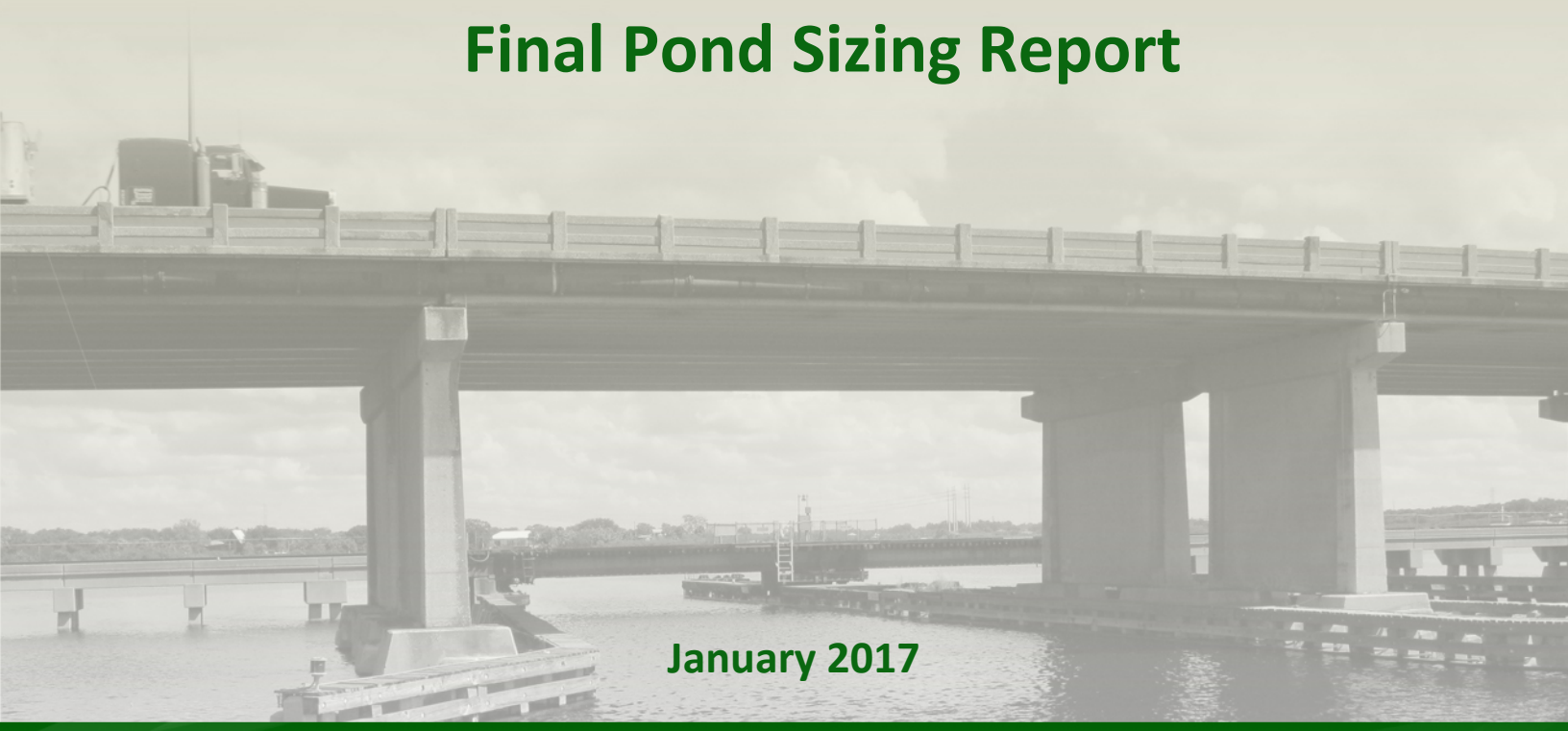
FDOT DISTRICT 7

US 41 (SR 45)

From Kracker Avenue to South of SR 676 (Causeway Boulevard)
Project Development and Environment (PD&E) Study

Final Pond Sizing Report



January 2017

Florida Department of Transportation
District Seven

Work Program Item Segment No. 430056-1
ETDM Project No. 5180
Hillsborough County

US 41 (SR 45)

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Prepared for:

Florida Department of Transportation
District Seven

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January 2017

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) conducted a Project Development and Environment (PD&E) Study to evaluate alternative improvements for US 41 (SR 45) from Kracker Avenue (milepoint 15.784) to south of SR 676 (Causeway Boulevard – milepoint 22.791) in Hillsborough County (**Figure 1-1)**, a distance of approximately 7.0 miles. Study objectives included: determine proposed typical sections and develop preliminary conceptual design plans for proposed improvements, while minimizing impacts to the environment; consider agency and public comments; and ensure project compliance with all applicable federal and state laws. Improvement alternatives were identified which will improve safety and satisfy future transportation demand. A *State Environmental Impact Report* (SEIR) was prepared for this study and approved on January 12, 2017.

In accordance with the FDOT's PD&E Manual, a Pond Sizing Report (PSR) was prepared for this PD&E Study. The information presented in this document is subject to change until the final Phase of the project. This Pond Sizing Report is preliminary and used as an engineering tool to identify potential stormwater management and floodplain encroachments as a result of the conceptual improvements. The calculations presented in this report are preliminary and help in estimating the preliminary size of the pond site facilities for each basin. The size requirements are preliminary based upon many assumptions and judgments. Conceptual calculations are attached in **Appendix A**.

The evaluation finds that a combination of dry retention and wet detention ponds are recommended for meeting the stormwater management requirements for the proposed roadway improvements. A preliminary right of way (ROW) cost for stormwater management facilities (ponds, etc.) and floodplain compensation sites is approximately $17 million.

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SECTION 1 INTRODUCTION

1.1 PD&E STUDY PURPOSE

The objective of this Project Development and Environment (PD&E) study was to assist the Florida Department of Transportation (FDOT) in reaching a decision on the type, location, and conceptual design of the proposed improvements for widening US 41 (SR 45) from Kracker Avenue to south of Causeway Boulevard (SR 676). The PD&E study satisfied all applicable requirements in order for this project to qualify for state funding of subsequent project development phases (design, right of way [ROW] acquisition, and construction).

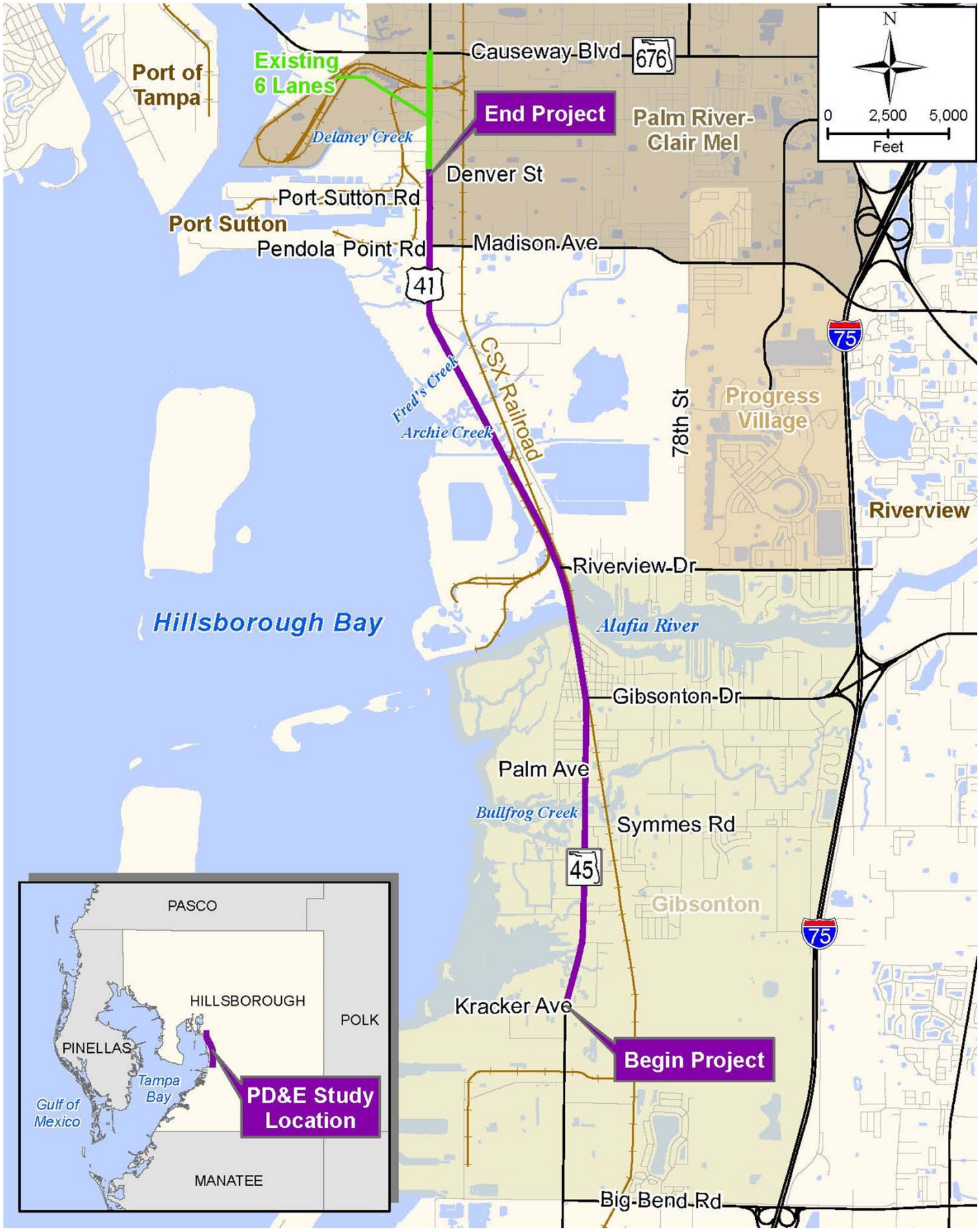
US 41 is a major north-south arterial of regional significance that parallels Interstate 75 (I-75) and US 301 in Hillsborough County. This project was screened through FDOT's Efficient Transportation Decision Making (ETDM) process as Project #5180. A *Final Programming Screen Summary Report* was published on April 10, 2013. A *State Environmental Impact Report* (SEIR) was prepared as part of this study and approved on January 12, 2017.

1.2 PROJECT DESCRIPTION

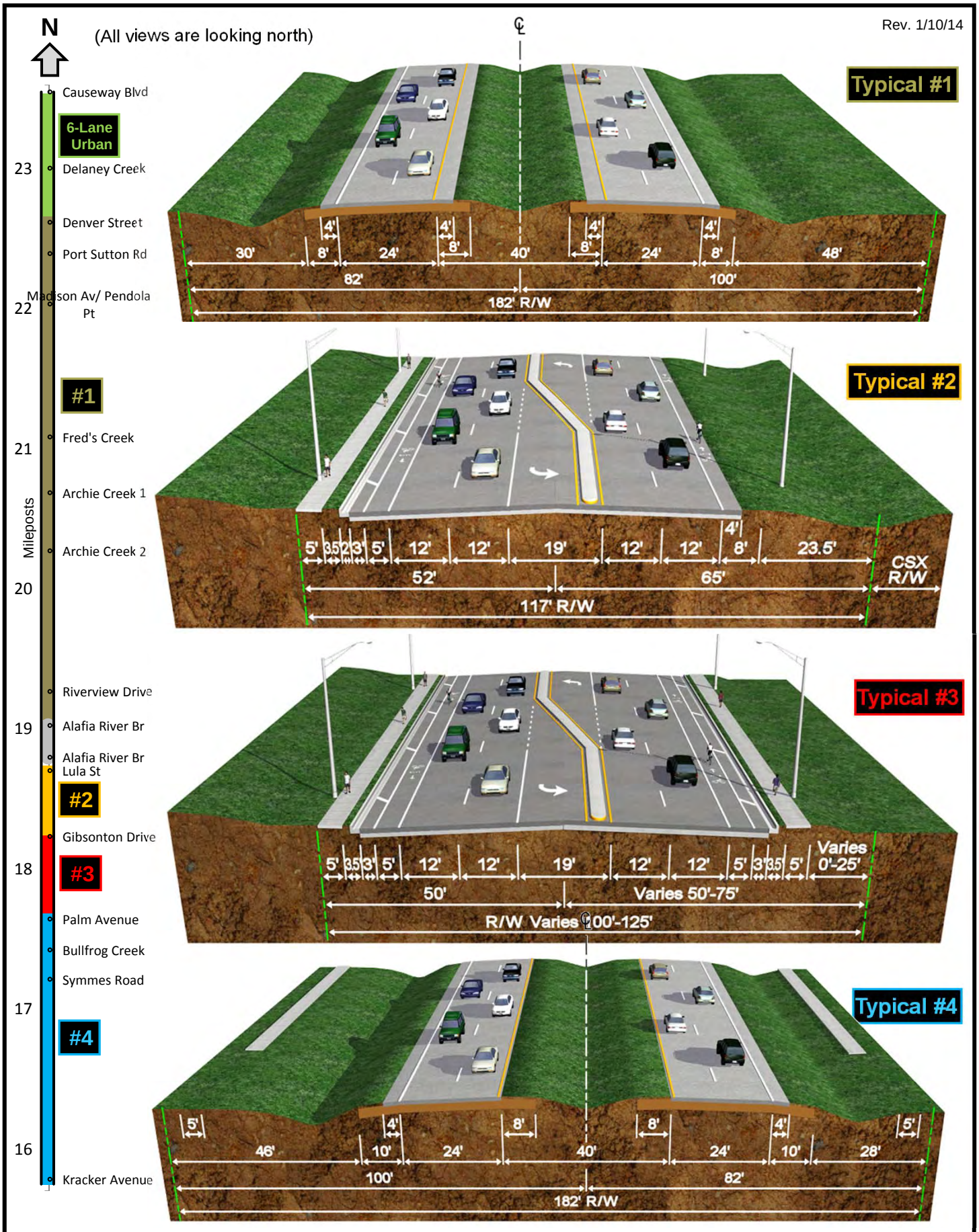
The FDOT conducted a PD&E study to evaluate alternative capacity and operational improvements to US 41 from Kracker Avenue (milepoint 15.784) to south of Causeway Boulevard (milepoint 22.791) in Hillsborough County (**Figure 1-1**), a distance of approximately 7.0 miles. The highway is to be improved from an existing, four-lane divided rural and urban facility to a six-lane divided facility. Bridges over Bullfrog Creek and the Alafia River are planned to be replaced. The planned improvements will include construction of stormwater management and floodplain compensation facilities and various intersection improvements, in addition to multimodal facilities (trail, pedestrian, bicycle and transit accommodations). However, the PD&E study for the proposed project did not evaluate specific stormwater management facilities and floodplain compensation sites as these locations will be identified during the proposed project's future design phase.

1.3 EXISTING FACILITY AND PLANNED IMPROVEMENTS

US 41 currently has both four-lane divided rural and urban typical sections (**Figure 1-2**). In addition, a 0.9-mile segment near the north end, between Denver Street and SR 676, was previously widened to a six-lane urban section. Existing lane widths vary from 11 to 12 feet and median widths vary from 19 to 40 feet. The rural typical section areas include 4-foot paved shoulders. The posted speed limit is 50 miles per hour (mph) in the north Gibsonton area and 55 mph in the areas to the south and north. The existing right of way width varies from 100 feet in north Gibsonton to 182 feet in the areas to the south and north. Existing bridge typical sections are shown in **Figure 1-3**.

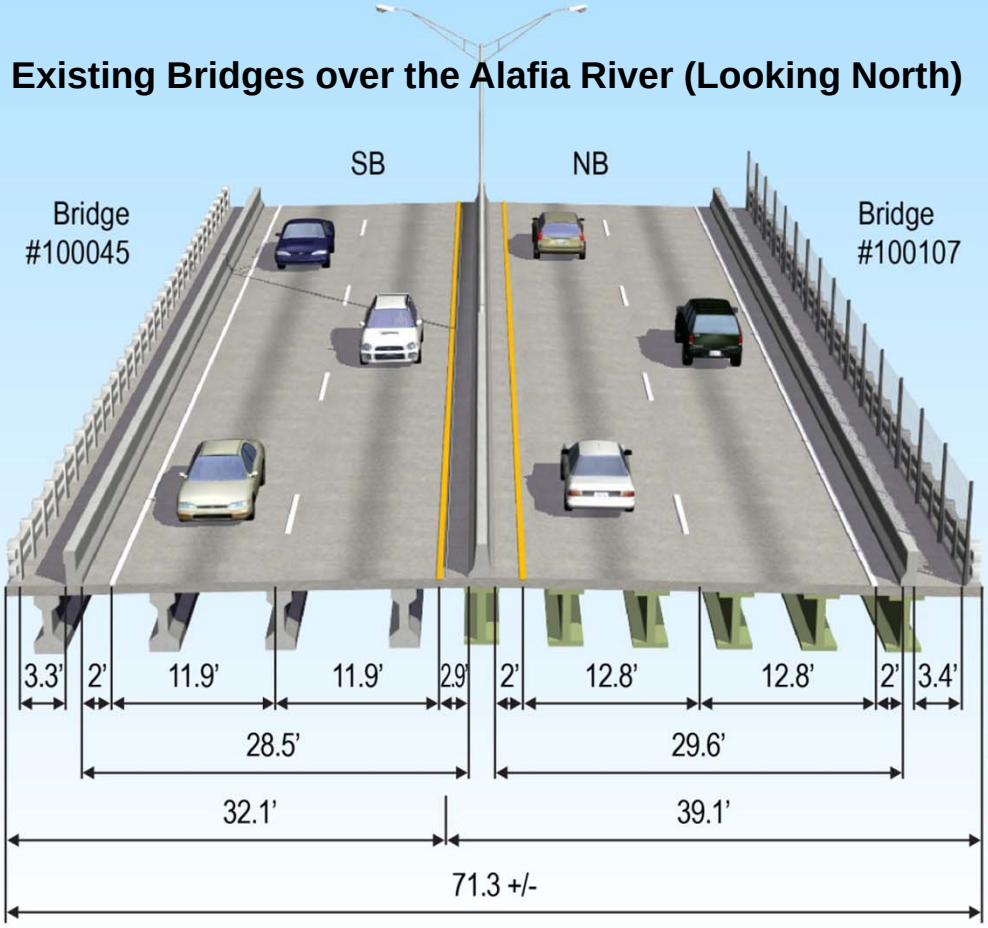


US 41(SR 45) PD&E Study *From Kracker Avenue to South of SR 676 (Causeway Blvd)* WPI Segment No. 430056-1 Hillsborough County	**Location and Study Area Map**	**Figure 1-1**

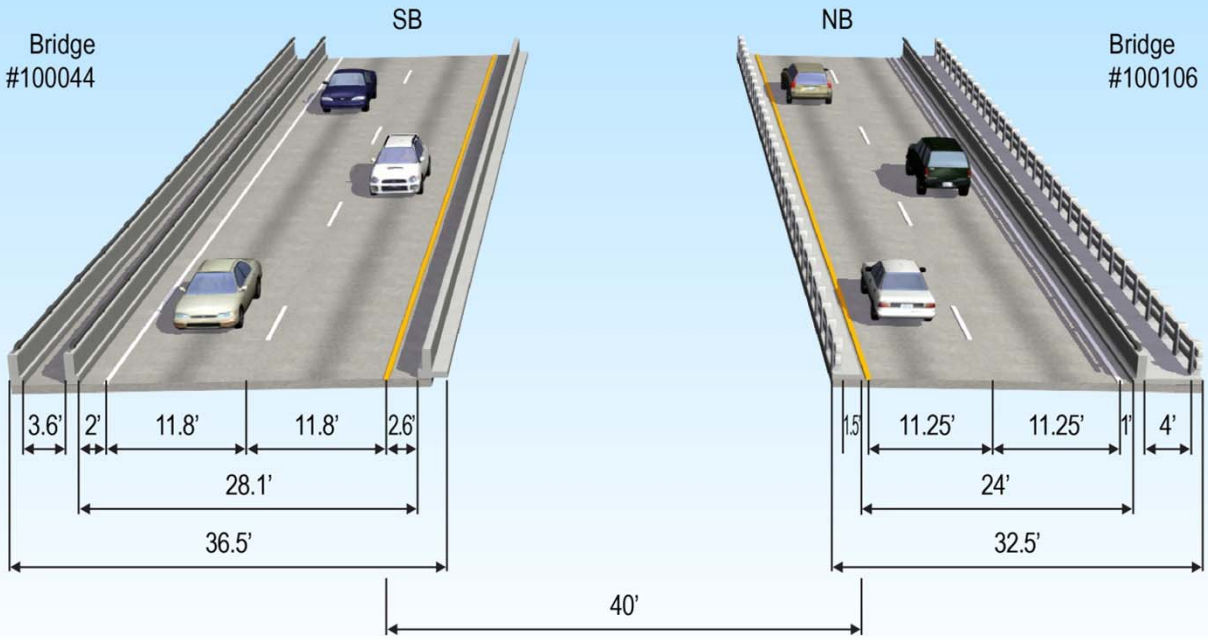


FDOT **US 41(SR 45) PD&E Study** *From Kracker Avenue to South of SR 676 (Causeway Blvd)* WPI Segment No. 430056 1 - Hillsborough County	**Existing Roadway Typical Sections**	**Figure 1-2**

Existing Bridges over the Alafia River (Looking North)



Existing Bridges over Bullfrog Creek (Looking North)



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US 41(SR 45) PD&E Study *From Kracker Avenue to South of SR 676 (Causeway Blvd)* WPI Segment No. 430056 1 - Hillsborough County	**Existing Bridge Typical Sections**	**Figure 1-3**

Planned improvements include widening to six lanes as well as intersection improvements, construction of stormwater management and floodplain compensation facilities and multimodal facilities. Planned typical sections include both suburban and urban typical sections. Additional right of way will be required in the north Gibsonton area for the planned improvements. Alternatives to replace the bridges at Bullfrog Creek and the Alafia River were evaluated. Planned typical sections are shown in **Figures 1-4, 1-5** and **1-6**. A "No-Build" Alternative was also evaluated. No future phases for this proposed project are included in FDOT's current adopted 5-year work program (Fiscal Years 16/17 through 20/21).

1.4 PROJECT PURPOSE AND NEED

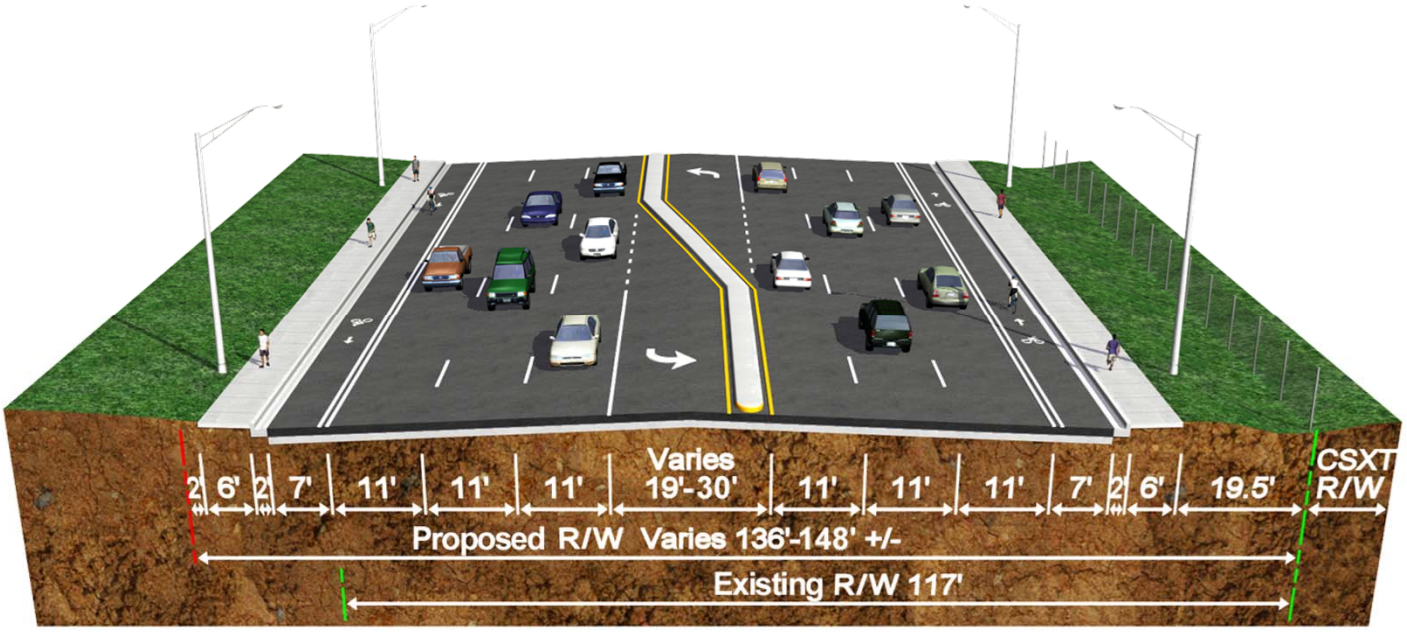
US 41 within the study area plays a significant role in connecting southern Hillsborough County to the Tampa Bay region. The purpose of the proposed project is to accommodate future traffic demands on US 41 due to growth within the project limits and surrounding areas. Segments within this corridor are projected to operate at level of service (LOS) F in the design year (2040) if no increase in capacity is provided. Additional factors which support the need for the project include:

Regional Connectivity - US 41 is a major north-south regional arterial that parallels I-75 and US 301 and connects south Hillsborough County to the Tampa Bay region. It provides connectivity between the communities of Apollo Beach, Riverview, and Gibsonton. US 41 is a "regional road" according to the West Central Florida Metropolitan Planning Organization's (MPO's) Chairs Coordinating Committee (CCC). US 41 also provides highway access to the Port of Tampa facilities at Pendola Point and Port Sutton.

