0 ft	0.00 ac-ft
96.00		2.35 ac	320.0 ft	320.0 ft	
91.00	Pond Bottom	2.01 ac	312.0 ft	280.0 ft	

Required Treatment+Attenuation Vol.= 4.98 ac-ft
Required Treatment+Attenuation Stage= 100.76 ft

Provided Treatment+Attenuation Vol.= 5.69 ac-ft
Provided Treatment+Attenuation Stage= 101.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.82 ac-ft
Estimated Storm Sewer TW EL.= 100.71 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 5.56 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-111**
POND NAME : **W-111**

Station Limits: From: 2270+00 To: 2304+14

Roadway Length = 3414 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 27.61 ac
Total Roadway Area: 27.61 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.65 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **30.26 ac**
Total Area: **30.26 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	13.65 ac	928.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	17.11 ac	1522.4
		Total:	30.76 ac	2450.6

CN = Total CN*Area / Total Area = **79.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.55 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.12 in**	**8.05 in**	**10.86 in**	**5.07 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-111**
POND NAME : **W-111**

Station Limits: From: 2270+00 To: 2304+14

Roadway Length = 3414 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Ramp	Varies	2	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 10.33 ac
*Pervious Roadway Area: 17.28 ac
Total Roadway Area: 27.61 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 2.65 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 2.65 ac

Total Area:

Impervious Area: **10.33 ac**
Pervious Area: **19.93 ac**
Water Surface Area: **0.00 ac**
Total Area: **30.26 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	10.33 ac	1012.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	9.68 ac	658.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	10.25 ac	912.2
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	30.26 ac	2582.6

CN = Total CN*Area / Total Area = **85.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.72 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.77 in**	**8.79 in**	**11.64 in**	**5.72 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-111**
POND NAME : **W-111**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	0.86 ac-ft
	0.50 in	x Total Basin Area =	1.26 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.26 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.91 ac-ft	20.31 ac-ft	27.38 ac-ft	12.77 ac-ft
Q_{post} =	14.56 ac-ft	22.16 ac-ft	29.35 ac-ft	14.41 ac-ft
ΔQ =	**1.64 ac-ft**	**1.85 ac-ft**	**1.97 ac-ft**	**1.64 ac-ft**

Attenuation V_{req} = 1.97 ac-ft (use largest value)

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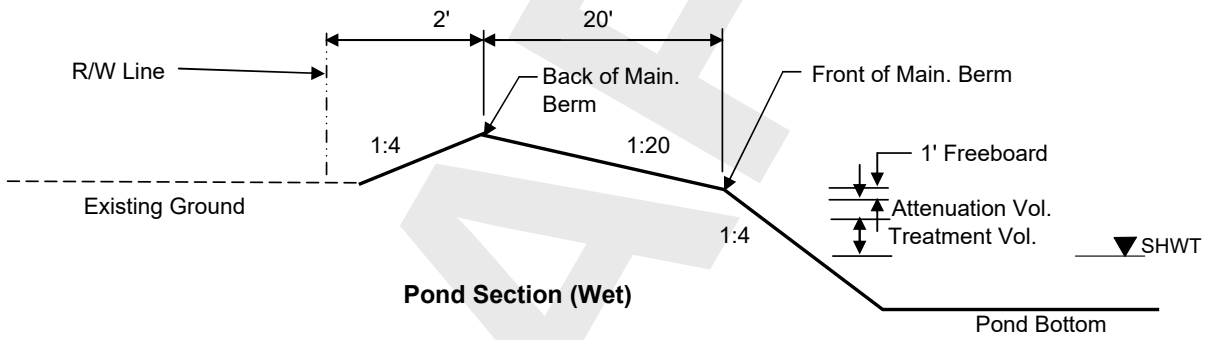
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-111**
POND NAME : **W-111**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	105.00
Pond Tie-In Width =	2.0 ft	@ 1:4	*Normal Water Elevation =	100.50
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	111.33

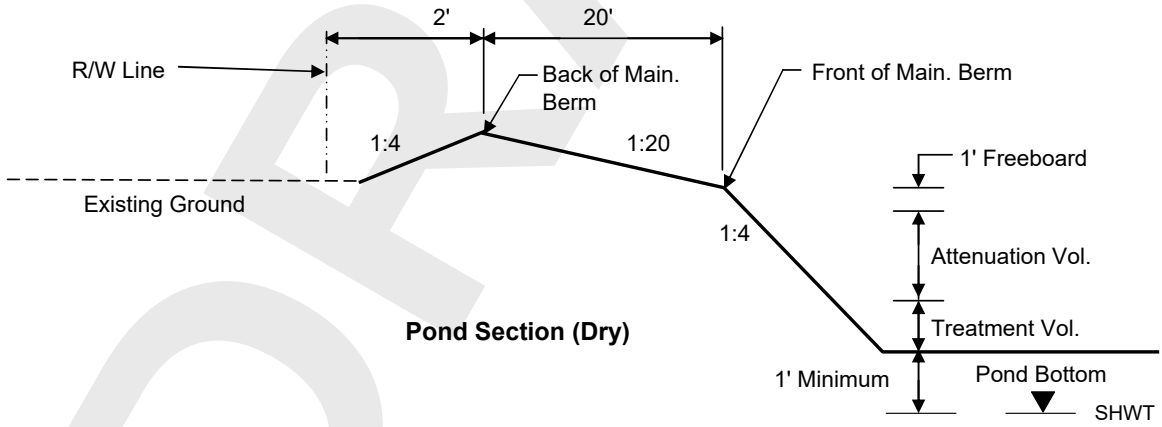
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	110.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-111**
POND NAME : **W-111**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
105.00	Pond R/W	2.71 ac	344.0 ft	343.0 ft	
105.50	Back of Main. Berm	2.65 ac	340.0 ft	339.0 ft	8.04 ac-ft
105.00		2.34 ac	320.0 ft	319.0 ft	6.80 ac-ft
104.50	Front of Main. Berm	2.06 ac	300.0 ft	299.0 ft	5.70 ac-ft
103.50	Provided Treat.Vol.+Att.Vol	1.95 ac	292.0 ft	291.0 ft	3.69 ac-ft
103.27	Req'd Treat.Vol+Att. Vol	1.93 ac	290.2 ft	289.2 ft	3.25 ac-ft
103.10	Estimated Storm Sewer TW	1.91 ac	288.8 ft	287.8 ft	2.92 ac-ft
102.21	Top of Treatment Vol.	1.82 ac	281.7 ft	280.7 ft	1.26 ac-ft
101.50	Pond Bottom	1.74 ac	276.0 ft	275.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.23 ac-ft
Required Treatment+Attenuation Stage= 103.27 ft

Provided Treatment+Attenuation Vol.= 3.69 ac-ft
Provided Treatment+Attenuation Stage= 103.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.90 ac-ft
Estimated Storm Sewer TW EL.= 103.10 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.39 ac

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DATE: February 17, 2011
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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-112**
POND NAME : **W-112**

Station Limits: From: BNC Alignment To: BNC Alignment

Roadway Length = 4364 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Offsite Area: 0.70 ac

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 27.26 ac
Total Roadway Area: 27.96 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.17 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **30.13 ac**
Total Area: **30.13 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	13.58 ac	923.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	16.55 ac	1472.9
		Total:	30.13 ac	2396.1

CN = Total CN*Area / Total Area = **79.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.57 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.11 in**	**8.04 in**	**10.84 in**	**5.05 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-112**
POND NAME : **W-112**

Station Limits: From: BNC Alignment To: BNC Alignment

Roadway Length = 4364 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Ramp	Varies	2	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Offsite Area: 0.70 ac

*Impervious Roadway Area: 4.89 ac
*Pervious Roadway Area: 22.37 ac
Total Roadway Area: 27.96 ac

Area calculated using shapes in CADD.

Pond Area:

Pervious Pond Area : 0.86 ac
Water Surface Area: 1.30 ac Wet Pond
Total Pond Area: 2.17 ac

Total Area:

Impervious Area: **4.89 ac**
Pervious Area: **23.93 ac**
Water Surface Area: **1.30 ac**
Total Area: **30.13 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	4.89 ac	479.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	11.62 ac	790.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	12.31 ac	1095.6
Proposed Ponds (Water Surface)	D	100	1.30 ac	130.5
		Total:	30.13 ac	2495.6

CN = Total CN*Area / Total Area = **82.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.07 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.48 in**	**8.46 in**	**11.30 in**	**5.43 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-112**
POND NAME : **W-112**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	2.51 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **2.51 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	12.82 ac-ft	20.17 ac-ft	27.21 ac-ft	12.68 ac-ft
Q_{post} =	13.76 ac-ft	21.25 ac-ft	28.36 ac-ft	13.62 ac-ft
ΔQ =	**0.95 ac-ft**	**1.08 ac-ft**	**1.15 ac-ft**	**0.94 ac-ft**

Attenuation V_{req} = 1.15 ac-ft (use largest value)

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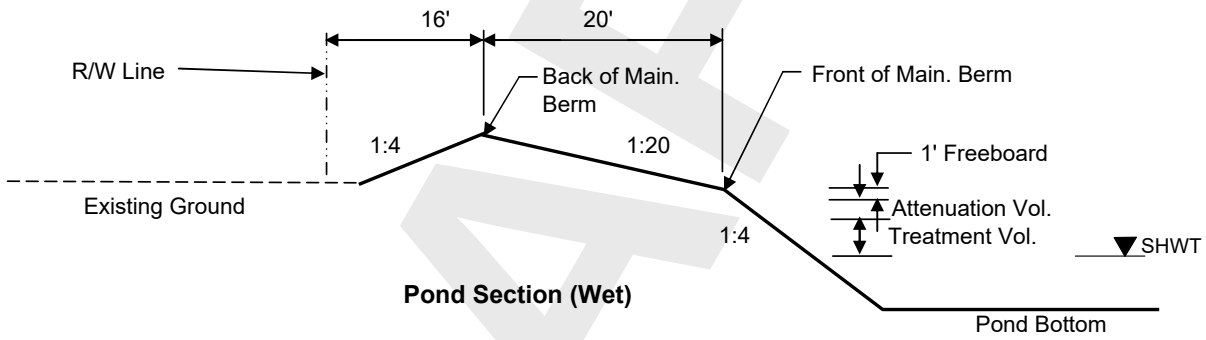
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-112**
POND NAME : **W-112**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	96.00
Pond Tie-In Width =	16.4 ft	@ 1:4	*Normal Water Elevation =	95.50
Maximum Storage Depth (**SD**) =	2.60 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	101.33

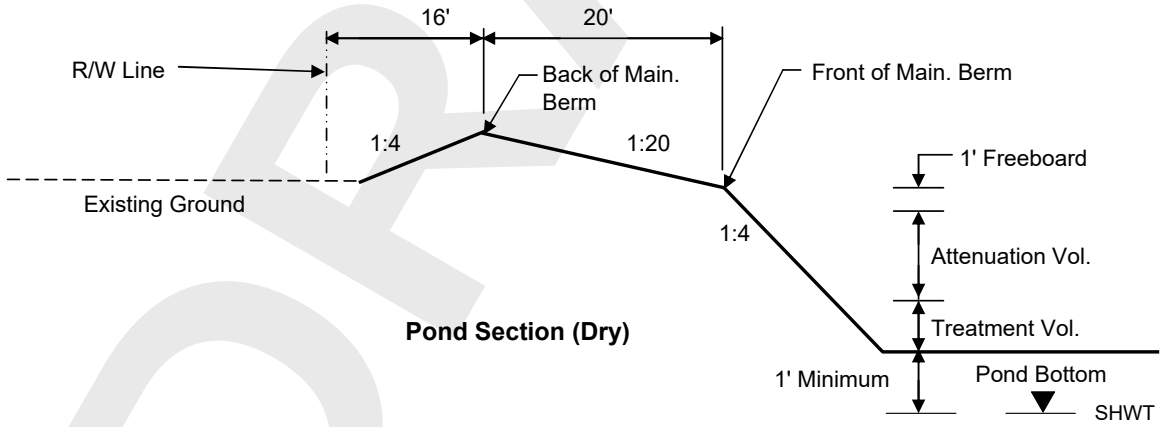
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	100.13 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-112**
POND NAME : **W-112**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
96.00	Pond R/W	2.65 ac	340.0 ft	340.0 ft	
100.10	Back of Main. Berm	2.17 ac	307.2 ft	307.2 ft	7.19 ac-ft
99.60		1.89 ac	287.2 ft	287.2 ft	6.17 ac-ft
99.10	Front of Main. Berm	1.64 ac	267.2 ft	267.2 ft	5.29 ac-ft
98.10	Provided Treat.Vol.+Att.Vol	1.54 ac	259.2 ft	259.2 ft	3.70 ac-ft
98.08	Req'd Treat.Vol+Att. Vol	1.54 ac	259.0 ft	259.0 ft	3.66 ac-ft
97.95	Estimated Storm Sewer TW	1.53 ac	258.0 ft	258.0 ft	3.47 ac-ft
97.35	Top of Treatment Vol.	1.47 ac	253.2 ft	253.2 ft	2.57 ac-ft
95.50	Normal Water Level	1.30 ac	238.4 ft	238.4 ft	0.00 ac-ft
101.90		1.93 ac	289.6 ft	289.6 ft	
98.90	Pond Bottom	1.54 ac	252.0 ft	265.6 ft	

Required Treatment+Attenuation Vol.= 3.66 ac-ft
Required Treatment+Attenuation Stage= 98.08 ft

Provided Treatment+Attenuation Vol.= 3.70 ac-ft
Provided Treatment+Attenuation Stage= 98.10 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.45 ac-ft
Estimated Storm Sewer TW EL.= 97.95 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.32 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-113**
POND NAME : **W-113**

Station Limits: From: 2304+14 To: 2344+00

Roadway Length = 3986 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 60.04 ac
Total Roadway Area: 60.04 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 25.92 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **85.96 ac**
Total Area: **85.96 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	32.12 ac	2183.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	53.84 ac	4791.8
		Total:	85.96 ac	6975.7

CN = Total CN*Area / Total Area = **81.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.32 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.29 in**	**8.25 in**	**11.06 in**	**5.23 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-113**
POND NAME : **W-113**

Station Limits: From: 2304+14 To: 2344+00

Roadway Length = 3986 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Ramp	Varies	2	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 16.97 ac
*Pervious Roadway Area: 43.07 ac
Total Roadway Area: 60.04 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 25.92 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 25.92 ac

Total Area:

Impervious Area: **16.97 ac**
Pervious Area: **68.99 ac**
Water Surface Area: **0.00 ac**
Total Area: **85.96 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	16.97 ac	1663.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	36.90 ac	2509.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	32.09 ac	2855.6
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	85.96 ac	7027.9

CN = Total CN*Area / Total Area = **81.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 2.23 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.36 in**	**8.32 in**	**11.15 in**	**5.30 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-113**
POND NAME : **W-113**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.41 ac-ft
	0.50 in	x Total Basin Area =	3.58 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.58 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	37.89 ac-ft	59.07 ac-ft	79.25 ac-ft	37.49 ac-ft
Q_{post} =	38.39 ac-ft	59.63 ac-ft	79.86 ac-ft	37.98 ac-ft
ΔQ =	**0.50 ac-ft**	**0.56 ac-ft**	**0.60 ac-ft**	**0.50 ac-ft**

Attenuation V_{req} = 0.60 ac-ft (use largest value)

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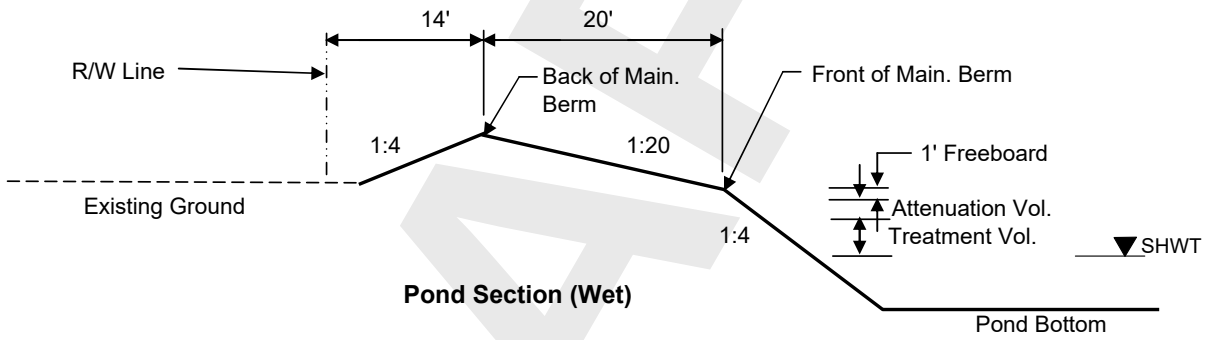
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-113**
POND NAME : **W-113**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	115.00
Pond Tie-In Width =	14.0 ft	@ 1:4	*Normal Water Elevation =	115.00
Maximum Storage Depth (**SD**) =	1.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.33

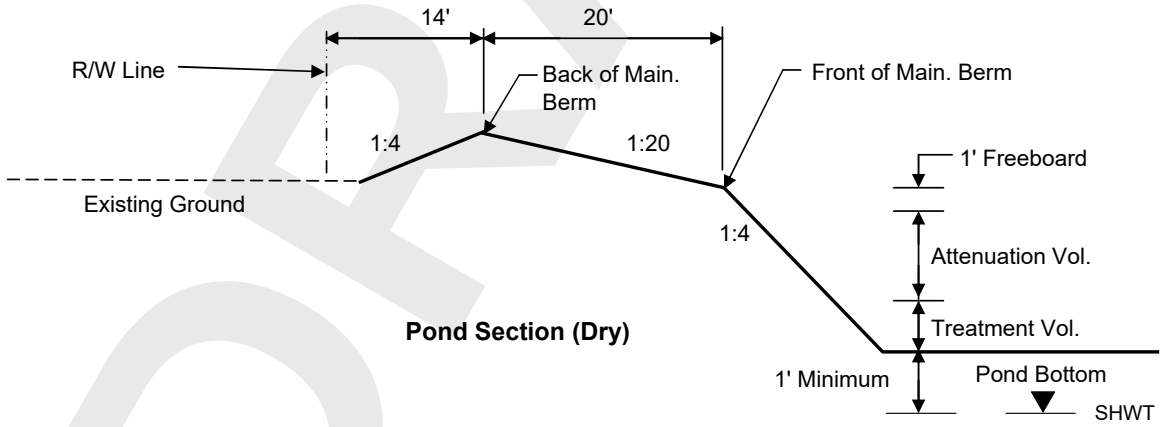
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	600 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	119.03 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-113**
POND NAME : **W-113**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
115.00	Pond R/W	27.30 ac	1091.0 ft	1090.0 ft	
118.50	Back of Main. Berm	25.92 ac	1063.0 ft	1062.0 ft	60.54 ac-ft
118.00		24.95 ac	1043.0 ft	1042.0 ft	47.82 ac-ft
117.50	Front of Main. Berm	24.00 ac	1023.0 ft	1022.0 ft	35.58 ac-ft
116.50	Provided Treat.Vol.+Att.Vol	23.63 ac	1015.0 ft	1014.0 ft	11.77 ac-ft
116.40	Req'd Treat.Vol+Att. Vol	23.59 ac	1014.2 ft	1013.2 ft	9.41 ac-ft
116.40	Estimated Storm Sewer TW	23.59 ac	1014.2 ft	1013.2 ft	9.41 ac-ft
116.30	Top of Treatment Vol.	23.55 ac	1013.4 ft	1012.4 ft	7.05 ac-ft
116.00	Pond Bottom	23.44 ac	1011.0 ft	1010.0 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 4.19 ac-ft
Required Treatment+Attenuation Stage= 116.40 ft

Provided Treatment+Attenuation Vol.= 11.77 ac-ft
Provided Treatment+Attenuation Stage= 116.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.08 ac-ft
Estimated Storm Sewer TW EL.= 116.40 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 34.13 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-114**
POND NAME : **W-114**

Station Limits: From: 2344+00 To: 2363+07

Roadway Length = 1907 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Offsite Area: 3.74 ac

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 17.91 ac
Total Roadway Area: 21.65 ac

**Area calculated in CADD.*

Pond Area: Pervious Pond Area = 4.27 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **25.92 ac**
Total Area: **25.92 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	A	49	22.84 ac	1119.3
Pasture, grassland or range; Fair condition (50% to 75%	D	84	0.32 ac	26.9
Woods & Wetlands Combination	A	88	2.76 ac	242.9
		Total:	25.92 ac	1389.0

CN = Total CN*Area / Total Area = **53.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **8.66 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**2.31 in**	**4.49 in**	**6.78 in**	**2.27 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-114**
POND NAME : **W-114**

Station Limits: From: 2344+00 To: 2363+07

Roadway Length = 1907 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Ramp	2.0		Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Offsite Area: 3.74 ac

Impervious Roadway Area: 14.76 ac
Pervious Roadway Area: 3.15 ac
Total Roadway Area: 17.91 ac

Area calculated in CADD.

