Florida Department of Transportation

SR 524 PD&E Study

Friday Road to Industry Road in Brevard County, FL

Location Hydraulics Report

FINAL

FDOT Office
District Five

Authors
CONSOR Engineers, LLC.

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The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C §327 and a Memorandum of Understanding dated December 14, 2016 and executed by the Federal Highway Administration and FDOT.

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1.0 INTRODUCTION

The Florida Department of Transportation (FDOT), in consultation with the Federal Highway Administration (FHWA), is conducting a Project Development and Environment (PD&E) Study that addresses the preliminary engineering and environmental elements associated with the widening of SR 524 from Friday Road (South) to Industry Road in Brevard County, Florida. Economic opportunities and enhanced transportation efficiency and safety guide the purpose and need for the widening of the roadway within the project study area. This area extends west to east from Friday Road (South) to Industry Road within the City of Cocoa limits, Brevard County, Florida as shown in **Figure 1** – *Study Area Vicinity.*

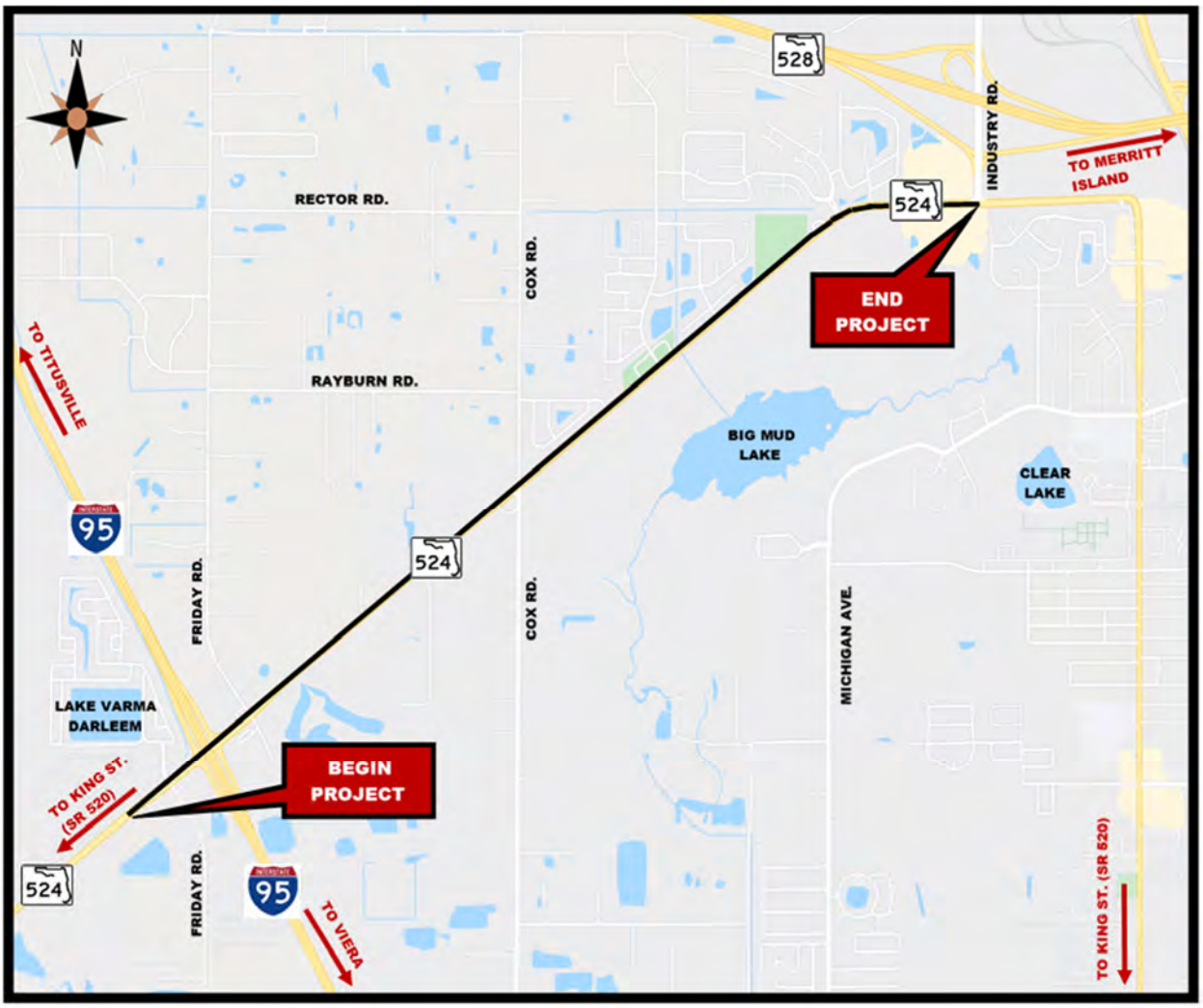


Figure 1 - Study Area Vicinity

1.1 Purpose and Need

The purpose of this project is to increase capacity by widening SR 524 between Friday Road (South) and Industry Road while improving safety along the corridor for all users. This project is part of an effort to improve the current conditions so that they will meet future standards of Level of Service, safety, traffic flow, as well as improve accessibility to not only large trucks, but pedestrians and cyclists alike.

The objective of the study is to evaluate roadway, intersection, and interchange alternatives associated with widening of SR 524. The study will analyze and assess proposed impacts on the social, economic, cultural, natural, and physical environment, in order to develop the location and design concept of the project in accordance with FDOT policy, procedures, and requirements. The project need was initially identified in the previously approved 2017 Corridor Planning Study. The project focuses on the need to respond to increasing land development demands that place additional strain on the transportation network, improve safety for vehicles and pedestrians, improve traffic flow, and provide enhanced accommodations for pedestrians and bicyclists.

1.2 Study Process

For the widening of SR 524 a two-level screening was performed to determine the Recommended Preferred Alternative as follows:

- Study Area. Desktop information was used to define overall corridor for the proposed project area.
- Corridor Evaluation.
- Alternatives Evaluation.

1.3 Purpose of the Location Hydraulics Report (LHR)

The primary objective of this LHR is to provide preliminary information on the designated floodplains, potential floodplain impact areas, and compensation volumes for the Recommended Preferred Alternative. This evaluation shall be accomplished by assessing and quantifying all floodplain impacts and providing recommendations to offset any impacts. The results of this evaluation will provide the FDOT with the information necessary to reach a decision on the type, design, and location of improvements that are required for the widening of SR 524.

This report has been prepared in accordance with the requirements set forth in *Executive Order 11988: Floodplain Management, 1977; USDOT Order 5650.2, Floodplain Management and Protection, 1979;* and *Federal-Aid Policy Guidance on Location and Hydraulic Design of Encroachments on Flood Plains, 23 CFR Part 650A;* and *the FDOT's PD&E Manual,* Part 2, Chapter 13, including the Minimal Encroachment Checklist for the Federal Emergency Management Agency (FEMA) Maps. The intent of these regulations is to avoid or minimize highway and land

use development encroachments that reduce storage and increase water surface elevations within base (100-year) floodplains. Where encroachment is unavoidable, the regulations require FDOT to take appropriate measures to minimize or mitigate impacts. This report provides preliminary information on designated floodplains, cross culverts, bridge crossings and potential floodplain impacts of the project on these areas.

General information regarding basin delineation, cross culvert location and culvert parameters used in the preparation of this report include the following:

- FEMA Flood Insurance Rate Maps (FIRM) for Brevard County: 12009C0425G, dated March 17, 2014, and 12009C0320H, dated January 29, 2021
- US Department of Agriculture (USDA) Soils Conservation Service (SCS) Soils Survey for Brevard County
- US Geological Survey (USGS) Quadrangle Maps
- FDOT PD&E Manual, Part 2, Chapter 13 (Effective July 1, 2020)
- FDOT Drainage Manual (January 2022)
- FDOT Drainage Design Guide (January 2022)
- *West Cocoa Watershed Evaluation* Volume 1 Engineering Report (April 2014)
- Correspondence and Coordination
- Various Development Plans
- Site Investigation

1.4 Project Datum

The vertical datum for this project and elevations in this report is the North American Vertical Datum of 1988 (NAVD88). Elevations can be converted from NAVD88 to the National Geodetic Vertical Datum of 1929 (NGVD29) by adding a conversion factor of 1.339 feet (NAVD88 + 1.339 feet = NGVD29).

2.0 EXISTING CONDITIONS

2.1 Drainage Patterns

A preliminary analysis of the cross drains has been performed to determine whether the existing cross drains can be extended or would require a replacement because the increase in the cross-drain length caused an increase in the headwater elevations due to the wider roadway footprint. Please note that the hydraulic analysis is based on providing adequate conveyance capacity. The decision to extend or replace a cross-drain may also be affected by each cross-drain's physical condition and age and should be examined further during the design phase. **Table 1** summarizes the existing cross drains along the SR 524 corridor and the FDOT Straight Line Diagrams can be found in **Appendix E**.

Table 1 - Summary of Existing Cross Drains

Structure No.	Station	# of Barrels	Size	Type	Length (ft)
CD-1	407+00	2	24”	RCP	87
CD-2	431+00	1	24”	RCP	113
CD-3	447+00	1	30”	RCP	94
CD-4	453+99	1	30”	RCP	191
CD-5	460+44	2	36”	RCP	112
CD-6	488+65	3	42”	RCP	114
CD-7	527+03	1	24”	RCP	120

The I-95 overpass consists of two separate bridges (Bridge Numbers 700054 (southbound) and 700128 (northbound)) that were originally built in 1966 and widened to the inside in 2009. **Table 2** summarizes information from the existing bridge plans and the Bridge Inspection Reports provided by the FDOT, dated January 21, 2021.

Table 2 - Existing NB and SB I-95 Bridge Information

	Southbound I-95 over SR 524 (700054)	**Northbound I-95 over SR 524 (700128)**
Bridge Length	187’-2”	187’-2”
Number of Spans	4 Spans	4 Spans
Span Arrangements	37’-7”, 56’-0”, 56’-0”, 37’-7”	37’-7”, 56’-0”, 56’-0”, 37’-7”
Deck Width	67.5’	67.5’
Superstructure Type	AASHTO Type II or AASHTO Type II Modified	AASHTO Type II or AASHTO Type II Modified
Scour Evaluation	N/A	N/A

The I-95 typical section consists of a six-lane divided concrete interstate facility with three 12-feet lanes and 12-feet inside and outside shoulders in each direction separated by a concrete barrier wall. Northbound and southbound bridges span the SR 524 roadway corridor with an existing vertical clearance of 16.48-feet. The I-95 typical section lies within an existing 300-feet of limited-access ROW. The limited-access ROW expands to 500-feet, where the SR 524 on and off-ramps are introduced.

2.2 Environmental Characteristics

The project is located within the Mud Lake and St. Johns River Drainage Basins. The Waterbody Identification numbers are 3056 and 28935, respectively. These waterbodies are not considered impaired by the Florida Department of Environmental Protection (FDEP). At the time of final design, a review of the impaired waterbodies should be performed to verify the classification.

Under separate covers a Contamination Screening Evaluation Report (CSER), Natural Resources Evaluation (NRE), Cultural Resource Assessment Study (CRAS), and a Noise Study Report (NSR) were prepared during this PD&E Study. Wetland and species impacts can be found in the NRE. Information regarding the known or potential contamination sites in the corridor can be found in

the CSER. Historical and archeological impacts along the project corridor can be found in the CRAS.

2.3 Land Uses

The overall project study area encompasses a mixture of land use classifications: industrial, commercial, residential, recreational, institutional, undeveloped land, and natural conservation areas.

2.4 Soil Types

The *Soil Survey of Brevard County, Florida* published by the U.S. Department of Agriculture (USDA) Natural Resource Conservation Services (NRCS) classifies the existing soils within the project limits and are generally characterized as poorly drained sandy soils. This information indicates there are fourteen soil groups within the vicinity of the proposed project and are described in **Table 3**. Refer to **Appendix C** for a depiction of the soils at the pond sites.