Safety - With the additional capacity provided in the corridor by the widening of US 41 from four to six lanes, roadway congestion will be reduced, which will decrease potential conflicts with other vehicles and potentially increase safety. An analysis of traffic crash data for years 2008 thru 2012 revealed that the overall average crash rate within the study limits was lower than the statewide average crash rate for similar type facilities. While not structurally deficient, the bridges over both Bullfrog Creek and the Alafia River are classified as *functionally obsolete* due to substandard-width shoulders. In addition, the sidewalks on the bridges are very narrow and there are no dedicated bicycle facilities.

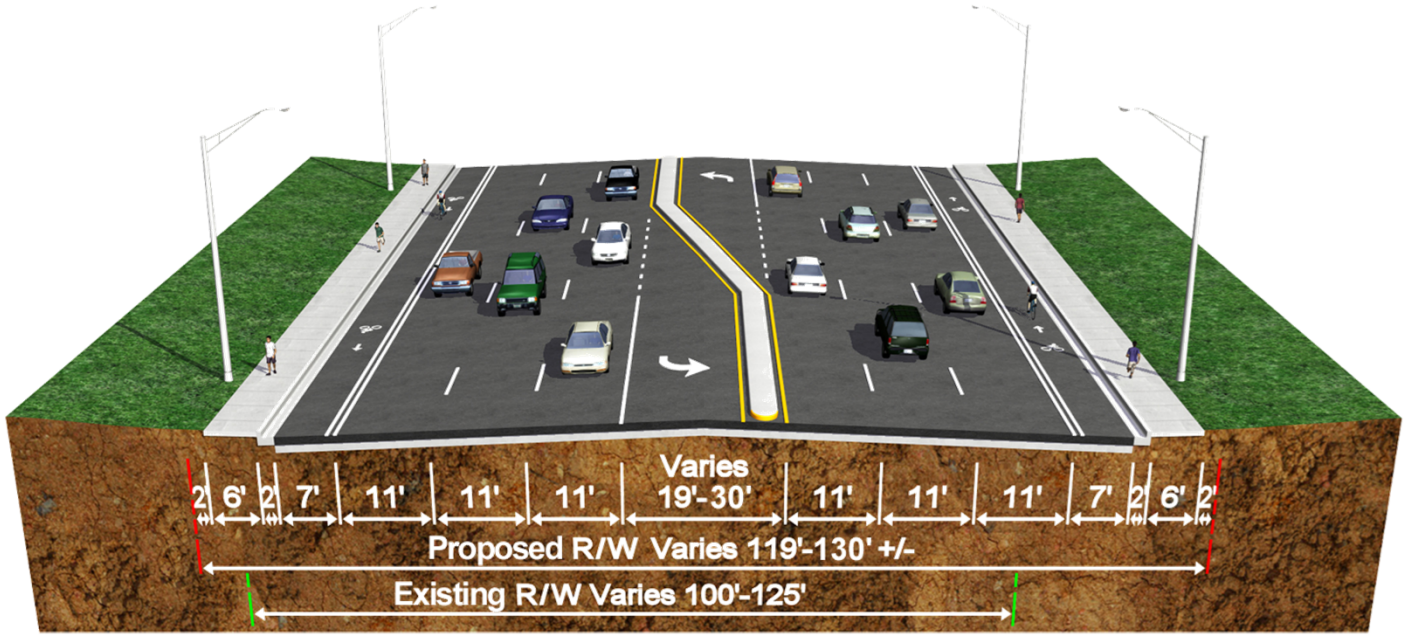
Plan Consistency - This project is consistent with the Comprehensive Plan for Unincorporated Hillsborough County. The Hillsborough County *Imagine 2040 Long-Range Transportation Plan (LRTP)* indicates a need to widen US 41 to 6-lanes from 19th Avenue to north of Madison Avenue, "beyond 2040". In addition, a short segment between Madison Avenue and Causeway Boulevard is shown as 6 lanes in the Cost Feasible FDOT Strategic Intermodal System Projects, with design after year 2026.

(All views are looking north)



From Gibsonton Drive to Lula Street

Design Speed = 45 mph



From Palm Avenue to Gibsonton Drive

Design Speed = 45 mph

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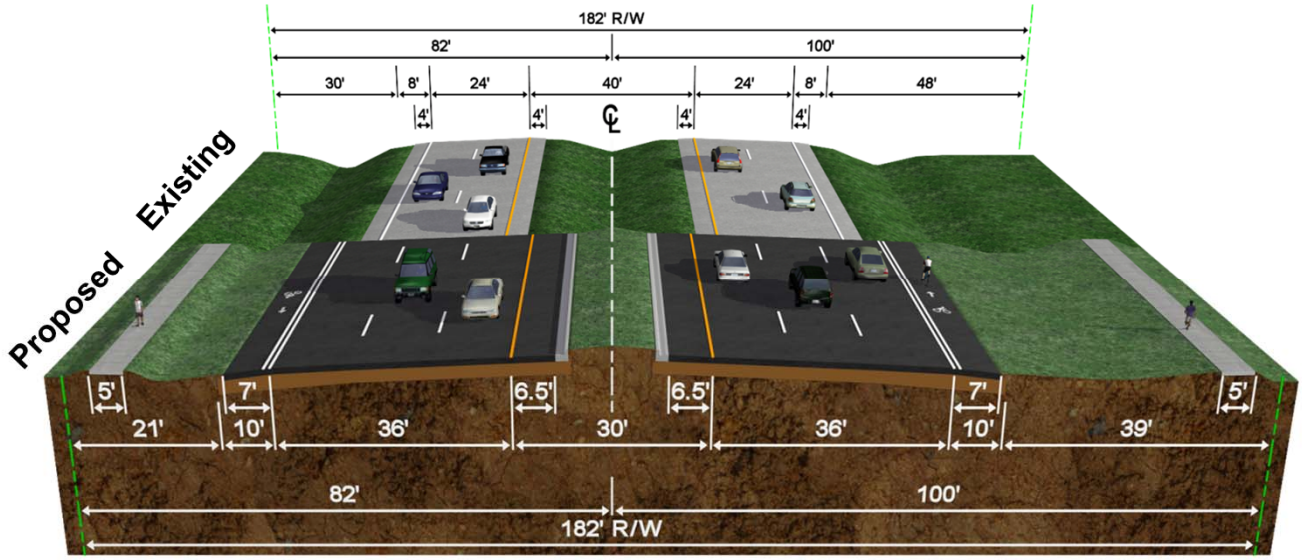
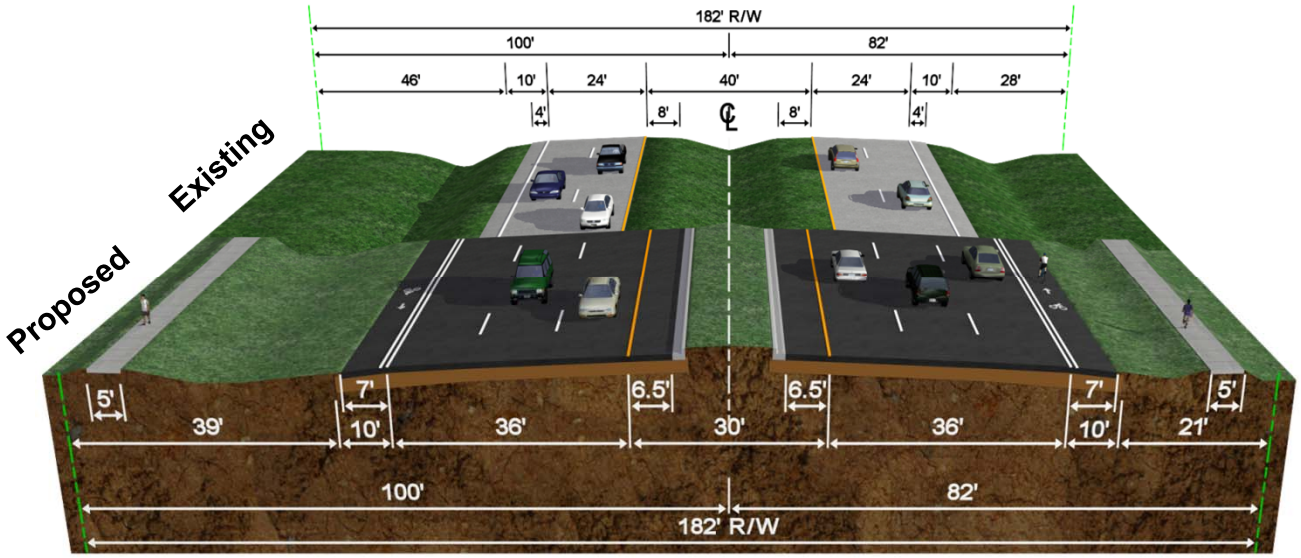
US 41(SR 45) PD&E Study *From Kracker Avenue to South of SR 676 (Causeway Blvd)* WPI Segment No. 430056 1 - Hillsborough County	**Planned Urban Typical Sections**	**Figure 1-4**

Suburban Alternatives Utilizing the Existing Pavement



- Provides 50 mph design speed (required for SIS Connector Segment north of Pendola Point)
- Design variation for border width required
- No additional ROW required

Between Alafia River Bridge & Denver Street (Near the North End of the Project)



- Provides 50 mph design speed
- Design variation for border width required
- No additional ROW required

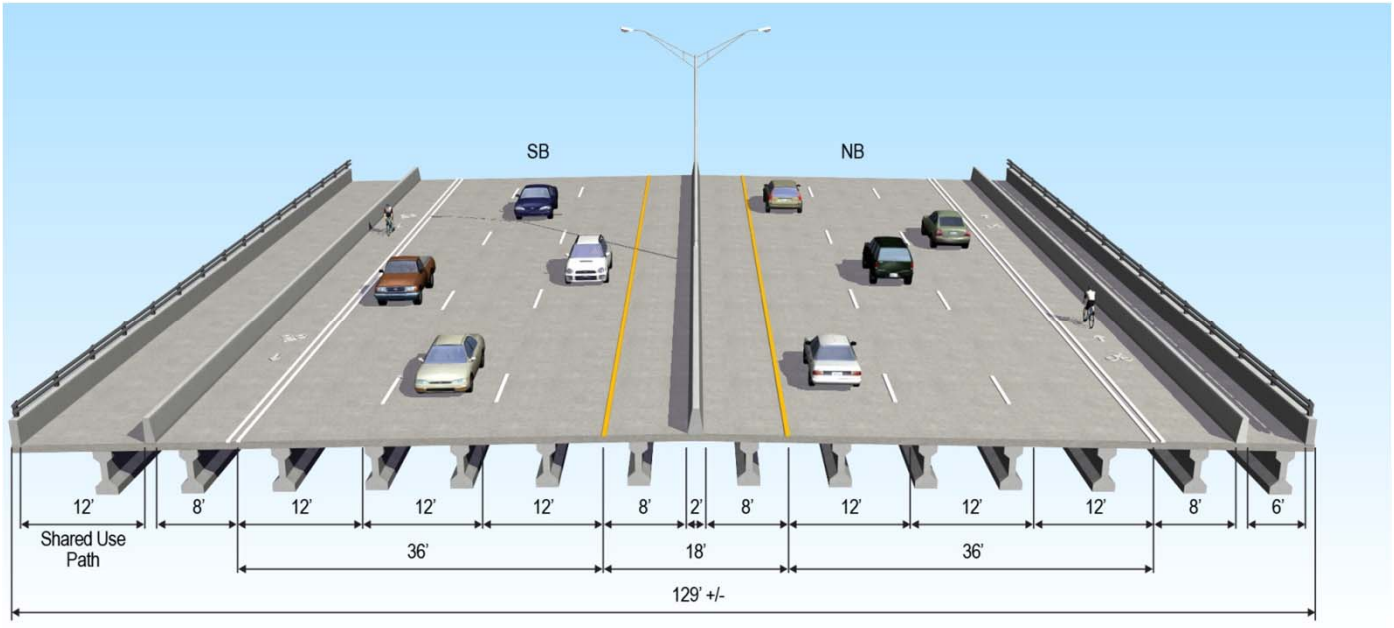
Between Kracker Ave. & Palm Ave. (Near the South End of the Project)

(All views are looking north)

Rev. 10/12/16

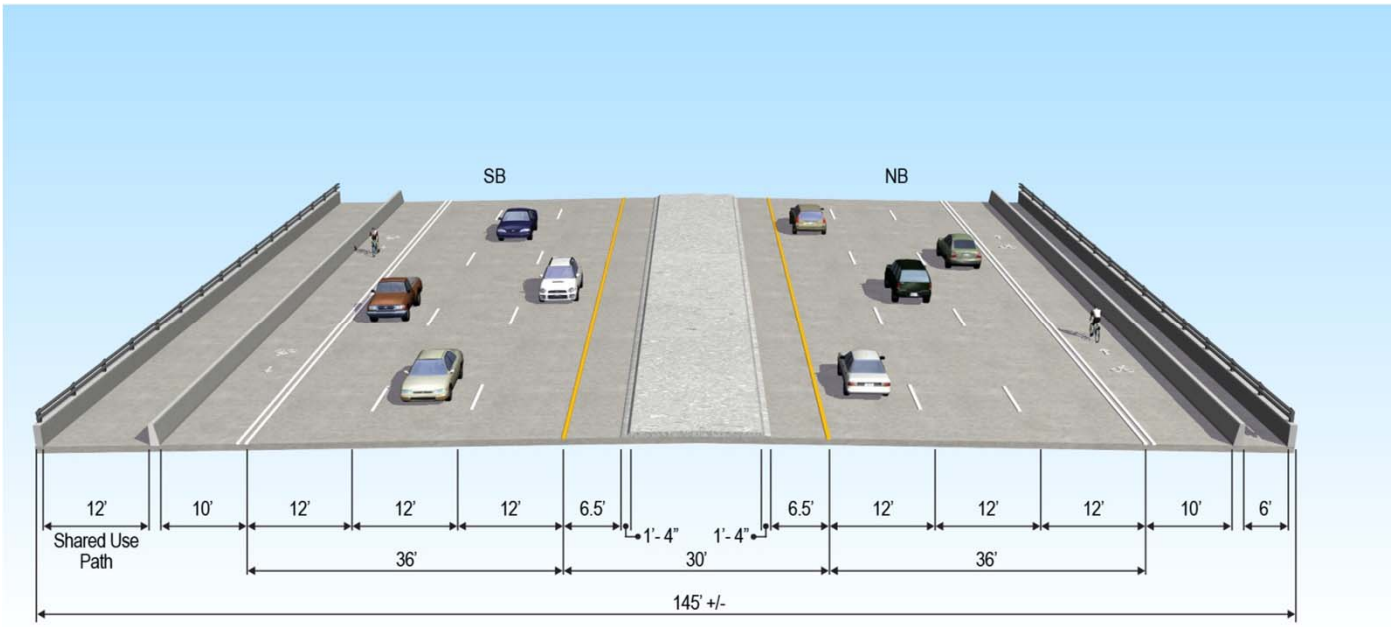
US 41(SR 45) PD&E Study *From Kracker Avenue to South of SR 676 (Causeway Blvd)* WPI Segment No. 430056 1 - Hillsborough County	**Planned Suburban Typical Sections**	**Figure 1-5**

(All views are looking north)



Bridge at Alafia River

Design Speed = 50 mph



Bridge at Bullfrog Creek

Design Speed = 50 mph

Rev. 10/12/16

US 41(SR 45) PD&E Study *From Kracker Avenue to South of SR 676 (Causeway Blvd)* WPI Segment No. 430056 1 - Hillsborough County	**Planned Bridge Typical Sections**	**Figure 1-6**

Emergency Evacuation - US 41 is listed as an evacuation route by the Hillsborough County Emergency Management and shown on the Florida Division of Emergency Management's evacuation route network. US 41 provides access to I-75 via interchanges with east-west connections on Gibsonton Drive, Big Bend Road (CR 672) and SR 60 in close proximity to the study limits.

Current and Future Transportation Demand - Traffic in the corridor is expected to increase due to projected population and employment growth along the corridor. In 2013, the Annual Average Daily Traffic (AADT) ranged between 23,400 vehicles per day (VPD) (Level of Service [LOS] B) and 36,400 VPD (LOS B) within the study area according to the *Traffic Technical Memorandum*. With a maximum AADT of 32,350 VPD over the four lane section, US 41 is at 88 percent capacity for the adopted level of service standard of D. In 2040, AADTs are expected to range between 38,800 VPD and 61,000 VPD. The existing four lane cross section would result in a LOS F in some segments with the future projected traffic volumes. The widening of this facility is also intended to provide relief to parallel facilities such as I-75 and US 301.

Modal Interrelationships – Expansion of the existing roadway would help improve mobility for the Hillsborough Area Regional Transit (HART) Authority local bus route 31 within the corridor. Bicycle and pedestrian accommodations will also be considered as part of the proposed improvements.

US 41 is part of the highway network that provides access to regional intermodal facilities such as the Port of Tampa and Port Manatee. The segment of US 41 between Madison Avenue/Pendola Point Road and SR 676 is designated as a Strategic Intermodal System (SIS) *connector*. The SIS is a statewide network of highways, railways, waterways, and transportation hubs that handle the bulk of Florida's passenger and freight traffic. Improvements to US 41 would enhance access to activity centers in the area and would improve movement for goods and freight in the Tampa Bay region and across the State.

1.5 REPORT PURPOSE

This *Pond Sizing Report* is one of several documents prepared as part of this PD&E study. This report documents a preliminary estimate of stormwater management pond sizes required to meet current drainage design standards. The calculations presented in this report are preliminary and will help in estimating the preliminary size of the pond site facilities for each basin.

SECTION 2 HYDROLOGIC FEATURES

The study limits of the US 41 corridor are within the three watersheds: Delaney Creek, Alafia River, and Bullfrog Creek. The proposed drainage areas are divided into 13 sub-basins. The basin limits and areas are presented in **Appendix A**.

2.1 NUTRIENT LOADING

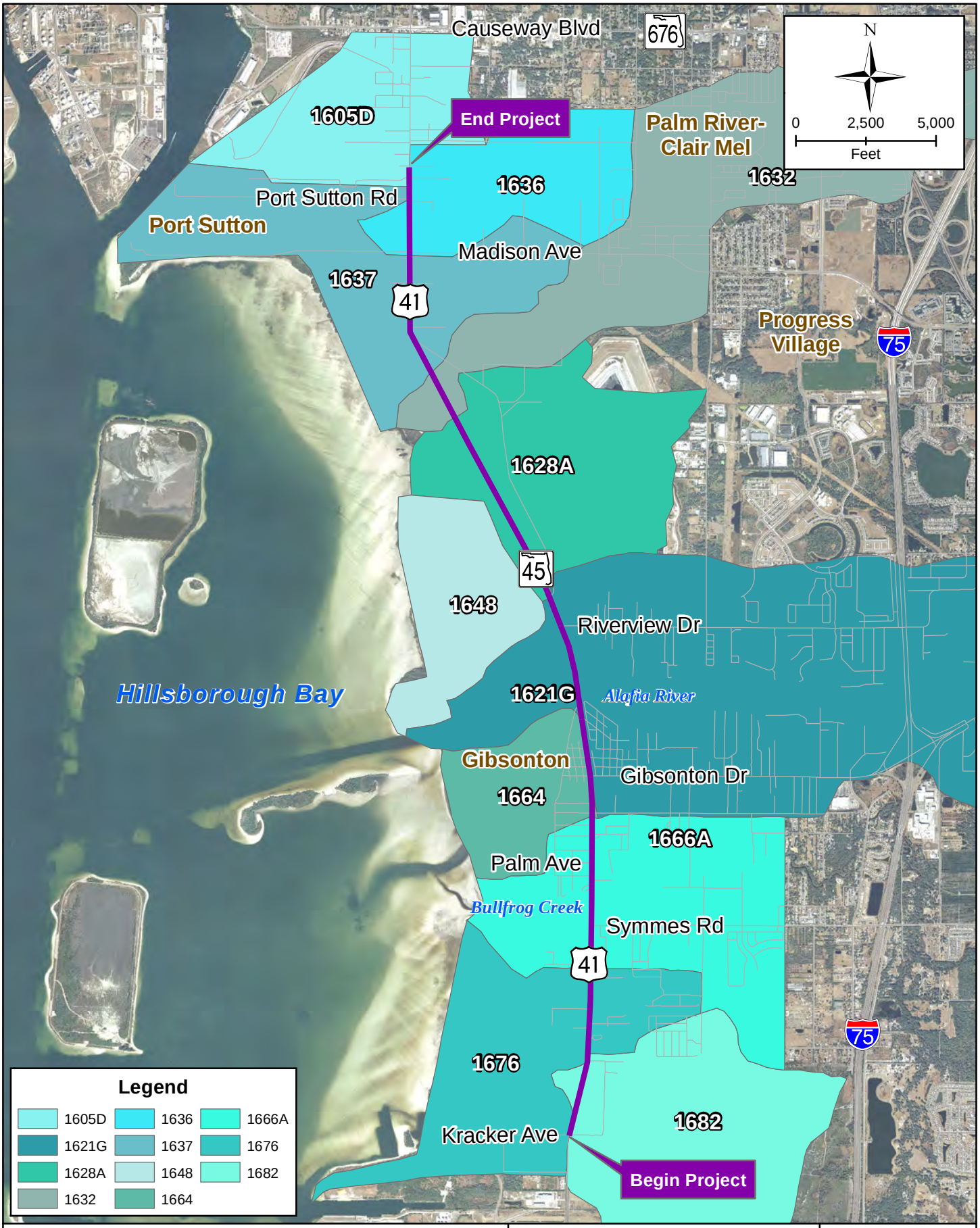
The following **Table 2-1** summarizes verified Impaired Water Body Identification (WBID) System based on Department of Environmental Protection (DEP) Geographic Information System (GIS) and **Figure 2-1** is the WBID Map.