Pond Area:

Pervious Pond Area : 4.27 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 4.27 ac

Total Area:

Impervious Area: **14.76 ac**
Pervious Area: **11.16 ac**
Water Surface Area: **0.00 ac**
Total Area: **25.92 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.76 ac	1446.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	11.00 ac	747.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	0.16 ac	14.7
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	25.92 ac	2209.0

CN = Total CN*Area / Total Area = **85.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.73 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.76 in**	**8.77 in**	**11.62 in**	**5.70 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-114**
POND NAME : **W-114**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.23 ac-ft
	0.50 in	x Total Basin Area =	1.08 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.23 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	4.98 ac-ft	9.69 ac-ft	14.64 ac-ft	4.90 ac-ft
Q_{post} =	12.44 ac-ft	18.94 ac-ft	25.10 ac-ft	12.31 ac-ft
ΔQ =	**7.46 ac-ft**	**9.25 ac-ft**	**10.46 ac-ft**	**7.41 ac-ft**

Attenuation V_{req} = 10.46 ac-ft (use largest value)

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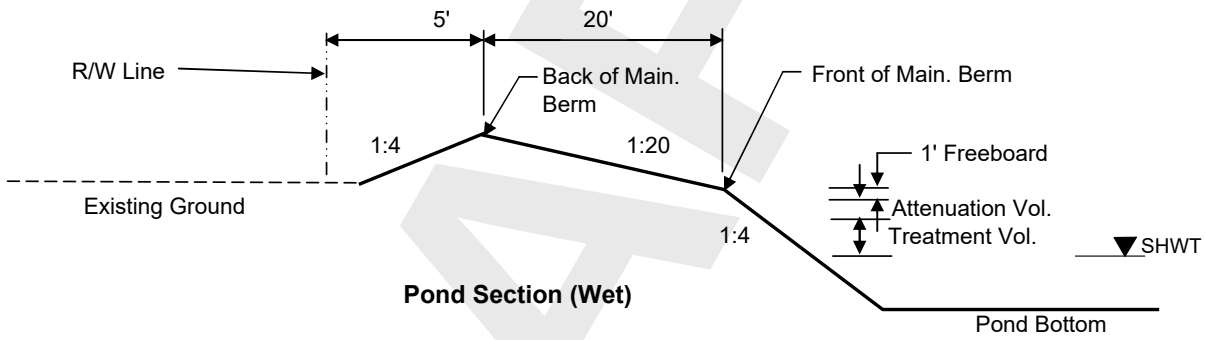
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-114**
POND NAME : **W-114**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	111.00
Pond Tie-In Width =	4.8 ft	@ 1:4	*Normal Water Elevation =	105.00
Maximum Storage Depth (**SD**) =	5.20 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	110.83

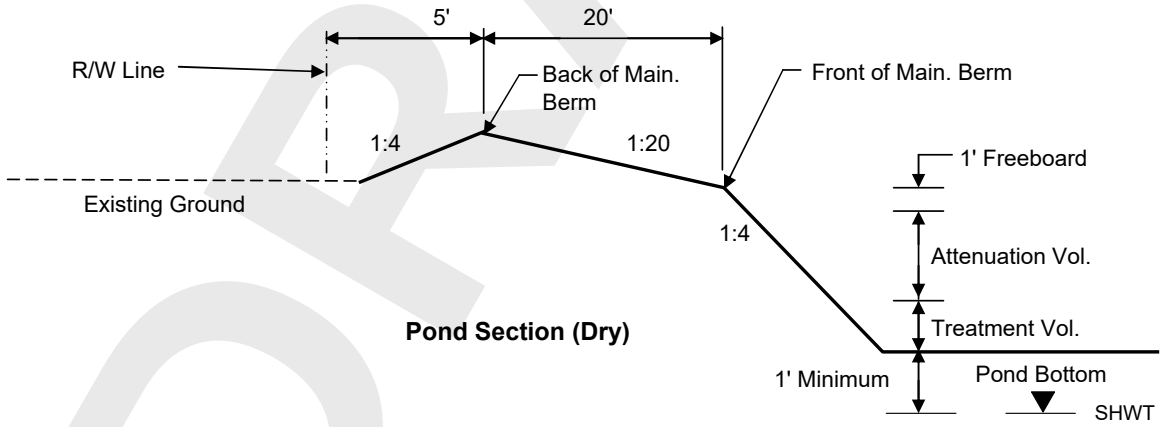
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	350 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	109.66 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-114**
POND NAME : **W-114**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
111.00	Pond R/W	4.46 ac	441.0 ft	441.0 ft	
112.20	Back of Main. Berm	4.27 ac	431.4 ft	431.4 ft	20.31 ac-ft
111.70		3.89 ac	411.4 ft	411.4 ft	18.27 ac-ft
111.20	Front of Main. Berm	3.52 ac	391.4 ft	391.4 ft	16.42 ac-ft
110.20	Provided Treat.Vol.+Att.Vol	3.37 ac	383.4 ft	383.4 ft	12.97 ac-ft
110.18	Req'd Treat.Vol+Att. Vol	3.37 ac	383.2 ft	383.2 ft	12.90 ac-ft
109.20	Estimated Storm Sewer TW	3.24 ac	375.4 ft	375.4 ft	9.67 ac-ft
106.50	Top of Treatment Vol.	2.87 ac	353.8 ft	353.8 ft	1.42 ac-ft
106.00	Pond Bottom	2.81 ac	349.8 ft	349.8 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 11.69 ac-ft
Required Treatment+Attenuation Stage= 110.18 ft

Provided Treatment+Attenuation Vol.= 12.97 ac-ft
Provided Treatment+Attenuation Stage= 110.20 ft

Estimated Treat. Vol.+Storm Sewer Att.= 8.64 ac-ft
Estimated Storm Sewer TW EL.= 109.20 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 5.58 ac

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-115**
POND NAME : **W-115**

Station Limits: From: 2363+07 To: 2408+70

Roadway Length = 4563 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 37.50 ac
Total Roadway Area: 37.50 ac

Pond Area: Pervious Pond Area = 6.08 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **43.58 ac**
Total Area: **43.58 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	A	49	20.53 ac	1006.0
Pasture, grassland or range; Fair condition (50% to 75%	D	84	16.41 ac	1378.5
Woods & Wetlands Combination	D	97	6.64 ac	644.2
		Total:	43.58 ac	3028.7

CN = Total CN*Area / Total Area = **69.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **4.39 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**3.98 in**	**6.70 in**	**9.36 in**	**3.93 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-115**
POND NAME : **W-115**

Station Limits: From: 2363+07 To: 2408+70

Roadway Length = 4563 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Ramp	2.0		Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 14.17 ac
Pervious Roadway Area: 23.33 ac
Total Roadway Area: 37.50 ac

Pond Area:

Pervious Pond Area : 6.08 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 6.08 ac

Total Area:

Impervious Area: **14.17 ac**
Pervious Area: **29.41 ac**
Water Surface Area: **0.00 ac**
Total Area: **43.58 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	14.17 ac	1388.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	16.10 ac	1095.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	13.31 ac	1184.5
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	43.58 ac	3668.2

CN = Total CN*Area / Total Area = **84.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.88 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.64 in**	**8.63 in**	**11.48 in**	**5.58 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-115**
POND NAME : **W-115**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.18 ac-ft
	0.50 in	x Total Basin Area =	1.82 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.82 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	14.46 ac-ft	24.33 ac-ft	34.01 ac-ft	14.28 ac-ft
Q_{post} =	20.47 ac-ft	31.36 ac-ft	41.69 ac-ft	20.26 ac-ft
ΔQ =	**6.01 ac-ft**	**7.04 ac-ft**	**7.68 ac-ft**	**5.98 ac-ft**

Attenuation V_{req} = 7.68 ac-ft (use largest value)

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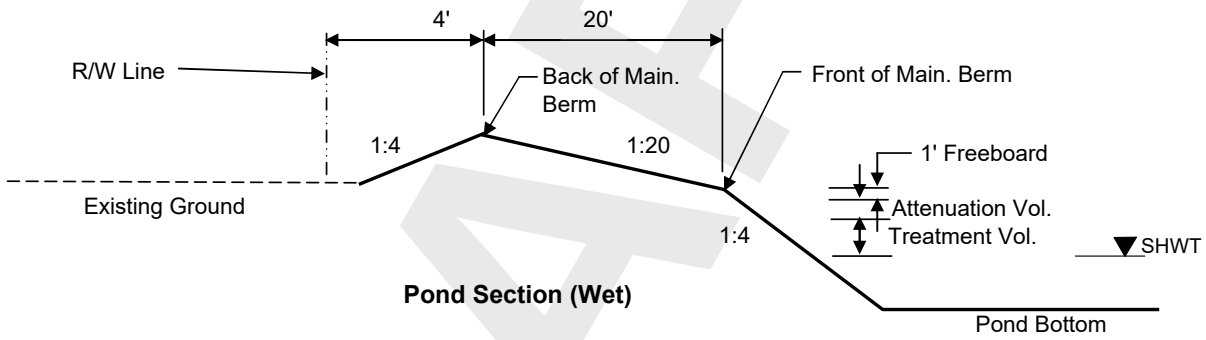
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-115**
POND NAME : **W-115**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	110.00
Pond Tie-In Width =	4.0 ft	@ 1:4	*Normal Water Elevation =	106.00
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	111.83

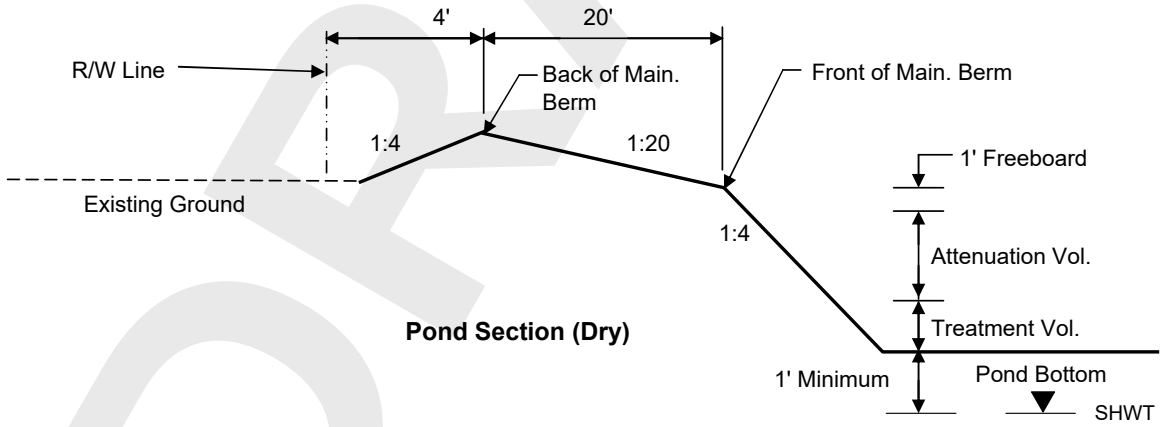
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1500 ft	
Estimated Energy Losses =	0.8 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	110.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-115**
POND NAME : **W-115**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
110.00	Pond R/W	6.27 ac	523.0 ft	522.5 ft	
111.00	Back of Main. Berm	6.08 ac	515.0 ft	514.5 ft	20.38 ac-ft
110.50		5.62 ac	495.0 ft	494.5 ft	17.45 ac-ft
110.00	Front of Main. Berm	5.17 ac	475.0 ft	474.5 ft	14.75 ac-ft
109.00	Provided Treat.Vol.+Att.Vol	5.00 ac	467.0 ft	466.5 ft	9.66 ac-ft
108.97	Req'd Treat.Vol+Att. Vol	5.00 ac	466.7 ft	466.2 ft	9.49 ac-ft
108.65	Estimated Storm Sewer TW	4.94 ac	464.2 ft	463.7 ft	7.92 ac-ft
107.40	Top of Treatment Vol.	4.73 ac	454.2 ft	453.7 ft	1.88 ac-ft
107.00	Pond Bottom	4.66 ac	451.0 ft	450.5 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 9.49 ac-ft
Required Treatment+Attenuation Stage= 108.97 ft

Provided Treatment+Attenuation Vol.= 9.66 ac-ft
Provided Treatment+Attenuation Stage= 109.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 7.80 ac-ft
Estimated Storm Sewer TW EL.= 108.65 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 7.84 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-116**
POND NAME : **W-116**

Station Limits: From: 2408+70 To: 2450+48

Roadway Length = 4178 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 33.57 ac
Total Roadway Area: 33.57 ac

Pond Area: Pervious Pond Area = 3.60 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **37.17 ac**
Total Area: **37.17 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	5.47 ac	371.9
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	29.53 ac	2628.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.26 ac	12.0
Residential Areas (2.0 acre, 12% Impervious)	D	82	0.72 ac	58.6
Commercial & business (85% impervious)	A	89	0.03 ac	2.7
Commercial & business (85% impervious)	D	95	0.97 ac	91.8
Depressional areas & existing storage	D	90	0.20 ac	18.1
		Total:	37.17 ac	3183.2

CN = Total CN*Area / Total Area = **85.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.68 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.81 in**	**8.82 in**	**11.68 in**	**5.75 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-116**
POND NAME : **W-116**

Station Limits: From: 2408+70 To: 2450+48

Roadway Length = 4178 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 12.28 ac
Pervious Roadway Area: 21.29 ac
Total Roadway Area: 33.57 ac

Pond Area:

Pervious Pond Area : 3.60 ac Dry Pond
Water Surface Area: 0.00 ac
Total Pond Area: 3.60 ac

Total Area:

Impervious Area: **12.28 ac**
Pervious Area: **24.89 ac**
Water Surface Area: **0.00 ac**
Total Area: **37.17 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	12.28 ac	1203.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	4.27 ac	290.5
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	20.62 ac	1835.4
Proposed Ponds (Water Surface)	D	100	0.00 ac	0.0
		Total:	37.17 ac	3329.0

CN = Total CN*Area / Total Area = **89.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.17 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.26 in**	**9.32 in**	**12.20 in**	**6.20 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-116**
POND NAME : **W-116**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Dry Retention	**1.00 in**	x Impervious Areas =	1.02 ac-ft
	0.50 in	x Total Basin Area =	1.55 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.55 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	17.98 ac-ft	27.33 ac-ft	36.17 ac-ft	17.80 ac-ft
Q_{post} =	19.40 ac-ft	28.87 ac-ft	37.78 ac-ft	19.22 ac-ft
ΔQ =	**1.42 ac-ft**	**1.54 ac-ft**	**1.61 ac-ft**	**1.41 ac-ft**

Attenuation V_{req} = 1.61 ac-ft (use largest value)

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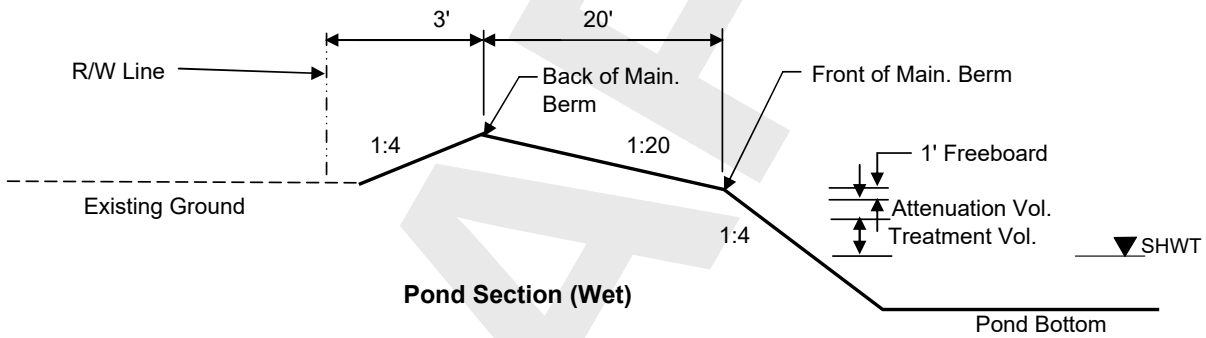
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-116**
POND NAME : **W-116**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	111.00
Pond Tie-In Width =	3.2 ft	@ 1:4	*Normal Water Elevation =	107.50
Maximum Storage Depth (**SD**) =	2.30 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	111.83