Table 3 - Project Soil Types

Map Unit Symbol	Soil Type	Hydrologic Soil Group Rating
2	Anclote sand, frequently ponded, 0 to 1 percent slopes	A/D
28	Immokalee sand, 0 to 2 percent slopes	B/D
30	Malabar sand, 0 to 2 percent slopes	A/D
36	Myakka sand, 0 to 2 percent slopes	A/D
38	Myakka sand, depressional	B/D
43	Paola fine sand, 0 to 8 percent slopes	A
45	Paola-Urban land complex, 0 to 8 percent slopes	A
49	Pomello sand, 0 to 5 percent slopes	A
51	Pompano sand, 0 to 2 percent slopes	A/D
54	St. Johns sand, 0 to 2 percent slopes	B/D
55	St. Johns sand, depressional	B/D
56	St. Lucie fine sand, 0 to 5 percent slopes	A
57	St. Lucie fine sand, 5 to 12 percent slopes	A
91	Anclote sand	A/D

Intertek, Inc. conducted a limited subsurface exploration to provide a preliminary evaluation for the soil conditions at each of the preferred alternative pond sites. Estimated seasonal high-water table (SHWT) is defined as groundwater level that is anticipated at the end of the wet season of a normal rainfall year under current site conditions. The geotechnical information provided by Intertek, Inc. for this study is included under a separate cover.

2.5 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) identifies the following floodplain zone present within the project study area.

- Zone A, a 100-year floodplain with no base flood elevation and flood hazard determined.
- Zone AE, a 100-year floodplain with base flood elevations determined.
- The remainder of the project are in designated Zone X, areas of 100-year flood with average depths of less than one foot or with drainage areas less than one square mile; or Zone X which is determined to be outside the 500-year floodplain.

The project is located within panels 12009C0425G, dated March 17, 2014, and 12009C0320H, dated January 29, 2021. A letter of map revision (LOMR) determination updated both FEMA FIRM panels, 12009C0425G and 12009C0320H, in the area of the Walmart Distribution Center near the I-95/SR 524 Interchange. The effective date for LOMR determination was July 13, 2021. See **Appendix B** for the applicable FEMA FIRMs.

3.0 PROPOSED CONDITIONS

3.1 Drainage Patterns

SR 524 runoff will be collected through a closed storm drain system. Offsite runoff will be collected in roadside swales and discharges to the cross drains. Proposed wet and dry stormwater management facilities will provide the required attenuation and water quality treatment per the St. John's River Water Management District (SJRWMD) and FDOT standards. Proposed floodplain compensation in the roadside swales will provide floodplain storage due to floodplain encroachment. For additional information, please refer to the SR 524 Widening from Friday Road to Industry Road Pond Siting Report.

Due to roadway widening, existing cross drains will be extended or replaced. Location and size for all other cross drains will be determined in the design phase.

3.2 Floodplain Impact and Level of Encroachment

This project will impact the 100-year floodplain in two ways:

1. Longitudinal impacts resulting from filing the floodplain areas associated with proposed roadway widening within the project limits.
2. Transverse impacts resulting from the extension and/or replacement of existing cross drains.

The longitudinal impacts cannot be avoided since widening will occur. Floodplain impacts were quantified according to the 100-year base flood elevation per the FEMA FIRMs. The depth of impacts was calculated using the difference between the floodplain elevation and the existing ground or seasonal high-water table depending on the location. During the design phase, every effort should be taken to minimize floodplain impacts.

The transverse impacts resulting from the extending or replacing the existing cross drains should be minimized during the design phase. The proposed cross drains or structures should perform in the same manner or better when compared to the existing hydraulic conditions.

Floodplain compensation for impacts within the project limits will utilize the "cup for cup" or volume for volume approach where fill volume is compensated with a cut from the existing

ground within or adjacent to the floodplain. In the design phase, if preferred, watershed modeling is also an acceptable method of determining floodplain impacts. **Table 4** summarizes the floodplain impacts for the project and calculations can be found in **Appendix D**. The project has minimal encroachments to the floodplain because floodplain compensation can be provided in the roadside swales.

Table 4 - Summary of Floodplain Impacts

Station	Basin	FEMA Floodplain Zone	Existing Ground Elevation (ft-NAVD)	FEMA Floodplain Elevation (ft-NAVD)	Actual Impact (Y/N)	Impact Length (ft)	Impact Width (ft)	Average Floodplain Depth (ft)	Impact Volume (ft^3)	Impact Volume (ac-ft)
460+00 to 461+00 (CD-5)	3	AE	20.95	19.70	N	-	-	-	-	-
488+57 to 488+90 (CD-6) (LT)	3	AE	18.11	20.70	Y	33.26	74	2.59	19,166	0.15
488+57 to 488+90 (CD-6) (RT)	3	AE	19.10	21.70	Y	33.26	74	2.59	19,166	0.15
Pond 2C	3	AE	24.00	20.70	N	-	-	-	-	-
490+00 to 541+00 (CD-7)	3	AE	Flood Zone is outside R/W	20.70	N	-	-	-	-	-
									Total Compensation Required:	0.30

3.3 Risk Evaluation

This project has minimal encroachments on the floodplain. There is no change in risk as the proposed drainage system follows FDOT Drainage Manual criteria. Additionally, the project minimizes the impact to the floodplain by utilizing proposed drainage swales within the preferred alternative design to provide for floodplain compensation. As a result of these actions, no additional risk is anticipated to the transportation infrastructure, traveling public, or residents.

3.4 PD&E Study Requirements

Per the FDOT PD&E Manual, Part 2, Chapter 13 Floodplains (effective July 1, 2020), if a project has minimal impacts due to the floodplain encroachments, then the Location Hydraulics Report should discuss the following items for all alternatives:

a. General description of the project including location, length, existing and proposed typical sections, drainage basins, and cross drains.

   Refer to the SR 524 Widening from Friday Road to Industry Road Pond Siting Report and Location Hydraulics Report for a general description of the project.

b. Determination of whether the proposed action is in the base floodplain.

Refer to the SR 524 Widening from Friday Road to Industry Road Location Hydraulics Report, ***Appendix B****.*

c. The history of flooding of the existing facilities and/or measures to minimize any impacts due to the proposed improvements.

As discussed with FDOT Brevard Maintenance and SJRWMD, there has been no known flooding in the project area. Any proposed impact to the floodplain will be compensated "cup for cup" within the project area.

d. Determination of whether the encroachment is longitudinal or transverse, and if it is a longitudinal encroachment, an evaluation and discussion of practicable avoidance alternatives.

This project will introduce longitudinal and transverse encroachments to the floodplain. Longitudinal encroachment is due to roadway widening. Existing cross drains will also be extended (transverse encroachments).

e. The practicality of avoidance alternatives and/or measures to minimize impacts.

To meet roadway design requirements, total avoidance is not feasible or practical. Shifting the alignment to the east or west will not avoid the impact and would result in impacts to existing residential and commercial developments. Minimizing the potential floodplain impact was part of the decision process for the Recommended Preferred Alternative. Compensation for the lost storage for the 10-year floodplain has been identified to further minimize impacts.

f. Impact of the project on emergency services and evacuation.

Emergency services and evacuation routes will not be impacted. Proposed cross drain extensions will continue to perform equal to or better than existing drainage conditions, resulting in no increase of flood risk.

g. Impacts of the project on the base flood, likelihood of flood risk, overtopping, location of overtopping, backwater.

No overtopping will occur. Proposed cross drains will be extended, replaced, or upsized and will continue to perform equal to or better than existing drainage conditions, resulting in no increase of flood risk. This will be determined in the design phase.

h. Determination of the impact of the project on regulatory floodways, if any, and documentation of coordination with FEMA and local agencies to determine the requirements for the project to be developed consistent with the regulatory floodway.

There are no regulatory floodways within the project limits.

i. The impacts on natural and beneficial floodplain values, and measures to restore and preserve these values (this information may also be addressed as part of the wetland impact evaluation and recommendations).

Refer to the SR 524 PD&E Study Natural Resources Submittal *for this information.*

j. Consistency of the project with the local floodplain development plan or the land use elements in the Local Government Comprehensive Plan (LGCP), and the potential of encouraging development in the base floodplain.

This project remains consistent with local floodplain development plans as it will at a minimum, maintain existing drainage conditions. This project does not change the potential of encouraging development within the base floodplain as it will at a minimum, maintain existing drainage conditions.

k. Measures to minimize floodplain impacts associated with the project, and measure to restore and preserve the natural and beneficial floodplain values impacted by the project.

Floodplain impacts were minimized to the extent possible. Floodplain compensation sites (roadway ditches) will offset unavoidable impacts to the floodplain.

l. A map showing project, location, and impacted floodplains. A ***FIRM MAP*** should be used if available and included in the appendix.

Refer to ***Appendix B*** *for the FIRM Maps.*

m. Results of any risk assessments performed.

Following all FDOT and SJRWMD criteria proposed drainage conditions will perform equal to or better than existing drainage conditions, resulting in no increase in flood risk.

4.0 CONCLUSION

There is no change in flood "Risk" associated with this project. The proposed floodplain encroachments are classified as "minimal."

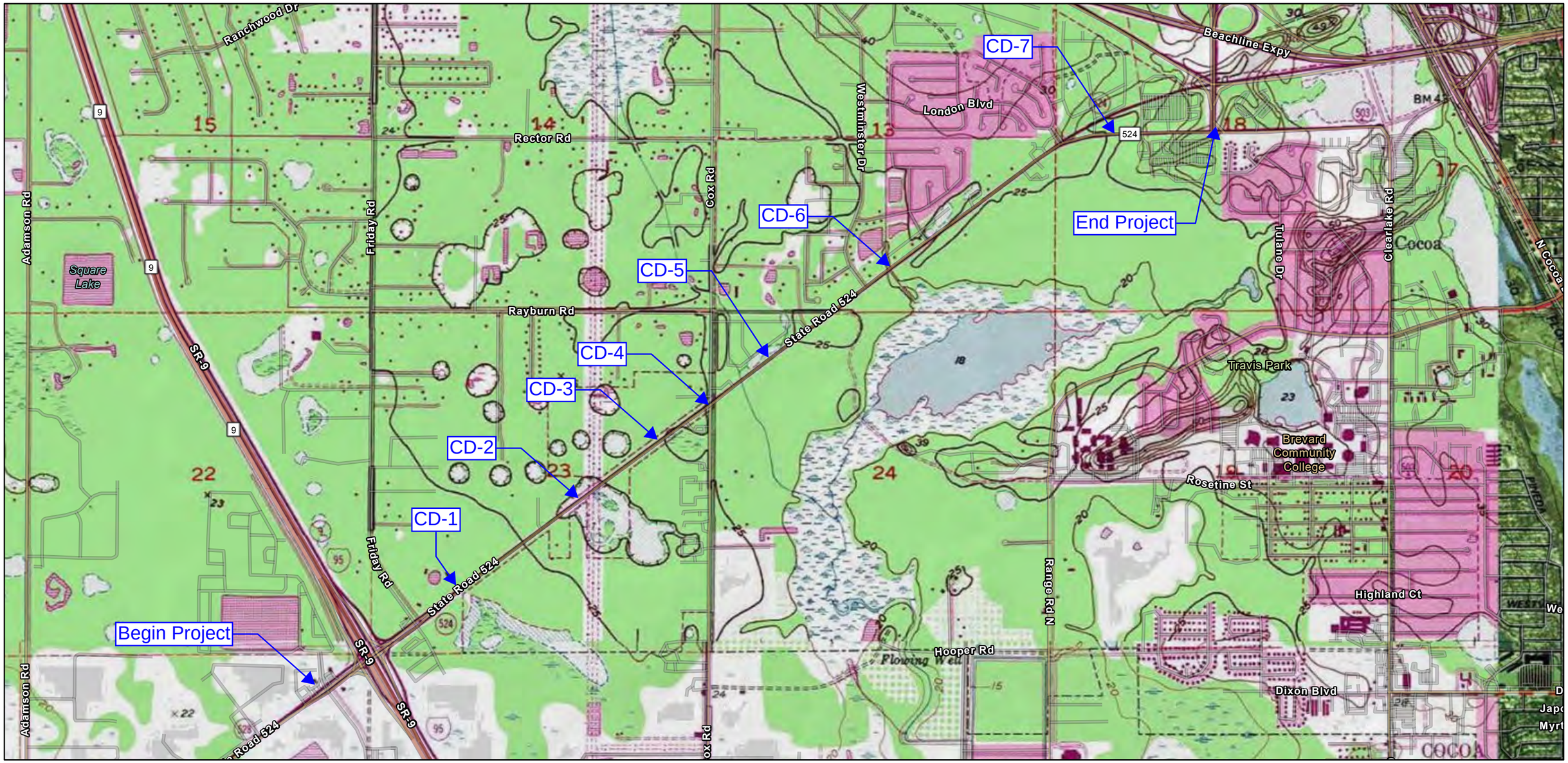
The proposed structures will perform hydraulically in a manner equal to or greater than the existing structures, and backwater surfaces are not expected to increase. *The widened roadway, with extended cross drains, will result in transverse impacts with minimal floodplain encroachments. As a result, the project will not affect existing flood heights or floodplain limits. This project will not result in any new or increased adverse environmental impacts. There will not be a significant change in the potential interruption or termination of emergency service or emergency evacuation routes.*

It has been determined, through consultation with local, state, and federal water resources and floodplain management agencies that there is no regulatory floodway involvement on the proposed project and that the project will not support base floodplain development that is incompatible with existing floodplain management programs.