Table 2-1 Impaired WBIDs

Regional Basins	Project Basin No.	WBID	Impairments
Kitchen Branch	1	1682	Fecal Coliform, Nutrients (Chlorophyll-a), Dissolved Oxygen (Nutrients and BOD)
	2		
Direct Runoff to Bay	3	1676	Fecal Coliform, Nutrients (Chlorophyll-a), Dissolved Oxygen (Nutrients and BOD)
Bullfrog Creek	4	1666A	Dissolved Oxygen, Nutrients (Chlorophyll-a and Historic Chlorophyll-a)
	5		
Direct Runoff to Bay	6	1664	---------(1)
North Prong Alafia R	7	1621G	Mercury (in fish tissue), Nutrients (Chlorophyll-a), Dissolved Oxygen
Archie Creek	8	1628A	Fecal Coliform (2)
Unnamed Canal	9	1632	Fecal Coliform (2)
	10		
Black Point Channel	11	1637	--------- (2)
Black Point Drain	12	1636	Fecal Coliform, Dissolved Oxygen (Nutrients and BOD)
	13		

(1) Per discussion with SWFWMD this basin requires pre vs. post nutrient loading analysis since it drains directly to the bay

(2) Per discussion with SWFWMD these basins do not require pre vs. post nutrient loading analysis



US 41 (SR 45) PD&E Study

From Kracker Avenue to South of SR 676 (Causeway Boulevard)

WPI Segment No. 430056 1 - Hillsborough County

Water Body ID (WBID) Map

Figure 2-1

2.2 SOIL CHARACTERISTICS

Based on a review of the U.S. Department of Agriculture (USDA) and the Natural Resources Conservation Service (NRCS) Soil Survey for Hillsborough County, Florida, the predominant soils within the study limits consist of Myakka fine sand, Malabar fine sand, Pinellas fine sand, and St. Johns fine sand. For the purpose of estimating the SCS runoff Curve Numbers, the Hydrologic Soil Group was retrieved from the South West Florida Water Management District (SWFWMD) Information System website. See **Table 2-2** for USDA soils and **Figure 2-2** for soils map.

Table 2-2 USDA Soils

Map #	Soil Name	Hydrologic Group	Depth to High Water Table (ft)	Soil Type	Description
5	Basinger Fine Sand, Holopaw Sand, Samsula muck	D	+2-1.0	Sandy and loamy soil	Very poorly drained soil in depressions, slopes 0-2%
15	Felda Fine Sand	B/D	0-1.0	Sandy and loamy soil	Very poorly drained soil in depressions, slopes 0-1%
17	Floridana Sand	B/D	0-1.0	Sandy and loamy soil	Very poorly drained soil in depressions, slopes 0-1%
24	Kesson Muck	D	0-0.5	Sandy soil	Very poorly drained soil in tidal swamps, slopes 0-1%
27	Malabar Sand	B/D	0-1.0	Sandy and loamy soil	Very poorly drained soil in depressions, slopes 0-2%
29	Myakka Sand	B/D	0-1.0	Sandy soil	Very poorly drained soil in flatwoods, slopes 0-8%
30	Myakka Sand, frequently flooded	B/D	0-1.0	Sandy soil	Very poorly drained soil in flatwoods, slopes 0-8%
38	Pinellas Fine Sand	B/D	0-1.0	Sandy and loamy soil	Very poorly drained soil in depressions, slopes 0-2%
44	St. Augustine Fine Sand	C	1.5-3.0	Sandy and loamy soil	Very poorly drained soil in depressions, slopes 0-5%
46	St. Johns Sand	B/D	0-1.0	Sandy soil	Very poorly drained soil in broad areas, slopes 0-5%
57	Wabasso Fine Sand	B/D	0-1.0	Sandy and loamy soil	Very poorly drained soil in flatwoods, slopes 0-2%

US 41 (SR 45) PD&E Study

From Kracker Avenue to South of SR 676 (Causeway Boulevard)

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NRCS Soils Map

Figure 2-2
Page 1 of 2

US 41 (SR 45) PD&E Study

From Kracker Avenue to South of SR 676 (Causeway Boulevard)

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NRCS Soils Map

Figure 2-2
Page 2 of 2

2.3 HISTORY OF FLOODING

Based on correspondence with District 7 Drainage Office and District 7 Maintenance Office there are three flood investigation sites and several locations of maintenance concern within the project limits. No history of roadway flooding was identified. See **Figure 2-3** for the FEMA floodplain map.

Flood investigation sites include flood investigation Nos. 1001032008834, 1005262005805, and 1006222010925. The flood investigation inventory sheets have been included within **Appendix B**.

Maintenance related issues identified include:

- US 41 at Palm Ave M.P. 17.642 southbound complaints related to ponding issue at roadside.
- At Florence St. MP. 16.862 there is a low area that retains water during wet season due to minimal outflow.
- At Dover St. MP.21.828 there is a low area that holds water during wet season. The outfall is to a creek flowing west to Tampa Bay. The outfall ditch needs clearing. This may be a County drainage easement and may be County maintained.
- At Bullfrog Creek, MP. 17.406 the utility strip leaches water over the sidewalk area for several blocks to the north.
- At Raleigh St.MP. 23.018 the old Chloride Battery Facility site has contaminated soil and is a Superfund site. Special attention needed in this area.

These current maintenance related issues have been taken into consideration in regards to the widening of US 41.

2.4 BASE FLOODPLAIN

The FEMA FIRMs dated August 28, 2008: 12057C0484H, 12057C0482H, 12057C0369H and 12057C0367H indicate that the study limits are within Flood Zone AE (El 11.0 ft) from approx. Station 831+00 to approx. Station 840+00 and Zone AE (10.0 ft) for the remainder of the study limits. FEMA Maps are provided in **Appendix B**. Per SWFWMD the FEMA elevations are based on storm surge conditions and base floodplain impacts will be assessed based on the lower riverine floodplain elevations.

Hillsborough County provided the following studies that establish the base floodplain for the project limits:

- Bullfrog Creek/ Wolf Branch Watershed Management Plan, dated October 2000
- Countywide Masterplan Update for the Alafia River Watershed, dated November 2010
- Delany Creek Area Stormwater Master Plan Update, dated April 2007

Hillsborough County provided GIS data along with the reports that identifies model node locations as well as other information. A nodal diagram is provided in **Appendix C** along with excerpts from these reports. Floodplain elevations for each project basin are identified in **Table 2-3**. Bullfrog Creek

elevations are provided in NGVD 29, however these elevations have been converted to NAVD 88 based on a conversion factor of -0.9.

The project's drainage design will be consistent with local FEMA, FDOT, and Southwest Florida Water Management District (SWFWMD) design guidelines, which state that 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 will be allowed., and that any required compensating storage shall be equivalently provided. Therefore, no significant changes in base flood elevations or limits will occur.

Table 2-3 Preliminary Floodplain Encroachment Summary

Regional Basins	Project Basin No.	Project Basin Boundaries	Model Node ID	Zone AE-Hillsborough County 100 yr flood EL (ft – NAVD 88) ①
Kitchen Branch	1	Sta 831+00 to Sta 848+90	822100	2.8
	2	Sta 848+90 to Sta 869+91	822000	1.1
Kracker Ave	3	Sta 869+91 to Sta 892+40	821200	5.0
Bullfrog Creek	4	Sta 892+40 to Sta 917+37	810020,810110	5.1
	5	Sta 917+37 to Sta 946+99	810100	5.6
Gibsonton	6	Sta 946+99 to Sta 995+51	700050	1.8
North Prong Alafia R	7	Sta 995+51 to Sta 96+75	280015	3.9
Archie Creek	8	Sta 96+75 to Sta 118+66	260040	4.5
Palm River-Clair Mel	9	Sta 118+66 to Sta 139+67	240040	4.9
	10	Sta 139+67 to Sta 160+58	200305	7.4
Black Point Channel	11	Sta 160+58 to Sta 189+78	200300,200340	5.1
Black Point Drain	12	Sta 189+78 to Sta 208+79	200025	7.6
	13	Sta 208+79 to Sta 220+62	200080	5.5

①*The estimated 100-year elevations are taken from Bullfrog Creek/Wolf Branch Watershed Management Plan, Countywide Masterplan Update for the Alafia River Watershed, and the Delany Creek Area Stormwater Master Plan Update.*

2.5 CURVE NUMBERS

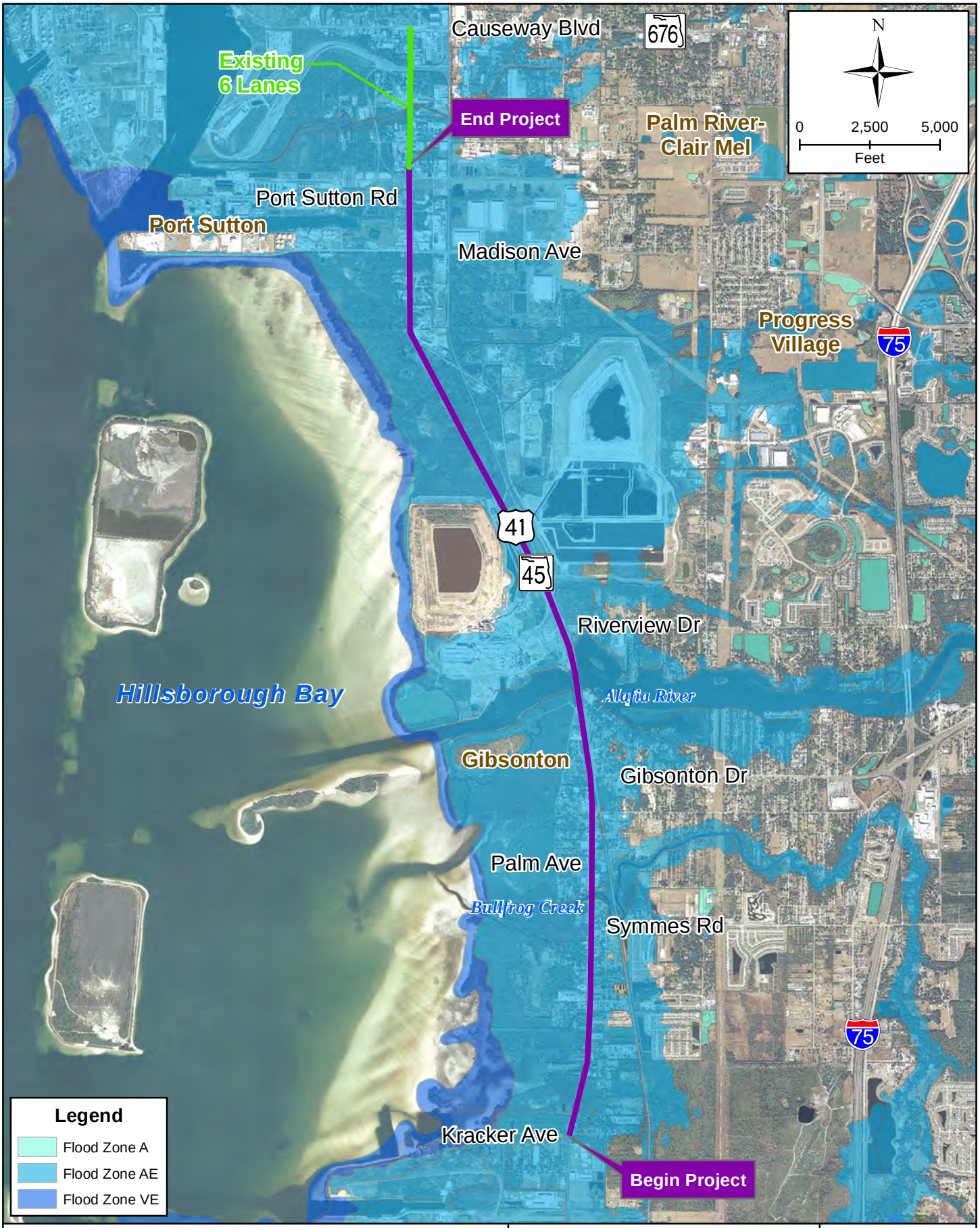
The runoff Curve Numbers (CN) were determined from Table T-7 of the FDOT Hydrology Handbook (dated February 2012) using the Hydrologic Soil Group BD.

2.6 SOIL STORAGE

The Soil storage capacity was determined using its relationship to the Curve Number using the SCS methodology.

2.7 RAINFALL INTENSITY

Rainfall intensity data were obtained from the SWFWMD's Return Period Rainfall Maps.



US 41 (SR 45) PD&E Study

From Kracker Avenue to South of SR 676 (Causeway Boulevard)

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FEMA Floodplain Map

Figure 2-3

2.8 EXISTING DRAINAGE CONDITIONS

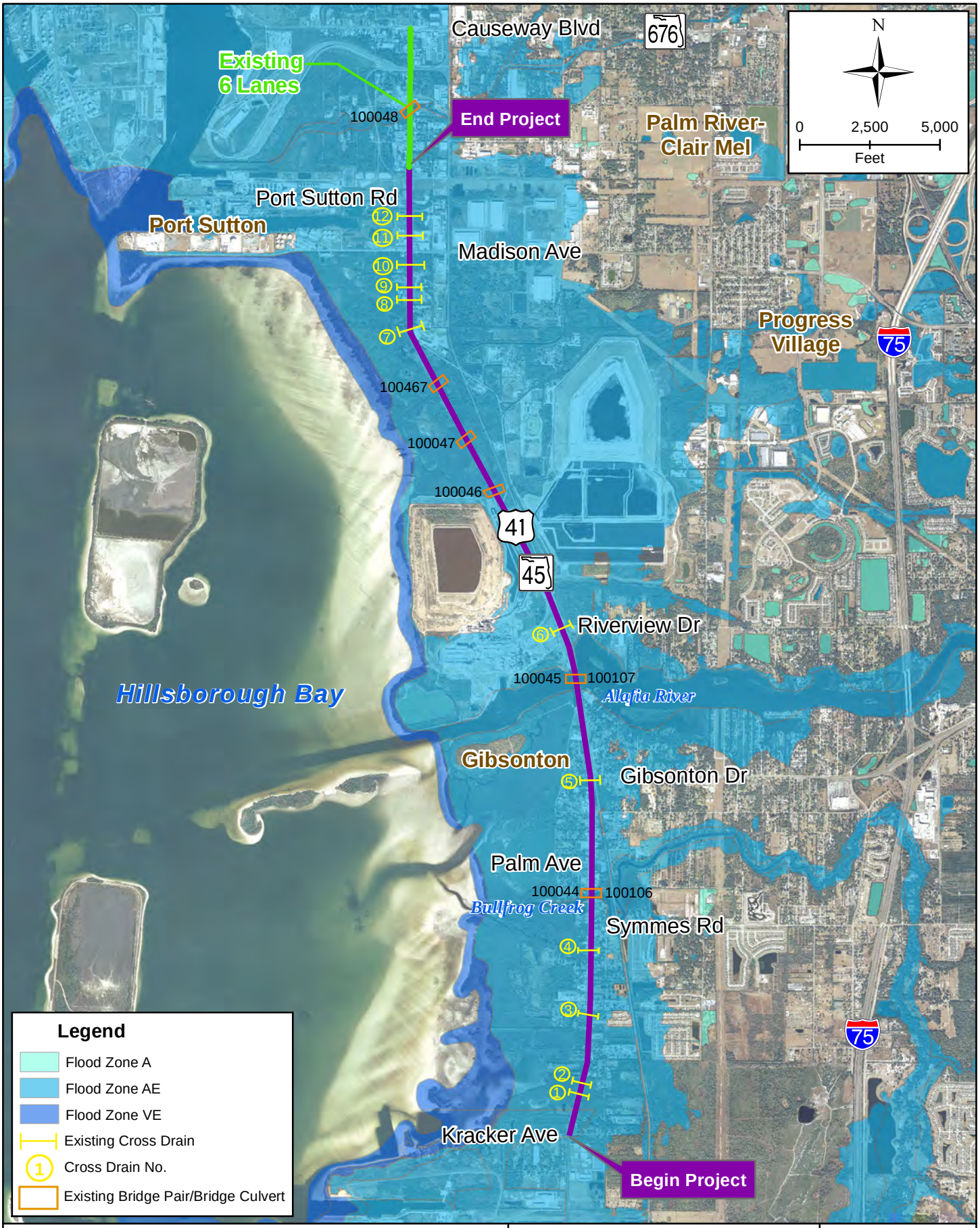
The study limits of the US 41 corridor traverses 10 regional basins with ultimate discharge to Tampa Bay. There are 12 cross drains and 6 bridge pair/bridge culverts within the study limits. See **Tables 2-4 & 2-5** for cross drain and bridge locations.

Table 2-4 Existing Cross Drains

Cross Drain No.	Mile Post	Description
1	16.038	10'x5' CBC
2	16.123	10'x5' CBC
3	16.620	10'x8' CBC
4	16.989	36" CC
5	18.160	2-36" CC
6	19.211	30" CC
7	21.423	15" CC
8	21.727	36" CC
9	21.779	2-36" CC
10	21.968	2-36" CC
11	22.166	15" CC
12	22.313	10'x7' CBC

Table 2-5 Existing Bridge Pair/Bridge Culvert

Bridge No.	Mile Post	Pipe Size/Type & Water Body
100044	17.422 (SB)	Bridge Pair (Bullfrog Creek)
100106	17.422 (NB)	Bridge Pair (Bullfrog Creek)
100045	18.914 (SB)	Bridge Pair (Alafia River)
100107	18.914 (NB)	Bridge Pair (Alafia River)
100046	20.271	36' Bridge Culvert (Archie Creek)
100047	20.686	31' Bridge Culvert (Archie Creek)
100467	21.084	26' Bridge Culvert (Fred's Creek)
100048	23.003	36' Bridge Culvert (Delaney Creek)



US 41 (SR 45) PD&E Study

From Kracker Avenue to South of SR 676 (Causeway Boulevard)

WPI Segment No. 430056 1 - Hillsborough County

Existing Cross Drain and Bridge Locations

Figure 2-4

SECTION 3 SMF DESIGN CRITERIA AND METHODOLOGY

3.1 DISCHARGE ATTENUATION

For basins with a positive outfall, and that do not discharge to an infinite basin, SWFWMD will require the proposed discharge rate from the basin be less than or equal to the existing discharge rate for the 25-yr/24-hr SWFWMD storm event. Additionally, FDOT Criteria requires Florida Administrative Code 14-86 evaluation for closed basins or basins with historical flooding.

The majority of the basins are considered to meet the infinite basin criteria based on conceptual pond outfall locations, as discussed with SWFWMD August 19, 2015, and are not anticipated to require any discharge attenuation. The project basins within Black Point Drain will require pre vs. post discharge attenuation. See notes provided with Pond Sizing Calculations and meeting minutes.

3.2 WATER QUALITY

1. A wet detention treatment system shall treat one inch of runoff from the contributing area.
2. A manmade wet detention system shall include a minimum of 35 percent littoral zone, concentrated at the outfall, for biological assimilation of pollutants. The treatment volume shall be no greater than 18 inches above the control elevation (orifice elevation/SHWL).
3. The wet detention system's treatment volume shall be discharged in no less than 120 hours (5 days) with no more than one-half the total volume being discharged within the first 60 hours (2.5 days).

Criterion 1 was utilized to estimate the required water quality for the wet pond. Criteria 2 and 3 will be implemented in final design. Dry retention pond is provided as well for the following reason:

Due to the impaired status for many of the receiving water bodies it is necessary to demonstrate that the project will not contribute to the impairment through demonstration of no net increase in nutrient loading from the project (pre vs. post nutrient loading comparison). Based on the Nutrient Loading calculations, shown in **Appendix A**, a wet pond would not be capable of meeting requirements for nutrient loading for some basins, therefore dry detention ponds have being considered in the estimation of pond sizing requirements.

3.3 DRAINAGE AREAS

The impervious drainage areas for each basin were determined as the basin length multiply by a typical impervious width. The pervious drainage areas were subtracted from the total drainage areas calculated as the basin length multiply by a typical Right of Way width of 182 feet. The calculations presented in this report are preliminary and help in estimating the preliminary size of the pond site facilities for each basin. The size requirements are preliminary based upon many assumptions and judgments. The results are tabulated on **Table 4-1**. The drainage basin map and conceptual calculations are shown in **Appendix A**. Historical drainage maps from District 7 have been included in **Appendix D**.

3.4 FLOODPLAIN INVOLVEMENT

The project limits have been evaluated to determine potential impacts to the base floodplain. Cup for cup compensation has been programed for any fill placed within the riverine floodplain. Alternatively, per discussion with SWFWMD, modeling and documentation could be provided to demonstrate that the fill placed within the riverine floodplain will not adversely affect conveyance, storage, water quality or adjacent lands. Therefore, it is anticipated that much of the floodplain mitigation provisions identified by this evaluation could be eliminated or reduced through more detailed analysis and modeling. Floodplain compensation site requirements are identified separately and are estimated based on estimated floodplain encroachment area, estimated floodplain encroachment volume, and estimated floodplain compensation (FPC) site area. These are summarized in **Table 4-2.**

SECTION 4 SUMMARY & RECOMMENDATIONS

The evaluation finds that a combination of dry retention and wet detention ponds are recommended for providing stormwater management to serve the proposed US 41 (SR 45) improvements. **Table 4-1** classifies the SMF size requirements per basin. **Table 4-2** shows the estimated floodplain encroachment area, estimated floodplain encroachment volume, and estimated floodplain compensation (FPC) site area.