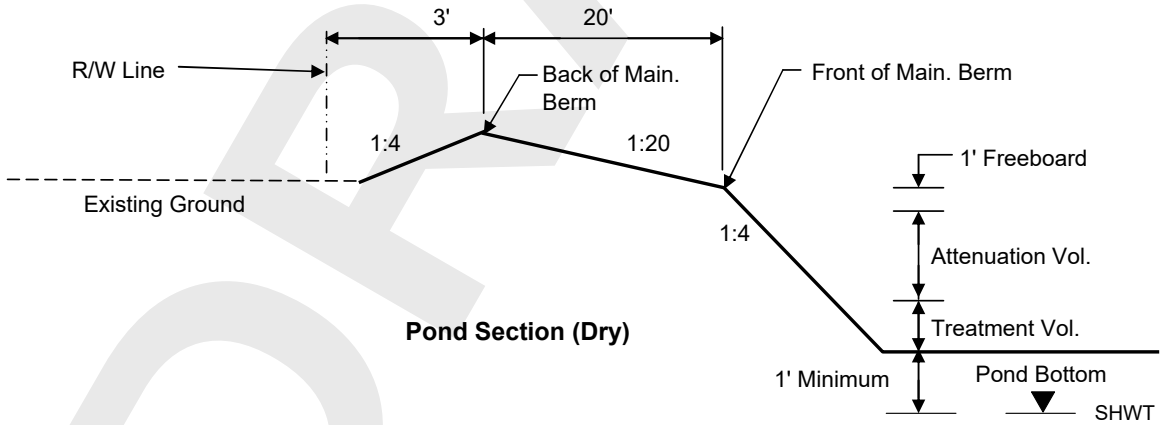
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1800 ft	
Estimated Energy Losses =	0.9 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	109.93 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-116**
POND NAME : **W-116**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
111.00	Pond R/W	3.72 ac	405.0 ft	400.0 ft	
111.80	Back of Main. Berm	3.60 ac	398.6 ft	393.6 ft	9.61 ac-ft
111.30		3.25 ac	378.6 ft	373.6 ft	7.90 ac-ft
110.80	Front of Main. Berm	2.91 ac	358.6 ft	353.6 ft	6.36 ac-ft
109.80	Provided Treat.Vol.+Att.Vol	2.78 ac	350.6 ft	345.6 ft	3.51 ac-ft
109.75	Req'd Treat.Vol+Att. Vol	2.78 ac	350.2 ft	345.2 ft	3.37 ac-ft
109.65	Estimated Storm Sewer TW	2.76 ac	349.4 ft	344.4 ft	3.09 ac-ft
109.15	Top of Treatment Vol.	2.70 ac	345.4 ft	340.4 ft	1.73 ac-ft
108.50	Pond Bottom	2.62 ac	340.2 ft	335.2 ft	0.00 ac-ft

Required Treatment+Attenuation Vol.= 3.16 ac-ft
Required Treatment+Attenuation Stage= 109.75 ft

Provided Treatment+Attenuation Vol.= 3.51 ac-ft
Provided Treatment+Attenuation Stage= 109.80 ft

Estimated Treat. Vol.+Storm Sewer Att.= 2.96 ac-ft
Estimated Storm Sewer TW EL.= 109.65 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.65 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-117**
POND NAME : **W-117**

Station Limits: From: 2450+48 To: 2476+67

Roadway Length = 2619 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 21.04 ac
Total Roadway Area: 21.04 ac

Pond Area: Pervious Pond Area = 2.41 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **23.45 ac**
Total Area: **23.45 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	2.13 ac	145.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	B	79	15.91 ac	1257.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	0.78 ac	69.7
Depressional areas & existing storage	A	87	0.10 ac	8.4
Depressional areas & existing storage	B	88	3.23 ac	284.1
Depressional areas & existing storage	D	90	1.30 ac	116.9
		Total:	23.45 ac	1881.2

CN = Total CN*Area / Total Area = **80.2**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **2.47 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.18 in**	**8.12 in**	**10.93 in**	**5.13 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-117**
POND NAME : **W-117**

Station Limits: From: 2450+48 To: 2476+67

Roadway Length = 2619 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 7.70 ac
Pervious Roadway Area: 13.35 ac
Total Roadway Area: 21.04 ac

Pond Area:

Pervious Pond Area : 0.89 ac
Water Surface Area: 1.52 ac Wet Pond
Total Pond Area: 2.41 ac

Total Area:

Impervious Area: **7.70 ac**
Pervious Area: **14.23 ac**
Water Surface Area: **1.52 ac**
Total Area: **23.45 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	7.70 ac	754.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	1.51 ac	102.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	B	79	11.32 ac	894.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	1.41 ac	125.4
Proposed Ponds (Water Surface)	D	100	1.52 ac	152.5
		Total:	23.45 ac	2028.7

CN = Total CN*Area / Total Area = **86.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.56 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.90 in**	**8.93 in**	**11.79 in**	**5.85 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-117**
POND NAME : **W-117**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.95 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.95 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	10.13 ac-ft	15.88 ac-ft	21.37 ac-ft	10.02 ac-ft
Q_{post} =	11.54 ac-ft	17.46 ac-ft	23.05 ac-ft	11.43 ac-ft
ΔQ =	**1.41 ac-ft**	**1.58 ac-ft**	**1.68 ac-ft**	**1.41 ac-ft**

Attenuation V_{req} = 1.68 ac-ft (use largest value)

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Job Number: PBS-001-01

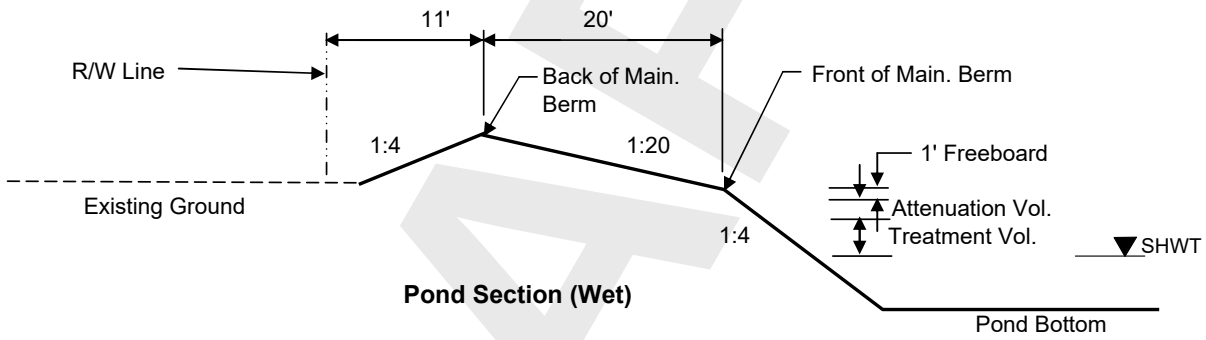
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-117**
POND NAME : **W-117**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	111.00
Pond Tie-In Width =	11.2 ft	@ 1:4	*Normal Water Elevation =	109.50
Maximum Storage Depth (**SD**) =	2.30 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	115.33

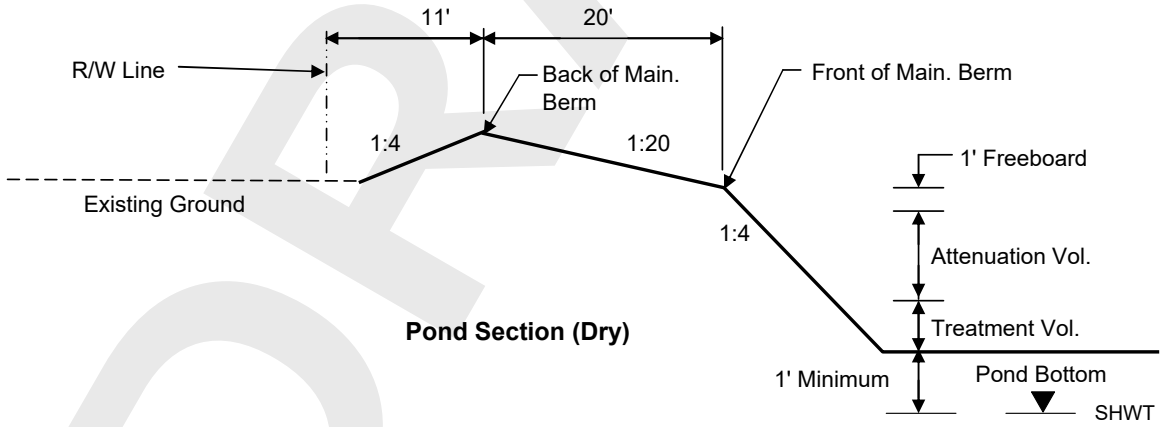
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1050 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	113.81 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-117**
POND NAME : **W-117**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
111.00	Pond R/W	2.76 ac	347.0 ft	346.0 ft	
113.80	Back of Main. Berm	2.41 ac	324.6 ft	323.6 ft	7.69 ac-ft
113.30		2.12 ac	304.6 ft	303.6 ft	6.56 ac-ft
112.80	Front of Main. Berm	1.85 ac	284.6 ft	283.6 ft	5.56 ac-ft
111.80	Provided Treat.Vol.+Att.Vol	1.75 ac	276.6 ft	275.6 ft	3.76 ac-ft
111.77	Req'd Treat.Vol+Att. Vol	1.75 ac	276.4 ft	275.4 ft	3.71 ac-ft
111.65	Estimated Storm Sewer TW	1.73 ac	275.4 ft	274.4 ft	3.50 ac-ft
110.80	Top of Treatment Vol.	1.65 ac	268.6 ft	267.6 ft	2.06 ac-ft
109.50	Normal Water Level	1.52 ac	258.2 ft	257.2 ft	0.00 ac-ft
104.50		1.09 ac	218.2 ft	217.2 ft	
100.50	Pond Bottom	0.94 ac	222.2 ft	185.2 ft	

Required Treatment+Attenuation Vol.= 3.63 ac-ft
Required Treatment+Attenuation Stage= 111.77 ft

Provided Treatment+Attenuation Vol.= 3.76 ac-ft
Provided Treatment+Attenuation Stage= 111.80 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.36 ac-ft
Estimated Storm Sewer TW EL.= 111.65 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 3.45 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-118**
POND NAME : **W-118**

Station Limits: From: 2476+67 To: 2523+85

Roadway Length = 4718 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 37.91 ac
Total Roadway Area: 37.91 ac

Pond Area: Pervious Pond Area = 3.88 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **41.79 ac**
Total Area: **41.79 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Pasture, grassland or range; Fair condition (50% to 75%	D	84	25.13 ac	2110.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	2.76 ac	245.3
Depressional areas & existing storage	D	90	13.86 ac	1247.7
WETLANDS, Cypress & Bay Heads, Areas of Periodic	D	100	0.05 ac	4.9
		Total:	41.80 ac	3608.5

CN = Total CN*Area / Total Area = **86.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.58 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.89 in**	**8.91 in**	**11.77 in**	**5.83 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-118**
POND NAME : **W-118**

Station Limits: From: 2476+67 To: 2523+85

Roadway Length = 4718 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 13.86 ac
Pervious Roadway Area: 24.04 ac
Total Roadway Area: 37.91 ac

Pond Area:

Pervious Pond Area : 1.24 ac
Water Surface Area: 2.64 ac Wet Pond
Total Pond Area: 3.88 ac

Total Area:

Impervious Area: **13.86 ac**
Pervious Area: **25.29 ac**
Water Surface Area: **2.64 ac**
Total Area: **41.79 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	13.86 ac	1358.6
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	23.34 ac	2076.9
Proposed Ponds (Water Surface)	D	100	2.64 ac	264.2
		Total:	39.84 ac	3699.8

CN = Total CN*Area / Total Area = **92.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.77 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.65 in**	**9.73 in**	**12.62 in**	**6.59 in**

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-118**
POND NAME : **W-118**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	3.48 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **3.48 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	20.50 ac-ft	31.04 ac-ft	40.99 ac-ft	20.30 ac-ft
Q_{post} =	23.16 ac-ft	33.89 ac-ft	43.95 ac-ft	22.95 ac-ft
ΔQ =	**2.66 ac-ft**	**2.85 ac-ft**	**2.96 ac-ft**	**2.65 ac-ft**

Attenuation V_{req} = 2.96 ac-ft (use largest value)

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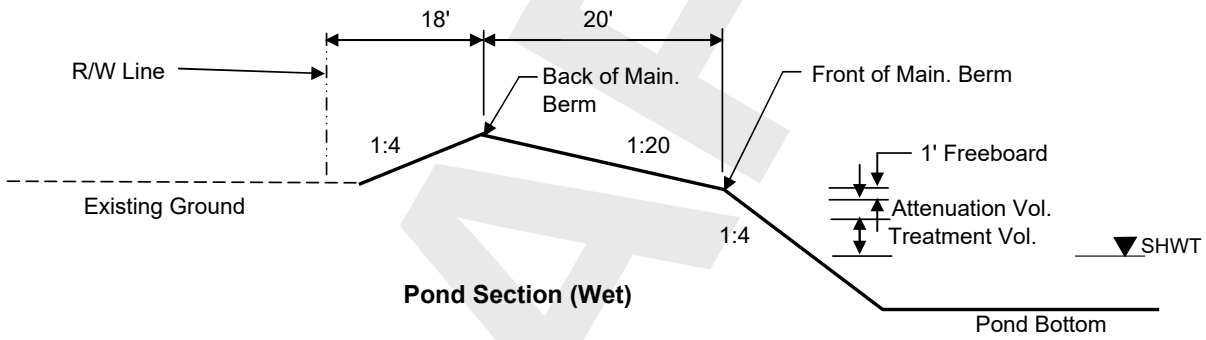
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-118**
POND NAME : **W-118**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	110.00
Pond Tie-In Width =	18.0 ft	@ 1:4	*Normal Water Elevation =	109.50
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	115.33

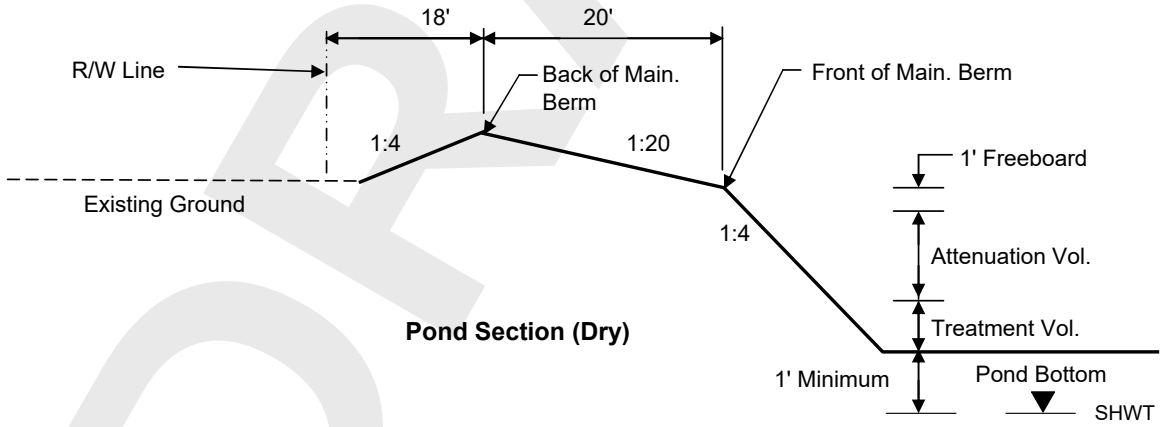
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1050 ft	
Estimated Energy Losses =	0.5 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	113.81 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-118**
POND NAME : **W-118**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
110.00	Pond R/W	4.59 ac	447.5 ft	447.0 ft	
114.50	Back of Main. Berm	3.88 ac	411.5 ft	411.0 ft	15.12 ac-ft
114.00		3.51 ac	391.5 ft	391.0 ft	13.27 ac-ft
113.50	Front of Main. Berm	3.16 ac	371.5 ft	371.0 ft	11.60 ac-ft
112.50	Provided Treat.Vol.+Att.Vol	3.03 ac	363.5 ft	363.0 ft	8.50 ac-ft
111.81	Req'd Treat.Vol+Att. Vol	2.94 ac	358.0 ft	357.5 ft	6.44 ac-ft
111.71	Estimated Storm Sewer TW	2.92 ac	357.1 ft	356.6 ft	6.14 ac-ft
110.78	Top of Treatment Vol.	2.80 ac	349.7 ft	349.2 ft	3.48 ac-ft
109.50	Normal Water Level	2.64 ac	339.5 ft	339.0 ft	0.00 ac-ft
104.50		2.06 ac	299.5 ft	299.0 ft	
99.50	Pond Bottom	1.78 ac	299.5 ft	259.0 ft	

Required Treatment+Attenuation Vol.= 6.44 ac-ft
Required Treatment+Attenuation Stage= 111.81 ft

Provided Treatment+Attenuation Vol.= 8.50 ac-ft
Provided Treatment+Attenuation Stage= 112.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 6.14 ac-ft
Estimated Storm Sewer TW EL.= 111.71 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 5.74 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-119**
POND NAME : **W-119**

Station Limits: From: 2523+85 To: 2542+70

Roadway Length = 1885 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 15.15 ac
Total Roadway Area: 15.15 ac

Pond Area: Pervious Pond Area = 3.23 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **18.37 ac**
Total Area: **18.37 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.12 ac	5.5
Residential Areas (1.0 acre, 20% Impervious)	A	51	0.48 ac	24.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	7.02 ac	477.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	4.01 ac	356.9
Pasture, grassland or range; Fair condition (50% to 75%	A	49	0.50 ac	24.5
Pasture, grassland or range; Fair condition (50% to 75%	D	84	1.83 ac	153.3
Woods-grass combination (orchard or tree farm); Fair	A	43	1.48 ac	63.4
Woods-grass combination (orchard or tree farm); Fair	D	82	1.27 ac	104.4
Woods & Wetlands Combination	A	88	0.14 ac	12.4
Woods & Wetlands Combination	D	97	1.53 ac	148.8
		Total:	18.37 ac	1370.9

CN = Total CN*Area / Total Area = **74.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **3.40 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.55 in**	**7.39 in**	**10.13 in**	**4.50 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-119**
POND NAME : **W-119**

Station Limits: From: 2523+85 To: 2542+70

Roadway Length = 1885 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

Impervious Roadway Area: 5.54 ac
Pervious Roadway Area: 9.61 ac
Total Roadway Area: 15.15 ac

Pond Area:

Pervious Pond Area : 0.97 ac
Water Surface Area: 2.25 ac Wet Pond
Total Pond Area: 3.23 ac

Total Area:

Impervious Area: **5.54 ac**
Pervious Area: **10.58 ac**
Water Surface Area: **2.25 ac**
Total Area: **18.37 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	5.54 ac	542.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	6.80 ac	462.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	3.78 ac	336.6
Proposed Ponds (Water Surface)	D	100	2.25 ac	225.5
		Total:	18.37 ac	1567.2