APPENDIX A

EXHIBITS

SR 524 PD&E Topo Map



8/9/2022

USA Topo Maps	High Resolution 60cm Imagery	4.8m Resolution Metadata
World Imagery	High Resolution 30cm Imagery	DATUM: NAD27
Low Resolution 15m Imagery	Citations	

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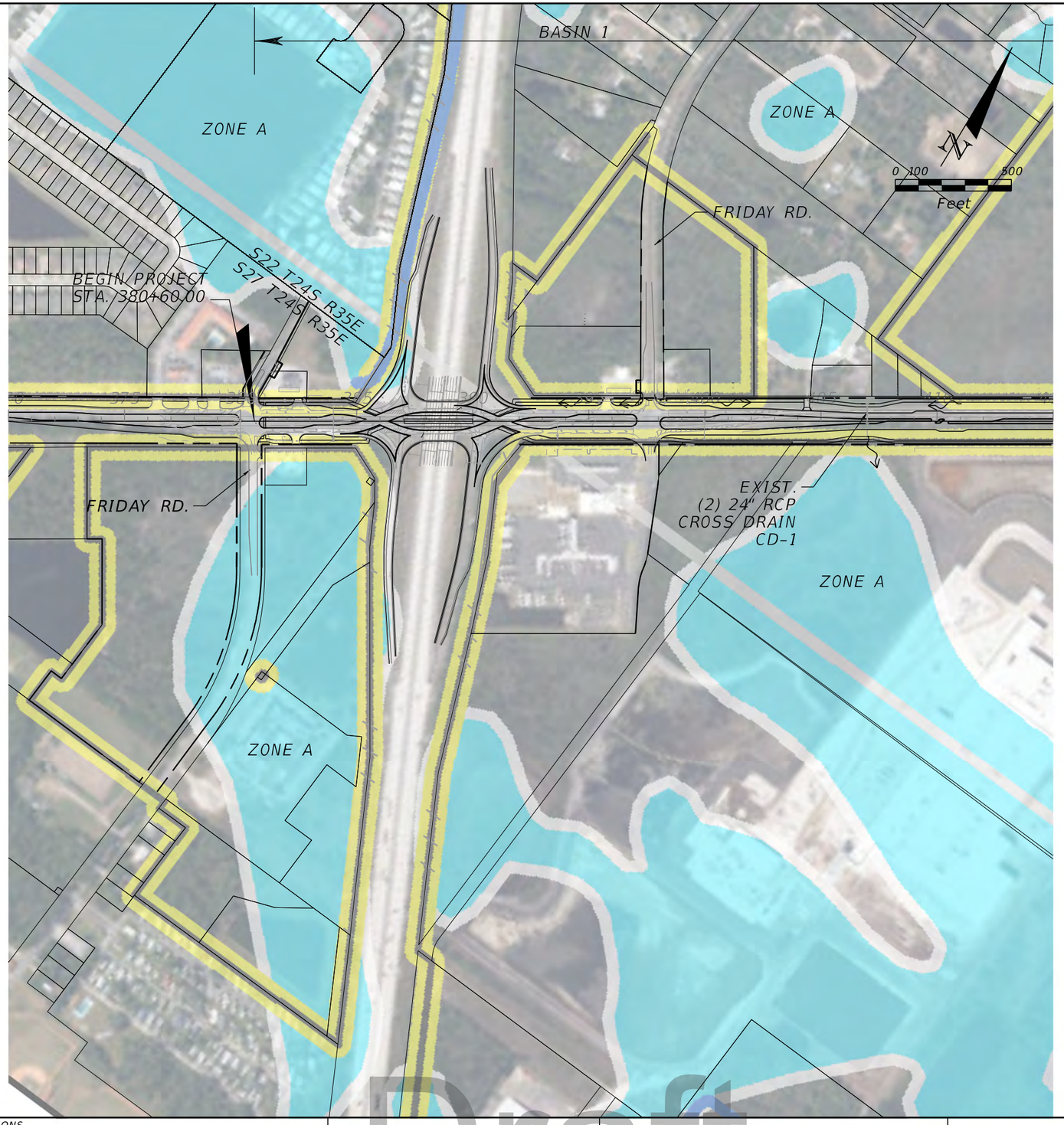

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

CONSOR ENGINEERS, LLC
MELINDA S. FISCHL, P.E. - No. 68406
1511 East SR 434, Suite 1001
Winter Springs, Florida 3278
Ph: 407.957.1660
Fax: 407.957.8744

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 524	BREVARD	43798312201

FLOODPLAIN EXHIBIT

SHEET NO.
A-2

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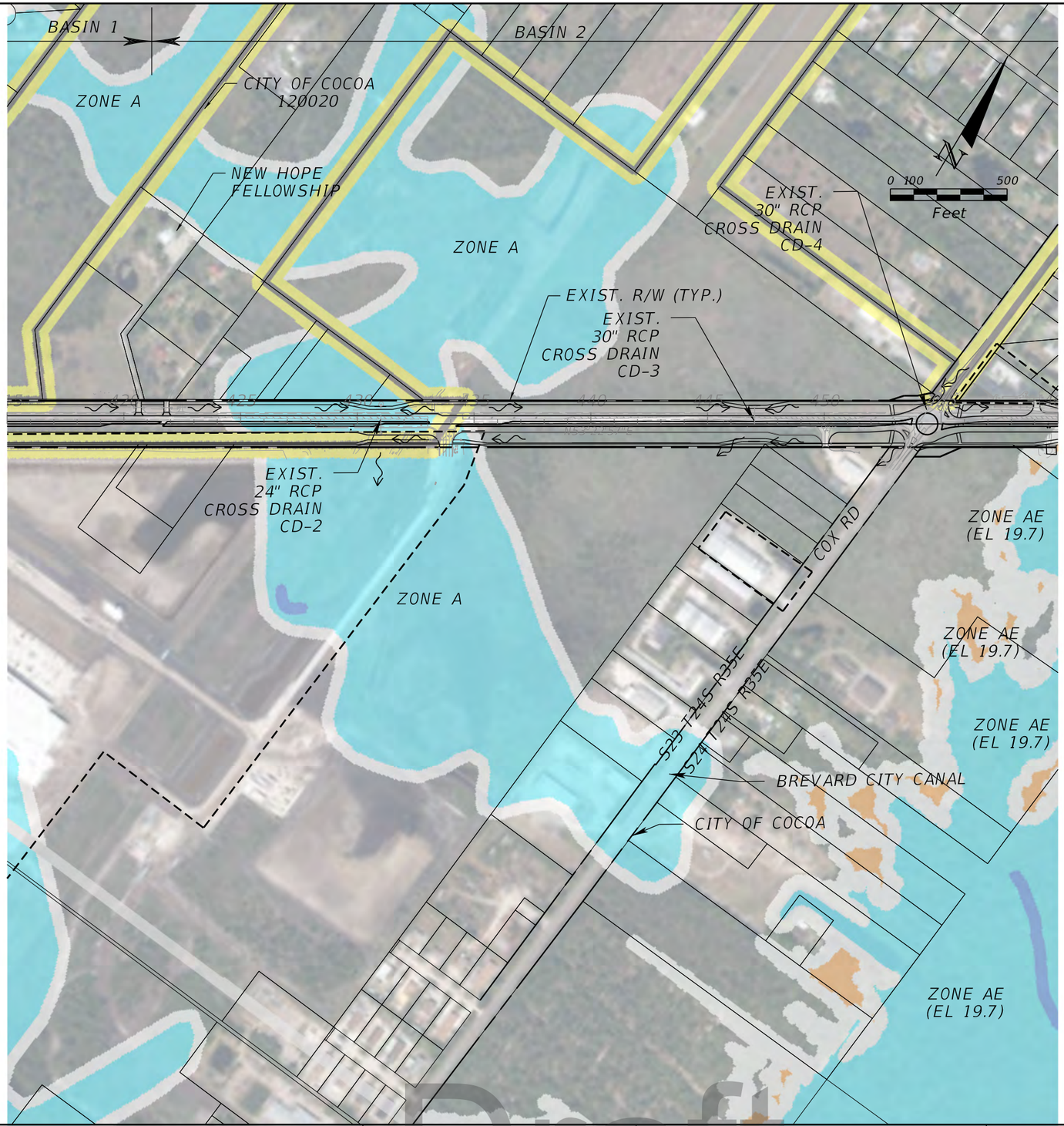

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FLOODPLAIN EXHIBIT

SHEET NO. A-3

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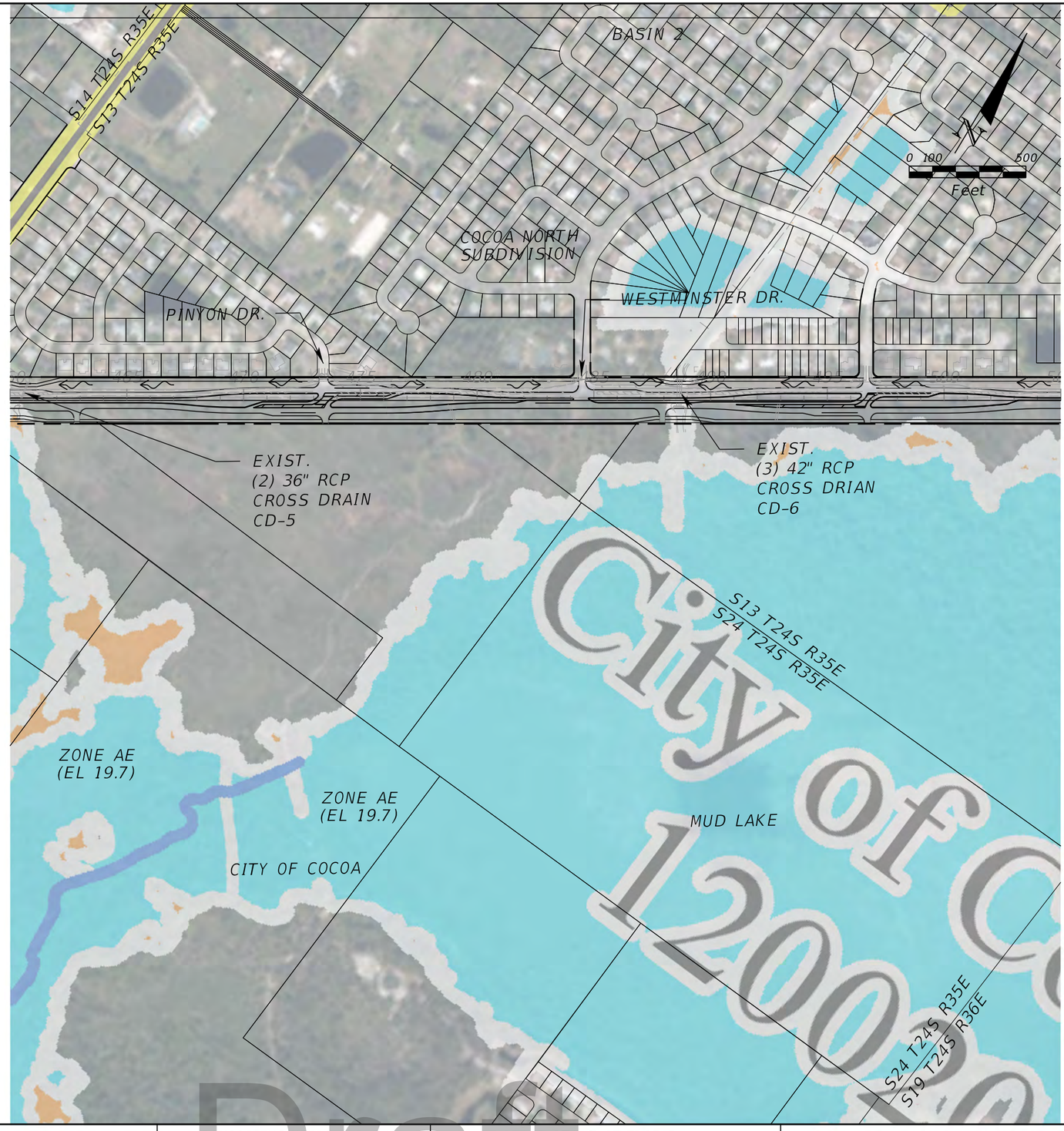