Table 4-1 Pond Sizing Areas

Regional Basins	Project Basin No.	Project Basin Boundaries	Project Basin Acreage (ac)	SMF Total Area (ac)
Kitchen Branch	1	Sta 831+00 to Sta 848+90	7.48	1.2
	2	Sta 848+90 to Sta 869+91	8.78	1.5
Direct Runoff to Bay	3	Sta 869+91 to Sta 892+40	9.40	1.6
Bullfrog Creek	4	Sta 892+40 to Sta 917+37	10.43	1.7
	5	Sta 917+37 to Sta 946+99	12.38	2.1
Direct Runoff to Bay	6	Sta 946+99 to Sta 995+51	20.27	3.4
North Prong Alafia R	7	Sta 995+51 to Sta 96+75	30.21	5.0
Archie Creek	8	Sta 96+75 to Sta 118+66	9.15	1.5
Unnamed Canal	9	Sta 118+66 to Sta 139+67	8.78	1.5
	10	Sta 139+67 to Sta 160+58	8.74	1.5
Black Point Channel	11	Sta 160+58 to Sta 189+78	12.20	2.0
Black Point Drain	12	Sta 189+78 to Sta 208+79	7.94	2.0
	13	Sta 208+79 to Sta 220+62	4.94	1.3
		Total	**150.69**	**26.3**

Table 4-2 Floodplain Encroachment and Compensation Summary

Basin #/FPC Site No.	Project Basin Boundaries	Estimated Floodplain Encroachment Area (ac) ①	Estimated Floodplain Encroachment Volume (ac-ft) ②④	Estimated Floodplain Compensation (FPC) site Area (ac) ③
1	Sta. 831+00.00 to Sta 848+90.00	Above 100 yr floodplain		
2	Sta 848+90.00 to Sta. 869+91.00	Above 100 yr floodplain		
3	Sta. 869+91.00 to Sta. 892+40.00	2.74	1.37	1.71
4	Sta. 892+40.00 to Sta. 917+37.00	0.56	0.28	0.35
5	Sta. 917+37.00 to Sta. 946+99.00	Above 100 yr floodplain		
6	Sta. 946+99.00 to Sta. 995+51.00	Above 100 yr floodplain		
7	Sta. 995+51.00 to Sta. 1034+11.00 Sta. 63+05.00 to Sta. 96+75.00	Above 100 yr floodplain		
8	Sta. 96+75.00 to Sta. 118+66.00	Above 100 yr floodplain		
9	Sta. 118+66.00 to Sta. 139+67.00	Above 100 yr floodplain		
10	Sta. 139+67.00 to Sta. 160+58.00	2.54	5.08	6.35
11	Sta. 160+58.00 to Sta. 189+78.00	3.13	1.57	1.96
12	Sta. 189+78.00 to Sta. 208+79.00	2.31	2.31	2.89
13	Sta. 208+79.00 to Sta. 220+62.00	1.44	0.72	0.90

①*The estimated floodplain encroachment area is based on a 26.5 ft width per the length of encroachment per side.*
②*An estimated fill depth based on contour data and the average depth was estimated per basin.*
③*An estimated of 1.25 determined the FPC site area.*
④*See Appendix C (Floodplain Encroachment and Compensation Calculation Summary) for Calculations.*

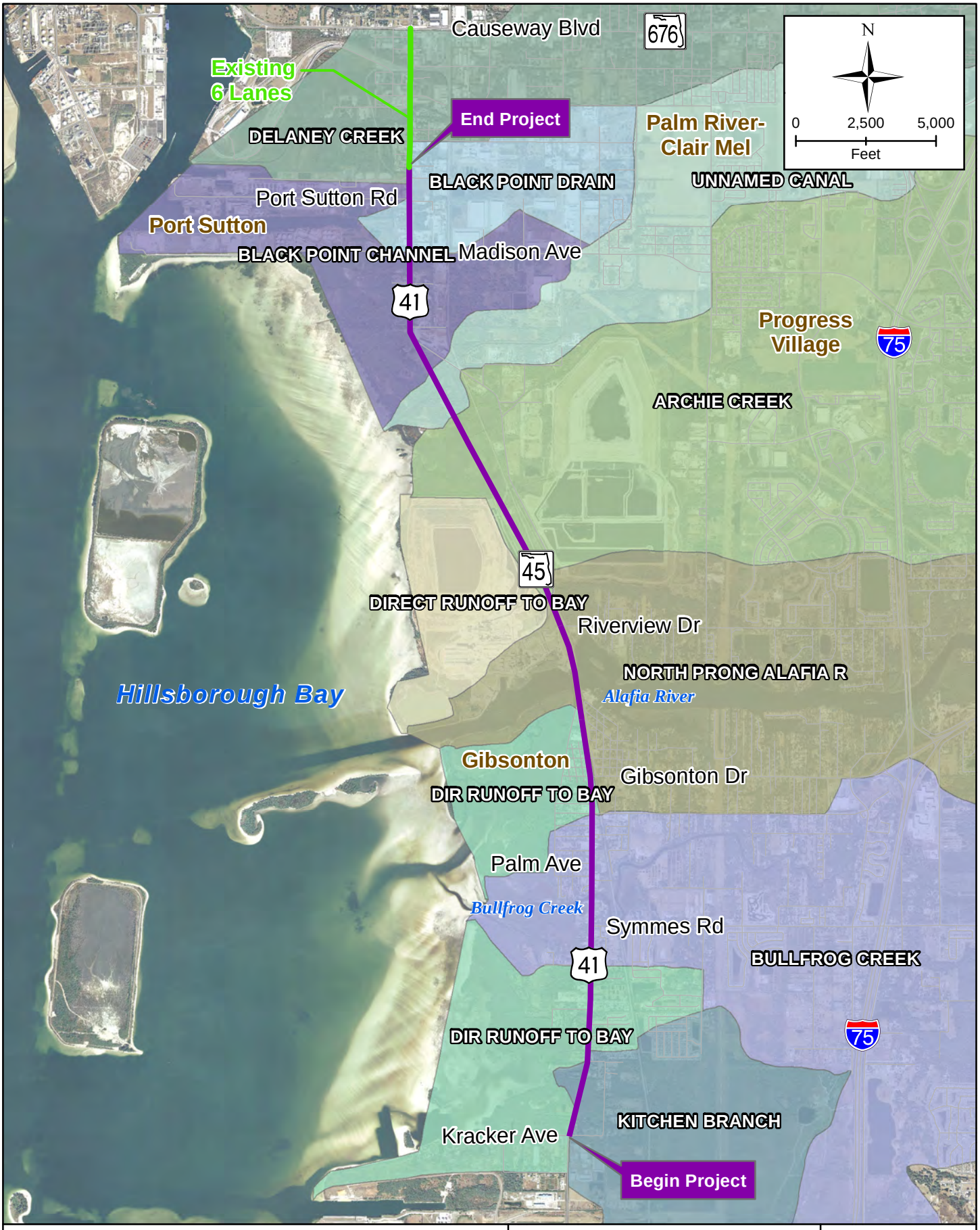
Cost Estimates

An earlier conceptual SMF/FPC Area of 67.66 acres was based on attenuation and water quality for sizing pond areas. After meeting with SWFWMD staff on August 19, 2015 (see **Appendix E**), it was determined that attenuation would not be required for most areas where a direct connection to the Bay is possible, allowing the pond sizing to decrease. FDOT's ROW staff previously provided a ROW total cost estimate of $20,502,400 for pond sites, based on 67.66 acres. Based on the new conceptual area of 55.97 acres and a factor of $303,020.99/acre, the new total estimated cost is approximately $17,000,000.

APPENDIX A

Calculations

Drainage Basin Map



US 41 (SR 45) PD&E Study

From Kracker Avenue to South of SR 676 (Causeway Boulevard)

WPI Segment No. 430056 1 - Hillsborough County

Drainage Basin Map

EXISTING LAND USE												
Basin	Sta. From	Sta. To	Length (ft)	Typical R/W Width (ft)	Typical Imp. Width (ft)	Typical Imp. Area (ac)	Add 10% Imp. Area (ac)	Imp. Total (ac)	Pervious Area (ac)	Total Area (ac)	Exist. CN
1	831+00.00	848+90.00	1790	182	56	2.30	0.23	2.53	4.95	7.48	79
2	848+90.00	869+91.00	2101	182	56	2.70	0.27	2.97	5.81	8.78	79
3	869+91.00	892+40.00	2249	182	56	2.89	0.29	3.18	6.22	9.40	79
4	892+40.00	917+37.00	2497	182	56	3.21	0.32	3.53	6.90	10.43	79
5	917+37.00	946+99.00	2962	182	56	3.81	0.38	4.19	8.19	12.38	79
6	946+99.00	995+51.00	4852	182	56	6.24	0.62	6.86	13.41	20.27	79
7	995+51.00 63+05.00	1034+11.00 96+75.00	7230	182	64	10.62	1.06	11.68	18.52	30.21	80
8	96+75.00	118+66.00	2191	182	56	2.82	0.28	3.10	6.06	9.15	79
9	118+66.00	139+67.00	2101	182	56	2.70	0.27	2.97	5.81	8.78	79
10	139+67.00	160+58.00	2091	182	56	2.69	0.27	2.96	5.78	8.74	79
11	160+58.00	189+78.00	2920	182	56	3.75	0.38	4.13	8.07	12.20	79
12	189+78.00	208+79.00	1901	182	56	2.44	0.24	2.69	5.25	7.94	79
13	208+79.00	220+62.00	1183	182	56	1.52	0.15	1.67	3.27	4.94	79

Note: The CN value used for pervious area in the calculation is 69.

PROPOSED LAND USE											
Basin	Sta. From	Sta. To	Length (ft)	Typical R/W Width (ft)	Typical Imp. Width (ft)	Typical Imp. Area (ac)	Add 15% Imp. Area (ac)	Imp. Total (ac)	Pervious Area (ac)	Total Area (ac)	Prop. CN
1	831+00.00	848+90.00	1790	182	109	4.48	0.67	5.15	2.33	7.48	89
2	848+90.00	869+91.00	2101	182	109	5.26	0.79	6.05	2.73	8.78	89
3	869+91.00	892+40.00	2249	182	109	5.63	0.84	6.47	2.92	9.40	89
4	892+40.00	917+37.00	2497	182	109	6.25	0.94	7.19	3.25	10.43	89
5	917+37.00	946+99.00	2962	182	109	7.41	1.11	8.52	3.85	12.38	89
6	946+99.00	995+51.00	4852	182	109	12.14	1.82	13.96	6.31	20.27	89
7	995+51.00 63+05.00	1034+11.00 96+75.00	7230	182	109	18.09	2.71	20.81	9.40	30.21	89
8	96+75.00	118+66.00	2191	182	109	5.48	0.82	6.30	2.85	9.15	89
9	118+66.00	139+67.00	2101	182	109	5.26	0.79	6.05	2.73	8.78	89
10	139+67.00	160+58.00	2091	182	109	5.23	0.78	6.02	2.72	8.74	89
11	160+58.00	189+78.00	2920	182	109	7.31	1.10	8.40	3.80	12.20	89
12	189+78.00	208+79.00	1901	182	109	4.76	0.71	5.47	2.47	7.94	89
13	208+79.00	220+62.00	1183	182	109	2.96	0.44	3.40	1.54	4.94	89

Note: The CN value used for pervious area in the calculation is 69.

POND SIZING CALCULATIONS												
Basin	Basin Area	Exist. CN	Exist. S (in)	Exist. 25-yr 24-hr vol. (ac-ft)	Prop. CN	Prop. S (in)	Prop. 25-yr 24-hr vol. (ac-ft)	Req. Att. Vol. (ac-ft)	Req. WQ Vol. (ac-ft)	Dry Retention Pond (ac)	Wet Retention Pond (ac)	Total Pond Area (ac)
1	7.48	79	3	4.02	89	1	4.78	0.00	0.62	1.2	0.0	1.2
2	8.78	79	3	4.71	89	1	5.61	0.00	0.73	1.5	0.0	1.5
3	9.40	79	3	5.05	89	1	6.01	0.00	0.78	1.6	0.0	1.6
4	10.43	79	3	5.60	89	1	6.67	0.00	0.87	1.7	0.0	1.7
5	12.38	79	3	6.65	89	1	7.91	0.00	1.03	2.1	0.0	2.1
6	20.27	79	3	10.89	89	1	12.96	0.00	1.69	3.4	0.0	3.4
7	30.21	80	3	16.53	89	1	19.31	0.00	2.52	5.0	0.0	5.0
8	9.15	79	3	4.92	89	1	5.85	0.00	0.76	1.5	0.0	1.5
9	8.78	79	3	4.71	89	1	5.61	0.00	0.73	1.5	0.0	1.5
10	8.74	79	3	4.69	89	1	5.58	0.00	0.73	1.5	0.0	1.5
11	12.20	79	3	6.55	89	1	7.80	0.00	1.02	2.0	0.0	2.0
12	7.94	79	3	4.27	89	1	5.08	0.81	0.66	1.3	0.7	2.0
13	4.94	79	3	2.65	89	1	3.16	0.50	0.41	0.8	0.5	1.3

Nutrient Loading Calcs

Representative Area Calculation for Nutrient Loading Concerns

Project: **US 41 (SR 45) PD&E**
FPID No. 430056-1-22-01
Hillsborough County
Project No.: **5127041**

Annual Precipitation Depth $AP := 51.50\frac{in}{yr}$

Annual Mass Loading for Highway Areas

$TNhwy := 1.64\frac{mg}{l}$ $TPhwy := 0.220\frac{mg}{l}$

Annual C values

Meteorological Zone 4

Existing loading calculation

Existing roadway DCIA = 35% NDCIA (CN) = 65

From Appendix E, FDEP Stormwater Quality Handbook (2010)

Annual curve number $CA_e := 0.323$ $CA_e = 0.32$

Existing annual runoff $QA_e := CA_e \cdot AP \cdot 1acre$ $QA_e = 1.39ft \cdot \frac{acre}{yr}$

Existing annual loading

Nitrogen loading $NA_e := TNhwy \cdot QA_e$ $NA_e = 2.80\frac{kg}{yr}$

Posphorus loading $PA_e := TPhwy \cdot QA_e$ $PA_e = 0.38\frac{kg}{yr}$

Proposed loading calculation

Proposed roadway DCIA = 70% NDCIA (CN) = 65

From Appendix E, FDEP Stormwater Quality Handbook (2010)

Annual curve number $CA_p := 0.592$

Existing annual runoff $QA_p := CA_p \cdot AP \cdot 1acre$ $QA_p = 2.54ft \cdot \frac{acre}{yr}$

Existing annual loading

Nitrogen loading $NA_p := TNhwy \cdot QA_p$ $NA_p = 5.14\frac{kg}{yr}$

Phosphorus loading $PA_p := TPhwy \cdot QA_p$ $PA_p = 0.69\frac{kg}{yr}$

Required removal efficiency calculations

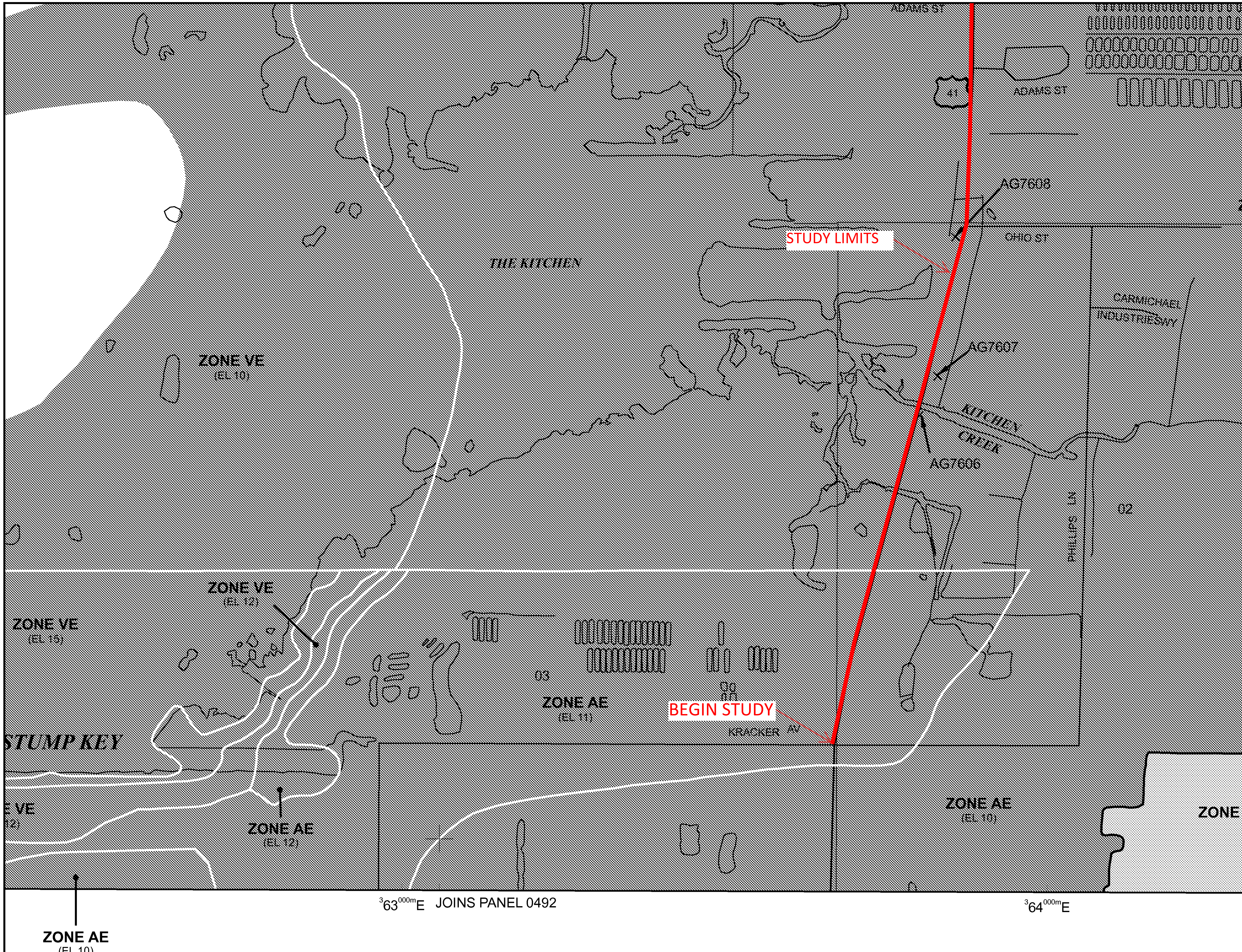
Required N removal efficiency $NRe := 1 - \frac{NA_e}{NA_p}$ $NRe = 45.4 \cdot \%$

Required P removal efficiency $PRe := 1 - \frac{PA_e}{PA_p}$ $PRe = 45.4 \cdot \%$

Based on above calculations, a wet pond would not be capable of meeting requirements for nutrient loading, since the removal efficiency of a wet pond is limited at or below 45%, therefore dry detention followed by wet detention is required.

APPENDIX B

FEMA Mapping/Flood Investigation Documentation



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0484H

FIRM
FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 484 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0484	H

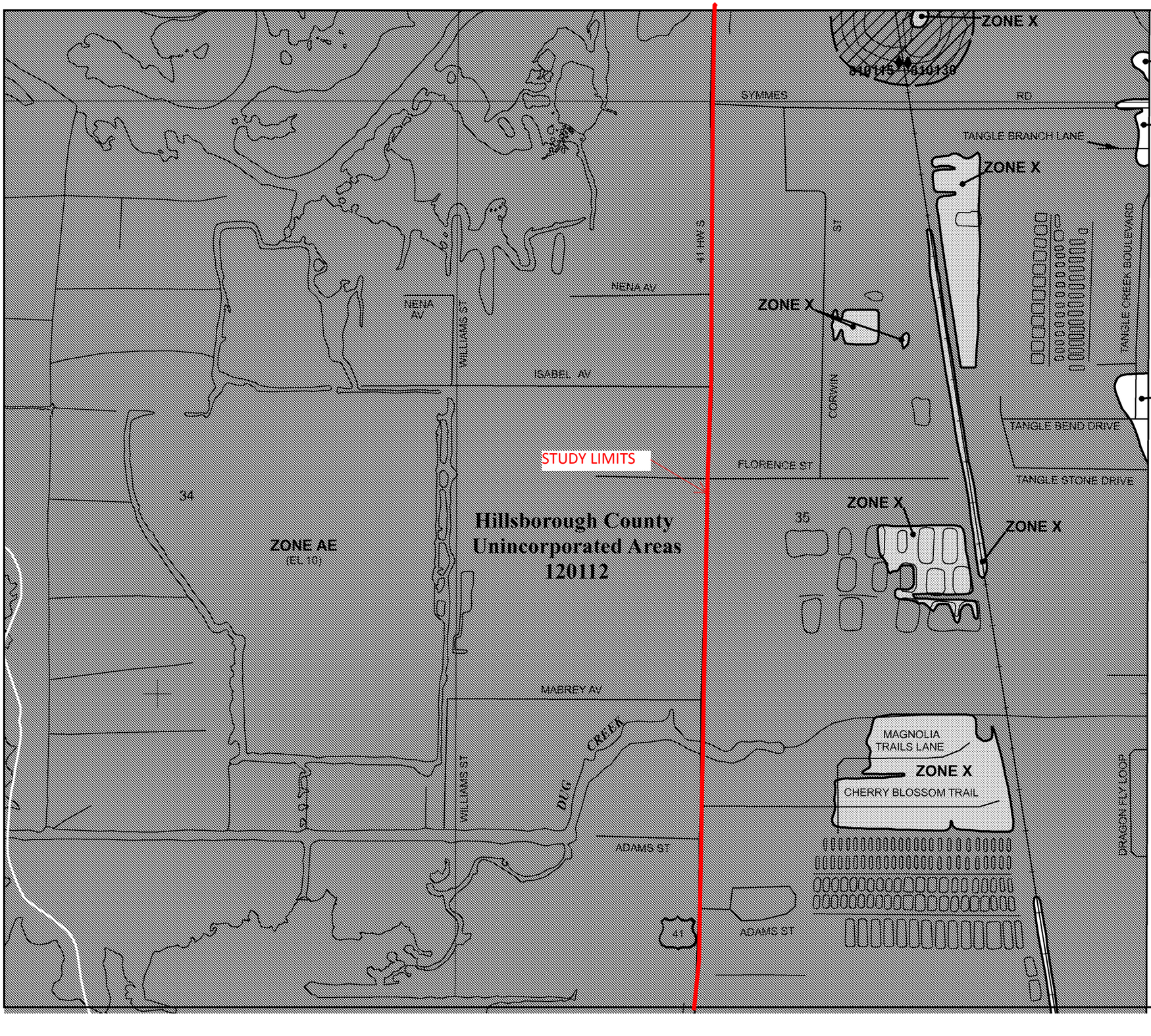
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12057C0484H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0484H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 484 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0484	H

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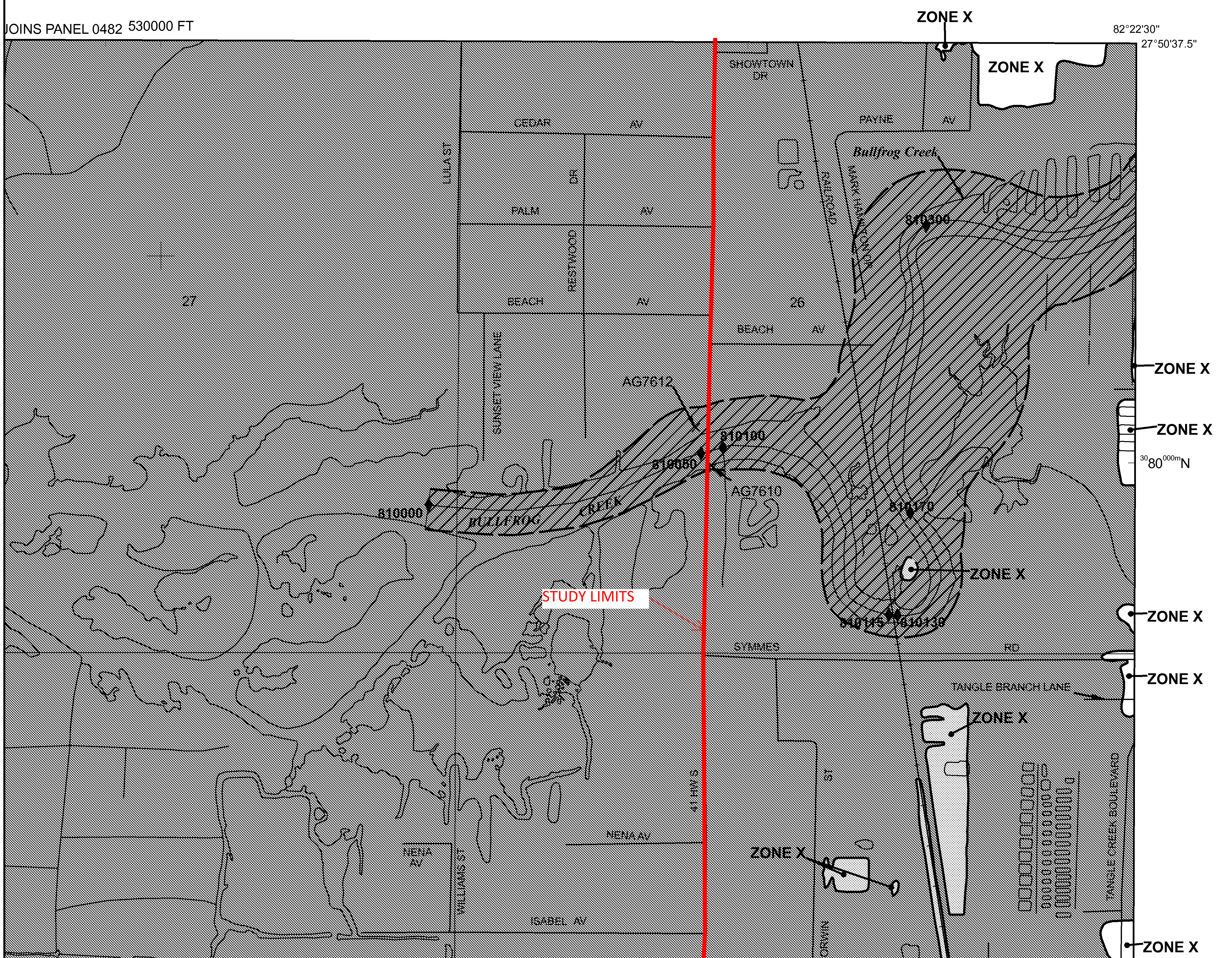

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0484H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 484 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
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U.S. DEPARTMENT OF HOMELAND SECURITY

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onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0482H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 482 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0482	H

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
12057C0482H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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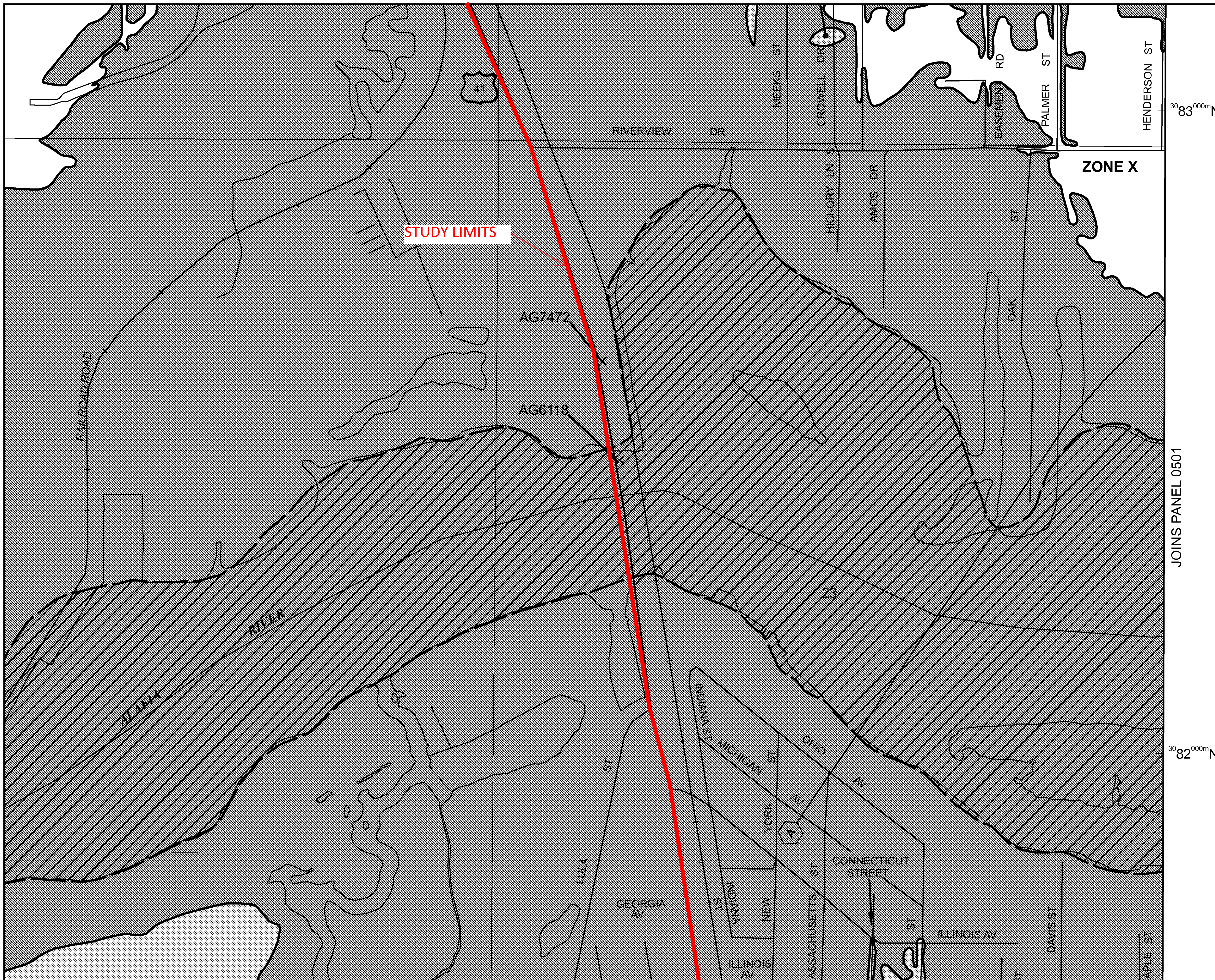

onal Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0482H

FIRM
FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 482 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0482	H

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U.S. DEPARTMENT OF HOMELAND SECURITY

MAP NUMBER
12057C0482H

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onal Flood Insurance Program at 1-800-638-6620.