CN = Total CN*Area / Total Area = **85.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.72 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.77 in**	**8.78 in**	**11.63 in**	**5.71 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-119**
POND NAME : **W-119**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	1.53 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **1.53 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	6.97 ac-ft	11.31 ac-ft	15.51 ac-ft	6.88 ac-ft
Q_{post} =	8.83 ac-ft	13.44 ac-ft	17.81 ac-ft	8.74 ac-ft
ΔQ =	**1.86 ac-ft**	**2.13 ac-ft**	**2.30 ac-ft**	**1.86 ac-ft**

Attenuation V_{req} = 2.30 ac-ft (use largest value)

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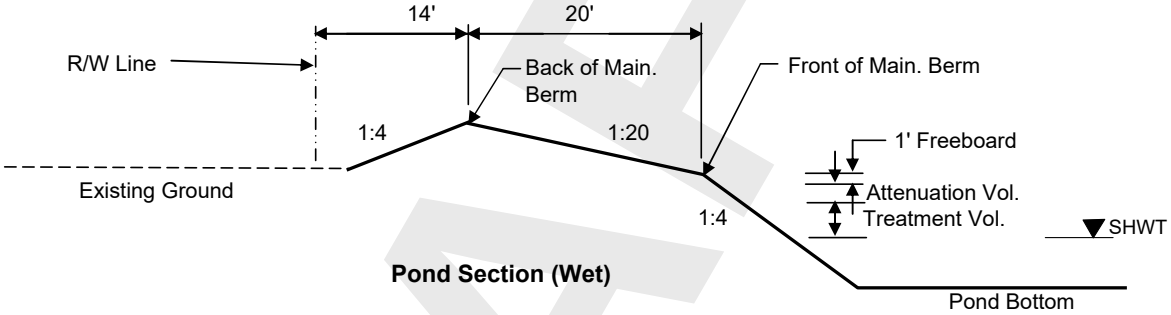
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-119**
POND NAME : **W-119**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	111.00
Pond Tie-In Width =	14.0 ft	@ 1:4	*Normal Water Elevation =	110.80
Maximum Storage Depth (**SD**) =	1.70 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	117.33

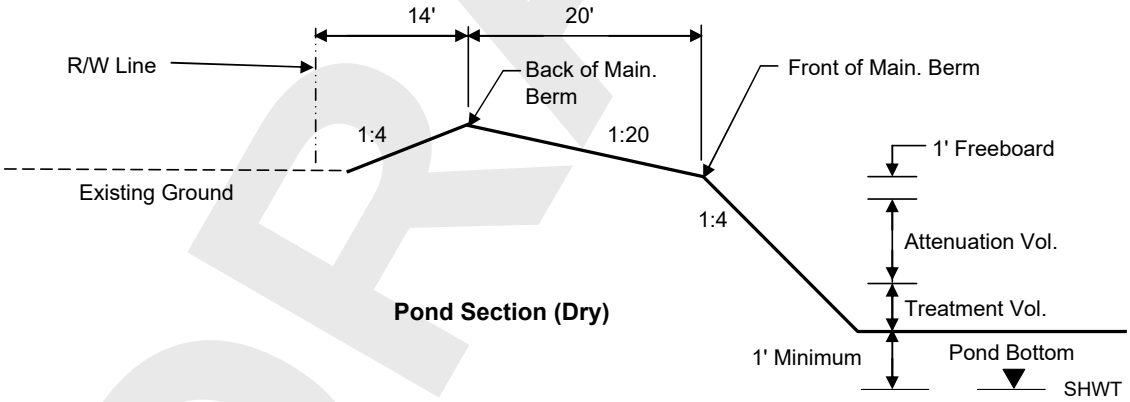
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	500 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	116.08 ft	



Pond Section (Wet)



Pond Section (Dry)

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-119**
POND NAME : **W-119**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
111.00	Pond R/W	3.73 ac	403.0 ft	403.0 ft	
114.50	Back of Main. Berm	3.23 ac	375.0 ft	375.0 ft	9.42 ac-ft
114.00		2.89 ac	355.0 ft	355.0 ft	7.89 ac-ft
113.50	Front of Main. Berm	2.58 ac	335.0 ft	335.0 ft	6.52 ac-ft
112.50	Provided Treat.Vol.+Att.Vol	2.45 ac	327.0 ft	327.0 ft	4.00 ac-ft
112.43	Req'd Treat.Vol+Att. Vol	2.45 ac	326.4 ft	326.4 ft	3.83 ac-ft
112.25	Estimated Storm Sewer TW	2.42 ac	325.0 ft	325.0 ft	3.39 ac-ft
111.50	Top of Treatment Vol.	2.34 ac	319.0 ft	319.0 ft	1.61 ac-ft
110.80	Normal Water Level	2.25 ac	313.4 ft	313.4 ft	0.00 ac-ft
106.80		1.82 ac	281.4 ft	281.4 ft	
102.80	Pond Bottom	1.61 ac	281.4 ft	249.4 ft	

Required Treatment+Attenuation Vol.= 3.83 ac-ft
Required Treatment+Attenuation Stage= 112.43 ft

Provided Treatment+Attenuation Vol.= 4.00 ac-ft
Provided Treatment+Attenuation Stage= 112.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 3.39 ac-ft
Estimated Storm Sewer TW EL.= 112.25 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.66 ac

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DATE: February 17, 2011
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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-120**
POND NAME : **W-120**

Station Limits: From: 2542+70 To: 2594+40

Roadway Length = 5170 ft
R/W Width = 350 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Offsite Area: 7.53 ac

Impervious Roadway Area: 0.00 ac
Pervious Roadway Area: 41.54 ac
Total Roadway Area: 49.07 ac

Area calculated in CADD.

Pond Area: Pervious Pond Area = 7.83 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **56.90 ac**
Total Area: **56.90 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	0.00 ac	0.0
Residential Areas (2.0 acre, 12% Impervious)	A	46	0.34 ac	15.6
Residential Areas (1.0 acre, 20% Impervious)	A	51	1.41 ac	71.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	28.71 ac	1952.2
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	2.35 ac	208.8
Pasture, grassland or range; Fair condition (50% to 75%	A	49	1.47 ac	72.1
Pasture, grassland or range; Fair condition (50% to 75%	C	79	1.76 ac	139.2
Pasture, grassland or range; Fair condition (50% to 75%	D	84	4.49 ac	377.2
Woods-grass combination (orchard or tree farm); Fair	A	43	4.38 ac	188.4
Woods-grass combination (orchard or tree farm); Fair	C	76	4.75 ac	361.0
Woods-grass combination (orchard or tree farm); Fair	D	82	3.80 ac	311.4
Woods & Wetlands Combination	A	88	0.43 ac	37.6
Woods & Wetlands Combination	C	94	0.55 ac	51.7
Woods & Wetlands Combination	D	97	2.47 ac	239.4
		Total:	56.90 ac	4026.3

CN = Total CN*Area / Total Area = **70.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = **4.13 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**4.12 in**	**6.87 in**	**9.56 in**	**4.07 in**

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Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-120**
POND NAME : **W-120**

Station Limits: From: 2542+70 To: 2594+40

Roadway Length = 5170 ft
R/W Width = 350 ft

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Offsite Area: 7.53 ac

Impervious Roadway Area: 15.19 ac
Pervious Roadway Area: 26.35 ac
Total Roadway Area: 49.07 ac

**Area calculated in CADD.*

Pond Area:

Pervious Pond Area : 1.81 ac
Water Surface Area: 6.02 ac Wet Pond
Total Pond Area: 7.83 ac

Total Area:

Impervious Area: **15.19 ac**
Pervious Area: **35.69 ac**
Water Surface Area: **6.02 ac**
Total Area: **56.90 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	15.19 ac	1488.8
Open Space (lawns, parks, golf courses, cemeteries, etc.)	A	68	21.03 ac	1429.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	5.14 ac	441.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	9.53 ac	848.1
Proposed Ponds (Water Surface)	D	100	6.02 ac	601.8
		Total:	56.90 ac	4810.1

CN = Total CN*Area / Total Area = **84.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 1.83 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**5.68 in**	**8.68 in**	**11.53 in**	**5.62 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-120**
POND NAME : **W-120**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	4.74 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **4.74 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	19.54 ac-ft	32.57 ac-ft	45.32 ac-ft	19.30 ac-ft
Q_{post} =	26.92 ac-ft	41.17 ac-ft	54.66 ac-ft	26.65 ac-ft
ΔQ =	**7.38 ac-ft**	**8.60 ac-ft**	**9.35 ac-ft**	**7.35 ac-ft**

Attenuation V_{req} = 9.35 ac-ft (use largest value)

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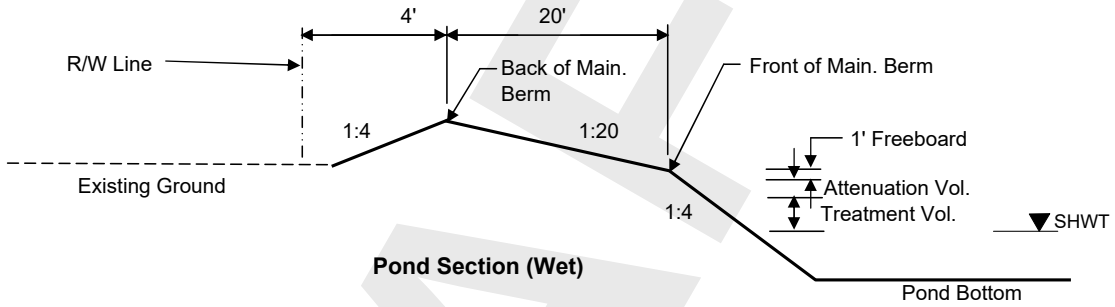
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-120**
POND NAME : **W-120**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	118.00
Pond Tie-In Width =	4.0 ft	@ 1:4	*Normal Water Elevation =	114.00
Maximum Storage Depth (**SD**) =	3.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	117.33

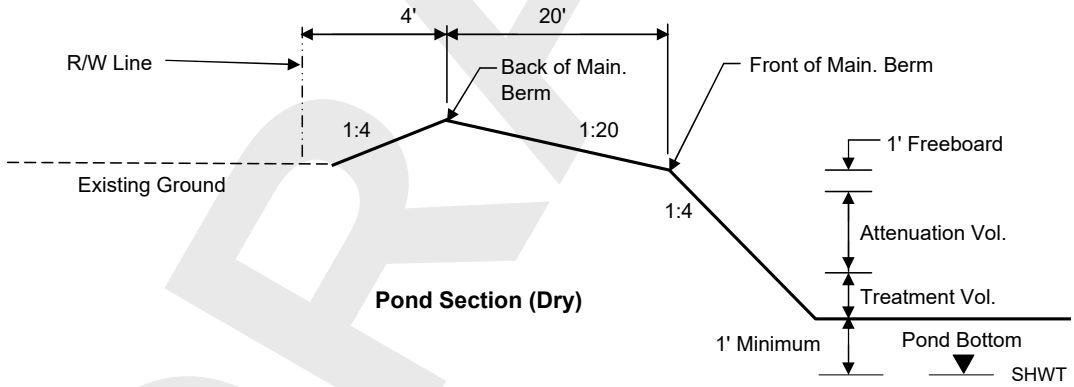
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	250 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	116.21 ft	



Pond Section (Wet)



Pond Section (Dry)

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-120**
POND NAME : **W-120**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
118.00	Pond R/W	8.05 ac	592.0 ft	592.0 ft	
119.00	Back of Main. Berm	7.83 ac	584.0 ft	584.0 ft	32.92 ac-ft
118.50		7.30 ac	564.0 ft	564.0 ft	29.13 ac-ft
118.00	Front of Main. Berm	6.79 ac	544.0 ft	544.0 ft	25.61 ac-ft
117.00	Provided Treat.Vol.+Att.Vol	6.60 ac	536.0 ft	536.0 ft	18.91 ac-ft
116.26	Req'd Treat.Vol+Att. Vol	6.45 ac	530.1 ft	530.1 ft	14.09 ac-ft
115.95	Estimated Storm Sewer TW	6.39 ac	527.6 ft	527.6 ft	12.09 ac-ft
114.78	Top of Treatment Vol.	6.17 ac	518.2 ft	518.2 ft	4.74 ac-ft
114.00	Normal Water Level	6.02 ac	512.0 ft	512.0 ft	0.00 ac-ft
109.00		5.11 ac	472.0 ft	472.0 ft	
104.00	Pond Bottom	4.68 ac	472.0 ft	432.0 ft	

Required Treatment+Attenuation Vol.= 14.09 ac-ft
Required Treatment+Attenuation Stage= 116.26 ft

Provided Treatment+Attenuation Vol.= 18.91 ac-ft
Provided Treatment+Attenuation Stage= 117.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 12.09 ac-ft
Estimated Storm Sewer TW EL.= 115.95 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 10.06 ac

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DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-121**
POND NAME : **W-121**

Station Limits: From: 2594+40 To: Exist CPP

Roadway Length = 6600 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

*Impervious Roadway Area: 0.00 ac
*Pervious Roadway Area: 57.75 ac
Total Roadway Area: 57.75 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 2.53 ac

Total Area:
Impervious Area: **0.00 ac**
Pervious Area: **60.28 ac**
Total Area: **60.28 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	0.00 ac	0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	12.91 ac	1110.3
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	47.37 ac	4216.0
		Total:	60.28 ac	5326.2

CN = Total CN*Area / Total Area = **88.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.32 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.12 in**	**9.17 in**	**12.04 in**	**6.06 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-121**
POND NAME : **W-121**

Station Limits: From: 2594+40 To: Exist CPP

Roadway Length = 6600 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Ramp	Varies	2	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 15.13 ac
*Pervious Roadway Area: 42.62 ac
Total Roadway Area: 57.75 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.21 ac
Water Surface Area: 1.32 ac Wet Pond
Total Pond Area: 2.53 ac

Total Area:

Impervious Area: **15.13 ac**
Pervious Area: **43.83 ac**
Water Surface Area: **1.32 ac**
Total Area: **60.28 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	15.13 ac	1482.7
Open Space (lawns, parks, golf courses, cemeteries, etc.)	C	86	9.80 ac	842.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	34.03 ac	3028.9
Proposed Ponds (Water Surface)	D	100	1.32 ac	132.2
		Total:	60.28 ac	5486.3

CN = Total CN*Area / Total Area = **91.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.99 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.43 in**	**9.50 in**	**12.38 in**	**6.37 in**

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PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-121**
POND NAME : **W-121**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	5.02 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **5.02 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	30.75 ac-ft	46.05 ac-ft	60.47 ac-ft	30.46 ac-ft
Q_{post} =	32.31 ac-ft	47.73 ac-ft	62.21 ac-ft	32.02 ac-ft
ΔQ =	**1.56 ac-ft**	**1.67 ac-ft**	**1.73 ac-ft**	**1.56 ac-ft**

Attenuation V_{req} = **1.73 ac-ft** (use largest value)

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(407) 971-8955 (fax)

Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

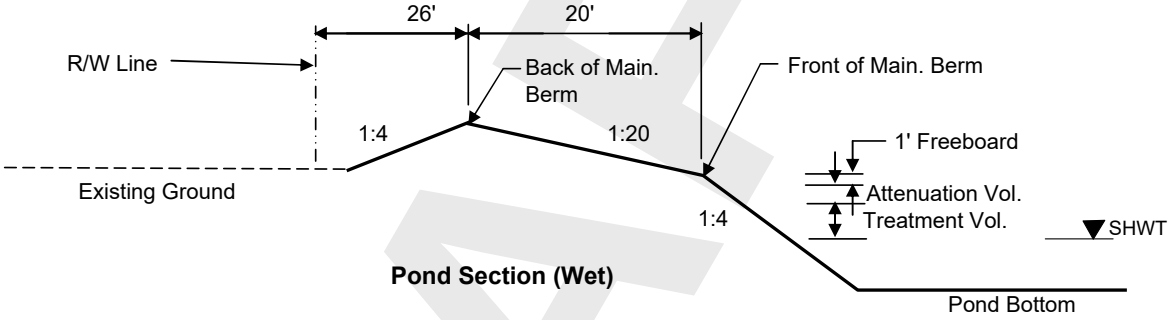
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-121**
POND NAME : **W-121**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	116.00
Pond Tie-In Width =	26.0 ft	@ 1:4	*Normal Water Elevation =	115.00
Maximum Storage Depth (**SD**) =	5.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	121.33

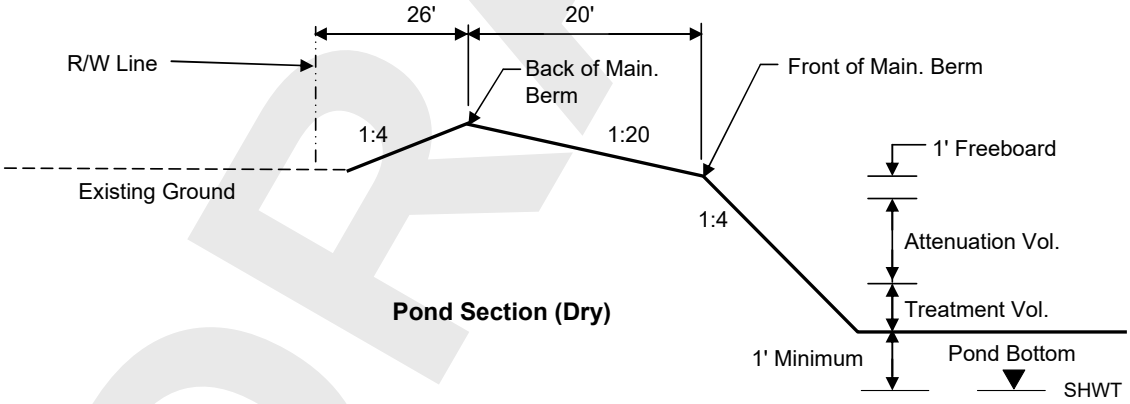
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	200 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	120.23 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-121**
POND NAME : **W-121**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
116.00	Pond R/W	3.39 ac	384.0 ft	384.0 ft	
122.50	Back of Main. Berm	2.53 ac	332.0 ft	332.0 ft	12.84 ac-ft
122.00		2.23 ac	312.0 ft	312.0 ft	11.65 ac-ft
121.50	Front of Main. Berm	1.96 ac	292.0 ft	292.0 ft	10.61 ac-ft
119.50	Provided Treat.Vol.+Att.Vol	1.75 ac	276.0 ft	276.0 ft	6.90 ac-ft
119.45	Req'd Treat.Vol+Att. Vol	1.74 ac	275.6 ft	275.6 ft	6.81 ac-ft
119.40	Estimated Storm Sewer TW	1.74 ac	275.2 ft	275.2 ft	6.72 ac-ft
118.60	Top of Treatment Vol.	1.66 ac	268.8 ft	268.8 ft	5.37 ac-ft
115.00	Normal Water Level	1.32 ac	240.0 ft	240.0 ft	0.00 ac-ft
110.50		0.96 ac	204.0 ft	204.0 ft	
105.50	Pond Bottom	0.76 ac	202.0 ft	164.0 ft	