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FLOODPLAIN EXHIBIT

SHEET NO.
A-4

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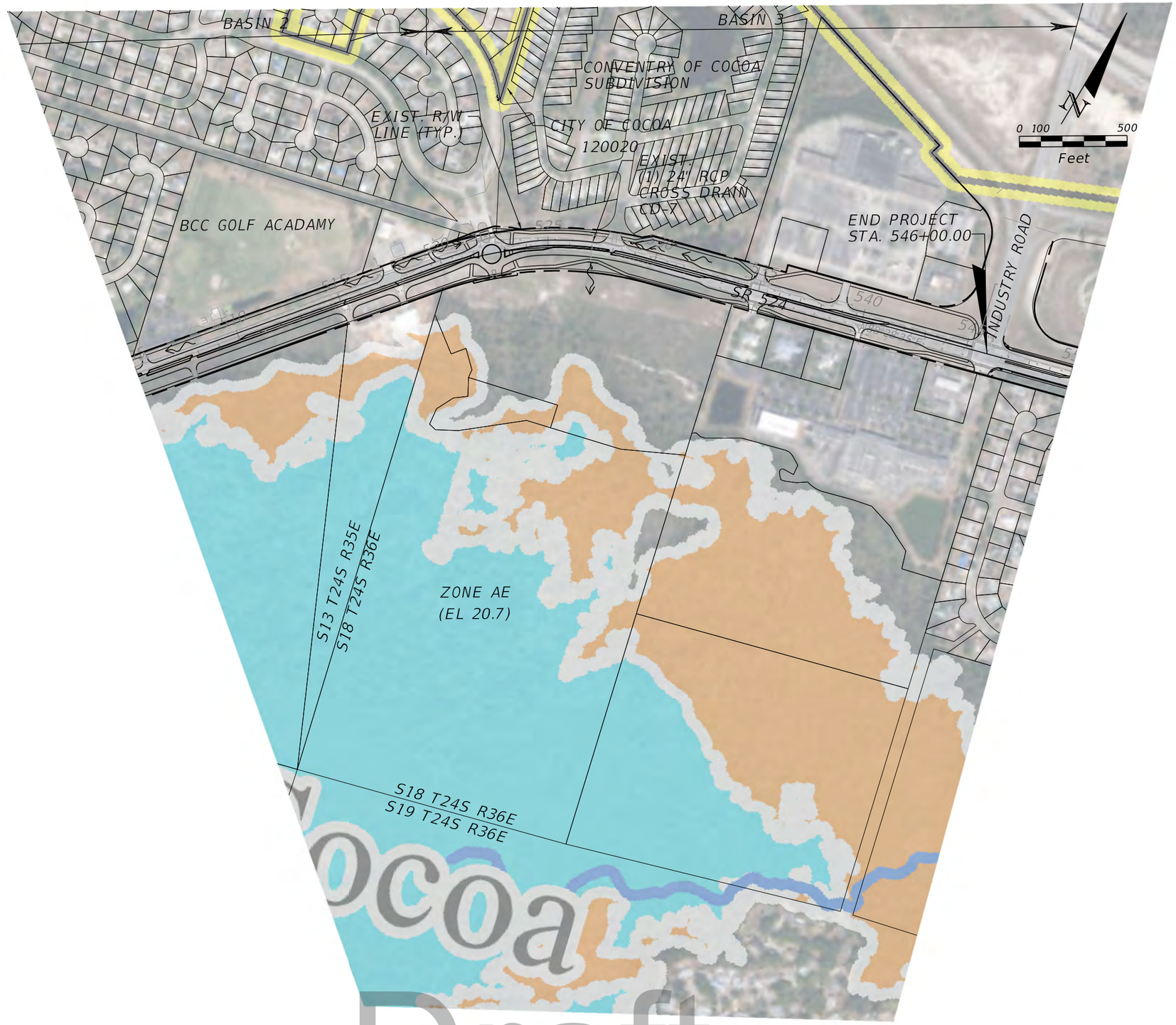

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FLOODPLAIN EXHIBIT

SHEET NO. A-5

APPENDIX B

FEMA FIRM MAPS

National Flood Hazard Layer FIRMette

FEMA

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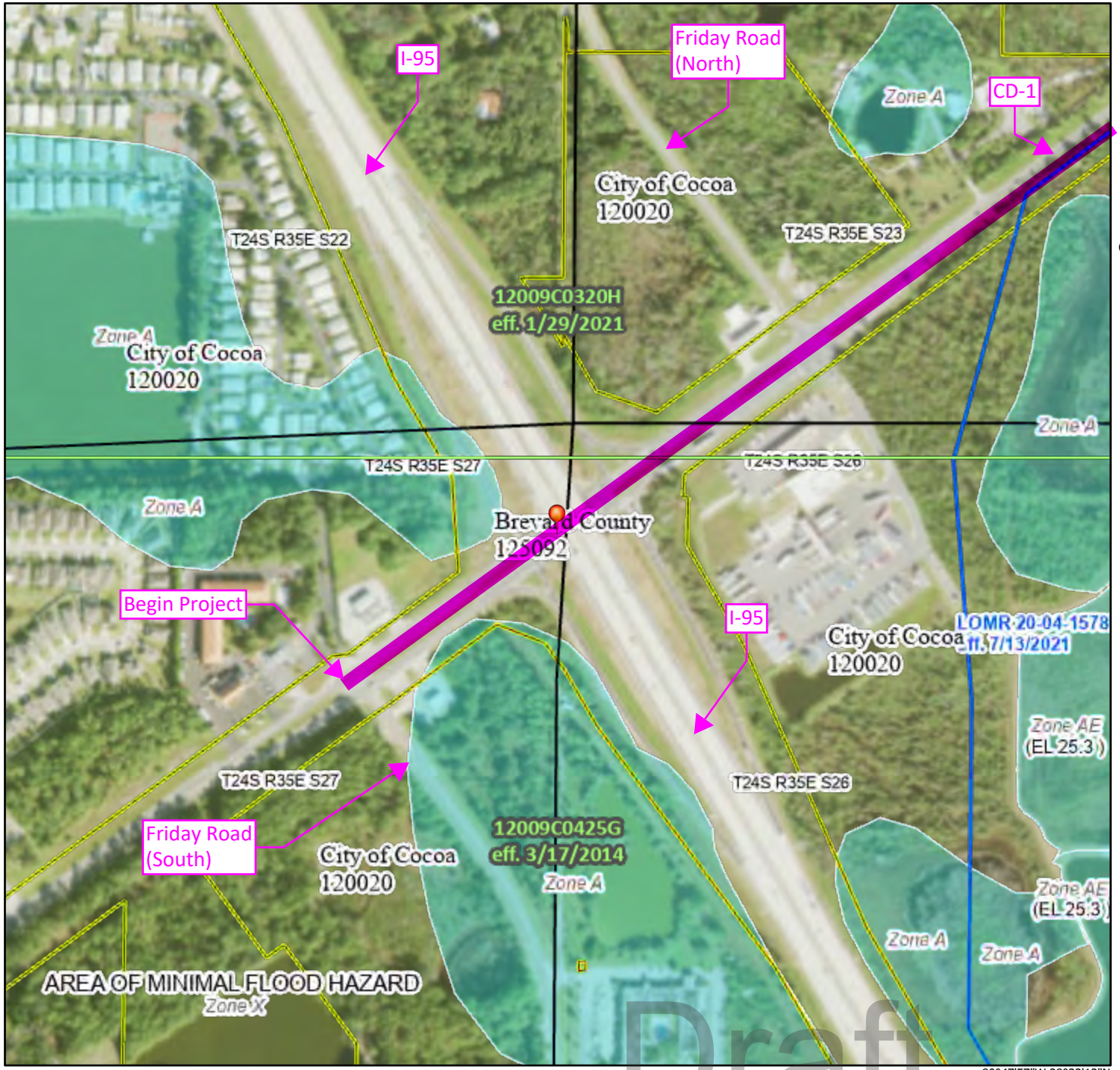

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0 250 500 1,000 1,500 2,000 Feet

1:6,000

Draft

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

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/29/2022 at 11:40 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

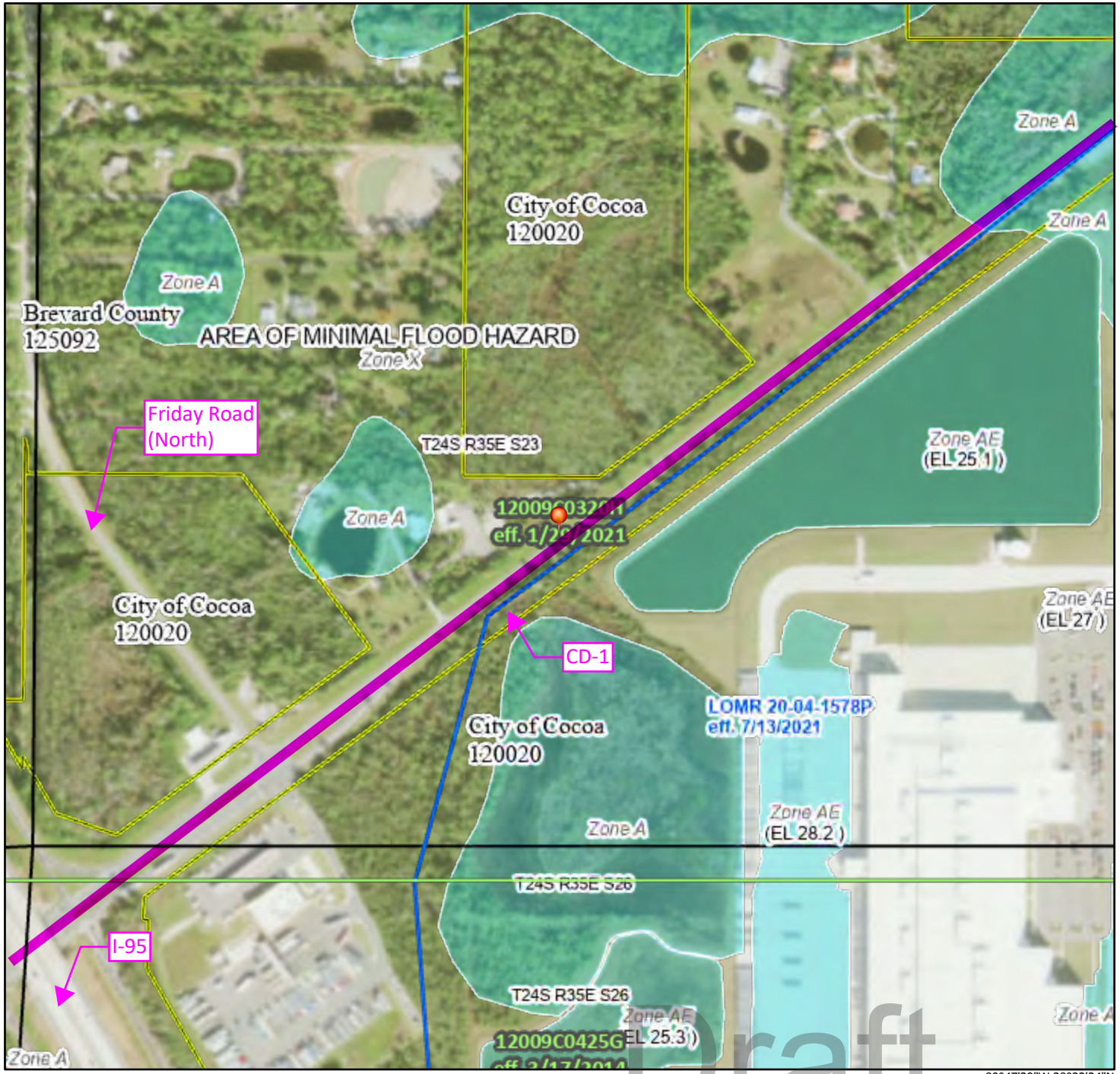
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory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