JOINS PANEL 0369 530000 FT

82°22'30"

27°52'30"

$^{30}84^{000m}$N

$^{30}83^{000m}$N

AG6115

STUDY LIMITS

RAILROAD

OLD 41 HWY

ZONE AE
(EL 10)

ZONE X

14

41

MEEKS ST

CROWELL DR

HICKORY LN N

RD

EASEMENT

PALMER ST

HENDERSON ST

RIVERVIEW DR

HICKORY LN S

AMOS DR

ST

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0482H

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FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 482 OF 801

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CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0482	H

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onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

STUDY LIMITS

AG7469

AG7466

AG7465

ZONE VE
(EL 10)

ZONE X

Tampa Bay

Hillsborough Bay

Archie Creek

BURTS RD

RAILROAD ROAD

North

10

41

15

16

1290000 FT

27°52'30"

82°24'22.5"

$^{3}62^{000m}$E

$^{3}63^{000m}$E JOINS PANEL 0482

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0369H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 369 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0369	H

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
12057C0369H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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...onal Flood Insurance Program at 1-800-638-6620.

Unincorporated Areas
120112

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

1295000 FT

ZONE AE
(EL 10)

BLOOMINGDALE AV

STUDY LIMITS

JOINS PANEL 0368

Delaney Creek Popoff

JENSEN RD

CHANCEY RD

BURTS RD

Delaney Creek Popoff Canal

09

10

41

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0369H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 369 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0369	H

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
12057C0369H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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onal Flood Insurance Program at 1-800-638-6620.

82°24'22.5"
525000 FT
27°54'22.5"

530000 FT JOINS PANEL

RAILROAD ROAD
MONTGOMERY STREET
RAILROAD ROAD
RAILROAD ROAD
S 54TH STREET
PENDOLA POINT ROAD
04
MADISON AVENUE
03
STUDY LIMITS
DOVER ST
ZONE AE
(EL 10)
Hillsborough Coun
Unincorporated Ar
120112
1295000 FT
BLOOMINGDALE Av

MAP SCALE 1" = 500'

250 0 500 1000
FEET
METER

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0369H

FIRM
FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 369 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0369	H

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
12057C0369H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

RAILROAD ROAD

BOISE ST

47TH ST S

DOROTHYS DREAM PL

34TH AV S

SAGASTA STREET

TOWAWAY AV

33

DIAMOND VOCAN DR

47TH ST S

RALEIGH ST

30TH AV S

210040

210030

210020

DELANEY CREEK

TRENTON ST

STUDY LIMITS

51ST ST S

HARTFORD ST

AUSTIN ST

DENVER ST

SANTA FE RD

04

03

34

210080

210070

36TH AV S

210050

210060

210090

210100

ZONE AE

54TH ST S

S 56TH ST

ZONE A

ZONE A

ZONE A

Hillsb

Unine

ZONE AE

(EL 10)

1300000 FT

27°54'22.5"

82°24'22.5"

$^{3}62^{000m}$E

$^{3}63^{000m}$E JOINS PANEL 0369

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0367H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 367 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0367	H

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
12057C0367H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

STUDY LIMITS

1305000 FT

JOINS PANEL 0366

ZONE A

ZONE X

ZONE AE

211010

211000

210090

210100

210080

24TH AV S

27TH AV S

30TH AV S

31ST AV S

34TH AV S

TOWAWAY AV

CAUSEWAY BL

EL CAMINO BLANCO BL

NEHAUL PL

HABERSHAM LN

22ND AV S

23RD AV S

ST PAUL ST

BOISE ST

RAILROAD ROAD

RAILROAD RD

ROCKPORT RD

VIVIAN PL

GELMAN PL S

DOROTHYS DREAM PL

SAGASTA ST

47TH ST S

48TH ST S

49TH ST S

50TH ST S

51ST ST S

54TH ST S

58TH ST S

Delaney Cree

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0367H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 367 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0367	H

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
12057C0367H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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onal Flood Insurance Program at 1-800-638-6620.

82°24'22.5"
525000 FT
27°56'15"
1310000 FT
530000 FT JOINS PANEL 0359

MAP SCALE 1" = 500'
250 0 500 1000
FEET
METER

12TH AV S
BRISTOL BAY WAY
56TH ST S
STUDY LIMITS
AG6058
16TH AV S
17TH AV S
19TH AV S
46TH ST S
28
47TH ST S
ZONE AE
(EL 10)
20TH AV S
21ST AV S
NEHAUL PL
SAGASTA ST
48TH ST S
50TH ST S
HABERSHAM LN
51ST ST S
22ND AV S
23RD AV S
48TH ST S
24TH AV S
RAILROAD ROAD
TAMPA COMMERCE CT
56TH ST S
ZONE A
12TH AV S
58TH ST S
58TH STR
ZONE A
Hillsborough County
Unincorporated Areas
120112
27
ZONE X
20TH AV S
ZONE A
ZONE A
ZONE A
24TH AV S
24TH AV
Delaney Creek
H ST S
ZONE A

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0367H

FIRM
FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 367 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0367	H

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
12057C0367H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0359H

FIRM
FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 359 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0359	H
TAMPA, CITY OF	120114	0359	H

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
12057C0359H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

16

15

AG6048

AG6049

City of Tampa 120114

UCETA RD

TRANSPORT DR

DISTRIBUTION DR

UCETA RD

RAILROAD

ACLINE DR E

S 71ST ST

ZONE AE
(EL 10)

ZONE AE
(EL 10)

AG6053

E ROMAN ST

JOINS PANEL 0358

ADAMO DR

ADAMO DR

ZONE X

1315000 FT

END STUDY

RAILROAD

ZONE X

ZONE X

ZONE X

E WASHINGTON ST

STUDY LIMITS

S 68TH ST

AG7548

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0359H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 359 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0359	H
TAMPA, CITY OF	120114	0359	H

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
12057C0359H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1006222010925

Entry Date: 6/22/2010 2:06:31 PM
Revised Date:
Completed By: Stephanie Hildreth, HDR

SECTION I: LOCATION

County - Hillsborough
State Road - SR 45, SR 599
Road Description - 4 lane(s), Principal Arterial, Roadside Ditches
Roadway Separation - Divided w/Non-Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Urban
Specific Classification of Road - Principal Arterial
Roadway Drainage - Roadside Ditches

Flooding Condition - On-System

Local Road Subject to Flooding - Port Sutton Road
Business Name:
Business/Private Property Address Subject to Flooding -
4333 S 50th Street
Tampa , FL 33619

Location:
Latitude: 27.906666
Longitude: -82.402259

Section/Township/Range - 4 / 30S / 19E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint - 2/16/2009
Complainant Name - Bob Greene
Problem Description - Property Flooding

Details of the Problem - Flooding problem related to the business on the northwest corner of the intersection. The ditches on US 41 are shallow and tend to pop off through the property.

The owner stated that the water gets near the floor elevation and causes problems with the septic system onsite. He believes that the problem was caused with the recent resurfacing project which added curb ramps and pedestrian signals at the intersection of Port Sutton and US 41.

Frequency of Flooding - Several times per year
Source for Frequency Data - Local Resident/Person Interviewed

Historic High Water - No historic high water data was available.
Water has come up to the building.
Flooding Event High Water - No event high water was recorded.

History of Problem - It is assumed that the problem has come up only after the widening of Port Sutton Road. Project 411276-1-52-04 (related projects 02 and 03). The project was completed in 2005 and tax records show that the property was sold in 2005.

SECTION III: PROBLEM ANALYSIS

Attachments

Attachment	Attachment Type	Attachment Description
Flooding_PortSutton.pdf	Other Data	Drainage Flooding Complaint Inventory Sheet
project_ 1.pdf	Project Plans	Roadway plans for 411276-1-52-04
project_ 2.pdf	Project Plans	Signing and Pavement Marking Plans and Signalization Plans for 411276-1-52-04
aerial view_ port sutton.pdf	Aerial Photo	Aerial view
swfwmd aerial_ port sutton.pdf	SWFWMD Contour Map	SWFWMD Contour map
cropped swfwmd_ port sutton.pdf	SWFWMD Contour Map	Cropped SWFWMD aerial
Deed_ port sutton.pdf	Other Data	Property Deed
photos_ port sutton.pdf	Site Photo	Photos

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation: It is not known for sure if the ramp work at this location caused the problem, but indications are that it may have added to a problem that already existed. The owner stated that he would be willing to provide FDOT a right of entry to install a pipe system to take water from the US 45 ditch to Port Sutton Road.

This problem cannon be adequately analyzed without a survey of the area to show flow direction and break over elevations.

Recommendation Date:

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors.
(Weight Factor = 10) 0

Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**0**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**0**

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1005262005805

Entry Date: 5/26/2005 8:19:52 AM
Revised Date: 8/2/2010 12:08:12 PM
Completed By: Tom Ward, PBS&J

SECTION I: LOCATION

County - Hillsborough
State Road - SR 685
Road Description - 4 lane(s), null, Roadside Ditches
Roadway Separation - Divided w/Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Rural
Specific Classification of Road - null
Roadway Drainage - Roadside Ditches

Flooding Condition - Off-System

Local Road Subject to Flooding -
Business Name: Sandra O'Brian
Business/Private Property Address Subject to Flooding -
11860 SR 45
Gibsonton , FL 33534

Location:
Latitude: 27.828127
Longitude: -82.381384

Section/Township/Range - 35 / 30S / 19E
Project is Active - Yes

Associated Projects

Project Date	State Project Number	Financial Project ID	Work Program ID	Project Description	Attachment
10/10/1991	10060 - 3580	- - -	7113977	Resurfacing	US_41_Sec-06.pdf

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint - 9/15/2004
Complainant Name - Sandra O'Brien
Problem Description - Property Flooding

Details of the Problem - Renters complained to owner that during the heavy rains and the hurricane season of 2004, the ditch bottom inlet located near her home overtopped and flooded her front yard and the front porch of her home. The depth of flooding is not known. The water also traveled down the dirt road adjacent to her home, and impacted another home. The depth of flooding is not known. The inlet also overtopped at least one other time (exact date unknown by owner) in the past heavy rains.

Frequency of Flooding - Several times per year
Source for Frequency Data - Local Resident/Person Interviewed

Historic High Water - A historic high water of located at Unknown was documented by Local Resident/Person Interviewed.
See above
Flooding Event High Water - No event high water was recorded.

History of Problem - Runoff from the US 41 Northbound Roadway travels to the roadside ditch, and then travels to ditch bottom inlets. According to the original drainage map from State Job No. 10060-3212, the flow travels from Florence Street south to the 10 ft x 8 ft box culvert located at Station 874+10. The drainage system from these plans shows roadside ditches along US 41 within the project limits. The drainage system was altered in 1991 when US 41 was resurfaced from Symmes Road to North of Big Bend Road, State Job No. 10060-3580. Ditch bottom inlets, side drains and pipe extensions in the ditches were added along portions of US 41 with this project. The drainage documentation from this project did not have the drainage basin delineated to compare current conditions with historic drainage patterns. The drainage pipes on the east side of US 41 from near the flooding site to the flooding site to the ultimate outfall at the 10 ft x 8 ft box culvert are all 18 inches in diameter. Although the extension of several 18-inch pipes caused some increase in head loss, this did not contribute substantially to flooding. The distance between flooding sites to the box culvert is approximately 700 feet. The creek at the box culvert is tidal. Based on comments from local residents, the highest tailwater ever witnessed was approximately 5.5 ft and did not get near this elevation during the reported flooding incident. The grate elevation of the ditch bottom inlet located adjacent to the property owner is 6.6 ft. Based on comments from residents, during the flooding complaint event, the water in the creek was near the elevation of the crown of the outfall pipe at elevation 3.7 ft. Based on drainage maps, field visits and contour aerials, the overall drainage basin limits for the area that contributes flow to the ditch in front of the flooding site are Florence Street to be the north, US 41 to the west, and CSX railroad to the east. Development in the basin area consists of mobile home parks, housing developments, and a fish hatchery. Much of this area is drained to the roadside ditch via lateral ditches that extend from the railroad ditch west to US 41 and are severely overgrown. Many of these ditches can pop-off in several directions and it would be difficult to determine where runoff would flow without detailed modeling. In addition, the basin boundaries may have changed since the original US 41 project was constructed. The ditch on Florence Street is also overgrown and silted in. It is doubtful that much flow is being contributed from this ditch or the lateral inflow ditches. If ruunoff from the entire drainage area for the 10-year event is assumed to reach the pipes along US 41, the pipes are undersized. However, based on the indeterminate nature of the basin, a minimum discharge area was developed to evaluate the existing storm drain system. This area was developed by excluding areas conveyed by overgrown and silted in ditches. The drainage analysis of the existing storm drain system only includes US 41 runoff and portions of offsite runoff that run directly into the storm drain system. Based on this minimum drainage area, energy losses in the pipes associated with a 10-year event are 1.03 ft from the outfall to the subject property. There is 2.9 ft of head available between the inlet top (6.6 ft) and the tailwater elevation (3.7 ft). At the highest tailwater witnessed (5.5 ft), this would put the hydraulice grade line at the inlet top.

Persons Interviewed

Site Visit Date - 12/1/2004
Site Inspection By - Resident Last Name, Renter
Interviewee(s) - Shayne Paynter, PBSJ
Site Visit Conditions - Not Applicable

Observed High Water - No observed high water was observed on the date of the site visit.

Site Visit Details - Shayne Paynter met the residence on December 1, 2004 at the residence of the flooding and field reviewed the site on the same day. The FDOT 7 Tampa Maintenance office was visited to obtain plans and inquire as to flooding issues at this site. Maintenance personnel could not recall any

flooding problem at this location.

SECTION III: PROBLEM ANALYSIS

Attachments

Attachment	Attachment Type	Attachment Description
US_41_Sec-01.pdf	Other Data	Drainage Complaint Inventory Work Sheet
US_41_Sec-04.pdf	FDOT Drainage Map	Drainage Map (SPN: 10060-3212)
US_41_Sec-05.pdf	Other Data	FDOT Correspondence not available
US_41_Sec-06.pdf	Project Plans	Key Sheet, Qunatities Sheet & plan sheet at area of flooding.
US_41_Sec-07.pdf	Other Data	Copies of Any FDOT , County , or City Drainage Studies not available.
Review of Drainage Complaint Investigation.pdf	Other Data	Review of Drainage Complaint Investigation
US41.pdf	Site Map	Location Map
REG.pdf	Project Plans	10060-3580 partial plans
Hill_10060_3212_SR 45_US 41_Obrien.pdf	Other Data	Drainage Complaint Investigation Report

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation: The ditch from the box culvert at Station 874+00 to the mitered end section at Station 875+50 is overgrown and should be cleared to allow flow from the storm drain system to enter the outfall effectively. Also, many of the grate inlets are blocked with overgrown grass that prevents flow in the ditch from entering the inlet effectively, especially the inlet located just south of the flooding complaint at Station 881+40. From the flooding complaint site at Station 882+00, to south to the Box Culvert at Station 874+00, the existing 18" pipes should be inspected for any obstructions and all pipes should be desilted. The ditch bottom inlet located at the flooding site should be modified to include traversable slots and the immediate area should be graded to drain to these slots. The inlet elevation is currently very close to the floor elevation of the residence located adjacent to the inlet. Adding slots and grading the ground between the right-of-way and the inlet to slope the terrian towards the inlet will help to prevent water from flowing outside the right-of-way. Cleaning ditches and clearing ditch inlet grates will help alleviate the flooding problem by allowing water to enter the inlets effectively and by maximizing the capacity fo the system. All the 18" pipes carry flow south to a MES at Station 875+67.60, before entering the creek. It should be noted that the rainfall associated with the 2004 hurricane season and the resulting flooding complaint

exceeded the design parameters for the drainage system, which is estimated to be a 10-year event, and flooding will still occur as result of very large rainfall events. In summary, the following steps should be taken to address the flooding complaint: 1) Inspect all pipes from the flooding complaint site to the box culvert 2) Clear any obstructions and desilt pipes 3) Clear all inlet tops from the flooding site to the box culvert that have excessive grass growth or debris 4) Add traversable slots to the existing inlet in front of the property in question and grade the existing ground near the inlet to direct runoff to flow into the inlet.

Recommendation Date: 5/2/2005

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	0
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**0**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**0**

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1001032008834

Entry Date: 1/3/2008 8:41:11 AM
Revised Date: 7/13/2010 11:29:51 AM
Completed By: Hiren Patel, PBS&J

SECTION I: LOCATION

County - Hillsborough
State Road - SR 45, SR 599
Road Description - 4 lane(s), Principal Arterial, Roadside Ditches
Roadway Separation - Divided w/Non-Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Urban
Specific Classification of Road - Principal Arterial
Roadway Drainage - Roadside Ditches

Flooding Condition - Off-System

Local Road Subject to Flooding - Ohio Street
Business Name:
Business/Private Property Address Subject to Flooding -
12130 US 41
Gibsonton , FL 33534

Location:
Latitude: 27.822308
Longitude: -82.381614

Section/Township/Range - 35 / 30S / 19E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint - 8/1/2007
Complainant Name - Gerry Javier
Problem Description - Unknown

Details of the Problem - 3” PVC storm drain pipe discharging onto FDOT ROW. A drainage connection permit is not currently on file.

Frequency of Flooding - Unknown
Source for Frequency Data - Unknown

Historic High Water - No historic high water data was available.

Flooding Event High Water - No event high water was recorded.

History of Problem - First reported by Gerry Javier FDOT Maintenance 08/01/2007 during routine maintenance of the right ditch fronting the property of concern.

Other Communications

Communication Date	Type	Communication From	Communication To	Communication Attachment Name
10/3/2007	Email	Mark Micikas , PBS&J	Andrew Stevens, PBS&J	25810416_Email100307.pdf
10/3/2007	Email	Mark Micikas , PBS&J	Andrew Stevens , PBS&J	258104340_EmailOct0307.pdf

SECTION III: PROBLEM ANALYSIS

Current Problem Analysis

Current Problem Analysis: Stormwater runoff for Eastwood Estates MHP is collected by storm drain and pumped to two outfall points; the FDOT R/W ditch; Ohio St. ditch. According to James Crowell (Property Maintenance), the storm drain pumps are turned on with floats once runoff depths begin to inundate the roadway within the park. The pumps appear to have been in place since the park inception prior to 1986. There is no history of apparent flooding or excessive erosion with in the S.R. 45 R/W due to the stormwater pumping.

Outfall Description: Manmade Channel or Ditch
Responsible Entity for Maintenance of Outfall: FDOT

Attachments

Attachment	Attachment Type	Attachment Description
258103627_SWFWMD023119.pdf	SWFWMD Contour Map	
25810373_SWFWMD353019.pdf	SWFWMD Contour Map	
258103858_Sitephotos.pdf	Site Photo	
258103943_Fieldnotes.pdf	Other Data	Field Notes

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation: No action is recommended at this time due to the Eastwood Estates MHP and stormwater system being in place prior to 1986 along with the SWFWMD aerials showing historic water patterns consistent with the system in place.