Required Treatment+Attenuation Vol.= 6.76 ac-ft
Required Treatment+Attenuation Stage= 119.45 ft

Provided Treatment+Attenuation Vol.= 6.90 ac-ft
Provided Treatment+Attenuation Stage= 119.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 6.58 ac-ft
Estimated Storm Sewer TW EL.= 119.40 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 4.23 ac

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-122**
POND NAME : **W-122**

Station Limits: From: Exist CPP To: Exist CPP

Roadway Length = 500 ft
R/W Width = Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	0.0 ft	0	0 ft
Paved Shoulder	0.0 ft	0	0 ft
Imperv. Median	0.0 ft	0	0 ft
Sidewalk	0.0 ft	0	0 ft
Curb&Gutter Type F	0.0 ft	0	0 ft
Shldr Gutter	0.0 ft	0	0 ft
Barrier Wall	0.0 ft	0	0 ft
		Total Impervious Width:	0 ft

Impervious Roadway Area: 8.29 ac
Pervious Roadway Area: 69.40 ac
Total Roadway Area: 77.69 ac

**Area calculated using shapes in CADD.*

Pond Area: Pervious Pond Area = 14.24 ac

Total Area:
Impervious Area: **8.29 ac**
Pervious Area: **83.64 ac**
Total Area: **91.93 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	C	98	7.95 ac	779.1
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	77.69 ac	6914.4
		Total:	85.64 ac	7693.5

CN = Total CN*Area / Total Area = **89.8**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ **1.13 in**

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.29 in**	**9.35 in**	**12.23 in**	**6.24 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-122**
POND NAME : **W-122**

Station Limits: From: Exist CPP To: Exist CPP

Roadway Length = 500 ft
R/W Width = Varies

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12.0	6	72.0 ft
Bike Lane			0.0 ft
Imperv. Median			0.0 ft
Ramp	Varies	4	Varies
Sidewalk	12.0	1	12.0 ft
Outside Shoulder	12.0	2	24.0 ft
Inside Shoulder	10.0	2	20.0 ft
Barrier Wall			0 ft
		Total Impervious Width:	128.0 ft

*Impervious Roadway Area: 19.28 ac
Pervious Roadway Area: 58.41 ac
Total Roadway Area: 77.69 ac

**Area calculated using shapes in CADD.*

Pond Area:

Pervious Pond Area : 1.95 ac
Water Surface Area: 12.28 ac Wet Pond
Total Pond Area: 14.24 ac

Total Area:

Impervious Area: **19.28 ac**
Pervious Area: **60.36 ac**
Water Surface Area: **12.28 ac**
Total Area: **91.93 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	A	98	19.28 ac	1889.4
Open Space (lawns, parks, golf courses, cemeteries, etc.)	D	89	60.36 ac	5372.3
Proposed Ponds (Water Surface)	D	100	12.28 ac	1228.4
		Total:	91.93 ac	8490.1

CN = Total CN*Area / Total Area = **92.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10 =$ 0.83 in

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

	Permitting Agency Event (25yr/24hr)	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Precipitation (P) =	7.50 in	10.60 in	13.50 in	7.44 in
Runoff (Q) =	**6.59 in**	**9.67 in**	**12.56 in**	**6.53 in**

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-122**
POND NAME : **W-122**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SWFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
Impaired Water/OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**N/A**	x Impervious Areas =	0.00 ac-ft
	1.00 in	x Total Basin Area =	7.66 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = **7.66 ac-ft**

Required Attenuation Volume:

Total Runoff (ac-ft)

	SWFWMD	FDOT 100yr/24hr	FDOT 100yr/72hr	Storm Sewer Design
Q_{pre} =	48.22 ac-ft	71.65 ac-ft	93.70 ac-ft	47.77 ac-ft
Q_{post} =	50.49 ac-ft	74.06 ac-ft	96.18 ac-ft	50.04 ac-ft
ΔQ =	**2.27 ac-ft**	**2.41 ac-ft**	**2.48 ac-ft**	**2.27 ac-ft**

Attenuation V_{req} = 2.48 ac-ft (use largest value)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

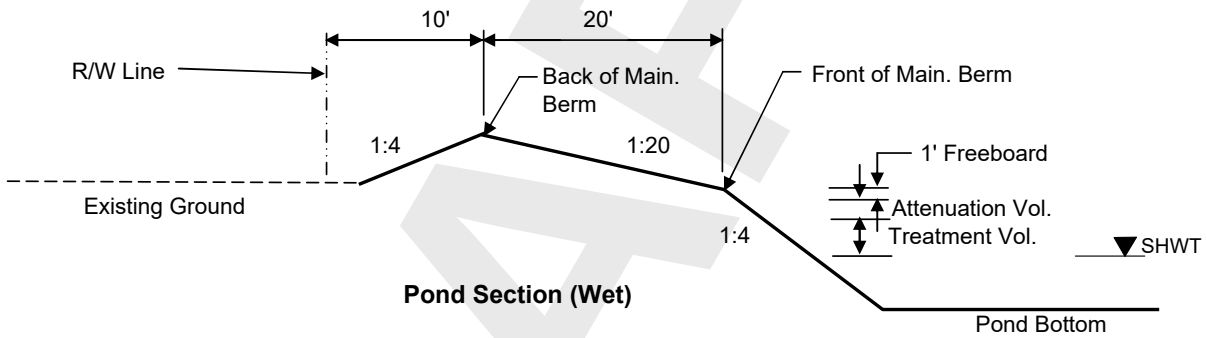
PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-122**
POND NAME : **W-122**

Maintenance Area Width =	20.0 ft	@ 1:20	*Existing Ground Elevation =	105.00
Pond Tie-In Width =	10.0 ft	@ 1:4	*Normal Water Elevation =	104.50
Maximum Storage Depth (**SD**) =	1.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	120.33

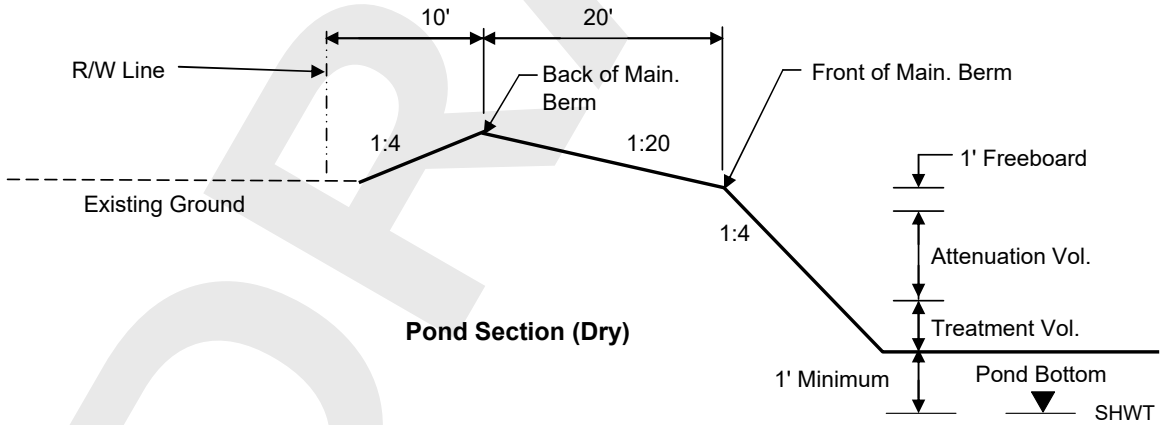
Hydraulic Grade Line (HGL) check

Note: *Used average existing ground normal water elevation. Existing ground and normal water level varies at pond site.*

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1500 ft	
Estimated Energy Losses =	0.8 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Maximum Storm Sewer Tailwater EL =	118.58 ft	



Pond Section (Wet)



Pond Section (Dry)

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Made by: SF
Checked by:

DATE: February 17, 2011
Job Number: PBS-001-01

PROJECT : **Central Polk Parkway PD&E Study**
BASIN NAME : **W-122**
POND NAME : **W-122**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	DIMENSIONS		STORAGE
			LENGTH	WIDTH	
105.00	Pond R/W	14.97 ac	807.0 ft	808.0 ft	
107.50	Back of Main. Berm	14.24 ac	787.0 ft	788.0 ft	38.64 ac-ft
107.00		13.52 ac	767.0 ft	768.0 ft	31.70 ac-ft
106.50	Front of Main. Berm	12.83 ac	747.0 ft	748.0 ft	25.11 ac-ft
105.50	Provided Treat.Vol.+Att.Vol	12.55 ac	739.0 ft	740.0 ft	12.42 ac-ft
105.32	Req'd Treat.Vol+Att. Vol	12.50 ac	737.5 ft	738.5 ft	10.14 ac-ft
105.35	Estimated Storm Sewer TW	12.51 ac	737.8 ft	738.8 ft	10.54 ac-ft
105.15	Top of Treatment Vol.	12.46 ac	736.2 ft	737.2 ft	8.04 ac-ft
104.50	Normal Water Level	12.28 ac	731.0 ft	732.0 ft	0.00 ac-ft
99.50		10.98 ac	691.0 ft	692.0 ft	
94.50	Pond Bottom	10.34 ac	691.0 ft	652.0 ft	

Required Treatment+Attenuation Vol.= 10.14 ac-ft
Required Treatment+Attenuation Stage= 105.32 ft

Provided Treatment+Attenuation Vol.= 12.42 ac-ft
Provided Treatment+Attenuation Stage= 105.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 9.93 ac-ft
Estimated Storm Sewer TW EL.= 105.35 ft

HGL requirements met

PROPOSED POND R/W (INCLUDING 25% INCREASE PER TMDL, IMPAIRED WATER BODIES) = 18.71 ac

DRAFT

APPENDIX L

COMMENTS

DRAFT

Submittal Report

Financial Project:	440897-2	Submittal Type:	POND SITING REPORT
Submittal Phase:	REVISED	Submittal Staff Type:	CONSULTANT
Received Date:	10/23/2020	Response Due Date:	11/5/2020
Grace Period:	0	District:	TURNPIKE
Status:	OPEN	Create Date:	10/23/2020
Create User Id:	KN864JZ	Last Update:	10/23/2020
		Last Update User Id:	KN864JZ

Description:

DCN 12203 - Updated Draft Pond Siting Report and QC Documentation

Note to Reviewers:
1.All Floodplain Compensation ponds were designed based on FEMA maps,

Threads:

No	Status	Current Holder	Reference	Categories
1	COMMENT SUBMITTED FOR RESPONSE	THOMAS PRESBY	General	INTELLIGENT TRANSPORTATION

Created By	Created On	Version	Delegate For
Nathan Poole	10/26/2020	1	

It appears FPC 4 will be constructed outside the existing US 17 right-of-way. Because of this, conflicts between FPC 4 and the new US 17 ITS Communications infrastructure along southbound US 17 are not anticipated as the US 17 ITS Communications infrastructure will be installed within the existing US 17 right-of-way.

Comment noted. Thank you.

No	Status	Current Holder	Reference	Categories
2	COMMENT SUBMITTED FOR RESPONSE	THOMAS PRESBY	General	INTELLIGENT TRANSPORTATION

Created By	Created On	Version	Delegate For
Nathan Poole	10/26/2020	1	

Slight clarification to Comment 1. The new US 17 ITS Communications referenced in the comment is the District One project FPID 442107-1-52-01. These plans are currently in District Specs review with letting scheduled for February 2021.

Comment noted. Thank you.

No	Status	Current Holder	Reference	Categories
3	COMMENT SUBMITTED FOR RESPONSE	THOMAS PRESBY		ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Philip Stein	10/29/2020	1	

Page 29, Table 7. Column headings are shown as Prehistoric Archaeological and Historic Archaeological. CRAS report identifies Archaeological Sites and Historic Sites that are eligible for listing. If that is what is described in this table I would recommend changing.

Concur, will revise table headings.

No	Status	Current Holder	Reference	Categories
4	COMMENT SUBMITTED FOR RESPONSE	THOMAS PRESBY	General	DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	10/30/2020	1	

Suggest changing the reference of Regional Pond option 3 to Regional stormwater management option 3.

Concur, will revise refrence to Regional Pond Otion 3 in the PSR narrative to "Regional stormwater management option 3".

No	Status	Current Holder	Reference	Categories
5	COMMENT SUBMITTED FOR RESPONSE	THOMAS PRESBY	pg 9 of 1619	DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	10/30/2020	1	

Last paragraph before section 2: Why is open in parenthesis?

Will remove the quotation marks.

No	Status	Current Holder	Reference	Categories
6	COMMENT SUBMITTED FOR RESPONSE	THOMAS PRESBY		DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	10/30/2020	1	

Do we want to show the SWFWMD model in the report?

We included SWFWMD floodplain figure as another available information on floodplain to support our discussion in Section 7.1 and we indicated in this section that we are using FEMA maps for floodplain encroachment/compensation calculations. We suggest keeping it for this submittal, since we have "DRAFT" watermark on all of the pages of the PSR including this figure. We can discuss further, if we should remove it for the final PSR and permit documentations.

No	Status	Current Holder	Reference	Categories
7	COMMENT SUBMITTED FOR RESPONSE	THOMAS PRESBY		DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	10/30/2020	1	

Does the report need to show all the versions of the different reports in the appendices? Could we just include the latest and greatest?

Yes, we need to provide both original and the latest report since the latest reports are addendum to the previous reports and do not cover the entire project.

No	Status	Current Holder	Reference	Categories
8	COMMENT SUBMITTED FOR RESPONSE	THOMAS PRESBY	pg 19 of 1619	DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	10/30/2020	1	

Last 3 sentences before section 7.4: Please check. It does not read well (excluding last sentence).

Concur, will revise.

DRAFT

Submittal Report

Financial Project:	440897-2	Submittal Type:	POND SITING REPORT
Submittal Phase:	OTHER	Submittal Staff Type:	CONSULTANT
Received Date:	11/11/2019	Response Due Date:	12/10/2019
Grace Period:	0	District:	TURNPIKE
Status:	OPEN	Create Date:	11/11/2019
Create User Id:	KN846CS	Last Update:	11/11/2019
		Last Update User Id:	KN846CS

Description:

DCN 11260 - Final Pond Siting Report

Notes to Reviewers:
1. Previous DCN 10915
2. SMF 1 is designed to provide both stormwater and floodplain requirements.
3. SMF 3 and FPC 2 are combined into one pond (Regional Pond 2) that provides both stormwater and floodplain requirements. This pond will be referred to as SMF 3 or Regional Pond 2 in this report.
4. Wider berms and buffer are provided for SMF 3 to allow for water table recovery and to avoid drawing down water table in the adjacent wetlands and properties. The berms and buffer area are graded to provide floodplain compensation also.
5. SMF 1, SMF 2, and SMF 3 (Regional

REFER TO DOCUMENTATION IN THE TURNPIKE SUBMITTAL ANNOUNCEMENT E-MAIL OR IN THE ERC DOCUMENTS TAB.

Threads:

Name	Assignment	Due Date	Status	Comments
Adriana Kirwan	LEAD REVIEWER	12/6/2019	ACTIVE	4

No	Status	Current Holder	Reference	Categories
49	RESPONSE ACCEPTED		Final Pond Siting Report, Section 8.2.1.2, Page 24	DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	12/3/2019	1	

The PSR states the following for SMF 3 – Regional Pond Alternative 2: "This pond is sized to treat 220 acres of offsite area by diverting it into the pond using the box culvert at Station 1198+/-. This offsite area equates to the entire contributing area from the northern Thornhill crossing to the end of project at US 17." Is the pollutant loading from this 220 acres of offsite area (59.48 acres of open space, 109.80 acres of forest, and 50.72 acres of impervious) equivalent to the pollutant loading from the 6-lane roadway?

THOMAS PRESBY	12/11/2019	1

Pollutant loading was calculated for the 4-lane roadway. We have revised the calculations for a 6-lane roadway and will include in the Revised Final PSR.

Adriana Kirwan	1/30/2020	1

Thank you.

DRAFT

No	Status	Current Holder	Reference	Categories
50	RESPONSE ACCEPTED		SMF 3	DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	12/4/2019	1	

Is the original intent of a regional pond being met by not physically providing treatment to the proposed road?

THOMAS PRESBY	12/11/2019	1	

The intent of the regional pond is to provide a reduction in pollutant loading to Lake Hancock. This is accomplished by treatment the offsite area draining towards the regional pond to compensate for the impervious being added from the new CPP alignment. This approach is acceptable to the Water Management District.

Adriana Kirwan	1/30/2020	1	

Will need to verify with the Water Management District.

THOMAS PRESBY	1/30/2020	1	

Agree. This will be discussed at the SWFWMD Pre-application meeting.

Adriana Kirwan	2/11/2020	1	

Understood. Thank you.

No	Status	Current Holder	Reference	Categories
52	RESPONSE ACCEPTED		Final PSR SMF 3	DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	12/5/2019	1	

The proposed regional pond (SMF 3) looks the same as it did in the draft PSR submittal. After discussions in a meeting on Oct 29th and a quick review of what was submitted for phase II design plans, the proposed regional pond layout is different and looks a lot smaller. Shouldn't this PSR reflect something similar if not the same to what the stormwater design will be?

THOMAS PRESBY	12/11/2019	1	

The pond site shown in the Final PSR (Appendix I-6) is smaller than what was shown in the Preliminary PSR. The pond is consistent with the phase II design plans. The smaller pond size was due to a more refined analysis. For the Revised Final PSR we will reduce the required R/W for SMF 3/FPC 2 to more closely follow the new pond shape.

Adriana Kirwan	1/30/2020	1	

There are a few exhibits throughout the PSR that still show the preliminary regional pond layout. Please update all exhibits, figures, maps to show the new, smaller and more refine regional pond layout. Thank you.

No	Status	Current Holder	Reference	Categories
53	RESPONSE ACCEPTED		Final PSR proposed ROW	DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	12/5/2019	1	

Will all the proposed right of way that is shown for SMF 3 be needed based on the smaller footprint that is being proposed in the design? Is it justifiable to take all that right of way for SMF 3?

THOMAS PRESBY	12/11/2019	1	

For the Revised Final PSR we will reduce the required R/W for SMF 3/FPC 2 to more closely follow the new pond shape.

Adriana Kirwan	1/30/2020	1	

The reason for this comment is that there are a few exhibits throughout the final PSR that still show the preliminary regional pond layout. Please update all exhibits, figures, maps to show the new, smaller and more refine regional pond layout. Thank you

Name	Assignment	Due Date	Status	Comments
Anand Jujare	LEAD REVIEWER	11/25/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Annemarie Hammond	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Brent Setchell	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Daniel Kastelic	LEAD REVIEWER	11/25/2019	ACTIVE	0*

DRAFT

Name	Assignment	Due Date	Status	Comments
DANIEL KELLY	REVIEWER	11/25/2019	ACTIVE	1

No	Status	Current Holder	Reference	Categories
10	RESPONSE ACCEPTED			ROADWAY

Created By	Created On	Version	Delegate For
DANIEL KELLY	11/22/2019	1	

Please enlarge Fig 1, e.g. full page, and increase text size in Fig 2.