B-1

National Flood Hazard Layer FIRMette

FEMA

80°48'16"W 28°22'56"N



80°47'39"W 28°22'24"N

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

1:6,000

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

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/29/2022 at 11:42 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

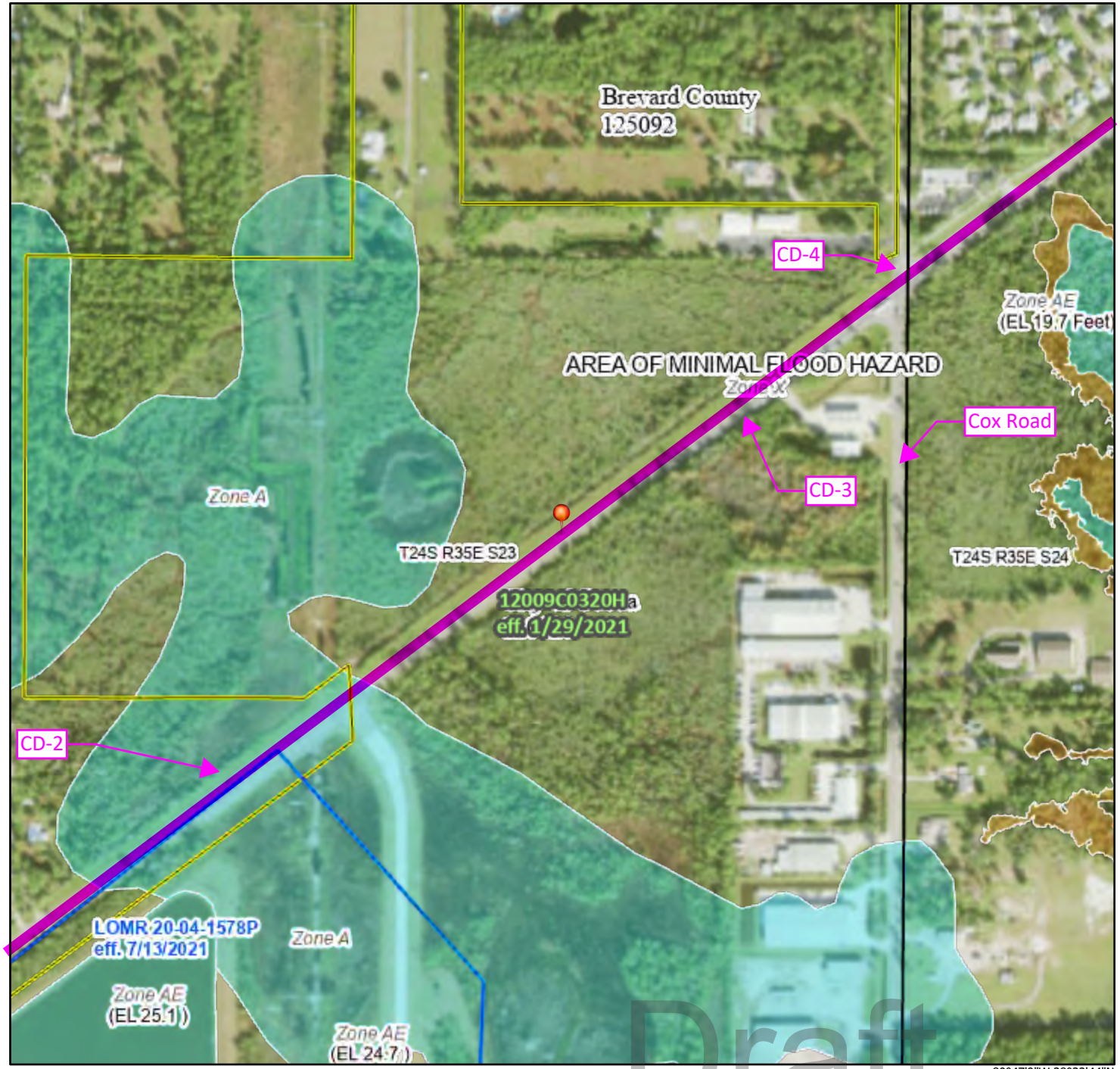
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory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

B-2

National Flood Hazard Layer FIRMette

FEMA

80°47'46"W 28°23'16"N



80°47'9"W 28°22'44"N

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

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

Draft

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/29/2022 at 11:43 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

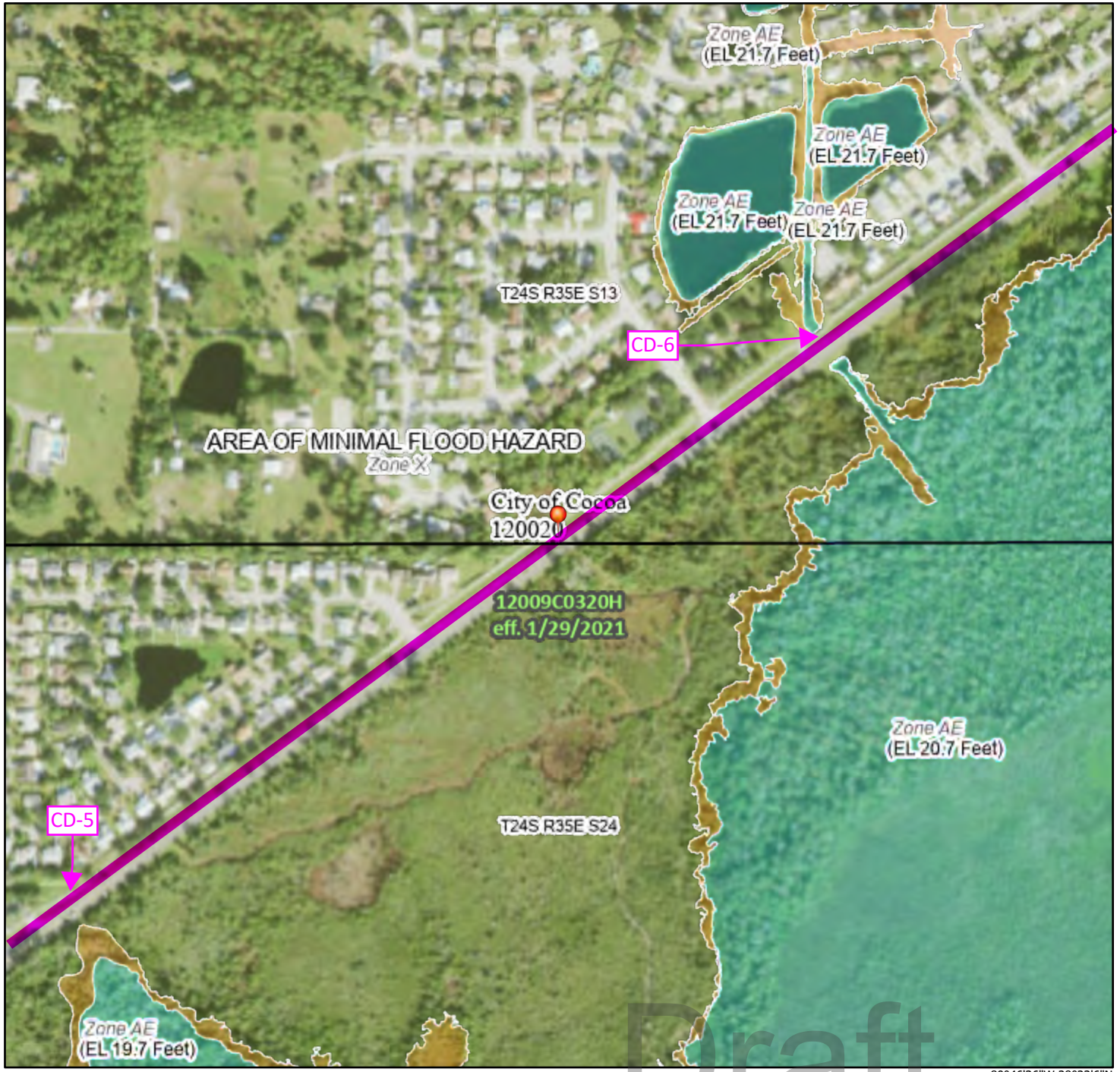
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory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

B-3

National Flood Hazard Layer FIRMette

FEMA

80°47'13"W 28°23'38"N



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

1:6,000

80°46'36"W 28°23'6"N

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

Draft

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/29/2022 at 11:44 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

National Flood Hazard Layer FIRMette

FEMA

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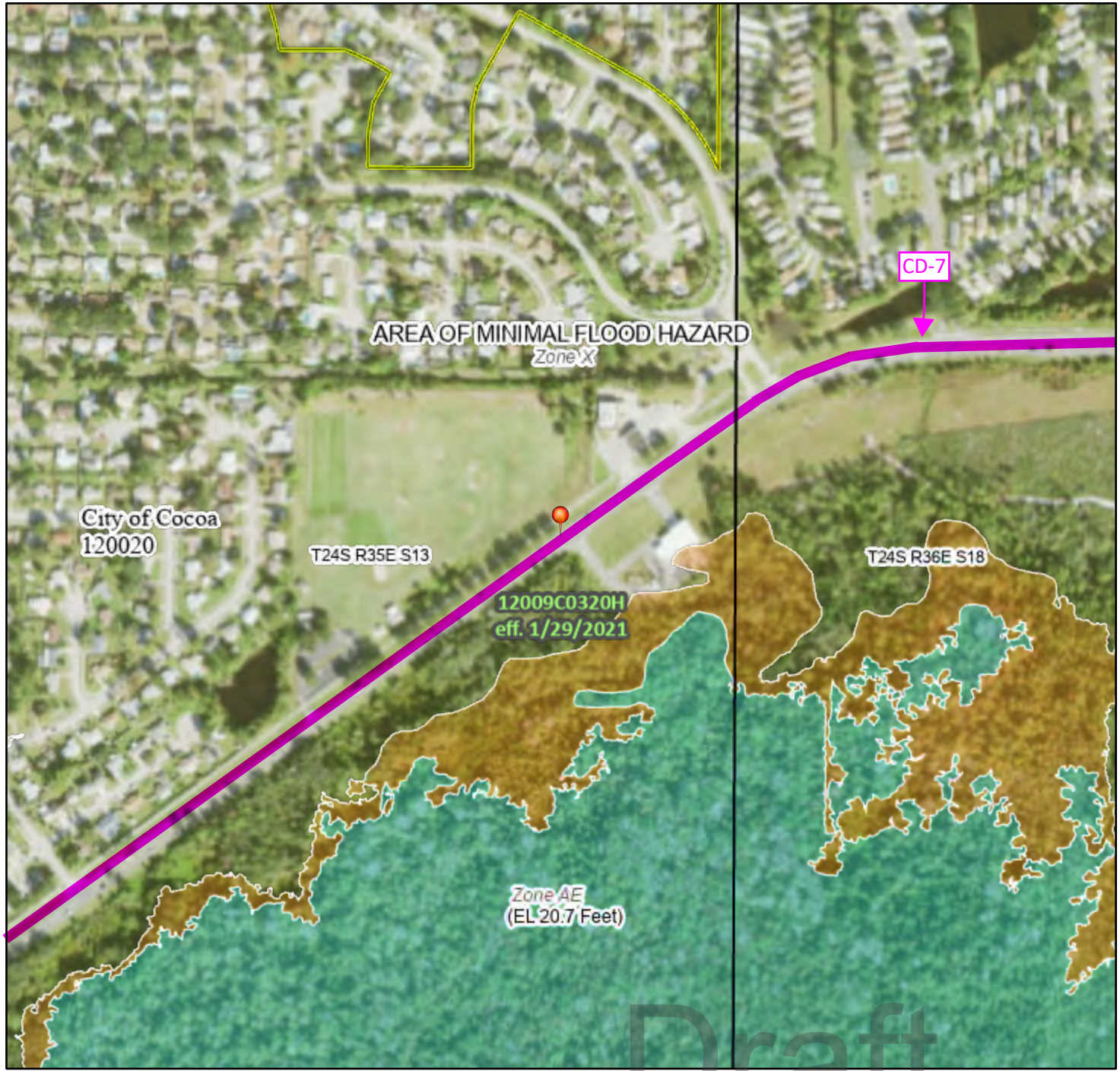