Recommendation Date:

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	0
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**0**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**0**

APPENDIX C

Hillsborough County Riverine Floodplain Elevations

Floodplain Encroachment and Compensation Calculation Summary
Table 4-2 Calculation Basis

Basin 3

Column 1: Length of basin times width of both sides

Column 2: Encroachment area times depth of 0.5' (Based on estimated average fill below floodplain depth)

Column 3: Encroachment volume times 1.25 (Based on 1' depth to water table and increased by 25% for grading)

Basin 4

Column 1: Station 892+40.00 to 897+00.00 (460') times width of both sides

Column 2: Encroachment area times depth of 0.5' (Based on estimated average fill below floodplain depth)

Column 3: Encroachment volume times 1.25 (Based on 1' depth to water table and increased by 25% for grading)

Basin 10

Column 1: Length of basin times width of both sides

Column 2: Encroachment area times depth of 2.0' (Based on estimated average fill below floodplain depth)

Column 3: Encroachment volume times 1.25 (Based on 1' depth to water table and increased by 25% for grading)

Basin 11

Column 1: 700 ft times width of one side + rest of basin length times width of both sides

Column 2: Encroachment area times depth of 0.5' (Based on estimated average fill below floodplain depth)

Column 3: Encroachment volume times 1.25 (Based on 1' depth to water table and increased by 25% for grading)

Basin 12

Column 1: Length of basin times width of both sides

Column 2: Encroachment area times depth of 1.0' (Based on estimated average fill below floodplain depth)

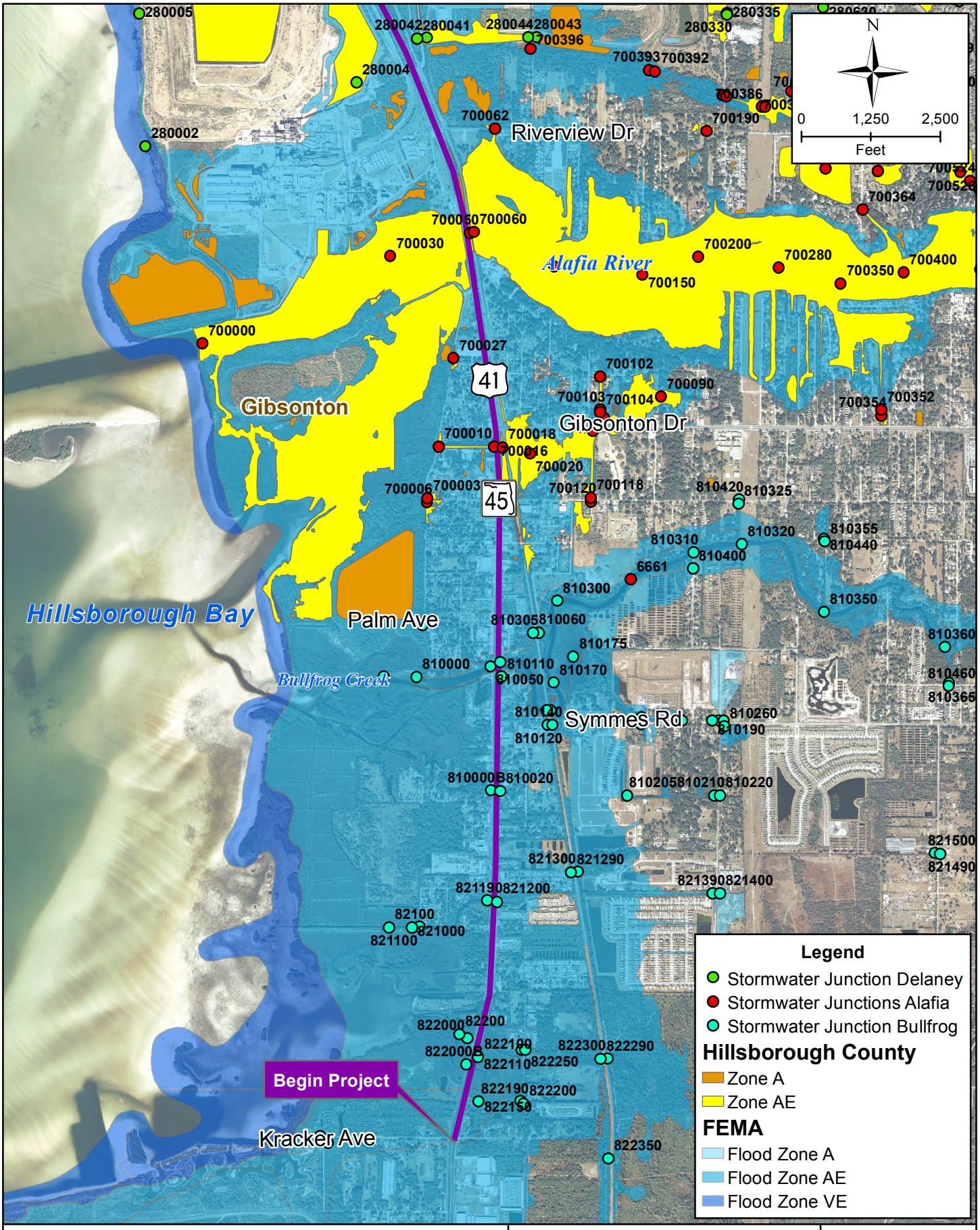
Column 3: Encroachment volume times 1.25 (Based on 1' depth to water table and increased by 25% for grading)

Basin 13

Column 1: Length of basin times width of both sides

Column 2: Encroachment area times depth of 0.5' (Based on estimated average fill below floodplain depth)

Column 3: Encroachment volume times 1.25 (Based on 1' depth to water table and increased by 25% for grading)

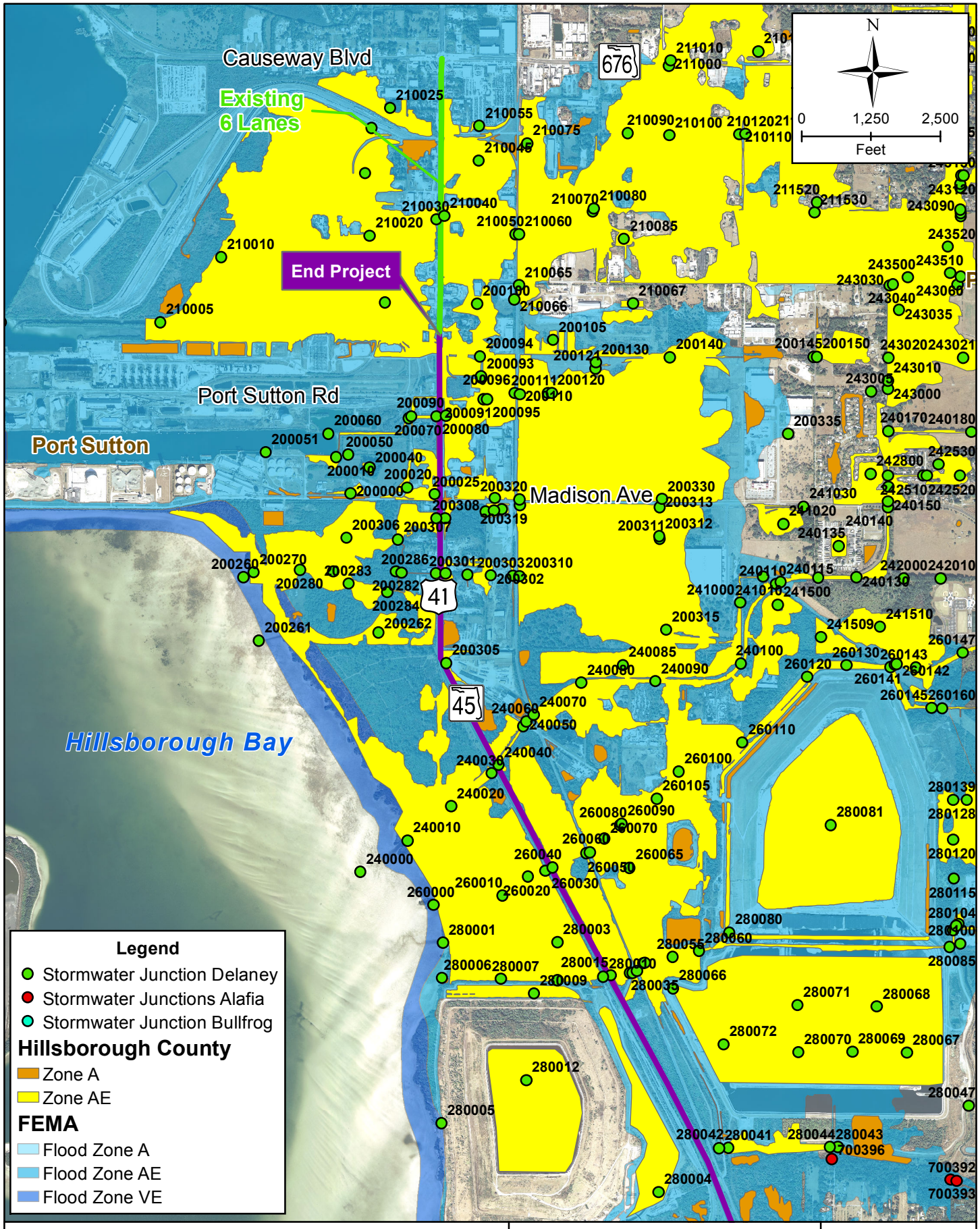


US 41 (SR 45) PD&E Study

From Kracker Avenue to South of SR 676 (Causeway Boulevard)

WPI Segment No. 430056 1 - Hillsborough County

FEMA Map w/ Junctions



US 41 (SR 45) PD&E Study

From Kracker Avenue to South of SR 676 (Causeway Boulevard)

WPI Segment No. 430056 1 - Hillsborough County

FEMA Map w/ Junctions

6.3 EXISTING CONDITIONS MODEL SIMULATION RESULTS

The 2.33-, 5-, 10-, 25-, 50- and 100-year design rainfall storm events, each with a design duration of 24 hours, were input to the calibrated model for simulation of peak flood elevations in channels and at structures. Water surface profiles have been generated to show maximum water level elevation for these events. These profiles are presented for each major conveyance system in Exhibits 6-1a through 6-1s. These conditions represent the existing baseline condition (no action plan) flooding response for the Bullfrog Creek/Wolf Branch watershed. A summary of simulated peak stages at all model nodes is presented in Table 6.2 for each design storm simulation.

Table 6.2
DESIGN STORM MODEL OUTPUT SUMMARY

Model Node ID	Existing Conditions Design Flood Elevations (Feet, NGVD)					
	2.33-year	5-year	10-year	25-year	50-year	100-year
Lower Bullfrog Creek						
810000	2.2	2.3	2.6	2.9	3.3	3.6
810020	4.1	4.3	4.6	4.9	5.3	5.5
810040	2.5	3.0	3.8	4.8	5.1	5.1
810050	2.9	3.4	4.1	4.6	5.5	6.1
810060	3.3	3.6	4.3	4.8	5.8	7.4
810100	2.9	3.5	4.2	4.7	5.8	6.5
810110	2.9	3.5	4.2	4.7	5.8	6.5
810115	3.6	4.2	5.1	5.7	6.7	7.4
810120	3.7	4.2	5.1	5.7	6.7	7.4
810130	3.8	4.5	5.5	6.3	7.8	7.5
810140	4.2	4.5	5.5	6.3	7.8	7.5
810170	4.0	4.8	5.8	6.6	8.0	8.0
810175	4.0	4.8	5.8	6.6	8.0	8.0
810180	4.0	4.8	5.8	6.6	8.0	8.0
810185	5.0	5.2	5.8	6.6	8.0	8.0
810190	8.7	8.9	9.3	9.5	10.0	10.2
810195	11.1	11.9	12.1	12.2	12.2	12.2
810200	5.0	5.5	6.1	6.7	8.0	8.2
810205	5.2	5.6	6.2	6.8	8.0	8.2
810210	6.9	7.2	7.4	7.6	8.0	8.4
810220	9.5	9.9	10.4	10.9	11.8	12.5
810240	11.4	12.5	13.3	13.6	13.6	13.6
810260	12.3	13.5	13.7	13.7	13.8	13.9
810300	4.4	5.2	6.3	7.1	8.5	8.6
810305	4.4	5.2	5.6	6.3	7.8	7.5
810310	5.2	6.1	7.3	8.2	9.7	10.0
810320	5.3	6.2	7.5	8.3	9.8	10.2
810325	7.7	7.8	7.9	8.3	9.8	10.2
810350	8.8	10.1	11.8	12.7	14.2	14.9
810355	10.2	10.3	11.8	12.7	14.2	14.9
810360	10.2	11.5	13.2	14.2	15.8	16.6
810365	12.6	12.8	13.2	14.2	15.8	16.6
810370	10.9	12.2	14.0	14.9	16.6	17.4
810380	11.0	12.3	14.1	15.1	16.8	17.7

Table 6.2
DESIGN STORM MODEL OUTPUT SUMMARY

Model Node ID	Existing Conditions Design Flood Elevations (Feet, NGVD)					
	2.33-year	5-year	10-year	25-year	50-year	100-year
817695	73.7	74.6	75.6	76.3	77.3	78.8
817700	73.8	74.7	75.7	76.4	77.4	79.0
817740	73.9	74.7	75.7	76.4	77.4	79.0
817750	74.1	75.1	76.3	77.2	78.5	79.7
817800	80.1	80.4	80.7	80.9	81.2	79.8
Unnamed Southern Fork - Little Bullfrog Creek						
818000	57.8	58.3	58.9	59.3	60.0	60.4
818010	67.6	68.1	68.8	69.2	70.0	70.4
818020	77.8	78.3	79.1	79.5	80.4	80.8
818100	78.6	79.8	82.4	83.8	84.6	84.8
818120	88.0	89.2	91.0	92.4	95.2	96.6
818150	90.1	90.2	91.0	92.4	95.2	96.7
818200	80.7	81.3	81.9	82.5	83.3	83.7
818250	81.6	82.0	82.6	83.5	85.5	87.2
Unnamed North Prong - Upper Bullfrog Creek						
819000	48.0	49.4	51.2	52.3	55.0	55.1
819020	48.7	49.6	51.4	52.4	55.2	55.1
819050	52.7	54.2	55.0	55.4	55.9	56.2
819060	76.5	76.7	77.0	77.2	77.5	77.6
819080	78.2	78.5	78.9	79.1	79.5	79.7
819090	85.9	86.1	86.3	86.4	86.8	86.9
819095	86.5	87.3	88.7	90.0	90.5	90.6
819100	90.7	90.9	91.1	91.3	91.5	91.6
819200	89.3	89.5	89.7	89.9	90.1	90.1
Dug Creek - Coastal						
821000	2.1	2.1	2.1	2.1	2.1	2.4
821100	2.2	2.3	2.2	2.1	2.3	2.7
821190	3.3	3.8	4.5	5.0	5.3	5.4
821200	3.3	3.9	4.7	5.3	5.8	5.9
821290	4.1	4.7	5.4	5.9	6.4	6.7
821300	4.4	5.1	6.1	6.8	7.8	8.4
821390	9.8	10.2	10.7	11.1	11.5	11.7
821400	10.3	10.5	10.9	11.2	12.0	12.7
821490	20.0	20.3	20.6	20.9	21.3	21.5
821500	22.5	22.9	23.9	25.1	26.3	26.4
Kitchen Branch - Coastal						
822000	2.0	2.0	2.0	2.0	2.0	2.0
822050	2.1	2.3	2.8	3.3	4.5	4.7
822100	2.1	2.2	2.5	2.8	3.4	3.7
822110	2.4	2.6	2.9	3.3	3.8	4.1
822150	2.1	2.3	2.5	2.8	3.4	3.8
822190	2.1	2.3	2.5	2.8	3.4	3.8
822200	2.2	2.3	2.5	2.9	3.6	4.0
822250	2.5	2.7	3.1	3.6	4.3	4.6
822290	4.2	4.6	5.2	5.6	6.0	6.2
822300	4.3	4.8	5.6	6.2	7.1	7.7
822350	4.6	5.1	5.7	6.2	6.8	7.1

TABLE 6.11-2
ALAFIA RIVER WATERSHED MANAGEMENT PLAN UPDATE
ALAFIA RIVER MAIN STEM SUBWATERSHED EXISTING CONDITIONS
FLOOD ELEVATIONS SUMMARY

MODEL JUNCTION	LOCATION DESCRIPTION	24-HOUR DURATION DESIGN STORM MAXIMUM FLOOD ELEVATION, ft NAVD 88					
		2.33-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
Alafia River from Hillsborough Bay to U.S. Highway 301							
700000	Hillsborough Bay	1.09	1.09	1.09	1.09	1.09	1.09
700030		1.14	1.17	1.23	1.35	1.48	1.61
700050	U.S. Highway 41 Bridge (d/s); FEMA XS No 1	1.16	1.20	1.29	1.45	1.62	1.80
700060	U.S. Highway 41 Bridge (u/s); FEMA XS No 2B	1.16	1.21	1.30	1.46	1.64	1.82
700100	FEMA XS No 5 (A)	1.17	1.22	1.32	1.50	1.69	1.89
700150	FEMA XS No 6	1.19	1.26	1.38	1.60	1.82	2.05
700200	FEMA XS No 7 (B)	1.21	1.29	1.43	1.68	1.93	2.18
700280	FEMA XS No 8	1.23	1.31	1.47	1.74	2.01	2.28
700350	FEMA XS No 9	1.26	1.36	1.56	1.88	2.19	2.48
700400	FEMA XS No 10 (C)	1.36	1.52	1.80	2.25	2.66	3.04
700500	FEMA XS No 11	1.43	1.62	1.95	2.47	2.93	3.35
700550	FEMA XS No 12	1.46	1.66	2.02	2.56	3.04	3.48
700600	FEMA XS No 13 (D)	1.50	1.72	2.10	2.68	3.19	3.64
700700	I-75 Bridge (d/s)	1.51	1.74	2.13	2.72	3.23	3.69
700750	I-75 Bridge (u/s)	1.57	1.83	2.26	2.91	3.46	3.96
700900	FEMA XS No 14	1.68	1.99	2.49	3.22	3.84	4.39
701000	FEMA XS No 15 (E)	1.76	2.10	2.64	3.43	4.09	4.66
701020	FEMA XS No 16	1.84	2.22	2.80	3.64	4.34	4.94
701100	[S-20-T30-R20]	1.91	2.32	2.94	3.82	4.54	5.16
701180	FEMA XS No 17	1.98	2.41	3.06	3.98	4.74	5.38
701200	FEMA XS No 18	2.04	2.49	3.17	4.12	4.90	5.56
701250	U.S. Highway 301 Bridge (d/s); FEMA XS No 19	2.24	2.76	3.54	4.60	5.45	6.17
Alafia River from U.S Highway 301 to Rice Creek							
701350	U.S. Highway 301 Bridge (u/s); FEMA XS No 20B (F)	2.30	2.84	3.65	4.75	5.62	6.36
701370	FEMA XS No 21	2.34	2.91	3.74	4.87	5.76	6.51
701380	FEMA XS No 22	2.36	2.93	3.76	4.89	5.78	6.54
701390	FEMA XS No 23	2.40	2.98	3.82	4.96	5.86	6.62
701400	[S17-T30-R20]	2.44	3.03	3.88	5.04	5.95	6.71
701500	FEMA XS No 24 (G)	2.68	3.36	4.33	5.61	6.60	7.41
701600	Rice Creek	2.80	3.51	4.53	5.87	6.90	7.74
Alafia River from Rice Creek to Buckhorn Creek							
701700	FEMA XS No 25	2.83	3.56	4.59	5.94	6.98	7.83
701800	FEMA XS No 26 (H)	3.05	3.85	4.95	6.39	7.49	8.39
701900		3.25	4.11	5.26	6.75	7.88	8.81
701950	FEMA XS No 27	3.32	4.19	5.37	6.88	8.02	8.95
702000		3.46	4.38	5.59	7.14	8.32	9.27
702100	FEMA XS No 28	3.71	4.70	5.95	7.54	8.73	9.71
702200	FEMA XS No 29 (I)	3.81	4.82	6.08	7.71	8.94	9.95
702205		4.02	5.07	6.34	7.96	9.19	10.19
702250	FEMA XS No 30	4.19	5.27	6.54	8.17	9.40	10.41
702400	Buckhorn Creek; FEMA XS No 31 (J)	4.77	5.99	7.37	9.11	10.40	11.44
Alafia River from Buckhorn Creek to Bell Creek							
702450	FEMA XS No 32	5.23	6.59	8.07	9.91	11.28	12.39
702500	FEMA XS No 33 (K)	5.27	6.69	8.22	10.07	11.45	12.57
702600		5.34	6.77	8.29	10.16	11.54	12.66
702650	FEMA XS No 34	5.41	6.88	8.47	10.36	11.73	12.83
702700	FEMA XS No 35 (L)	5.49	6.98	8.60	10.58	12.02	13.18
702800		5.65	7.20	8.85	10.83	12.33	13.53
702880	FEMA XS No 36	5.71	7.28	8.92	10.92	12.44	13.64
702900		5.97	7.57	9.23	11.22	12.70	13.89
702950	FEMA XS No 37	6.43	8.15	9.77	11.71	13.17	14.34
703000		6.60	8.33	9.95	11.89	13.34	14.50
703050	FEMA XS No 38	6.81	8.60	10.24	12.19	13.64	14.79
703100	FEMA XS No 39 (M)	7.26	9.21	10.97	13.02	14.53	15.73
703200		7.33	9.32	11.13	13.23	14.78	16.01
703300	FEMA XS No 40 (N)	7.34	9.35	11.19	13.33	14.91	16.15
703400	FEMA XS No 41 (O)	7.62	9.77	11.68	13.83	15.40	16.64
703500	FEMA XS No 42	8.17	10.19	12.06	14.16	15.70	16.92
703550	FEMA XS No 43	8.28	10.30	12.15	14.26	15.79	17.01
703600	FEMA XS No 44 (P)	9.20	11.04	12.83	14.88	16.35	17.53
703700	Bell Creek	9.44	11.30	13.06	15.09	16.54	17.70
Alafia River from Bell Creek to Bell Shoals Road Bridge							
703790	FEMA XS No 45	9.59	11.44	13.19	15.21	16.66	17.82
703800	FEMA XS No 46	9.62	11.47	13.23	15.26	16.72	17.89
703850	FEMA XS No 47	9.92	11.84	13.62	15.63	17.08	18.24
703900	FEMA XS No 48	10.50	12.52	14.42	16.58	18.16	19.34

Table 6-4 Comparison of Peak WSEL for the 100-Year, 1-Day and 100-Year, 5-Day Events

Model Junction ID	Subwatershed	100-Year, 1-Day Peak WSEL (ft NAVD)	100-Year, 1-Day Time to Peak (Hr)	100-Year, 5-Day Peak WSEL (ft NAVD)	100-Year, 5-Day Time to Peak (Hr)	Z5D - Z1D (ft)
200000	Delaney Pop-off	6.86	14.40	6.80	62.90	(0.06)
200010	Delaney Pop-off	6.77	14.30	6.72	62.90	(0.05)
200020	Delaney Pop-off	7.60	24.80	7.82	64.40	0.22
200025	Delaney Pop-off	7.60	24.80	7.83	64.40	0.23
200040	Delaney Pop-off	11.52	25.40	11.67	62.30	0.15
200050	Delaney Pop-off	3.29	13.40	3.41	62.90	0.12
200051	Delaney Pop-off	1.60	0.00	1.60	0.00	0.00
200060	Delaney Pop-off	1.60	0.00	1.60	0.00	0.00
200065	Delaney Pop-off	3.39	19.80	3.50	68.20	0.11
200070	Delaney Pop-off	5.49	19.80	5.86	68.30	0.37
200080	Delaney Pop-off	5.53	19.60	5.90	68.30	0.37
200090	Delaney Pop-off	5.98	19.50	6.41	68.30	0.43
200091	Delaney Pop-off	6.09	19.50	6.50	68.20	0.41
200092	Delaney Pop-off	6.09	19.50	6.50	68.20	0.41
200093	Delaney Pop-off	6.09	19.70	6.50	69.00	0.41
200094	Delaney Pop-off	6.09	19.70	6.50	68.90	0.41
200095	Delaney Pop-off	7.53	17.50	8.01	66.90	0.48
200096	Delaney Pop-off	7.61	17.50	8.09	66.80	0.48
200100	Delaney Pop-off	6.10	20.10	6.51	69.20	0.41
200105	Delaney Pop-off	9.40	13.90	9.40	61.90	0.00
200110	Delaney Pop-off	7.70	18.00	8.20	67.40	0.50
200111	Delaney Pop-off	7.73	18.30	8.22	67.60	0.49
200120	Delaney Pop-off	7.82	18.60	8.31	67.90	0.49
200121	Delaney Pop-off	7.86	18.50	8.34	67.90	0.48
200130	Delaney Pop-off	8.30	13.90	8.57	67.50	0.27
200140	Delaney Pop-off	8.91	14.30	9.05	64.20	0.14
200145	Delaney Pop-off	11.12	15.00	11.07	63.80	(0.05)
200150	Delaney Pop-off	12.98	16.00	13.02	64.80	0.04
200260	Delaney Pop-off	1.60	0.00	1.60	0.00	0.00
200261	Delaney Pop-off	1.60	0.00	1.60	0.00	0.00
200262	Delaney Pop-off	2.03	13.10	1.81	61.30	(0.22)
200270	Delaney Pop-off	2.38	13.30	2.23	62.00	(0.15)
200280	Delaney Pop-off	2.80	13.40	2.68	62.20	(0.12)
200281	Delaney Pop-off	2.94	13.50	2.83	62.30	(0.11)
200282	Delaney Pop-off	2.94	13.50	2.84	62.20	(0.10)
200283	Delaney Pop-off	2.97	13.50	2.86	62.30	(0.11)
200284	Delaney Pop-off	2.97	13.50	2.86	62.30	(0.11)
200285	Delaney Pop-off	5.17	13.60	4.79	62.30	(0.38)

Table 6-4 Comparison of Peak WSEL for the 100-Year, 1-Day and 100-Year, 5-Day Events