THOMAS PRESBY	12/11/2019	1	

Will revise figures as noted.

DANIEL KELLY	12/11/2019	1	

Response Accepted & Comment Closed

Name	Assignment	Due Date	Status	Comments
Deanna Campbell	LEAD REVIEWER	11/25/2019	ACTIVE	0*

Name	Assignment	Due Date	Status	Comments
DOUG GABLE	LEAD REVIEWER	11/25/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
EDUARDO PONCE	LEAD REVIEWER	11/25/2019	ACTIVE	0

DRAFT

Name	Assignment	Due Date	Status	Comments
Eric Krebill	LEAD REVIEWER	12/5/2019	ACTIVE	1

No	Status	Current Holder	Reference	Categories
51	RESPONSE ACCEPTED			CONTAMINATION

Created By	Created On	Version	Delegate For
Eric Krebill	12/4/2019	1	

App H Contamination Tech Memo, ought to be titled Level 1 CSER Addendum. The tech memo is dated Oct. 2, 2019, why wasn't it previously submitted for ERC review ?
1.1 references a CSER for the mainline dated April 12, 2019, which I do not have record of reviewing in ERC for approval, was it submitted ?
1.2 describes three projects but doesn't specify which project is applicable to the tech memo, and doesn't specify the applicable Segment 1 from SR 570 to US 17 ?
2.0 indicates the tech memo is not intended to satisfy all of the requirements referenced in Chapter 20 Contamination, so explain which of the requirements are included and where the other requirements are covered in the two previous CSERs. Methodology should also describe the other desktop activities conducted to determine Risk including review of historical aerials and topo maps contained in App C of the memo. Was groundwater flow direction also considered ?
3.1 Table 1 should include a description of the historical aerial review results and historical topo map review results for each of the pond sites, like you did for FPC 1. Indicate the databases listing each facility, and whether or not new regulatory file information was identified and reviewed subsequent to the previous CSER. Referring to a pond as the site but also calling regulated facilities the site is quite confusing, suggest you refer to the SMPs/FPCs/Facilities by name throughout. The facilities evaluated ought to be plotted and color coded with regard to Risk on Sheets A-2 and A-3.
SMF 1 indicate the specific types of contaminants of concern associated with the hazardous and solid waste. Not clear why the Polk Co Household Hazardous Waste Facility is included since it's beyond the 1/8th mile buffer ?
SMF 3 indicate the specific types of contaminants of concern associated with the waste tire collection. Not clear why the facility is included since it's beyond the buffer ?
FPC 1 indicate the contaminants of concern. Based on the historical review and reconnaissance, why do you reckon the ASTs in a concrete containment are present 30 feet SW of FPC 1 ? Did you try asking the land owner ?
FPC 2 indicate the contaminants of concern.
FPC 3 why is the Fleet facility included, its beyond the buffer ? Indicate whether the ASTs are used for petroleum fuel storage. The identified contaminants of concern are too general and what about the previous mining contaminants of concern ? Was groundwater depth and flow measured using the existing geotech piezometers discussed in the previous CSERs ?
FPC 4 why is the Lake Hancock facility included, it's beyond the buffer and indicates no contaminants of concern ? What direction was groundwater flow measured at Christina's Market and what were the specific contaminants of concern, VOAs, PAHs, both? Be more specific about the contaminants of concern for Bartow Auto Salvage, which ought to include chlorinated solvents.
4.0 Table 2 would be more informative if each SMF and FPC is listed. Wondering whether the municipality was contacted to evaluate when sewer was provided at FPC 4, of if septic systems potentially remain that may be encountered. Also wondering whether we should be concerned about termiticides likely applied to the around around the building s during the past 50 years ?

App H CSER dated December 2018, I did not review, has it been approved by FDOT ?

THOMAS PRESBY	12/11/2019	1

Please see the attached Word document for the responses to this comment. We have also attached the CSER for the mainline for the second comment 'b".

Eric Krebill	12/16/2019	1

The previous pond siting report only included tables from the Level I CSER dated April 12, 2019, and since the December 2018 CSER was apparently not reviewed and approved through ERC both CSER reports should be submitted to the PM for ERC review.

Current responses to comments appear generally acceptable for incorporation into current CSER, if the two previous CSERs are to be included as appendices.

Name	Assignment	Due Date	Status	Comments
Erin Yao	LEAD REVIEWER	11/25/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
Francis DeLaRosa	LEAD REVIEWER	11/25/2019	ACTIVE	0*

DRAFT

Name	Assignment	Due Date	Status	Comments
Fred Gaines	LEAD REVIEWER	11/25/2019	ACTIVE	2

No	Status	Current Holder	Reference	Categories
44	RESPONSE SUBMITTED	Fred Gaines		ENVIRONMENTAL PERMITS

Created By	Created On	Version	Delegate For
Fred Gaines	11/25/2019	1	

Per Figure 7 there are no direct discharges to impaired water bodies.

THOMAS PRESBY	12/11/2019	1	

Section 4.3 states that the regional pond 2 discharges to an impaired waterbody via a wet connection. We will coordinate with SWFWMD to verify that the impaired criteria applies.

Fred Gaines	12/17/2019	1	

Per FDOT Central Office direction, FDOT only provides impaired water body criteria when direct discharges are made to an impaired waterbody not when a drop of water ultimately makes it to the impaired waterbody. Please coordinate further with Turnpike Drainage. If necessary this can be included as a topic in the upcoming SWFWMD pre-app.

THOMAS PRESBY	1/29/2020	1	

SMF 3 outfalls into a large boady of water that is directly connected to Lake Hancock via a 200' +/- Trail bridge located to the northwest of SMF 3. We will coordinate further with the FTE Drainage and determine if we need to discuss this topic in our upcoming SWFWMD pre-application meeting.

Fred Gaines	2/18/2020	1	

Suggest clarifying that no direct discharges to an impaired water body but using Pollutant Loading calculations in support of regional pond.

THOMAS PRESBY	10/21/2020	1	

We agree. We are using the Pollutant Loading calculations in support of the Regional Pond.

No	Status	Current Holder	Reference	Categories
45	RESPONSE ACCEPTED			ENVIRONMENTAL PERMITS

Created By	Created On	Version	Delegate For
Fred Gaines	11/25/2019	1	

Please label the pond alternative locations on Figures 1 - 8.

THOMAS PRESBY	12/11/2019	1	

Will revise figures to show the alternative pond sites on Figures 1 to 8.

Fred Gaines	12/17/2019	1	

Response Accepted & Comment Closed

Name	Assignment	Due Date	Status	Comments
Gary Kaser	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Gary Roche	LEAD REVIEWER	11/25/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
James Beverly	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Jason Tosspon	LEAD REVIEWER	11/25/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Jorge Moreno	LEAD REVIEWER	11/25/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Karina Della Sera	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Kevin Ingle	LEAD REVIEWER	11/25/2019	ACTIVE	0

DRAFT

Name	Assignment	Due Date	Status	Comments
Lance Knutsen	REVIEWER	11/25/2019	ACTIVE	1

No	Status	Current Holder	Reference	Categories
9	RESPONSE ACCEPTED			SURVEY

Created By	Created On	Version	Delegate For
Lance Knutsen	11/22/2019	1	
No Comments			
THOMAS PRESBY	12/11/2019	1	
Comment noted. Thank you.			
Lance Knutsen	12/17/2019	1	
Response Accepted & Comment Closed			

Name	Assignment	Due Date	Status	Comments
M Wayne Shelton	LEAD REVIEWER	11/25/2019	ACTIVE	0*

Name	Assignment	Due Date	Status	Comments
Mark Mathes	LEAD REVIEWER	11/25/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
Mark Roberts	REVIEWER	11/25/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
Michael Grant	LEAD REVIEWER	11/25/2019	ACTIVE	0*

Name	Assignment	Due Date	Status	Comments
Nathan Poole	REVIEWER	11/25/2019	ACTIVE	0*

Name	Assignment	Due Date	Status	Comments
Nicole Monies	LEAD REVIEWER	11/25/2019	ACTIVE	0*

Name	Assignment	Due Date	Status	Comments
Pamela Nagot	IN-HOUSE PROJECT MANAGER	11/25/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
Philip Stein	LEAD REVIEWER	11/25/2019	ACTIVE	7

No	Status	Current Holder	Reference	Categories
1	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Philip Stein	11/19/2019	1	
Page 6 of pdf, 3rd paragraph, only mention of 4(f) found throughout document. Where is that data as it is not discussed beyond that statement. Should atleast be mentioned somewhere other than executive summary.			
THOMAS PRESBY	12/11/2019	1	
We will indicate we have no 4(f) involvement in the text.			
Philip Stein	12/11/2019	1	
Response Accepted & Comment Closed			

DRAFT

No	Status	Current Holder	Reference	Categories
2	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Philip Stein	11/19/2019	1	

Page 7 of pdf, Table 1, should incorporate archaeological potential in this table as well. You only show historical (all low) while archaeological is discussed and some of those have medium potential.

THOMAS PRESBY	12/11/2019	1	

The table will be revised to include archaeological rankings.

Philip Stein	12/11/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
3	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Philip Stein	11/19/2019	1	

Section 7.4.1 and .3, shows listed species as high because of a bald eagle siting. Was this a nest? Will this have the potential to require a permit? Should it be avoided?

THOMAS PRESBY	12/11/2019	1	

There was no nest observed at FPC 1. However, because eagles of varying cohorts were observed in the assessment area, it may be an area of interest or potential usage area for bald eagles and may require a permit pending discussion with USFWS. Coordination meeting with US Fish & Wildlife was held on December 2, 2019. A second meeting is being held on December 11th, 2019. An undocumented active nest was confirmed at FPC 3 in 2019. This nest is anticipated to require a USFWS Bald Eagle Nest Take Permit, but a pond relocation is not necessary. The PSR text will be updated.

Philip Stein	12/11/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
4	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Philip Stein	11/19/2019	1	

"Conducted to concluded" found in several locations. Is that the intended statement or a typo?

THOMAS PRESBY	12/11/2019	1	

Will revise the text.

Philip Stein	12/11/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
5	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Philip Stein	11/19/2019	1	

Page 28, Table 6, Should include historical and archaeological impacts.

THOMAS PRESBY	12/11/2019	1	

Table 6 will be revised to add historical and archaeological impacts.

Philip Stein	12/11/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
6	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Philip Stein	11/19/2019	1	

9.3.2 You describe listed species impacts as moderate and medium. Be consistent.

THOMAS PRESBY	12/11/2019	1	

Will revise text for consistency.

DRAFT

Philip Stein	12/11/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
8	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Philip Stein	11/19/2019	1	

Page 535 and 582 of pdf, remove federal project statement, this is not a federal COA.

THOMAS PRESBY	12/11/2019	1

We will revise the Contamination Technical Memorandum and Level I CSER to remove the federal project statement.

Philip Stein	12/11/2019	1

Response Accepted & Comment Closed

Name	Assignment	Due Date	Status	Comments
Ramasamy Venkatesan	REVIEWER	11/25/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Rax Jung	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Roger Gobin	LEAD REVIEWER	11/25/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Sergio Figueroa	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Steeve Koloko	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Stephanie Sharp	LEAD REVIEWER	11/25/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Teresa Puckett	LEAD REVIEWER	11/25/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
THOMAS PRESBY	CONSULTANT PROJECT MANAGER	12/10/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Tiffany Crosby	REVIEWER	11/25/2019	ACTIVE	3

No	Status	Current Holder	Reference	Categories
46	RESPONSE ACCEPTED			ENVIRONMENTAL PERMITS

Created By	Created On	Version	Delegate For
Tiffany Crosby	11/25/2019	1	

Please include pond site location on the various maps provided to better review the information.

THOMAS PRESBY	12/11/2019	1

Will revise the figures in Appendix A (1 to 8) to label all of the alternative pond and floodplain site locations.

Tiffany Crosby	12/18/2019	1

Response Accepted & Comment Closed

DRAFT

No	Status	Current Holder	Reference	Categories
47	RESPONSE ACCEPTED			ENVIRONMENTAL PERMITS

Created By	Created On	Version	Delegate For
Tiffany Crosby	11/25/2019	1	

Bald eagle nests and sand skink habitat have been identified and should be discussed specifically to determine level of impact. Include if any pond is within sand skink habitat, within a protection buffer of an eagle nest or other listed species that would require a permit and mitigation. information should be quantified to the extent data is available.

THOMAS PRESBY	12/11/2019	1

Will revise the text in Section 7.4 and 8.2 of the Revised Final PSR to individually include discussions about the level of impact for the sand skinks, bald eagle and other listed species that would require a permit and mitigation.

Tiffany Crosby	12/18/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
48	RESPONSE ACCEPTED			ENVIRONMENTAL PERMITS

Created By	Created On	Version	Delegate For
Tiffany Crosby	11/25/2019	1	

Are the potential occurrences provided in Figure 3.1 for all the pond sites or specific to individual ponds? Please clarify.

THOMAS PRESBY	12/11/2019	1

Figure 3-1 in the Wetlands and Protected Species Evaluation (Appendix G) includes the locations of the only gopher tortoises observed within or adjacent to the proposed right of way, which are in close proximity to FPC 1. The potential occurrences shown in Table 3-1 are generalized for all pond sites. The level of potential protected species involvement is detailed for each SMF and FPC in Table 3-2 on page 15 of Appendix G. We will clarify this in the Appendix G text.

Tiffany Crosby	12/18/2019	1

Response Accepted & Comment Closed

Name	Assignment	Due Date	Status	Comments
Todd Bogner	LEAD REVIEWER	11/25/2019	ACTIVE	33

No	Status	Current Holder	Reference	Categories
11	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Cover Page:

"Florida's Turnpike Enterprise"

THOMAS PRESBY	12/11/2019	1

Will revise the text as noted.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
12	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary page:

Page numbering should start with "1", not "6"

THOMAS PRESBY	12/11/2019	1

Agree, we will revise page numbers.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

DRAFT

No	Status	Current Holder	Reference	Categories
13	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary Page:
1st paragraph:

PD&E "Study"

Created By	Created On	Version	Delegate For
THOMAS PRESBY	12/11/2019	1	

Agree, we will revise text.

Created By	Created On	Version	Delegate For
Todd Bogner	12/16/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
14	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary Page:
1st paragraph:

"Florida Department of Transportation (FDOT)"

Created By	Created On	Version	Delegate For
THOMAS PRESBY	12/11/2019	1	

Agree, we will revise text as noted.

Created By	Created On	Version	Delegate For
Todd Bogner	12/16/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
15	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary Page:
2nd paragraph:

Last sentence: Please re-read this sentence and make it more clear

Created By	Created On	Version	Delegate For
THOMAS PRESBY	12/11/2019	1	

Agree, will revise text to clarify.

Created By	Created On	Version	Delegate For
Todd Bogner	12/16/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
16	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary
2nd Paragraph:

"through" not "thru". Thru is used in informal writing; this is a technical report.

Created By	Created On	Version	Delegate For
THOMAS PRESBY	12/11/2019	1	

Agree, we will revise text.

Created By	Created On	Version	Delegate For
Todd Bogner	12/16/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
17	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

DRAFT

Executive Summary Page:
3rd paragraph:

1st sentence: "facility"

THOMAS PRESBY 12/11/2019 1

Agree, we will revise text.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
18	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary Page:
3rd paragraph:

1st sentence: "alternatives"

THOMAS PRESBY 12/11/2019 1

The text will be revised as noted.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
19	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary Page:
3rd paragraph:

4th line: "the", not "our"

THOMAS PRESBY 12/11/2019 1

Agree, will revise text.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
20	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary Page:
3rd paragraph:

9th line: This is an SEIR. Why were 4(f) properties evaluated?

THOMAS PRESBY 12/11/2019 1

Pond sites were evaluated for 4(f) properties as part of the evaluation matrix. These properties are avoided whenever possible for pond or floodplain sites.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
21	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Executive Summary Page:
2nd page

2nd line: "an" interdisciplinary team.

THOMAS PRESBY 12/11/2019 1

DRAFT

Agree, will revise text.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
22	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 1.0 Introduction:

See previous comment on using "thru"

THOMAS PRESBY 12/11/2019 1

Agree, will revise text.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
23	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 2.1

Why did you say "seasonal high water table (SHWT) 4 times? Why not just once and use "SHWT" thereafter?

THOMAS PRESBY 12/11/2019 1

Will revise text to be consistent.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
24	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 3.0, 3.1 "Southwest Florida Water Management District (SWFWMD)"

THOMAS PRESBY 12/11/2019 1

Will revise text.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
25	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 4.0: just use SWFWMD since it will be first written out in section 3.1

THOMAS PRESBY 12/11/2019 1

Will revise text as noted.

Todd Bogner 12/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
26	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

DRAFT

Section 4.2: same as previous

THOMAS PRESBY	12/11/2019	1

Will revise text.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
27	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 4.3: DEP? Did you mean to write, "Florida Department of Environmental Protection (FDEP)"?

THOMAS PRESBY	12/11/2019	1

Yes, will revise text as noted.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
28	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 5.0: check the font size throughout this section. It seems to not all be the same.

THOMAS PRESBY	12/11/2019	1

Will review and revise.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
29	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 6.2.2: BCWE? first time using this acronym, please word it out.

THOMAS PRESBY	12/11/2019	1

Agree, will revise text to Base Clearance Water Elevation.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
30	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 6.2.2: SHGWT? Should this be SHWT, consistent with the rest of the document, or are you introducing something new?

THOMAS PRESBY	12/11/2019	1

Will revise text to SHWT.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
31	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

DRAFT

Section 7.0: SHW elevations? Should this be SHWT consistent with the rest of the document, or are you introducing something new?

THOMAS PRESBY	12/11/2019	1

Will revise text to SHWT.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
32	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 7.2: "100-year" and "5-day" to be consistent with how the rest has been written.

THOMAS PRESBY	12/11/2019	1

Will revise text.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
33	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

section 7.4.1: "conducted to 'conclude' if.."

THOMAS PRESBY	12/11/2019	1

Will revise text as noted.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
34	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 7.4.1: Cultural Resource Assessment "Survey"

THOMAS PRESBY	12/11/2019	1

Will revise text as noted.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
35	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 7.4.3: see previous add "Survey"

THOMAS PRESBY	12/11/2019	1

Will revise text.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
36	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

DRAFT

Section 8.2.1.1:

"conducted to 'conclude' if.."