80°46'4"W 28°23'27"N

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

1:6,000

Draft

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

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
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- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/29/2022 at 11:45 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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National Flood Hazard Layer FIRMette

FEMA

80°46'15"W 28°24'5"N

80°45'37"W 28°23'33"N

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

1:6,000

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

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
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- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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

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Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Cocoa Brevard County Florida	DETENTION BASIN FILL	HYDRAULIC ANALYSIS HYDROLOGIC ANALYSIS UPDATED TOPOGRAPHIC DATA
	COMMUNITY NO.: 120020		
IDENTIFIER	Cocoa Walmart DC 8851	APPROXIMATE LATITUDE AND LONGITUDE: 28.375, -80.790 SOURCE: FEMA's NFHL Viewer DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 12009C0320H DATE: January 29, 2021 TYPE: FIRM NO.: 12009C0425G DATE: March 17, 2014	NO REVISION TO THE FLOOD INSURANCE STUDY REPORT

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map

FLOODING SOURCES AND REVISED REACHES **See Page 2 for Additional Flooding Sources**

WETPOND A – Area centered approximately 6,690 feet southwest of the intersection of Rayburn Road and Britt Road
WETPOND B – Area centered approximately 3,860 feet southeast of the intersection of Rayburn Road and Britt Road

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
WETPOND A	No BFEs*	BFEs	YES	NONE
	Zone X (unshaded)	Zone AE	YES	YES
	Zone A	Zone AE	YES	YES
WETPOND B	No BFEs	BFEs	YES	NONE

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

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Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

OTHER FLOODING SOURCES AFFECTED BY THIS REVISION

FLOODING SOURCES AND REVISED REACHES

WETPOND B - Centered approximately 3,860 feet southeast of the intersection of Rayburn Road and Britt Road
WETPOND C - Centered approximately 4,140 feet southeast of the intersection of Rayburn Road and Britt Road
WETPOND D - Centered approximately 4,630 feet southeast of the intersection of Rayburn Road and Britt Road
SR524-310C - Centered approximately 4,550 feet southeast of the intersection of Rayburn Road and Britt Road
DRYPOND A - Centered approximately 6,040 feet southwest of the intersection of Rayburn Road and Britt Road
DRYPOND A1-C311 - Centered approximately 5,300 feet southwest of the intersection of Rayburn Road and Britt Road
DRYPOND A2-A140 - Centered approximately 6,040 feet southeast of the intersection of Rayburn Road and Britt Road

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
WETPOND B	Zone A	Zone AE	YES	YES
	Zone X (unshaded)	Zone AE	YES	YES
WETPOND C	No BFEs*	BFEs	YES	NONE
	Zone A	Zone AE	YES	YES
	Zone X (unshaded)	Zone AE	YES	YES
WETPOND D	No BFEs	BFEs	YES	NONE
	Zone A	Zone AE	YES	YES
	Zone X (unshaded)	Zone AE	YES	NONE
SR524-310C	No BFEs	BFEs	YES	NONE
	Zone A	Zone AE	YES	YES
	Zone X (unshaded)	Zone AE	YES	NONE
DRYPOND A	No BFEs	BFEs	YES	NONE
	Zone A	Zone AE	YES	YES
	Zone X (unshaded)	Zone AE	YES	NONE
DRYPOND A1-C311	No BFEs	BFEs	YES	NONE
	Zone A	Zone AE	YES	YES
	Zone X (unshaded)	Zone AE	YES	NONE
DRYPOND A2-A140	No BFEs	BFEs	YES	NONE
	Zone A	Zone AE	YES	YES
	Zone X (unshaded)	Zone AE	YES	NONE

* BFEs - Base Flood Elevations

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

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Engineering Services Branch
Federal Insurance and Mitigation Administration

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Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance discharges computed in the submitted hydrologic model. Future development of projects upstream could cause increased discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on discharges and could, therefore, indicate that greater flood hazards exist in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This revision has met our criteria for removing an area from the 1-percent-annual-chance floodplain to reflect the placement of fill. However, we encourage you to require that the lowest adjacent grade and lowest floor (including basement) of any structure placed within the subject area be elevated to or above the Base (1-percent-annual-chance) Flood Elevation.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Jacky Bell
Director, Mitigation Division
Federal Emergency Management Agency, Region IV
Rhodes Building, 3005 Chamblee Tucker Road
Atlanta, GA 30341
(770) 220-5406

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panels warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

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Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below, and through FEMA's Flood Hazard Mapping website at https://www.floodmaps.fema.gov/fhm/bfe_status/bfe_main.asp

LOCAL NEWSPAPER

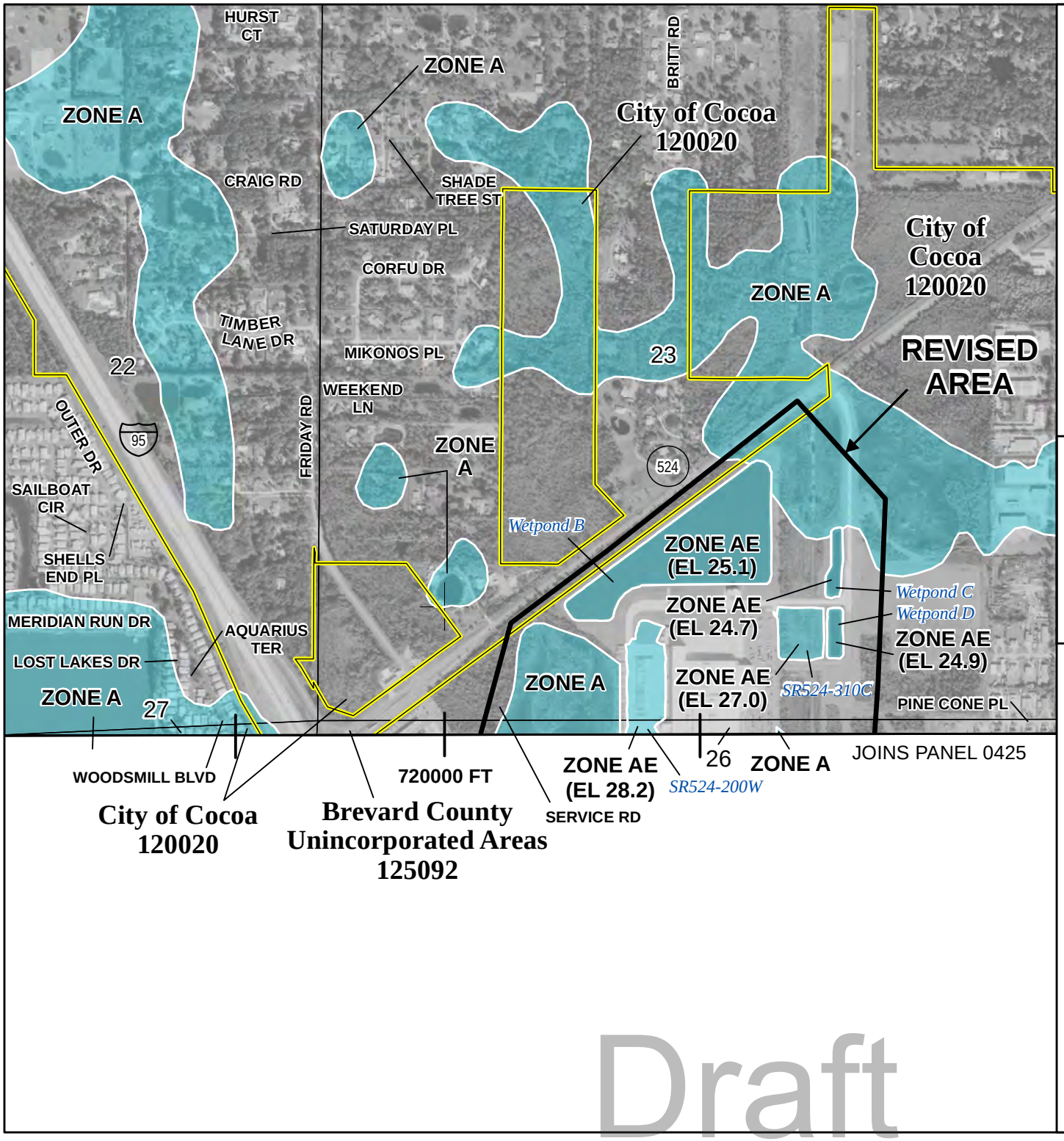
Name: *The Florida Today*
Dates: March 8, 2021 and March 15, 2021

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised flood hazard determination presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

B-11



Draft

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A,V, A99*
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- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*

SCALE

NOTE: BASEMAP IMAGERY WAS OBTAINED FROM NAIP IN 2019.