Model Junction ID	Subwatershed	100-Year, 1-Day Peak WSEL (ft NAVD)	100-Year, 1-Day Time to Peak (Hr)	100-Year, 5-Day Peak WSEL (ft NAVD)	100-Year, 5-Day Time to Peak (Hr)	Z5D - Z1D (ft)
200286	Delaney Pop-off	3.01	13.50	2.90	62.20	(0.11)
200290	Delaney Pop-off	3.10	13.50	2.99	62.20	(0.11)
200300	Delaney Pop-off	5.82	13.60	5.35	62.20	(0.47)
200301	Delaney Pop-off	6.13	13.50	5.61	62.10	(0.52)
200302	Delaney Pop-off	6.23	13.40	5.71	62.10	(0.52)
200303	Delaney Pop-off	7.43	26.60	7.73	72.00	0.30
200305	Delaney Pop-off	7.43	12.80	7.14	61.10	(0.29)
200306	Delaney Pop-off	3.01	13.40	2.85	62.20	(0.16)
200307	Delaney Pop-off	3.04	13.50	2.87	62.10	(0.17)
200308	Delaney Pop-off	3.06	13.50	2.89	62.10	(0.17)
200310	Delaney Pop-off	7.47	26.60	7.81	72.00	0.34
200311	Delaney Pop-off	7.47	26.60	7.81	72.00	0.34
200312	Delaney Pop-off	7.53	26.10	7.87	72.00	0.34
200313	Delaney Pop-off	7.54	26.10	7.87	71.90	0.33
200315	Delaney Pop-off	7.47	26.70	7.80	72.00	0.33
200319	Delaney Pop-off	7.46	27.30	7.80	72.00	0.34
200320	Delaney Pop-off	6.96	64.00	7.04	72.00	0.08
200330	Delaney Pop-off	8.86	15.90	9.09	65.10	0.23
200335	Delaney Pop-off	8.94	15.30	9.15	64.60	0.21
200340	Delaney Pop-off	4.30	13.40	3.77	61.50	(0.53)
200345	Delaney Pop-off	5.45	15.30	5.44	64.30	(0.01)
200346	Delaney Pop-off	5.47	16.00	5.51	64.80	0.04
200347	Delaney Pop-off	5.49	16.10	5.52	64.90	0.03
200350	Delaney Pop-off	5.52	15.10	5.50	64.30	(0.02)
210000	Delaney Creek	1.60	0.00	1.60	0.00	0.00
210005	Delaney Creek	5.24	18.60	5.65	67.10	0.41
210010	Delaney Creek	5.49	18.50	5.89	67.10	0.40
210015	Delaney Creek	5.50	18.50	5.89	67.10	0.39
210020	Delaney Creek	5.61	18.30	6.01	66.90	0.40
210021	Delaney Creek	5.62	18.60	6.01	67.10	0.39
210022	Delaney Creek	5.61	19.20	6.01	67.10	0.40
210025	Delaney Creek	5.51	18.60	5.90	67.20	0.39
210030	Delaney Creek	5.97	17.20	6.32	66.10	0.35
210040	Delaney Creek	7.74	16.10	7.95	65.10	0.21
210045	Delaney Creek	7.76	16.60	7.98	65.50	0.22
210050	Delaney Creek	8.28	15.80	8.47	64.70	0.19
210055	Delaney Creek	7.77	16.70	7.99	65.60	0.22
210060	Delaney Creek	10.25	15.60	10.39	64.40	0.14

Table 6-4 Comparison of Peak WSEL for the 100-Year, 1-Day and 100-Year, 5-Day Events

Model Junction ID	Subwatershed	100-Year, 1-Day Peak WSEL (ft NAVD)	100-Year, 1-Day Time to Peak (Hr)	100-Year, 5-Day Peak WSEL (ft NAVD)	100-Year, 5-Day Time to Peak (Hr)	Z5D - Z1D (ft)
230160	Delaney Creek	33.26	45.30	35.89	72.00	2.63
230170	Delaney Creek	33.94	32.30	35.92	72.00	1.98
230175	Delaney Creek	35.67	23.30	37.04	63.60	1.37
230177	Delaney Creek	40.13	13.00	39.87	61.20	(0.26)
230178	Delaney Creek	37.87	14.30	38.18	63.80	0.31
230179	Delaney Creek	41.41	12.70	41.17	61.00	(0.24)
230180	Delaney Creek	35.69	23.20	37.20	63.50	1.51
230185	Delaney Creek	35.66	25.20	36.39	67.60	0.73
230186	Delaney Creek	35.70	23.20	37.25	63.40	1.55
230190	Delaney Creek	39.26	15.10	39.81	61.30	0.55
230195	Delaney Creek	45.97	13.50	46.00	61.60	0.03
230196	Delaney Creek	46.26	12.90	46.17	61.20	(0.09)
230197	Delaney Creek	52.89	13.10	52.59	61.30	(0.30)
230200	Delaney Creek	49.85	25.80	50.80	65.30	0.95
231000	Delaney Creek	33.52	13.80	33.55	62.80	0.03
231001	Delaney Creek	33.55	13.80	33.57	62.80	0.02
233000	Delaney Creek	43.73	24.80	44.15	63.80	0.42
233010	Delaney Creek	38.69	25.60	42.36	72.00	3.67
233015	Delaney Creek	38.69	25.60	42.36	72.00	3.67
234000	Delaney Creek	37.71	15.50	38.40	62.70	0.69
240000	Delaney Pop-off	1.60	0.00	1.60	0.00	0.00
240010	Delaney Pop-off	3.90	13.60	3.94	62.30	0.04
240020	Delaney Pop-off	4.25	14.00	4.45	63.50	0.20
240030	Delaney Pop-off	4.47	16.40	4.70	64.30	0.23
240040	Delaney Pop-off	4.90	16.50	5.22	64.50	0.32
240050	Delaney Pop-off	5.58	16.40	5.87	64.60	0.29
240060	Delaney Pop-off	6.72	16.40	7.08	64.70	0.36
240070	Delaney Pop-off	7.09	16.40	7.49	64.70	0.40
240080	Delaney Pop-off	7.16	16.30	7.55	64.70	0.39
240085	Delaney Pop-off	6.19	26.30	7.12	70.70	0.93
240090	Delaney Pop-off	7.40	16.10	7.78	64.50	0.38
240100	Delaney Pop-off	7.71	15.80	8.10	64.30	0.39
240110	Delaney Pop-off	9.01	14.40	9.34	63.30	0.33
240115	Delaney Pop-off	9.40	14.20	9.68	63.10	0.28
240120	Delaney Pop-off	10.02	14.00	10.27	62.70	0.25
240130	Delaney Pop-off	10.42	14.00	10.65	62.70	0.23
240135	Delaney Pop-off	10.51	14.00	10.71	62.60	0.20
240140	Delaney Pop-off	10.64	14.10	10.89	62.80	0.25

Table 6-4 Comparison of Peak WSEL for the 100-Year, 1-Day and 100-Year, 5-Day Events

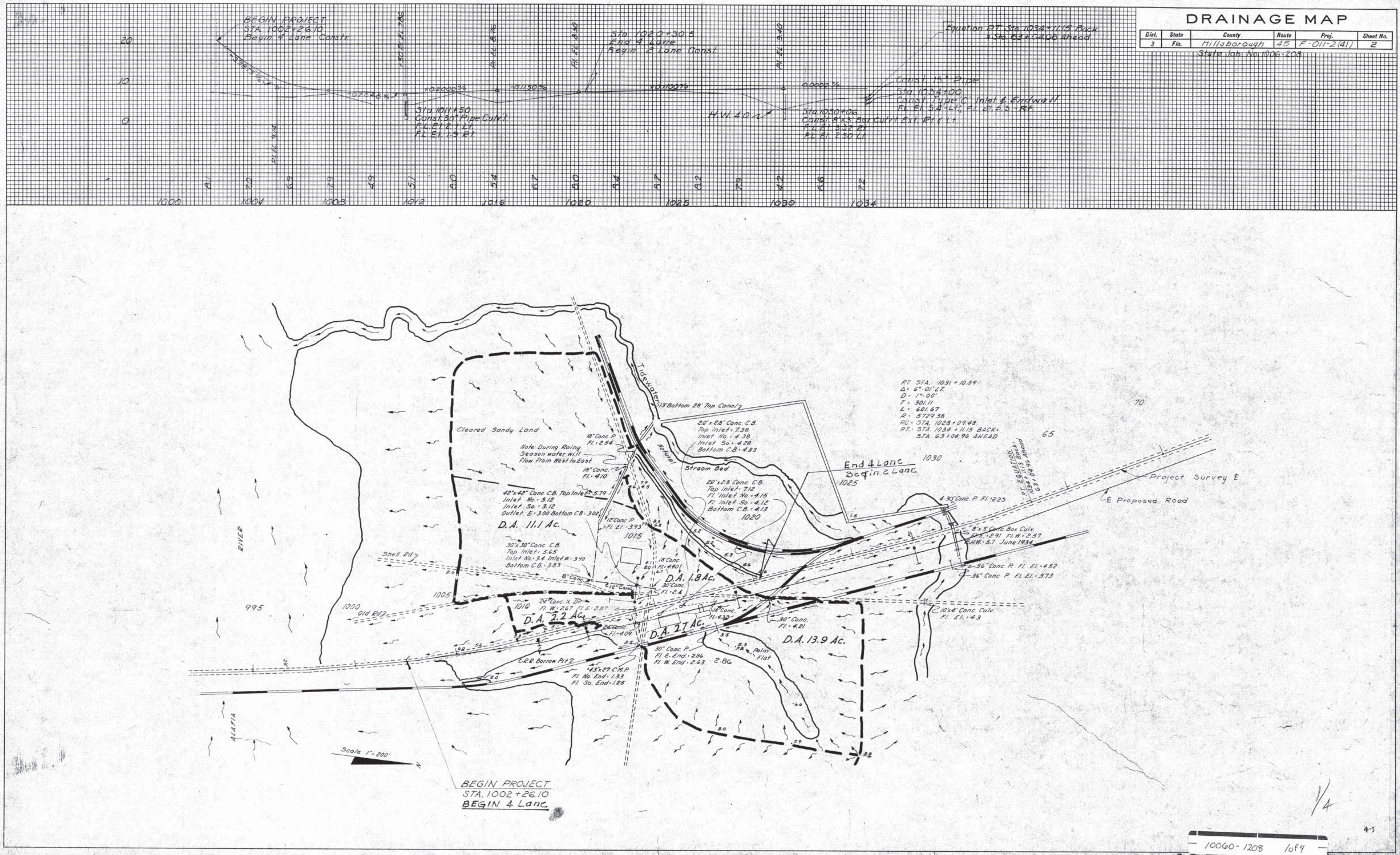
Model Junction ID	Subwatershed	100-Year, 1-Day Peak WSEL (ft NAVD)	100-Year, 1-Day Time to Peak (Hr)	100-Year, 5-Day Peak WSEL (ft NAVD)	100-Year, 5-Day Time to Peak (Hr)	Z5D - Z1D (ft)
252000	Delaney Pop-off	28.93	18.10	29.27	67.60	0.34
252020	Delaney Pop-off	28.93	18.40	29.26	67.80	0.33
252025	Delaney Pop-off	29.20	12.90	29.27	67.90	0.07
252030	Delaney Pop-off	28.93	18.60	29.24	67.40	0.31
252040	Delaney Pop-off	29.01	15.00	29.24	67.30	0.23
252050	Delaney Pop-off	29.10	14.40	29.24	67.40	0.14
252051	Delaney Pop-off	28.61	25.40	29.15	72.00	0.54
252052	Delaney Pop-off	28.61	34.40	29.15	72.00	0.54
252053	Delaney Pop-off	28.61	32.90	29.15	72.00	0.54
252054	Delaney Pop-off	28.74	13.90	29.15	72.00	0.41
252055	Delaney Pop-off	29.74	25.10	30.26	72.00	0.52
252060	Delaney Pop-off	29.39	14.00	29.31	62.80	(0.08)
252065	Delaney Pop-off	29.96	12.80	30.26	72.00	0.30
252500	Delaney Pop-off	29.01	15.00	29.24	67.50	0.23
252505	Delaney Pop-off	69.10	14.00	60.00	63.20	(9.10)
252510	Delaney Pop-off	29.01	15.00	29.24	67.80	0.23
253000	Delaney Pop-off	28.89	19.70	29.27	67.80	0.38
253005	Delaney Pop-off	29.49	12.90	29.27	67.30	(0.22)
253010	Delaney Pop-off	28.88	19.70	29.26	67.40	0.38
253015	Delaney Pop-off	31.79	12.80	30.13	63.30	(1.66)
253020	Delaney Pop-off	28.88	19.50	29.26	67.40	0.38
253025	Delaney Pop-off	32.65	12.70	31.09	61.20	(1.56)
254000	Delaney Pop-off	29.51	17.40	29.98	65.80	0.47
254010	Delaney Pop-off	29.55	18.20	30.00	66.40	0.45
254020	Delaney Pop-off	29.55	18.10	30.00	66.40	0.45
254030	Delaney Pop-off	29.99	12.60	30.01	66.40	0.02
254040	Delaney Pop-off	30.77	12.50	30.01	66.20	(0.76)
254050	Delaney Pop-off	31.20	12.50	30.67	60.80	(0.53)
260000	North Archie Creek	1.60	0.00	1.60	0.00	0.00
260010	North Archie Creek	3.54	28.40	3.76	72.00	0.22
260020	North Archie Creek	3.83	28.40	4.08	72.00	0.25
260030	North Archie Creek	4.09	28.30	4.35	72.00	0.26
260040	North Archie Creek	4.45	27.70	4.83	72.00	0.38
260050	North Archie Creek	4.96	27.20	5.35	72.00	0.39
260060	North Archie Creek	5.92	26.60	6.75	72.00	0.83
260065	North Archie Creek	6.01	26.40	6.81	72.00	0.80
260070	North Archie Creek	6.56	27.00	7.31	72.00	0.75
260080	North Archie Creek	7.09	27.10	7.65	72.00	0.56

Table 6-4 Comparison of Peak WSEL for the 100-Year, 1-Day and 100-Year, 5-Day Events

Model Junction ID	Subwatershed	100-Year, 1-Day Peak WSEL (ft NAVD)	100-Year, 1-Day Time to Peak (Hr)	100-Year, 5-Day Peak WSEL (ft NAVD)	100-Year, 5-Day Time to Peak (Hr)	Z5D - Z1D (ft)
280003	Archie Creek	1.93	13.70	1.84	62.40	(0.09)
280004	Archie Creek	3.98	13.00	3.10	61.40	(0.88)
280005	Archie Creek	1.77	24.80	1.84	70.30	0.07
280006	Archie Creek	1.60	0.00	1.60	0.00	0.00
280007	Archie Creek	2.89	21.30	3.05	69.80	0.16
280008	Archie Creek	3.23	21.30	3.40	69.80	0.17
280009	Archie Creek	8.60	25.00	9.96	72.00	1.36
280010	Archie Creek	3.55	21.30	3.72	69.80	0.17
280012	Archie Creek	170.64	25.00	171.29	72.00	0.65
280015	Archie Creek	3.86	21.30	4.07	69.80	0.21
280020	Archie Creek	4.16	21.30	4.37	69.80	0.21
280030	Archie Creek	4.46	21.30	4.72	69.80	0.26
280035	Archie Creek	6.56	20.70	7.15	69.30	0.59
280040	Archie Creek	6.56	20.70	7.14	69.30	0.58
280041	Archie Creek	7.19	20.00	7.82	68.80	0.63
280042	Archie Creek	7.66	19.70	8.54	68.40	0.88
280043	Archie Creek	7.72	19.60	8.59	68.40	0.87
280044	Archie Creek	8.05	19.40	8.91	68.20	0.86
280047	Archie Creek	8.21	19.20	9.03	68.00	0.82
280050	Archie Creek	6.54	20.70	7.11	69.70	0.57
280055	Archie Creek	6.54	20.80	7.11	69.90	0.57
280060	Archie Creek	6.54	20.80	7.11	69.80	0.57
280066	Archie Creek	11.00	25.00	11.40	72.00	0.40
280067	Archie Creek	11.00	25.00	11.39	72.00	0.39
280068	Archie Creek	11.00	25.00	11.39	72.00	0.39
280069	Archie Creek	11.02	25.00	11.42	72.00	0.40
280070	Archie Creek	10.98	25.00	11.36	72.00	0.38
280071	Archie Creek	10.98	25.00	11.36	72.00	0.38
280072	Archie Creek	11.29	25.00	11.81	72.00	0.52
280080	Archie Creek	9.94	13.10	9.35	62.00	(0.59)
280081	Archie Creek	111.07	25.00	111.52	72.00	0.45
280085	Archie Creek	8.30	18.90	9.08	67.90	0.78
280086	Archie Creek	8.86	17.60	9.61	67.10	0.75
280088	Archie Creek	10.05	18.50	10.87	66.90	0.82
280089	Archie Creek	10.99	18.80	11.74	66.70	0.75
280100	Archie Creek	8.74	12.60	9.09	68.00	0.35
280104	Archie Creek	8.86	17.60	9.61	67.10	0.75
280105	Archie Creek	8.87	17.60	9.62	67.10	0.75

APPENDIX D

Historical District 7 Drainage Maps


DRAINAGE MAP
Dist. 3
State Fla.
County Hillsborough
Route 45
Proj. F-011-2(41)
Sheet No. 2
State Job No. 1006-208
BEGIN PROJECT
STA. 1002+26.10
Begin 4 Lane Constr.
Sta. 1011+50
Const. 30" Pipe Culvt.
Sta. 1020+30.5
End 4 Lane
Begin 2 Lane Const.
H.W. 4.0
Sta. 1030+06
Const. 8'x3' Box Culvt. Ext.
Equation PT. Sta. 1034+11.15 Back = Sta. 63+04.96 Ahead
Const. 18" Pipe
Sta. 1034+00
Const. Type C Inlet & Endwall
Cleared Sandy Land
Note: During Rainy Season water will flow from West to East
Tidewater
13' Bottom 28' Top Canal
Natural Stream Bed
End 4 Lane
Begin 2 Lane
D.A. 11.1 Ac.
D.A. 1.8 Ac.
D.A. 2.2 Ac.
D.A. 2.7 Ac.
D.A. 13.9 Ac.
Shell Rd.
Old Rd.
RIVER
ALAFIA
L.R.R. Borrow Pit
Palm Flat
Project Survey ℄
℄ Proposed Road
H.W. 5.7 June 1934
Scale 1" = 200'
BEGIN PROJECT
STA. 1002+26.10
BEGIN 4 Lane
10060-1208

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sheet No.
3	Fla.	Hillsborough	45	F-011-2(41)	3

State Job No. 10060-208

Equation PT Sta 1032+11.15 Back = Sta 63+04.96 Ahead

Sta 157+00 End 2 Lane Begin 4 lane Const

Sta 96+53 Const Trip 10'x6' Box Culv't Ext Ef & Lt. F.L. El.=1.54

Sta 118+46 Const Trip 10'x6' Box Culv't Ext Ef & Lt. F.L. El.=1.54

Sta 138+73.71 Const Obl 10'x6' Box Culv't (30° Skew Rt.) Ext Ef & Lt. Fl. El.=1.00± Fl. El.=1.63±

MATCH LINE

Scale 1"=1000 Ft.

2'x2' Conc box Culv. Fl.=1.83 E. Fl.=1.25 W. E. Road=8.99 N.H.W. 4.0 E.H.W. 6.8

Double 9.4'x5.0' box Culv. Fl.=1.27 E. Road=9.14 PWL=0.51 10-22-56 N.H.W.=4.0 E.H.W.=6.0

3 Span Timber Trustle 64 Sq. Ft. Opening H.W. El.=5.7 June 1934 Fl.=2.5 Top Rail=7.76

3-10'x6' Conc. box Culv. Fl.=1.54 N.H.W.=4.0 E.H.W.=6.8

4 Span Timber Trustle Fl.=3.0 Top Rail=7.47 178 Sq. Ft. Opening N.H.W.=4.0 E.H.W.=6.0

3-10'x6' Conc. box Culv. Fl.=1.54 N.H.W.=4.0 E.H.W.=6.0

Note Equation PT Sta 1034+11.15 Back = Sta 63+04.96 Ahead

U.S. Phosphoric Plant

24" Conc. Fl. N.=4.15 Fl. S.=4.27

36" Pipe Fl. El.=2.72

10' Conc. Bridge 140 Sq. Ft. Opening Fl. El.=0.7

Paved Road

ALAFIA RIVER

10 Ft. Concrete Bridge 70 Sq. Ft. Opening Fl. El.=1.59

Double 12'x5' Conc. Box Fl El.=0.54 120 Sq. Ft. Opening

3-48" Conc. Pipes Fl.=1.09 PWL 0.66 10-29-56 Top Rail=8.67 H.W.=6.0

2-36" Pipes Fl. El.=0.4

Note: This canal will connect drainage areas at flood times

58"x36" CMP Arch P H.W. 12.3 Fl. El.=1.93

16' Timber Bridge 88 Sq. Ft. Opening Fl. El.=1.39

2-7'x5' Conc. Box Fl. El.=1.59 H.W. El.=6.7 June 1934

2-36" Conc. Pipes Fl. El.=3.52

10' Concrete Bridge 32 Sq. Ft. Opening Fl. El.=4.3

D.A. 334 Ac.

Natural Stream Bed

2-43"x27" CMP H.W. 12.0 Fl. El.=9.5

2-24" Pipe Fl. El.=10.1

5'x3' Culvert Fl. El.=10.1

Grass Pond

Improved Pasture

Pine & Pal.

D.A. 1841 Ac.

D.A. 2874 Ac.

D.A. 2481 Ac.

2-65'x40" CMP Arch P H.W. 10.8 Fl. El.=7.3

58"x36" CMP Arch P Fl. El.=11.0 H.W. 14.0

14"x10.5" CMP Arch P H.W. 17.6 Fl. El.=7.1

Note This canal will connect drainage areas at flood times.