THOMAS PRESBY	12/11/2019	1

Will revise text.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
37	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 8.2.1.1: See previous add "Survey"

THOMAS PRESBY	12/11/2019	1

Will revise text.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
38	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 8.2.2: "conducted to 'conclude' if.."

THOMAS PRESBY	12/11/2019	1

Will revise text.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
39	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 8.2.2: see previous add "Survey"

THOMAS PRESBY	12/11/2019	1

Will revise text as noted.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
40	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	

Section 8.2.2.2: "conducted to 'conclude' if.."

THOMAS PRESBY	12/11/2019	1

Will revise text.

Todd Bogner	12/16/2019	1

Response Accepted & Comment Closed

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No	Status	Current Holder	Reference	Categories
41	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	
section 8.2.2.2: see previous add "Survey"			
THOMAS PRESBY	12/11/2019	1	
Will revise text.			
Todd Bogner	12/16/2019	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
42	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	
Section 9.3.1: Last two sentences			
This is confusing. Please be clearer on which sites contain wetlands and which contain OSWs			
THOMAS PRESBY	12/11/2019	1	
Agree. Will be more descriptive in the text between wetlands and OSWs.			
Todd Bogner	12/16/2019	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
43	RESPONSE ACCEPTED			ENVIRONMENTAL MANAGEMENT OFF.

Created By	Created On	Version	Delegate For
Todd Bogner	11/25/2019	1	
Section 9.3.5			
See previous add "Survey"			
THOMAS PRESBY	12/11/2019	1	
Will revise text.			
Todd Bogner	12/16/2019	1	
Response Accepted & Comment Closed			

Name	Assignment	Due Date	Status	Comments
Walter Breuggeman	LEAD REVIEWER	11/25/2019	ACTIVE	0

DRAFT

Submittal Report

Financial Project:	440897-2	Submittal Type:	POND SITING REPORT
Submittal Phase:	OTHER	Submittal Staff Type:	CONSULTANT
Received Date:	7/9/2019	Response Due Date:	8/6/2019
Grace Period:	0	District:	TURNPIKE
Status:	CLOSED	Create Date:	7/9/2019
Create User Id:	KN846CS	Last Update:	7/9/2019
		Last Update User Id:	KN846CS

Description:

DCN 10915 - Pre-Final Pond Siting Report

Note to Reviewers: One pond near Thornhill Rd. has been eliminated due to the realignment of Thornhill Rd. being removed from the project design. Please refer to DCN 10329 to review the previous Draft Pond Siting Report Comments.

REFER TO DOCUMENTATION IN THE TURNPIKE SUBMITTAL ANNOUNCEMENT E-MAIL OR IN THE DOCUMENTATION TAB OF THIS SWERC SUBMITTAL.

Threads:

Name	Assignment	Due Date	Status	Comments
Adriana Kirwan	LEAD REVIEWER	7/24/2019	ACTIVE	1

No	Status	Current Holder	Reference	Categories
10	RESPONSE ACCEPTED		PSR	DRAINAGE

Created By	Created On	Version	Delegate For
Adriana Kirwan	7/23/2019	1	

Section 7.2.1 Regional Alternatives appears to be the Environmental Look Around portion of this report. Describe what regional stakeholders were contacted and what opportunities were evaluated based on this coordination. Include backup documentation supporting the environmental look around evaluation. Include any meeting minutes in the Appendix.

THOMAS PRESBY	9/1/2019	1

Will add additional discussion regarding our ELA meeting with the SWFWMD land management.

Adriana Kirwan	9/6/2019	1

Thank you.

Name	Assignment	Due Date	Status	Comments
Anand Jujare	LEAD REVIEWER	7/23/2019	ACTIVE	0*

Name	Assignment	Due Date	Status	Comments
Annemarie Hammond	LEAD REVIEWER	7/23/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
Brent Setchell	LEAD REVIEWER	7/23/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
CHRIS KELLER	REVIEWER	7/23/2019	ACTIVE	5

No	Status	Current Holder	Reference	Categories
1	RESPONSE ACCEPTED		Final Pond Siting Report page 6	DRAINAGE,LANDSCAPING

Created By	Created On	Version	Delegate For
CHRIS KELLER	7/17/2019	1	

DRAFT

Please include discussion regarding aesthetic design of the storm water management facilities in the third paragraph of the Executive Summary along with environmental and wetland impacts, etc..

FDOT policy requires all disciplines to address aesthetics (reference policy topic 000-650-011-c)
The FDOT Drainage Design Manual requires storm water ponds to be integrated with existing and proposed landscaping and adjoining uses, to be designed in accordance with the Highway Beautification Policy and to rely on an interdisciplinary team including collaboration with the Landscape Architect to address aesthetic design approach.

THOMAS PRESBY 9/1/2019 1

Agree, we will include in the Final Report.

CHRIS KELLER 9/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
2	RESPONSE ACCEPTED		Page 19, Final Pond Siting Report	DRAINAGE,LANDSCAPING

Created By	Created On	Version	Delegate For
CHRIS KELLER	7/17/2019	1	

Provide documentation that pond location and design was coordinated in accordance with FDOT Drainage Design Manual section 5.4.4.2.

THOMAS PRESBY 9/1/2019 1

Agree, we will include in the Final Report.

CHRIS KELLER 9/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
3	RESPONSE ACCEPTED		Page 19, Final Pond Siting Report	DRAINAGE,LANDSCAPING

Created By	Created On	Version	Delegate For
CHRIS KELLER	7/17/2019	1	

Include discussion about how aesthetics will be addressed in section 7.0 (Per FDOT Drainage Design Manual section 5.4.4.2)

THOMAS PRESBY 9/1/2019 1

Agree, we will include in the Final Report.

CHRIS KELLER 9/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
4	RESPONSE ACCEPTED		Page 25, Final Pond Siting Report	DRAINAGE,LANDSCAPING

Created By	Created On	Version	Delegate For
CHRIS KELLER	7/17/2019	1	

Include discussion verifying aesthetics have been included as part of the evaluation process. (Reference FDOT policy 000-650-011-c and FDOT Drainage Design Manual section 5.4.4.2)

THOMAS PRESBY 9/1/2019 1

Agree, we will include in the Final Report.

CHRIS KELLER 9/16/2019 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
5	RESPONSE ACCEPTED		General	DRAINAGE,LANDSCAPING

Created By	Created On	Version	Delegate For
CHRIS KELLER	7/17/2019	1	

Controlling policy, and markups provided for your information.

THOMAS PRESBY 9/1/2019 1

Comments noted. We will address the aesthetics in the Final Report.

CHRIS KELLER 9/16/2019 1

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Response Accepted & Comment Closed

Name	Assignment	Due Date	Status	Comments
Daniel Kastelic	LEAD REVIEWER	7/23/2019	ACTIVE	0*

Name	Assignment	Due Date	Status	Comments
Deanna Campbell	LEAD REVIEWER	7/23/2019	ACTIVE	0*

Name	Assignment	Due Date	Status	Comments
DOUG GABLE	LEAD REVIEWER	7/23/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
Eduardo Ponce	LEAD REVIEWER	7/23/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
Eric Krebill	LEAD REVIEWER	7/30/2019	ACTIVE	2

No	Status	Current Holder	Reference	Categories
11	RESPONSE ACCEPTED			OTHER

Created By	Created On	Version	Delegate For
Eric Krebill	7/29/2019	1	

The FPID # indicated on the page headers is incorrect, it has an extra 8 that should be deleted.

THOMAS PRESBY	9/1/2019	1	

Agree, will revise.

Eric Krebill	9/5/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
12	RESPONSE ACCEPTED			CONTAMINATION

Created By	Created On	Version	Delegate For
Eric Krebill	7/29/2019	1	

I find it a bit confusing that the report title is Final Pond Siting Report yet the Executive Summary and Introduction indicate the report is preliminary.

Section 8.3.4 Hazardous Materials Contamination indicates a Contamination Screening Evaluation Report16 (CSER) was prepared in accordance with PD&E Manual Chapter 22. The 16 appears to be a typo. The current PD&E chapter for a CSER is Chapter 20. Please indicate the existing CSER date, note only tables from that report are included as Appendix G in the Conceptual Pond Siting Report provided as Appendix K.. A correlation is not apparent between the pond sites listed in the Conceptual Pond Siting Report which included evaluation of the CSER findings versus the current listing of pond and floodplain sites listed in Tables 6 & 7 in this Final Pond Siting Report. A figure should be provided in the current report showing locations of the current pond and floodplain sites in addition to the plans contained in Appendix I.

It's my understanding that a CSER is currently being prepared and has not yet been provided for ERC review. The new CSER information should be included and considered in this Final Pond Siting Report. It appears that Level II impact to construction assessment activities are likely warranted for evaluation of several of the proposed pond locations prior to final selection of the alternatives.

THOMAS PRESBY	9/1/2019	1	

Will revise section 8.3.4 and will include updated CSER report.

Eric Krebill	9/5/2019	1	

Response Accepted & Comment Closed

Name	Assignment	Due Date	Status	Comments
Erin Yao	LEAD REVIEWER	7/23/2019	ACTIVE	0

Name	Assignment	Due Date	Status	Comments
Francis DeLaRosa	LEAD REVIEWER	7/23/2019	ACTIVE	0*

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Name	Assignment	Due Date	Status	Comments
Fred Gaines	LEAD REVIEWER	7/23/2019	ACTIVE	3

No	Status	Current Holder	Reference	Categories
7	RESPONSE ACCEPTED			ENVIRONMENTAL PERMITS

Created By	Created On	Version	Delegate For
Fred Gaines	7/23/2019	1	

Section 6 indicates that several regulatory resources (including wetlands and listed species) were evaluated for the floodplain comp alternatives, but the write-ups for the 4 sites don't appear to address the regulatory resources associated with the sites. Please review.

THOMAS PRESBY	9/1/2019	1	

Agree, we will include in the Final Report.

Fred Gaines	10/1/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
8	RESPONSE ACCEPTED			ENVIRONMENTAL PERMITS

Created By	Created On	Version	Delegate For
Fred Gaines	7/23/2019	1	

Table 6 - suggest adding listed species impacts (including NA or none if appropriate) to table.

THOMAS PRESBY	9/1/2019	1	

Agree, we will include in the Final Report.

Fred Gaines	10/1/2019	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
9	RESPONSE ACCEPTED			ENVIRONMENTAL PERMITS

Created By	Created On	Version	Delegate For
Fred Gaines	7/23/2019	1	

Please clarify if no new pond alternatives were evaluated for the design phase or if all potential sites are assumed to have similar impacts. If Avoidance and Minimization will need to be documented during design, it may be beneficial to indicate why there are no alternatives with complete avoidance.

THOMAS PRESBY	9/1/2019	1	

Only one pond site alternative was evaluated per basin, since our pond requirements based on the required hydraulic connections are located within a single owner parcel, with similar potential impacts.

Fred Gaines	10/1/2019	1	

Response Accepted & Comment Closed

Name	Assignment	Due Date	Status	Comments
Gary Kaser	LEAD REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Gary Roche	LEAD REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Henry Pinzon	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
James Beverly	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Jason Tosspon	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Karina Della Sera	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**

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Katherine Chinault	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Kevin Ingle	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Lance Knutsen	REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
M Wayne Shelton	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Mark Roberts	REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Michael Grant	LEAD REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Nathan Poole	REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Nicole Monies	LEAD REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Pamela Nagot	IN-HOUSE PROJECT MANAGER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Ramasamy Venkatesan	REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Roger Gobin	LEAD REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Sergio Figueroa	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Steeve Koloko	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Stephanie Sharp	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Tami Barfield	REVIEWER	7/23/2019	ACTIVE	1

No	**Status**	**Current Holder**	**Reference**	**Categories**
6	RESPONSE ACCEPTED			ENVIRONMENTAL PERMITS

Created By	**Created On**	**Version**	**Delegate For**
Tami Barfield	7/18/2019	1	
PSR			
THOMAS PRESBY	9/1/2019	1	
Comment noted. Thank you.			
Tami Barfield	9/4/2019	1	
Response Accepted & Comment Closed			

Name	**Assignment**	**Due Date**	**Status**	**Comments**
Teresa Puckett	LEAD REVIEWER	7/23/2019	ACTIVE	0*
Name	**Assignment**	**Due Date**	**Status**	**Comments**
THOMAS PRESBY	CONSULTANT PROJECT MANAGER	8/6/2019	ACTIVE	0

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Name	Assignment	Due Date	Status	Comments
Todd Bogner	LEAD REVIEWER	7/23/2019	ACTIVE	0
Name	**Assignment**	**Due Date**	**Status**	**Comments**
Walter Breuggeman	LEAD REVIEWER	7/23/2019	ACTIVE	0

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APPENDIX M

PROJECT CORRESPONDANCE

DRAFT

SR 570B (Central Polk Parkway)
Segment 1 from SR 570 (Polk Parkway)
to SR 35 (US 17) (Polk)

440897-2-32-01

Date/Time

Friday, June 15, 2018, 9:00 am

Location

Turkey Lake Headquarters Room 2130
Ocoee, FL 34761

Purpose of Meeting

Drainage Kickoff Meeting

Participants

Please see attached sign in sheet for all meeting participants.

I. Introductions

Erin Yao discussed purpose of this meeting and turned it over to KCA.

II. Summary of Approach

Ali Tayebnejad discussed the following drainage design approach:

1. KCA is planning to provide water quality in a regional pond or a combination of offsite and infield ponds to limit the need for linear treatment ponds along the project.

Martin Horwitz asked about the Sovereign Submerged Lands determination for the Lake Lena Run crossing south of SR 540. He later indicated that District One Permits verified that they did not get a sovereign submerged lands determination for Lake Lena Run.

Mark Easley stated that KCA would be requesting a Sovereign Submerged Lands determination from the FDEP in the near future.

2. Our goal is to avoid linear systems for treatment and limit the number of ponds.
3. One offsite pond will be towards the middle of the project with the purpose of treatment and attenuation. In-field ponds will be proposed at both ends of the project, the SR 570 Interchange and US 17 Interchange.

Erin Yao mentioned to discuss the pond in the middle of the project with Joe Chinelly (to utilize the fill for the project).

Daniel Kastelic stated that 10% of the drainage pond areas should to be dedicated to Landscape Opportunities. Utilize areas primarily along the inside or outside of pond maintenance berms and within view zones of the roadway. Avoid square, triangular and rectangular graded pond shapes. Use curvilinear designed pond forms whenever possible.

4. Compensatory treatment will be evaluated for the segments of the project that could not be conveyed to the offsite or infield ponds.
5. Attenuation for these segments will be provided within the roadside ditches. The outfall from these ditches will be provided at the cross drain locations with no treatment via detention or retention.

Fred Gaines indicated that since the roadside ditches only provide attenuation, the direct discharge points into the wetland might need to be mitigated.

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6. Lake Hancock is impaired for nutrient and since our outfalls are all upstream of the lake, the impaired water body criteria should not be required.

Martin Horwitz asked KCA to verify the stages within the ponds around Lake Hancock, and if these small lakes are pre-treatment ponds.

Fred Gaines stated that the SWFWMD recently modified the Lake Hancock water levels back in 2015. KCA needs to review / check on the seasonal high water levels downstream of the alignment.

Erin Yao would also like KCA to look closer at the existing pond in Area 6 where bridge option is being considered and possibly use this pond for additional drainage requirements for the project.

7. For the regional pond alternative, KCA is evaluating three sites including the infield area within the SR 570 Interchange, the offsite pond toward the middle of the project, and the existing regional pond south of Lake Hancock.

Martin Horwitz and Erin Yao noted that KCA would need to discuss the regional pond south of Lake Hancock with the SWFWMD. The water management district might want additional water for Peace Creek.

FTE suggested a separate coordination meeting with SWFWMD Land Management and Minimum Flows and Levels to discuss water level benefits.

8. In order to provide floodplain compensation within the right-of-way and receive offsite sheet flow, the ditch bottom elevation may be as low as the seasonal high water elevation and wet during the wet season.

Erin Yao mentioned to check by the FTE Maintenance for their preference for wet or dry ditches along the CPP mainline. She directed KCA to use FEMA maps in place of the latest SWFWMD model for determining floodplain encroachment and compensation. If we were asked at the SWFWMD pre-application meeting to use their model, then Erin Yao needs to be informed and Carl Spiro needs to get involved.

9. The regional and offsite ponds will be sized for the future 6-lane typical section. The floodplain compensation within the right-of-way will be sized for the 4-lane condition. KCA needs clarification regarding the sizing of the drainage conveyance systems such as pipes and ditches. Does FTE want the systems sized for 4 lanes or 6 lanes?

Erin Yao said to upsize the conveyance system and design roadside ditches for 6 lanes. KCA will document this in the drainage documentation so that in the future someone could look at it and see the approach clearly.

Fred Gaines questioned the number and schedule of meeting with the agencies.

Ali Tayebnejad stated that there might be two meetings including a pre-application meeting with SWFWMD Regulatory and a meeting with Land Management and Operations and Minimum Flows and Levels regarding Lake Hancock and the use of the existing SWFWMD pond south of this lake.

Fred Gaines thought to possibly try to have a combined meetings with Regulatory and Land Management.