Map Projection:
NAD 1983 StatePlane Florida East FIPS 0901 Feet;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 Feet

0 150 300 600 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

BREVARD COUNTY, FLORIDA
and Incorporated Areas

PANEL 320 OF 825

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
BREVARD COUNTY	125092	0320	H
COCOA, CITY OF	120020	0320	H

REVISED TO REFLECT LOMR EFFECTIVE: July 13, 2021

VERSION NUMBER
2.3.3.2

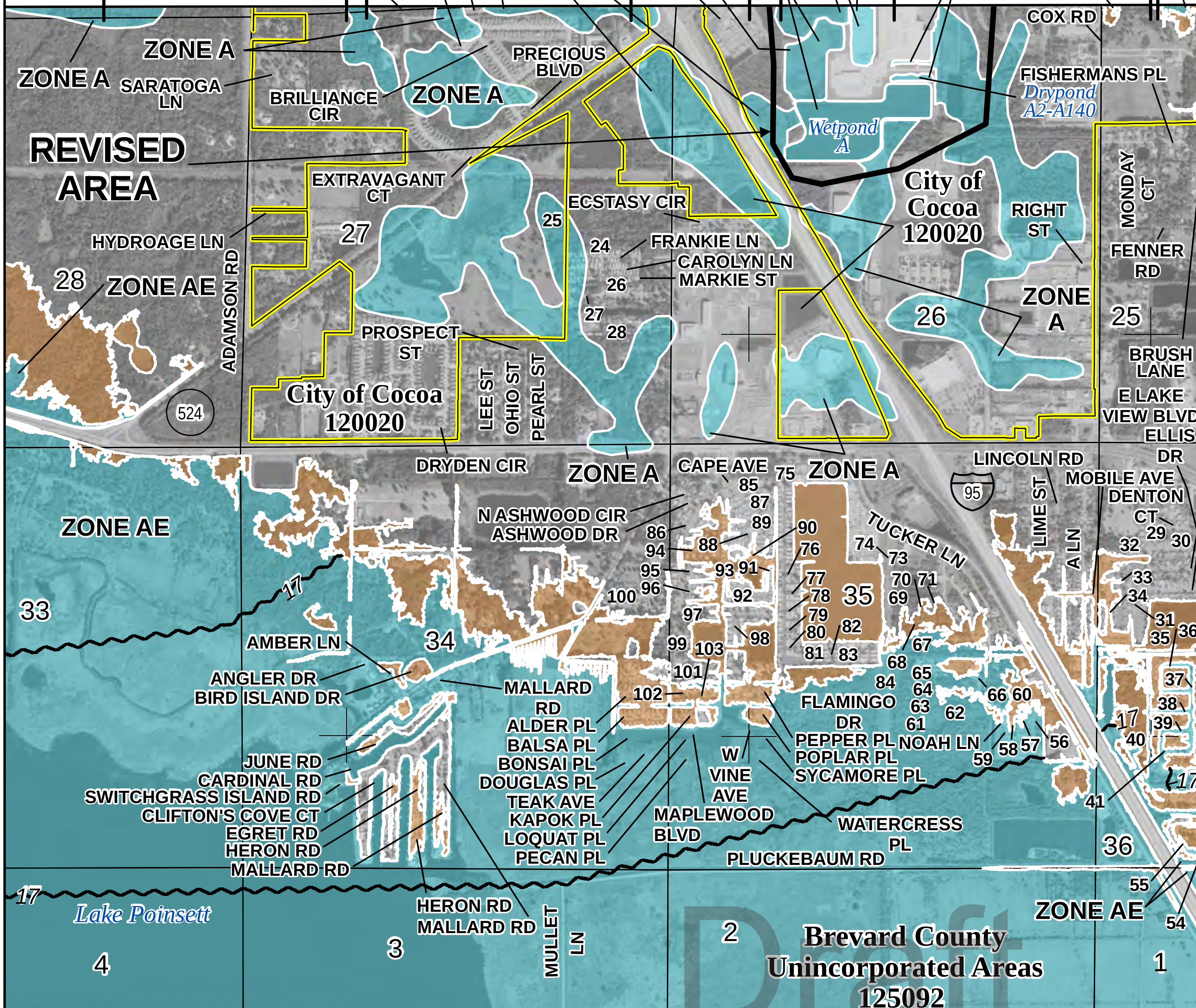
MAP NUMBER
12009C0320H

MAP REVISED
JANUARY 29, 2021

B-12

KEY TO NUMBERED STREETS

24-SHARI LEE ST
25-DONNI ST
26-PHILLIP LN
27-BAGGETT PL
28-FLEETWOOD PL
29-N DENTON CIR
30-S DENTON CIR
31-S LAKE VIEW BLVD
32-MANGOLIA CT
33-N LAKE CIR
34-W LAKE CIR
35-S LAKE CIR
36-KENNEDY CIR
37-JOHNSON BLVD
38-SHORT ST
39-QUEEN ST
40-PINE HILL ST
41-WEAVER ST
54-SMART ST
55-CLARKE ST
56-ISSAC AVE
57-JACOB AVE
58-ENOCH AVE
59-ABRAHAM LN
60-SANDY PINE PL
61-SNOW GOOSE LN
62-PINTAIL DUCK WAY
63-WOOD DUCK ST
64-RUDDY DUCK WAY
65-BLUEBILL ST
66-SNOW BIRD AVE
67-MEADOWLARK ST
68-BUNTING PL
69-MOCKINGBIRD PL
70-SWALLOW CT
71-IBIS CT
73-FOREST LAKE DR
74-BLUE LAKE PL
76-LOBLOLLY PL
77-CAMPHOR PL
78-SILK OAK PL
79-CHINABERRY PL
80-SUGAR BERRY PL
81-BUTTONWOOD CT
82-BEECH CT
83-BOTTLEBRUSH CT
84-BASSWOOD CT
85-ARDEN ST
86-BEECHWOOD CIR
87-BARBARA LN
88-DEBORAH ST
89-ELINOR ST
90-N LAKESHORE DR
91-E LAKESHORE DR
92-S LAKESHORE DR
93-W LAKESHORE DR
94-COTTONWOOD CIR
95-DRIFTWOOD PL
96-EDGEWOOD PL
97-FAIRWOOD ST
98-WOODLAKE AVE
99-MARBLEWOOD BLVD
100-BRADBIE LN
101-GATEWOOD ST
102-EUCALYPTUS PL
103-HOLLY PL



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- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*

SCALE

NOTE: BASEMAP IMAGERY WAS OBTAINED FROM NAIP IN 2019.

N

Map Projection:
NAD 1983 StatePlane Florida East FIPS 0901 Feet;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 2,000 feet 1:24,000

0 1,000 2,000 4,000 Feet

0 305 610 1,220 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

BREVARD COUNTY, FLORIDA
and Incorporated Areas

PANEL **425** OF **825**

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
BREVARD COUNTY	125092	0425	G
COCOA, CITY OF	120020	0425	G
ROCKLEDGE, CITY OF	120027	0425	G

REVISED TO REFLECT LOMR EFFECTIVE: July 13, 2021

B-13

VERSION NUMBER
2.1.3.0

MAP NUMBER
12009C0425G

MAP REVISED
MARCH 17, 2014

APPENDIX C

USDA SOIL REPORT

United States Department of Agriculture

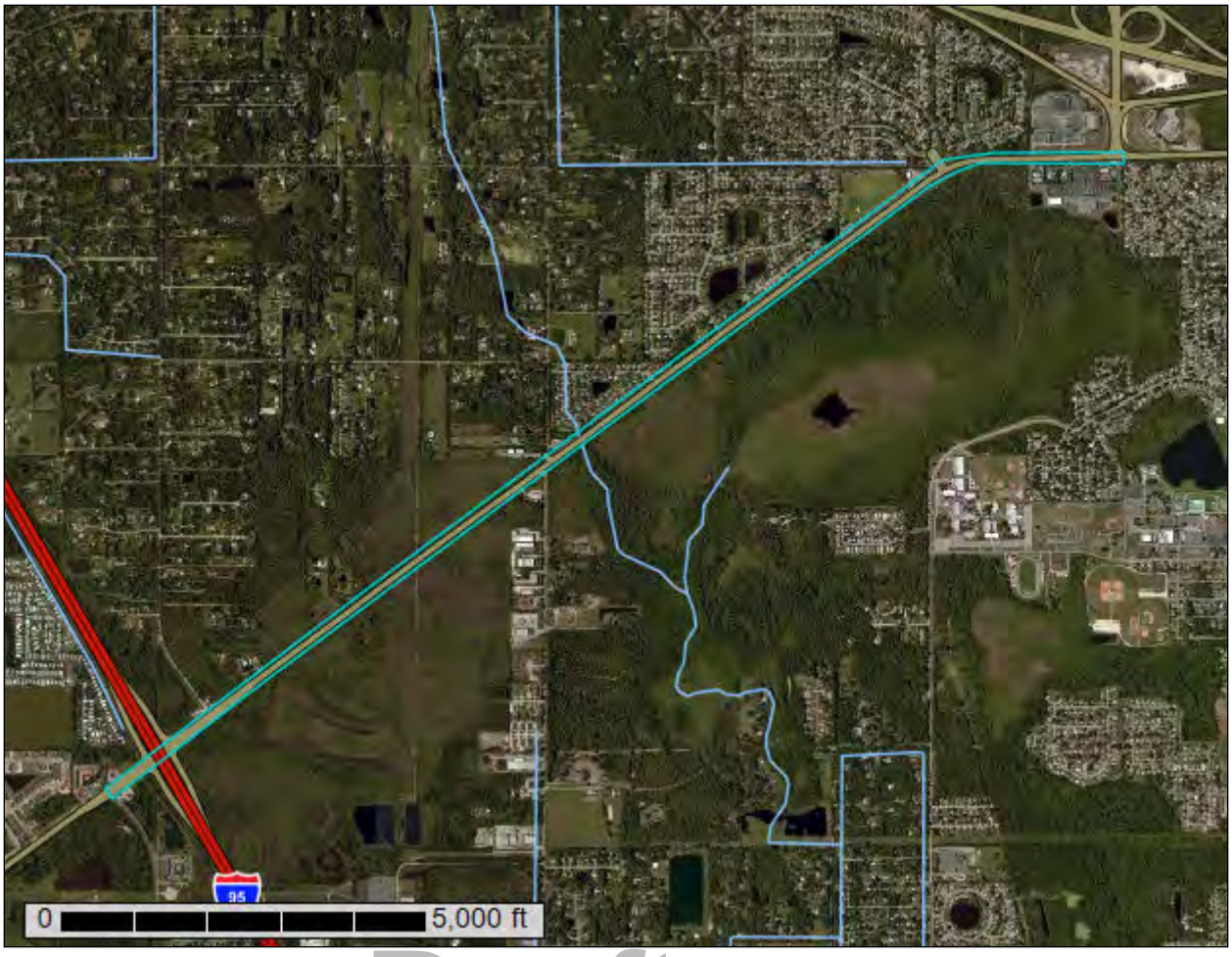
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Brevard County, Florida

SR 524 Widening PD&E LHR



September 1, 2022

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

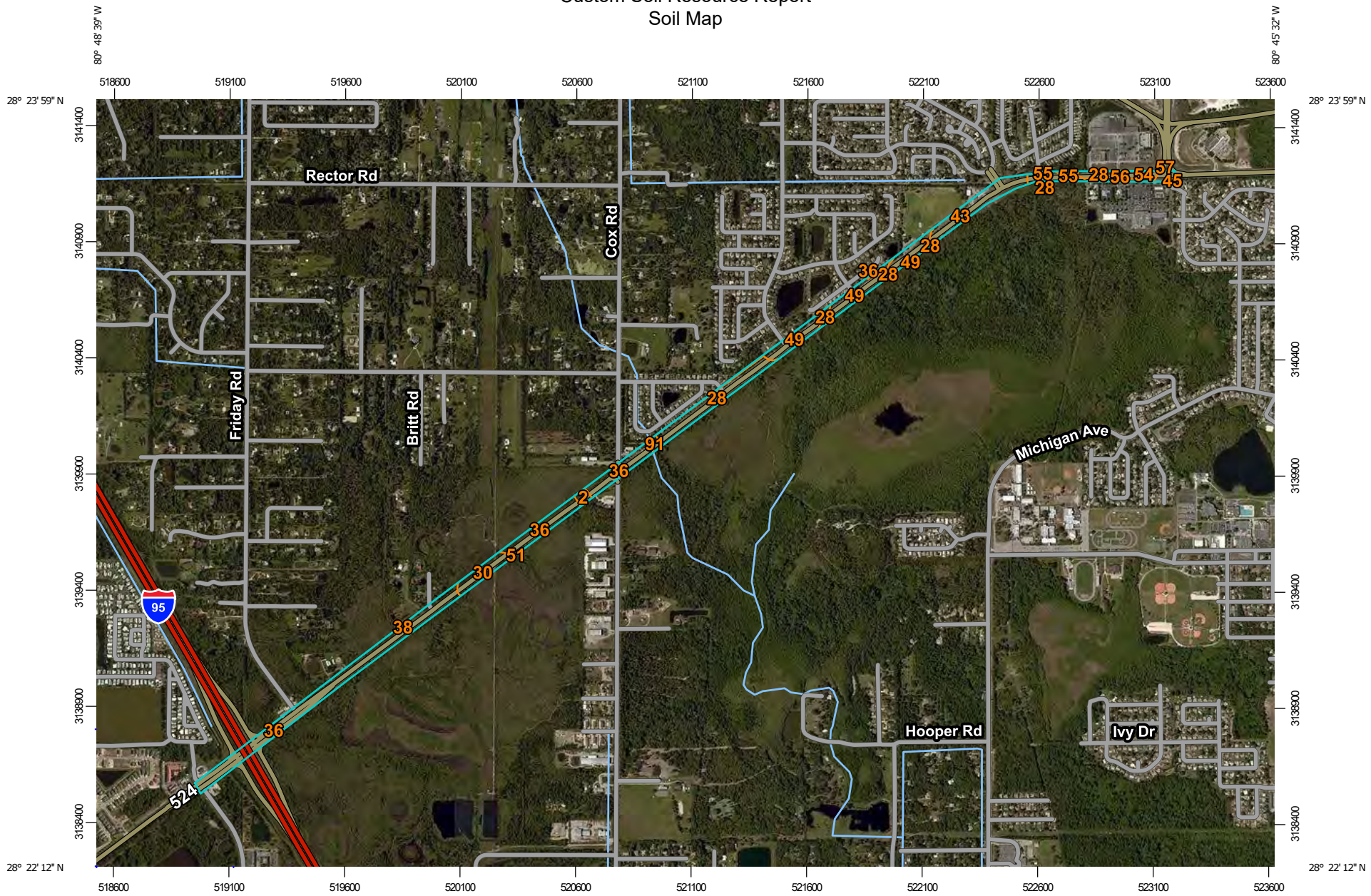
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:23,300 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 300 600 1200 1800