W.W. Pond

W.W. Area

Improved Flatwoods Land

Cypress Pond

Note This bridge will connect drainage areas at flood time

2-20' Span Conc. Bridge 160 Sq. Ft. Opening Fl. El.=2.5 H.W. 30.0

12" Conc. Bridge 84 Sq. Ft. Opening Fl. El.=21.9 H.W. 25.9

5'x3' Culvert Fl. El.=29.0

18" Conc. Pipe Fl. El.=31.5

2-24" Conc. Pipes Fl. El.=30.8

10'x3' Culvert Fl. El.=27.8

18" Pipe Fl. El.=33.5

18" Pipe Fl. El.=33.7

Range 19 East Range 20 East

Twp 29 South Twp 30 South

15' Canal, 12' Canal, 6' Canal, 3' Ditch, 5' Ditch, 14' Canal, 8' Canal, 10' Canal, 18' Canal

2/4

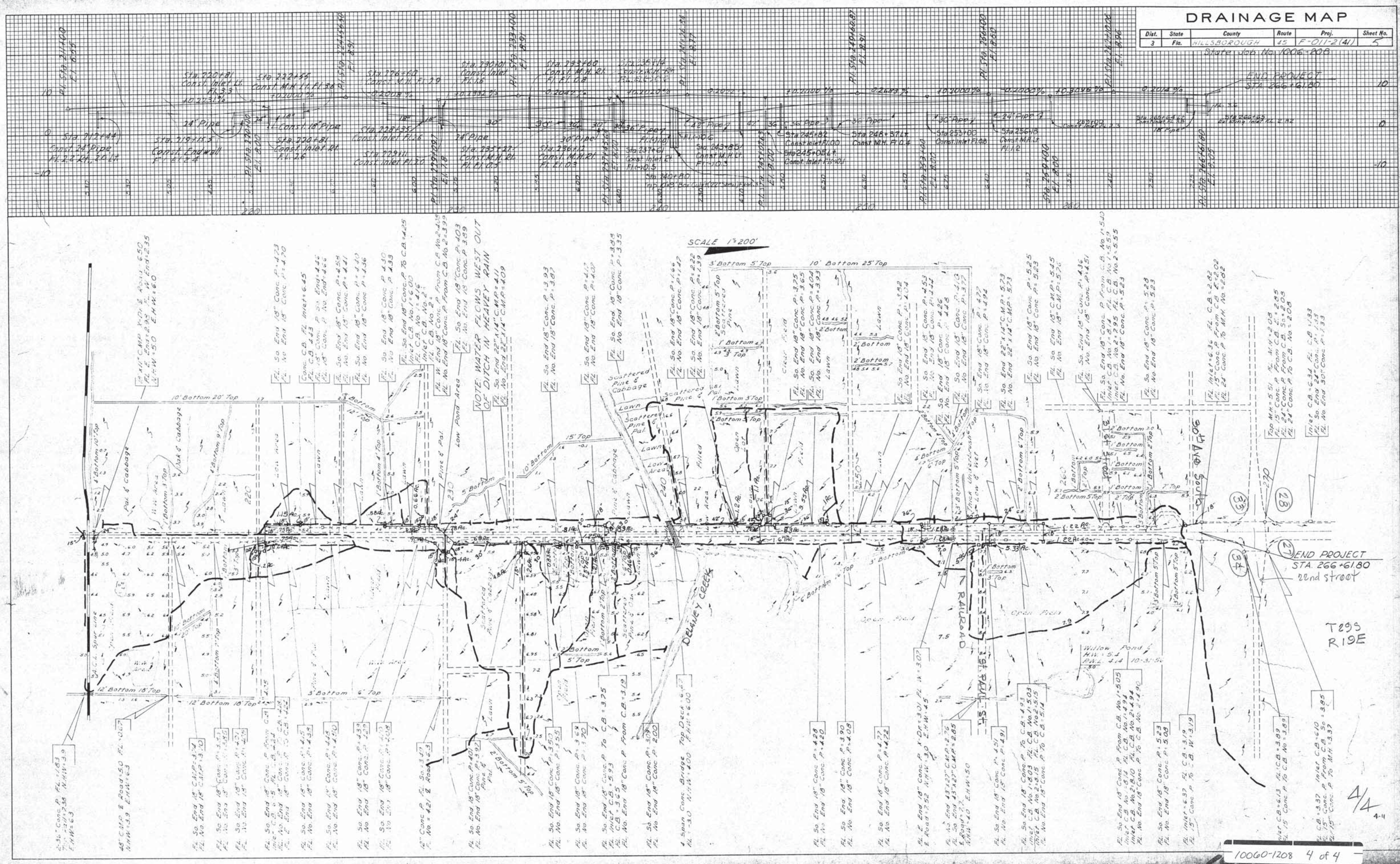
46

10060-1208 2 of 4

DRAINAGE MAP

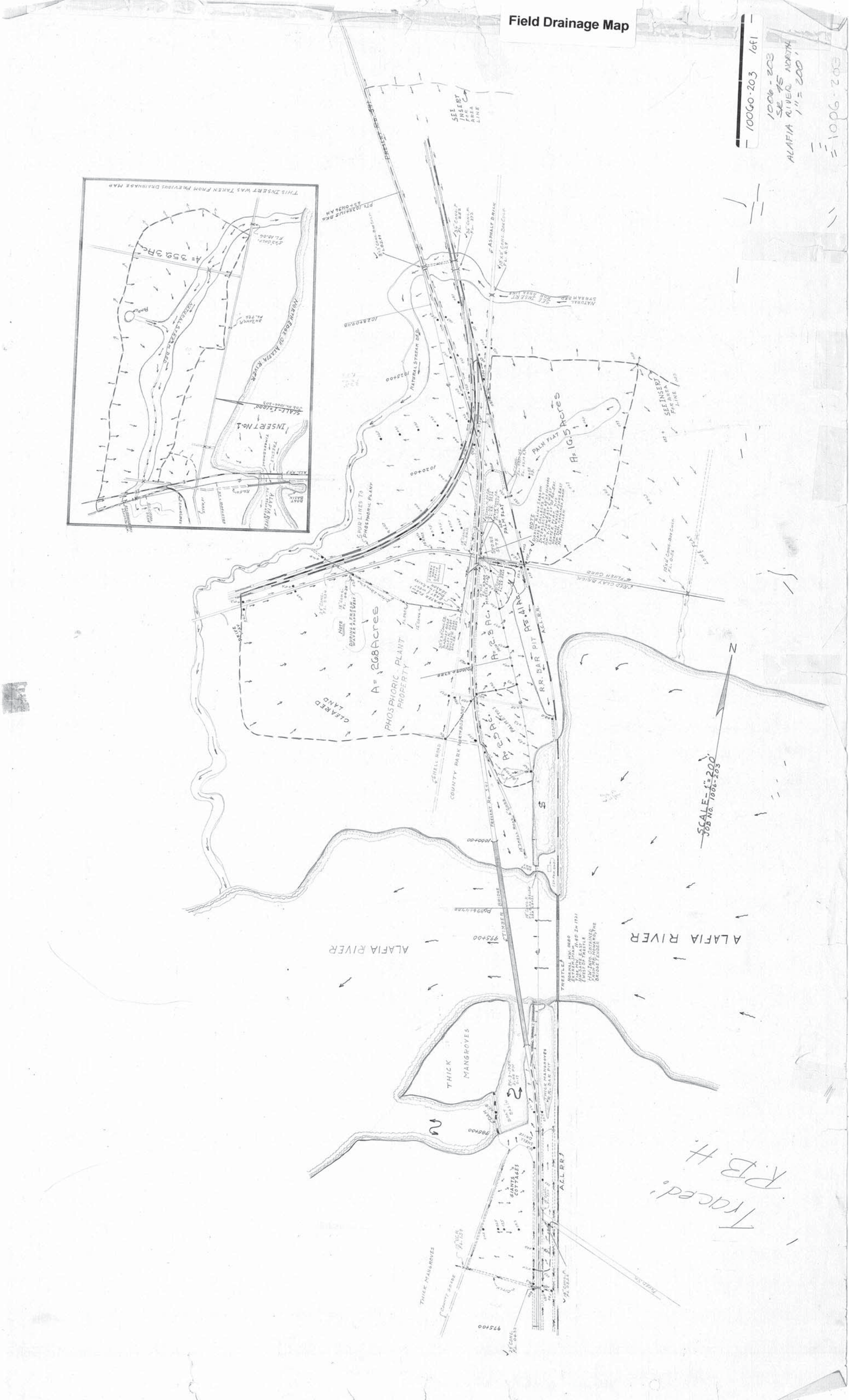
Dist.	State	County	Route	Proj.	Sheet No.
3	Fla.	Hillsborough	45	F-011-2(41)	4

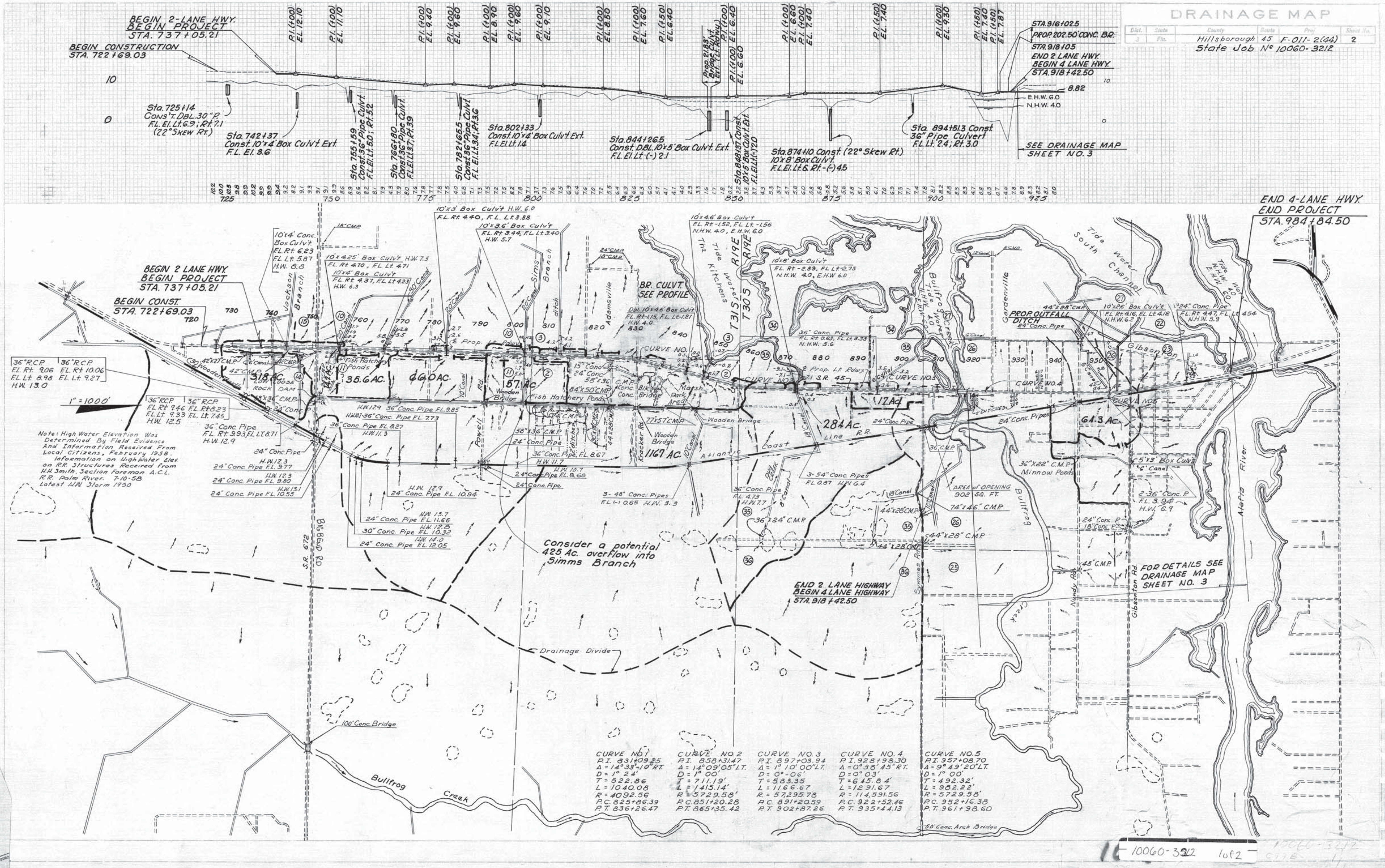
State Job No. 10060-1208



DRAINAGE MAP
Dist. 3
State Fla.
County HILLSBOROUGH
Route 45
Proj. F-011-2(41)
Sheet No. 5
State Job No. 1006-208
END PROJECT
STA. 266+61.80
SCALE 1"=200'
NOTE: WATER FLOWS WEST OUT OF DITCH IN HEAVY RAIN
DELANEY CREEK
RAILROAD
22nd Street
T29S
R19E

Field Drainage Map

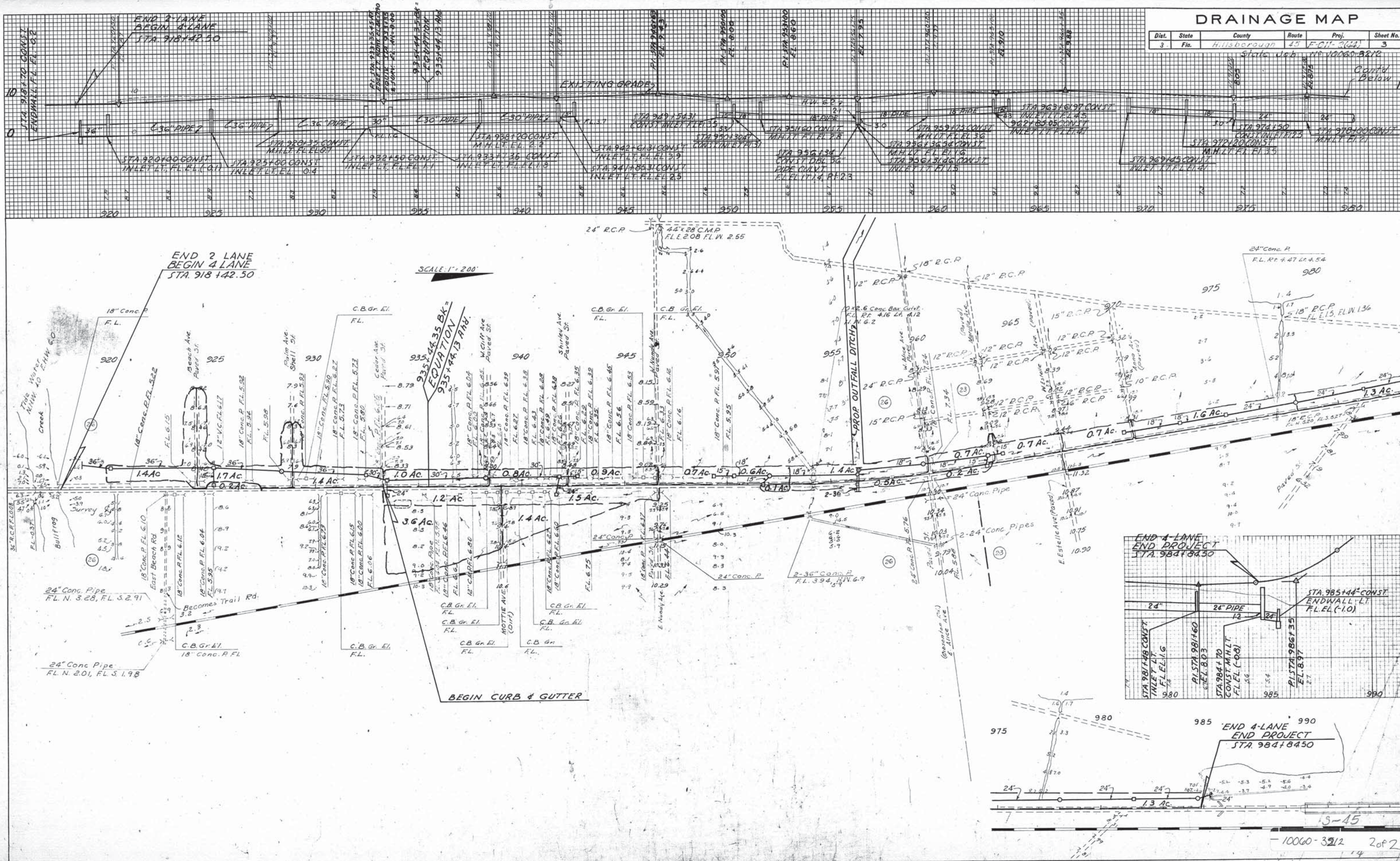



DRAINAGE MAP
Hillsborough 45 F-011-2(44) 2
State Job No 10060-3212
BEGIN 2-LANE HWY.
BEGIN PROJECT
STA. 737+05.21
BEGIN CONSTRUCTION
STA. 722+69.03
END 2 LANE HWY.
BEGIN 4 LANE HWY.
STA. 918+42.50
SEE DRAINAGE MAP
SHEET NO. 3
END 4-LANE HWY.
END PROJECT
STA. 984+84.50
BR. CULVT
SEE PROFILE
Consider a potential
425 Ac. overflow into
Simms Branch
Drainage Divide
END 2 LANE HIGHWAY
BEGIN 4 LANE HIGHWAY
STA. 918+42.50
FOR DETAILS SEE
DRAINAGE MAP
SHEET NO. 3
Note: High Water Elevation Was Determined By Field Evidence And Information Received From Local Citizens, February 1958. Information on High Water Elev. on R.R. Structures Received From H.H. Smith, Section Foreman A.C.L. R.R. Palm River. 7-10-58. Latest H.W. Storm 1950
1" = 1000'
Bullfrog Creek
Alafia River
Atlantic Coast Line R.R.
100' Conc. Bridge
50' Conc. Arch Bridge
CURVE NO. 1
P.I. 831+09.25
Δ = 14°33'-10" RT.
D = 1° 24'
T = 522.86
L = 1040.08
R = 4092.56
P.C. 825+86.39
P.T. 836+26.47
CURVE NO. 2
P.I. 858+31.47
Δ = 14°09'05" LT.
D = 1° 00'
T = 711.19'
L = 1415.14'
R = 5729.58'
P.C. 851+20.28
P.T. 865+35.42
CURVE NO. 3
P.I. 897+03.94
Δ = 1° 10' 00" LT.
D = 0°-06'
T = 583.35
L = 1166.67
R = 57295.78
P.C. 891+20.59
P.T. 902+87.26
CURVE NO. 4
P.I. 928+98.30
Δ = 0°38'45" RT.
D = 0° 03'
T = 645.84'
L = 1291.67
R = 114,591.56
P.C. 922+52.46
P.T. 935+44.13
CURVE NO. 5
P.I. 957+08.70
Δ = 9°49'20" LT.
D = 1° 00'
T = 492.32'
L = 982.22'
R = 5729.58'
P.C. 952+16.38
P.T. 961+98.60
10060-3212 1 of 2

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sheet No.
3	Fla.	Hillsborough	45	F-011-2(11)	3

State Job No. 10060-3212



APPENDIX E

Agency Coordination

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 400801

Date:	1/22/2014
Time:	11:00
Project Name:	FDOT US 41 PD&E Study from south of Causeway to Kracker Ave.
Attendees:	Richard Alt; Chaz LaRiche; Andrew Goldsmith, American Consulting, agoldsmith@acp-fl.com; Michael Ryan, American Consulting, Christopher Salicco, American Consulting

County:	Hillsborough	**Sec/Twp/Rge:**	Multiple
Total Land Acreage:	159	**Project Acreage:**	159 acres

Prior On-Site/Off-Site Permit Activity:

- ERP – Researching

Project Overview:

- Widen from 4 lane to 6 lane
- Wetlands/Surface Waters – Yes
- FDOT ETDM 5180

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.)

- Review the ETDM report for specific issues associated with the potential wetland/surface water issues
- Replacement of bridges over the rivers and creeks
- 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.
- Eleven WBID's - 8 are impaired for nutrients
- Discharging to impaired waters.
- Need coordination with DEP on adjacent contaminated sites.

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 if the pond does not discharge to an infinite basin. Or demonstrate no adverse impacts if attenuation is not provided.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase riverine flood stages up- or down-stream of the project area(s).
- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for the required project area.
- 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.
- 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)

- Any work below the MHW line will require coordination with Tampa Port Authority

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 FDOT.
- 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:

- SWERP – Sections A, C and E of the ERP Application.
- < 640 acres of project area and <50 acres of wetland or surface water impacts - $3,106.00 Online Submittal

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

-

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SWFWMD PRE APPLICATION MEETING MINUTES

Meeting Date: January 22, 2014 **Date Issued:** January 22, 2014

Location: SWFWMD Tampa Office

Project Name: US 41 PD&E Study from Kracker Avenue to south of Causeway Blvd.

Purpose: To discuss stormwater management permitting criteria

Notes by: Michael Ryan **American Project #:** 5127041

Copies to: Attendees, Andrew Goldsmith, Christopher Salicco, File: 5127041.B.03, Bill Adams, Larry Weatherby

Attendees	Representing	Phone	Fax or e-mail
Richard Alt	SWFWMD	813-985-7481	Richard.alt@wattermaters.org
Chastity 'Chaz' LaRiche	SWFWMD	813-985-7481	Chaz.LaRiche@watermatters.org
Andrew Goldsmith	American Consulting Engineers	813-435-2602	agoldsmith@acp-fl.com
Michael Ryan	American Consulting Engineers	813-435-2623	mryan@acp-fl.com
Christopher Salicco	American Consulting Engineers	813-435-2617	csalicco@acp-fl.com

The following notes reflect our understanding of the discussions and decisions made at this meeting. If you have any questions, additions or comments, please contact us at the above address. We will consider the minutes to be accurate unless written notice is received within 10 working days of the date issued.

Water Quality Treatment:

Wet detention may not be sufficient and will only remove roughly 42% of nutrients. May require use of a treatment train with dry detention swale pretreatment. The governing water quality volume will be the greater of standard water quality (presumptive) or nutrient removal requirements.

If a WBID identifies no impairments for nutrients but is directly discharging to the impaired bay, then nutrient removal requirements will apply. The definition of directly connected is a gray area and engineering judgment should be used based on proximity to the bay. If the WBID identifies no impairments and is not within close proximity to be considered directly connected, such as WBIDs 1628A and 1632, then presumptive criteria will apply.

Compensatory treatment is allowable.

Water Quantity:

Open basin criteria. The design shall meet the 25-year 24-hour discharge attenuation, unless there exists a directly connected discharge to the bay (essentially an infinite basin). Engineering judgment will determine if the SWMF discharge is directly connected since there is no definitive definition of this. If a directly connected discharge is found to exist the 25-year attenuation criteria will not apply and the pond will be designed to release detained runoff as fast as possible. This could also apply to a SWMF located on the east side of the roadway if the SWMF discharges to a riverine system and is directly connected to the bay, the timing of the peak discharges between the onsite system and the riverine system will have to be evaluated to determine if 25-year attenuation criteria apply. For example, if the peak discharge from the onsite system occurs at hour 12 and the peak discharge from the riverine system occurs at hour 24, it will be assumed that the onsite system peak discharge will have no effect on the riverine system peak discharge.

Floodplain:

Richard Alt stated that the base flood elevations for Zone AE indicated on the FIRM are based on storm surge elevations and would not apply for floodplain encroachment estimates. Mr. Alt said to contact Dr. Sue for the riverine water surface profiles in the area. He stated that the riverine analysis used tailwaters of approximately 3 feet and the 100-year water surface profiles at U.S.41 would be significantly lower. He said that we should provide floodplain compensation based on flood elevations reported per the water surface profiles from Dr. Sue.

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 402518

Date:	8/19/2015
Time:	11:00
Project Name:	FDOT US41 S of Causeway to Kracker Ave
Attendees:	Richard Alt, Al Gagne, Andrew Goldsmith - American Consulting agoldsmith@acp-fl.com William Adams, Larry Weatherby

County:	Hillsborough	**Sec/Twp/Rge:**	
Total Land Acreage:	170	**Project Acreage:**	170 acres

Prior On-Site/Off-Site Permit Activity:

- 4 lane rural
- PA 400801, ETDM 5180

Project Overview:

- Expand to 6 lane urban and suburban

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.)

- Project is located in both the Tampa Bay/Coastal Basin and the Alafia Basin. Impacts in the Alafia basin may be located within the service area for the Tampa Bay Mitigation Bank. Will need to verify this. If so, they may be able to use a connectivity argument to mitigate Alafia impacts at the Tampa Bay Mit Bank. Will need to submit a cumulative impact analysis using a connectivity argument for tidal systems.
- 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.
- If the project is located in a county which is listed as a coastal county under the Coastal Zone Management Act (CZM) and the project has wetland impacts, it will require a noticing period once the permit application is deemed complete. Wetland and/or surface waters impacts less than 1 acre in size will require a 10 day noticing period, prior to the issuance of the permit. Wetland and/or surface water impacts greater than 1 acre in size will require a 30 day noticing period, prior to the issuance of the permit. Permits could be issued as early as the 11th or 31st day, but staffs' schedule and workload will determine the actual issuance date.

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

- Existing roadway/intersections –
- WBIDs need to be independently verified by the consultant - WBID – 1682,1676, 1666A, 1664, 1621G, 1628A, 1632, 1637, and 1636
- Discharging to impaired waters in some areas.

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. Only SMF 12/13 will need to attenuate, all others (as shown during the meeting) will not require attenuation.
- 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 if applicable.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for the required project area.
- In addition, 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.
- 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. Tampa Port Authority owns the bottom lands in Hillsborough County. Will need to coordinate with EPC and the Tampa Port Authority.

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 FDOT.
- 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:

- SWERP – Sections A, C, and E of the ERP Application.
- < 640 acres of project area and < 50 acres of wetland or surface water impacts - $3,105.75

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

- In accordance with Rule 40D-1.603(2), F.A.C., no later than 30 days after submittal of an initial application of an Individual surface water management permit the applicant shall publish at the applicant's expense a notice of the District's receipt of the application in a newspaper having general circulation as defined in Chapter 50, F.S., in the county or counties in which the activity is proposed. Please provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP must be in accordance with the language provided in Rule 40D-1.603(10), F.A.C., and receipt of an affidavit establishing proof of this publication will be considered a completeness item of this ERP Application. Per Rule 40D-1.603(12), F.A.C., this must be received before the application will be considered complete and the 60-day timeframe for taking agency action on the application will commence.

  40D-1.603(12) – “Applicants required to publish a notice of receipt of application must provide to the District a publisher’s affidavit establishing proof of publication pursuant to Sections 50.041and 50.051, F.S., before the application will be considered complete and the applicable timeframe for taking agency action on the application will commence.”

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