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Drainage Kick-Off Meeting / June 15th, 2018 @ 9:00 am / Turnpike Headquarters - Room 2130
440897-2-52-01 / Central Polk Parkway (SR 570B, Roadway ID 16471000) / From Polk Parkway (SR 570) to US 17 (SR 35)
Sign-In-Sheet

Florida's Turnpike Staff							Kisinger Campo & Associates, Corp. and Sub-Consultants				
Discpline	Name (Turnpike)	Company (Turnpike)	Phone (407-264-ext.)	Email (name@dot.state.fl.us)	Initial	Initial	Name (Design Consultant)	Company	Phone (xxx-xxx-xxxx)	Mobile Phone (xxx-xxx-xxxx)	Email (name@xxxx.com)
Project Manager	**Pam Nagot**	**HNTB**	**3043**	**pamela.nagot**	PN	TJH	**Thomas Presby II**	**KCA**	**813.871.5331**	**727-642-5531**	tpresby@kisingercampo.com
Deputy PM	Yang Zhao	HNTB	**3376**	yang.zhao			Todd Gardina	KCA	813.871.5331	727.510.0625	tgardina@kisingercampo.com
Roadway	Stephanie Sharp	FTE	3038	stephanie.sharp			Todd Gardina	KCA	813.871.5331		tgardina@kisingercampo.com
	Jason Christopher	HNTB	3633	jason.christopher			Branan Anderson	KCA	813.871.5331		Branan.Anderson@kisingercampo.com
							Joe Lauk	PGA	863.533.7317		joe2@patelgreene.com
Drainage	Erin Yao	FTE	3479	erin.yao	EYS	AA	Ali Tayebnejad	KCA	813.871.5331		atayebnejad@kisingercampo.com
	Richard Ramoutar	HNTB	3080	richard.ramoutar			Curt Sprunger	KCA	813.871.5331		Curt.Sprunger@kisingercampo.com
						CWF	Tony Fromen	KCA	813.871.5331		Tony.Fromen@kisingercampo.com
Utilities	Vacant	FTE	3007				Brent Postma	Omni	813. 852.1888		bpostma@omni-communications.com
	Deanna Campbell	HNTB	3420	deanna.campbell			Shannon Wright	Omni	813. 852.1888		SWright@OMNI-Communications.com
Environmental	Martin Horwitz	FTE	3022	martin.horwitz		ME	Mark Easley	KCA	813.871.5331		measley@kisingercampo.com
	Fred Gaines	Atkins	3689	fred.gaines on phone	FG		Sarah Johnson	KCA	813.871.5331		sarah.johnson@kisingercampo.com
Archaeological							Lee Hutchinson	ACI	941.379.6206		lhutchinson@aciflorida.com
							Marion Almy	ACI	941.379.6206		malmy@aciflorida.com
PD&E (Reevaluation)	Martin Horwitz	FTE	3022	martin.horwitz		ME	Mark Easley	KCA	813.871.5331		measley@kisingercampo.com
	Kristee Booth	E-Sciences	3409	kristee.booth			Bill Howell	Lochner	813.357.3750		bhowell@hwlochner.com
PD&E Extension	Jessica Dean	Atkins	3301	jessica.dean							
Structures	Russ Snyder	FTE	3442	russ.snyder			Guillermo Madriz	KCA	813.871.5331		gmadriz@kisingercampo.com
	Alfred John	HNTB	3584	alfred.john			Jason LaBarbera	KCA	813.871.5331		Jason.LaBarbera@kisingercampo.com
							Chris Cromwell	PGA	863.533.7317		chris@patelgreene.com
							John Corven	Corven	850.386.6800		JCorven@corveneng.com
							Rafal Wuttrich	H&H	813-749-0823		rwuttrich@hardesty-hanover.com
S&PM	Shannon Pike	FTE	3418	shannon.pike			Fathy Abdalla	KCA	813.871.5331		fabdalla@kisingercampo.com
	Mario Acosta	HNTB	3216	mario.acosta							
Signalization	Shannon Pike	FTE	3418	shannon.pike			Erez Dayan	PGA	863.533.7317		erez@patelgreene.com
	Michelle Schofner	Atkins	O: 813.281.4546 C: 813.732.5749	michelle.schofner@atkinsglobal.com							
Lighting	Shannon Pike	FTE	3418	shannon.pike			Fathy Abdalla	KCA	813.871.5331		fabdalla@kisingercampo.com
	Roderic Grier	HNTB	3915	roderic.grier							
Landscape	Erin Yao	FTE	3479	erin.yao			Rachel Rodgers	LAD	813.985.1142		Rachel.Rodgers@LADesignFL.com
	Daniel Kastelic (Chris Keller)	HNTB HNTB	3478 407.547.3067	daniel.kastelic ckeller@hntb.com							
Survey + Mapping	Gary Roche	FTE	3637	gary.roche			Thomas Halstead	M&C	813.549.3740	727.224.2645	THalstead@mckimcreed.com
	Lance Knutsen	HNTB/Mehta	3673	lance.knutsen							
ROW	Nick Bowman	FTE	3436	nick.bowman			Greg Jones	M&C	941.379.3404	941.232.3877	GJones@mckimcreed.com
	Chris Scodius	American Acquisition Group	O: 813.287.8191 C: 727.804.1388	chris@americanacquisition.com							

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Photogrammetry							Ike Rooks	IFR	813.752.2113		iker@ifrooks.com
Tolls Traffic Studies	Saad Shbaklo	HNTB	3135	saad.scbaklo			Stephan Heimburg	H&H	813.514.4505		sheimburg@hardesty-hanover.com
Tolls PM	Mike Hurm	HNTB	3002	michael.hurm			Stephan Heimburg	H&H	813.514.4505		sheimburg@hardesty-hanover.com
Toll Facility + Site + Gantry	James Beverly	FTE	3646	jamesE.beverly			Webb Jones	H&H	813.514.4519		wjones@hardesty-hanover.com
	Jason Tosspon	HNTB	3123	jason.tosspon							
Tolling Structures	Russ Snyder	FTE	3442	russ.snyder			James Newberry	H&H	813-514-6832		jnewberry@hardesty-hanover.com
	Alfred John	HNTB	3584	alfred.john							
Tolling Electrical	Jeff Kipfinger	HNTB	3433	jeff.kipfinger			Andrew Barthle	H&H	954-368-6333		abarthle@hardesty-hanover.com
Tolling ITS	James Beverly	FTE	3646	jamesE.beverly			Andrew Barthle	H&H	954-368-6333		abarthle@hardesty-hanover.com
	Jason Tosspon	HNTB	3123	jason.tosspon							
	Anand Jujare	HNTB	3924	anand.jujare							
Tolling MOT	James Vick	Atkins	3410	james.vick			Webb Jones	H&H	813.514.4519		wjones@hardesty-hanover.com
Building Architecture	Jeff Warmington	Atkins	786.251.3620	jeff.warmington@atkinsglobal.com			Arnie Hernandez	WGI	813.579.2270		Arnaldo.Hernandez@wginc.com
Building Structural	Douglas Ramirez	Atkins	305.514.3306	douglas.ramirez@atkinsglobal.com			James Newberry	H&H	813-514-6832		jnewberry@hardesty-hanover.com
							Arnie Hernandez	WGI	813.579.2270		Arnaldo.Hernandez@wginc.com
Building Mechanical	Pedro "Pete" Rodriguez	Atkins	305.514.3399	pedro.rodriquez@atkinsglobal.com			Amaka Amalu-Anderson	H&H	954-368-6332		aanderson@hardesty-hanover.com
Building Interiors	John Provost-Heron	Atkins	954.934.1164	john.provost-heron			Arnie Hernandez	WGI	813.574.3190		Arnaldo.Hernandez@wginc.com
Building Electrical	Pete Trevin	Atkins	305.514.3389	pete.trevin@atkinsglobal.com			Andrew Barthle	H&H	954-368-6333		abarthle@hardesty-hanover.com
Building Site/Civil	David McCoy	Atkins	407.806.4215	david.mccoy@atkinsglobal.com			Webb Jones	H&H	813.514.4519		wjones@hardesty-hanover.com
ITS	Shannon Pike	FTE	3418	shannon.pike			Phuc Duong	GF	813.882.4366 ext. 6115		pduong@GFNET.com
	Anand Jujare	HNTB	3924	anand.jujare							
Noise Assessment	Martin Horwitz	FTE	3022	martin.horwitz							
	Kristee Booth	HNTB/Esciences	3409	kristee.booth							
Geotechnical	Ken Morgan	FTE	3335	ken.morgan			Larry Moore	Tierra	813.989.1354	813-504-3016	lmoore@tierraeng.com
	Roger Gobin	PB	3839	roger.gobin			Sandra Polanis	DPS	352.588.2811		spolanis@dps-corp.com
						MN	Marc Novak	Tierra	813.989.1354	813-376-3535	mnovak@tierraeng.com
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	Eduardo "Ed" Sainten	HNTB / Terracon	3408	eduardo.sainten			Mike Bair	Tierra	813.989.1354	813-774-2719	mbair@tierraeng.com
Traffic Planning	Emam Emam	AECOM	3820	emam.emam			Fathy Abdalla	KCA	813.871.5331		fabdalla@kisingercampo.com
	Jimmy Mulandi	AECOM	3824	jimmy.mulandi							
Public Involvement	Rax Jung	FTE	3870	rax.jung			Lara Bouck	Lochner	407.514.2782		lbouck@hwlochner.com
	Henry Pinzon	FTE	3802	henry.pinzon			Bill Howell	Lochner	813.357.3750		bhowell@hwlochner.com
Specifications + Quantities + Estimates	Eddie Register	FTE	3087	eddie.register			Deborah Hernandez-Cedeno	KCA	813.871.5331		Deborah.Hernandez-Cedeno@kisingercampo.com
	Takezo Murasaki	FTE	3048	takezo.murasaki							
Traffic Operations	Eric Gordin	FTE	3316	eric.gordin							

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	Dalita Singh	Jacobs	3413	dalita.singh							
Safety / TSM&O	Holly Walker	Jacobs	3257	holly.walker							
Maintenance - RDWY	Bob May	Jacobs	3473	robert.may							
Structures	Aran Lessard	Jacobs	954.410.1234	aran.lessard							
Construction	Joe Chinelly	FTE	3341	joseph.chinelly							
Plans Processing	Manny Alverio	Atkins / Montgomery	3446	manuel.alverio			Donna Trew	KCA	813.871.5331		Donna.Trew@kisingercampo.com
Digital Delivery	Dayna Griffin	FTE	3695	dayna.griffin			Donna Trew	KCA	813.871.5331		Donna.Trew@kisingercampo.com
	Ruby Perez	FTE	3999	ruby.perez							
Additional FTE Staff											
	Patrick Muench	FTE		patrick.muench							
		Polk County									
Discpline	**Name (Polk County)**	**Company (Polk County)**	**Phone**	**Email**							
Project Mgt. Section / Engineering Manager	Joe Montoya, PE	Polk County	863.535.2200	joemontoya@polk-county.net							
		FDOT District One									
Discpline	**Name**	**Company (FDOT D1)**	**Phone**	**Email**							
District Project Management Engineer	Nicole Mills	D1	O: 863.519.2277 C: 863.393.6394	Nicole.Mills@dot.state.fl.us							

Legend

KCA	Kisinger Campo & Associates, Inc.
ACI	Archaeological Consultants, Inc.
Corven	Corven Engineering, Inc.
DPS	Deversified Professional Services, Corp.
GF	Gannett Fleming, Inc.
H&H	Hardesty & Hanover, LLC
Lochner	H.W. Lochner, Inc.
IFR	I.F. Rooks & Associates, Inc.
LAD	L.A. Design, P.A.
M&C	Mc Kim & Creed, Inc.
Omni	Omni Communications, LLC
PGA	Patel, Greene & Associates, PLLC
Tierra	Tierra, Inc.
WGI	Wantman Group, Inc.

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Tiffany Buchanan

From: Ali Tayebnejad
Sent: Tuesday, January 1, 2019 3:13 PM
To: Tiffany Buchanan
Cc: Tony Fromen
Subject: FW: Polk Parkway Interdepartmental Meeting w Turnpike

KISINGER CAMPO & ASSOCIATES

Ali Tayebnejad, PE
Stormwater Department Manager

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DRAFT

From: Yao, Erin <Erin.Yao@dot.state.fl.us>
Sent: Wednesday, December 19, 2018 2:54 PM
To: Dave Kramer <dave.kramer@swfwmd.state.fl.us>; Dawn Turner <Dawn.Turner@swfwmd.state.fl.us>; Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk <Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; Mark Easley <Mark.Easley@kisingercampo.com>; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>; Kirwan, Adriana <Adriana.Kirwan@dot.state.fl.us>; Hammond, Annemarie <Annemarie.Hammond@dot.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

Hello Dave,

As an update, our consultant is currently planning to move forward to utilize the information in the SWFWMD model to evaluate our project's impacts. However, they are not planning to update or rerun the SWFWMD model. As we looked into the floodplain closer between the FEMA maps and the SWFWMD model, we noticed that CR 540A may have impacted the floodplain and we are concerned this may in turn affect the compensation requirements for this project. Are there any opportunities to work with SWFWMD and/or the county to possibly improve conveyance under the road and pull the floodplain back to the FEMA floodplain? Do you know if the county is aware of the potential impacts this road may have had on the overall floodplain?

Thanks,

Erin T Yao, PE, CFM
Florida's Turnpike Enterprise
District Drainage Engineer

P.O.Box 613069
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✉: erin.yao@dot.state.fl.us

From: Dave Kramer [mailto:dave.kramer@swfwmd.state.fl.us]
Sent: Thursday, October 18, 2018 3:38 PM
To: Dawn Turner <Dawn.Turner@swfwmd.state.fl.us>; Yao, Erin <Erin.Yao@dot.state.fl.us>; Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk <Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; mark.easley@kisingercampo.com; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

Thank you for the information Dawn. Erin, I would agree (with Dawn) that the most accurate and representative data should be used and should supersede any FEMA mapping that is based on dated or inaccurate information.
Dave

David Kramer, P.E.
ERP Evaluation Manager
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Introducing ERP eCompliance Online Permit Condition Reporting at
WaterMatters.org/ePermitting

From: Dawn Turner
Sent: Thursday, October 18, 2018 3:15 PM
To: Yao, Erin <Erin.Yao@dot.state.fl.us>; Dave Kramer <dave.kramer@swfwmd.state.fl.us>; Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk

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<Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; mark.easley@kisingercampo.com; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

Erin,

As you and I discussed previously, the only area that was updated on the FEMA FIRMS to reflect the Lake Hancock model is the area affected by the new outfall structure at Lake Hancock.

The Lake Hancock model was developed using the earlier Saddle Creek model (circa 2002). Areas affected by the Lake Hancock outfall structure were updated to reflect recent land alterations. The 100 year – 5 day event was used to update the floodplain near Lake Hancock. The same event was used to update the Saddle Creek floodway north of the lake. The rest of the watershed was re-delineated to reshape existing FEMA floodplain polygons to reflect 2005 LiDAR based terrain information. The Saddle Creek model is not reflected in the earlier FEMA information.

It will be the consultant's responsibility to ensure they have the best available information regarding the 100 year floodplain. Consequently, they should obtain the Lake Hancock model and GIS information.

Please contact me if you have any questions.

Dawn

_____

Dawn Turner, P.E.
Southwest Florida Water Management District
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or 1-800-836-0797 (Florida only), ext. 4199

From: Yao, Erin <Erin.Yao@dot.state.fl.us>
Sent: Tuesday, October 16, 2018 5:18 PM
To: Dave Kramer <dave.kramer@swfwmd.state.fl.us>; Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk <Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; mark.easley@kisingercampo.com; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Dawn Turner <Dawn.Turner@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

Hello Dave,

Thank you for the email and for meeting with us last week. I appreciate that SWFWMD has invested so much into understanding the functionality of the Lake Hancock system. This model can certainly be a tool available to our team as we continue with our design, but I wanted to follow up on the approach to the floodplain evaluation. Given that the FEMA maps appear to have been updated recently to include the improvements that have been made to Lake Hancock, it was my assumption that it is reasonable to assume the FEMA maps will be sufficient to demonstrate no adverse impacts for the 100 year floodplain. Based on the meeting, it was my understanding that KCG would obtain the model to use if it would help to clarify or determine any information on the FEMA maps (for example any FEMA zones that do not have a base flood elevation established). Please let me know if you are in agreement with this approach.

Thank you,

Erin T Yao, PE, CFM
Florida's Turnpike Enterprise
District Drainage Engineer

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Ocoee, Florida 34761-3069

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✉: erin.yao@dot.state.fl.us

From: Dave Kramer [mailto:dave.kramer@swfwmd.state.fl.us]
Sent: Thursday, October 11, 2018 2:26 PM
To: Carmen L. Sanders <Carmen.Sanders@swfwmd.state.fl.us>; Jerry Mallams <Jerry.Mallams@swfwmd.state.fl.us>; Janie Hagberg <Janie.Hagberg@swfwmd.state.fl.us>; Rick M. Vaughn <Rick.Vaughn@swfwmd.state.fl.us>; Colleen Kruk <Colleen.Kruk@swfwmd.state.fl.us>; James Fine <James.Fine@swfwmd.state.fl.us>; Cliff Ondercin <Cliff.Ondercin@swfwmd.state.fl.us>; Gaines, Fred <Fred.Gaines@dot.state.fl.us>; Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>; Nagot, Pamela <Pamela.Nagot@dot.state.fl.us>; Yao, Erin <Erin.Yao@dot.state.fl.us>
Cc: Thomas J. Presby II <Thomas.Presby@kisingercampo.com>; Ali Tayebnejad <Ali.Tayebnejad@kisingercampo.com>; mark.easley@kisingercampo.com; Albert A. Gagne <Albert.Gagne@swfwmd.state.fl.us>; Dawn Turner <Dawn.Turner@swfwmd.state.fl.us>; Mark Keck <Mark.Keck@swfwmd.state.fl.us>; Thomas LaRoue <Thomas.LaRoue@swfwmd.state.fl.us>; Michelle Hopkins <Michelle.Hopkins@swfwmd.state.fl.us>; Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Scott Letasi <Scott.Letasi@swfwmd.state.fl.us>
Subject: RE: Polk Parkway Interdepartmental Meeting w Turnpike

EXTERNAL SENDER: Use caution with links and attachments.

Fred and Erin,
I wanted to follow up on the water quantity discussion we had this morning. We discussed the permittability of potential increased discharge rates and volumes to Lake Hancock, as well as estimation of flood elevations and floodplain extent within the lake and in the surrounding watershed. As mentioned, the District has invested a significant amount of time and effort to understand the behavior of the lake and its hydraulic and hydrologic input and output. We recommend obtaining and utilizing the most accurate and up-to-date data (including modeling) to determine if the roadway project will result in adverse impacts. I've included Mark Keck and Dawn Turner (not in attendance this morning) on this email to help facilitate coordination and acquisition of the data we have available.
Thanks,

Dave

David Kramer, P.E.
ERP Evaluation Manager
Environmental Resource Permit Bureau
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Southwest Florida Water Management District
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-----Original Appointment-----
From: Dave Kramer
Sent: Wednesday, September 12, 2018 3:57 PM
To: Dave Kramer; Carmen L. Sanders; Jerry Mallams; Janie Hagberg; Rick M. Vaughn; Colleen Kruk; James Fine; Cliff Ondercin; Gaines, Fred; Horwitz, Martin; Nagot, Pamela
Cc: Thomas J. Presby II; Ali Tayebnejad; Mark Easley; Albert A. Gagne
Subject: Polk Parkway Interdepartmental Meeting w Turnpike
When: Thursday, October 11, 2018 9:30 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: TPA Bldg 1 Laurel Oaks Video Conf Rm 1005-1006

Interdepartmental meeting with Florida's Turnpike Enterprise to discuss the following:

Turnpike has started design of the Central Polk Parkway in the vicinity of Lake Hancock (please see attached draft location map exhibit). This project has the potential to involve several different SWFWMD Departments/disciplines. Turnpike has recently met with SWFWMD land management regarding some aspects of the project's potential involvement with the Old Florida Plantation DRI. The Design Team would like to meet with SWFWMD ERP staff and others associated with SWFWMD's various Lake Hancock projects.

CONFIDENTIALITY NOTE: This communication may be privileged and confidential. It should not be disseminated to others. If received in error, please immediately reply that you have received this communication in error and then delete it. Thank you.

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