Feet
0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

Soil Survey Area: Brevard County, Florida
Survey Area Data: Version 21, Aug 25, 2021

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

Date(s) aerial images were photographed: Mar 28, 2015—May 18, 2015

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Anclote sand, frequently ponded, 0 to 1 percent slopes	0.8	1.2%
28	Immokalee sand, 0 to 2 percent slopes	10.7	16.5%
30	Malabar sand, 0 to 2 percent slopes	3.4	5.3%
36	Myakka sand, 0 to 2 percent slopes	27.1	41.8%
38	Myakka sand, depressional	0.2	0.2%
43	Paola fine sand, 0 to 8 percent slopes	6.9	10.7%
45	Paola-Urban land complex, 0 to 8 percent slopes	0.1	0.1%
49	Pomello sand, 0 to 5 percent slopes	10.0	15.4%
51	Pompano sand, 0 to 2 percent slopes	0.0	0.0%
54	St. Johns sand, 0 to 2 percent slopes	0.6	1.0%
55	St. Johns sand, depressional	0.8	1.3%
56	St. Lucie fine sand, 0 to 5 percent slopes	2.8	4.4%
57	St. Lucie fine sand, 5 to 12 percent slopes	0.9	1.3%
91	Anclote sand	0.5	0.8%
Totals for Area of Interest		**64.9**	**100.0%**

Map Unit Descriptions

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

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made

up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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

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

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

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

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

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

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

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

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

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

Brevard County, Florida

2—Anclote sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2svzj
Elevation: 0 to 130 feet
Mean annual precipitation: 46 to 58 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Anclote

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Parent material: Sandy marine deposits

Typical profile

A1 - 0 to 8 inches: sand
A2 - 8 to 22 inches: sand
Cg1 - 22 to 40 inches: sand
Cg2 - 40 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)

Hydric soil rating: Yes

Minor Components

Floridana

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

Terra ceia

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Tomoka

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

28—Immokalee sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2s3ll
Elevation: 0 to 150 feet
Mean annual precipitation: 42 to 57 inches

Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Immokalee

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 9 inches: sand
E - 9 to 36 inches: sand
Bh - 36 to 55 inches: sand
C - 55 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Minor Components

Valkaria

Percent of map unit: 5 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave

Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Pomello

Percent of map unit: 3 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Satellite

Percent of map unit: 2 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Felda

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

30—Malabar sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2sm5k
Elevation: 0 to 40 feet
Mean annual precipitation: 46 to 57 inches

Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Malabar

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 15 inches: sand
Bw - 15 to 35 inches: sand
E' - 35 to 45 inches: sand
Btg - 45 to 65 inches: sandy loam
Cg - 65 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Holopaw

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip

Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Cypress lake

Percent of map unit: 3 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

36—Myakka sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2twt9
Elevation: 10 to 130 feet
Mean annual precipitation: 43 to 62 inches
Mean annual air temperature: 64 to 77 degrees F
Frost-free period: 280 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

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

Description of Myakka

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 20 inches: sand
Bh - 20 to 36 inches: sand
C - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Minor Components

Valkaria

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear, convex

Across-slope shape: Concave, linear
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

38—Myakka sand, depressional

Map Unit Setting

National map unit symbol: 1lg3l
Elevation: 0 to 100 feet
Mean annual precipitation: 49 to 57 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Myakka, Depressional

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 8 inches: sand
E - 8 to 22 inches: sand
Bh1 - 22 to 35 inches: sand
Bh2 - 35 to 46 inches: sand
C - 46 to 63 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Hydric soil rating: Yes

Eaugallie

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Hydric soil rating: Yes

Holopaw

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Hydric soil rating: Yes

43—Paola fine sand, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tzwh
Elevation: 0 to 110 feet
Mean annual precipitation: 44 to 68 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Paola

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 26 inches: fine sand
B/E - 26 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (20.00 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)

Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

Minor Components

Cassia
Percent of map unit: 5 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Astatula
Percent of map unit: 5 percent
Landform: Knolls on marine terraces, hills on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

Candler
Percent of map unit: 5 percent
Landform: Knolls on marine terraces, hills on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL), Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

45—Paola-Urban land complex, 0 to 8 percent slopes

Map Unit Setting
National map unit symbol: 1lg3t
Elevation: 0 to 120 feet
Mean annual precipitation: 49 to 57 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Paola and similar soils: 55 percent
Urban land: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paola

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 48 inches: fine sand
B/E - 48 to 60 inches: fine sand
C - 60 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G156BC999FL)
Other vegetative classification: Forage suitability group not assigned (G156BC999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G156BC999FL)

Other vegetative classification: Forage suitability group not assigned (G156BC999FL)
Hydric soil rating: Unranked

Minor Components

Cocoa
Percent of map unit: 2 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Forage suitability group not assigned (G156BC999FL)
Hydric soil rating: No

St. lucie
Percent of map unit: 1 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Forage suitability group not assigned (G156BC999FL)
Hydric soil rating: No

Pomello
Percent of map unit: 1 percent
Landform: Rises on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Forage suitability group not assigned (G156BC999FL)
Hydric soil rating: No

Tavares
Percent of map unit: 1 percent
Landform: Ridges on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Forage suitability group not assigned (G156BC999FL)
Hydric soil rating: No

49—Pomello sand, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: 2sm5n

Elevation: 0 to 160 feet
Mean annual precipitation: 46 to 64 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Pomello

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: sand
E - 4 to 56 inches: sand
Bh - 56 to 62 inches: sand
Bw - 62 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Minor Components

Immokalee

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Tavares

Percent of map unit: 4 percent
Landform: Ridges on marine terraces, flatwoods on marine terraces, hills on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope, tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL), Sand Pine Scrub (R155XY001FL), Sandy soils on rises, knolls, and ridges of mesic uplands (G155XB121FL)
Hydric soil rating: No

Satellite

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, rises on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

St. lucie

Percent of map unit: 3 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

51—Pompano sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzw4
Elevation: 0 to 40 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pompano and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pompano

Setting

Landform: Drainageways on flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
C - 6 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Myakka

Percent of map unit: 8 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Brynwood

Percent of map unit: 4 percent

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Holopaw

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Samsula

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

54—St. Johns sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ttlj
Elevation: 30 to 150 feet
Mean annual precipitation: 50 to 60 inches
Mean annual air temperature: 70 to 73 degrees F
Frost-free period: 310 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

St. johns and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Johns

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Sandy marine deposits

Typical profile

A - 0 to 11 inches: sand
E - 11 to 24 inches: sand
Bh - 24 to 36 inches: sand
BC - 36 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Hydric soil rating: Yes

Minor Components

Myakka

Percent of map unit: 10 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

55—St. Johns sand, depressional

Map Unit Setting

National map unit symbol: 1lg44
Elevation: 0 to 30 feet
Mean annual precipitation: 49 to 57 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 350 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

St. johns and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Johns

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 11 inches: sand
E - 11 to 19 inches: sand
Bh - 19 to 31 inches: sand
Cg - 31 to 70 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Hydric soil rating: Yes

Minor Components

Myakka

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G156BC145FL)
Hydric soil rating: Yes

Tomoka

Percent of map unit: 2 percent
Landform: Marshes on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G156BC645FL)
Hydric soil rating: Yes

56—St. Lucie fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2twsr
Elevation: 20 to 110 feet
Mean annual precipitation: 44 to 61 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of St. Lucie

Setting

Landform: Ridges on marine terraces, dunes on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Convex
Across-slope shape: Linear

Parent material: Sandy eolian deposits and/or marine deposits

Typical profile

A - 0 to 4 inches: fine sand
C - 4 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

Minor Components

Paola

Percent of map unit: 6 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

Pomello

Percent of map unit: 5 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces

Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

57—St. Lucie fine sand, 5 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2x9fg
Elevation: 0 to 20 feet
Mean annual precipitation: 49 to 57 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 360 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of St. Lucie

Setting

Landform: Ridges on marine terraces, knolls on marine terraces, dunes on marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and/or marine deposits

Typical profile

A - 0 to 4 inches: fine sand
C - 4 to 80 inches: fine sand

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

Minor Components

Paola

Percent of map unit: 6 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Hydric soil rating: No

Pomello

Percent of map unit: 5 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Palm beach

Percent of map unit: 4 percent
Landform: Ridges on marine terraces, dunes on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G156BC111FL)
Hydric soil rating: No

91—Anclote sand

Map Unit Setting

National map unit symbol: 1lg58
Elevation: 10 to 80 feet

Mean annual precipitation: 49 to 57 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Anclote and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Anclote

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 19 inches: sand
Cg - 19 to 72 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Hydric soil rating: Yes

Minor Components

Chobee

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)

Hydric soil rating: Yes

Floridana

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G156BC245FL)
Hydric soil rating: Yes

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APPENDIX D

FLOODPLAIN CALCULATIONS

CONSOR ENGINEERS, INC.

		DATE
MADE BY:	MSF	21-Jan-22
CHECK BY:	DAB	21-Apr-22

PROJECT: SR 524 Widening PD&E LHR

LOCATION: Floodplain Impacts

seg 1 380+60 to 397+50
seg 2 397+50 to 455+00
seg 3 455+00 to 522+50
seg 4 522+50 to 546+00

100-YR Floodplain

CD #	Basin	Station	FEMA Floodplain Zone	Existing Ground Elevation (ft NAVD)	FEMA Floodplain Elevation (ft NAVD)	Actual Impact (Y/N)	Impact Length (ft)	Impact Width (ft)	Average Floodplain Depth (ft)	Impact Volume (ft^3)	Impact Volume (ac-ft)	Remarks
CD-5	3	460+00 - 461+00	AE	20.95	19.70	N	-	-	-	-	-	
CD-6	3	488+57.20 - 488+90.46	AE	18.11	20.70	Y	33.26	74	2.59	19166	0.15	
CD-6	3	488+57.20 - 488+90.46	AE	19.10	21.70	Y	33.26	74	2.60	19166	0.15	
-	3	Pond 2C	AE	24.00	20.70	N	-	-	-	-	-	SHWT = 22.50'
CD-7	3	490+00 - 541+00	AE	Flood zone is outside R/W	20.70	N	-	-	-	-	-	

10-YR Floodplain

CD #	Basin	Station	FEMA Floodplain Zone	Existing Ground Elevation (ft NAVD)	FEMA Floodplain Elevation (ft NAVD) (based on exist. contours)	Actual Impact (Y/N)	Impact Length (ft)	Impact Width (ft)	Average Floodplain Depth (ft)	Impact Volume (ft^3)	Impact Volume (ac-ft)	Remarks
-	1	383+00 - 385+00	A	24.90	23.00	N	-	-	-	-	-	beginning of project
CD-2	2	424+26.10 - 435+10.62	A	23.24	24.70	Y	1084.52	100	1.46	158339.9	3.63	

APPENDIX E

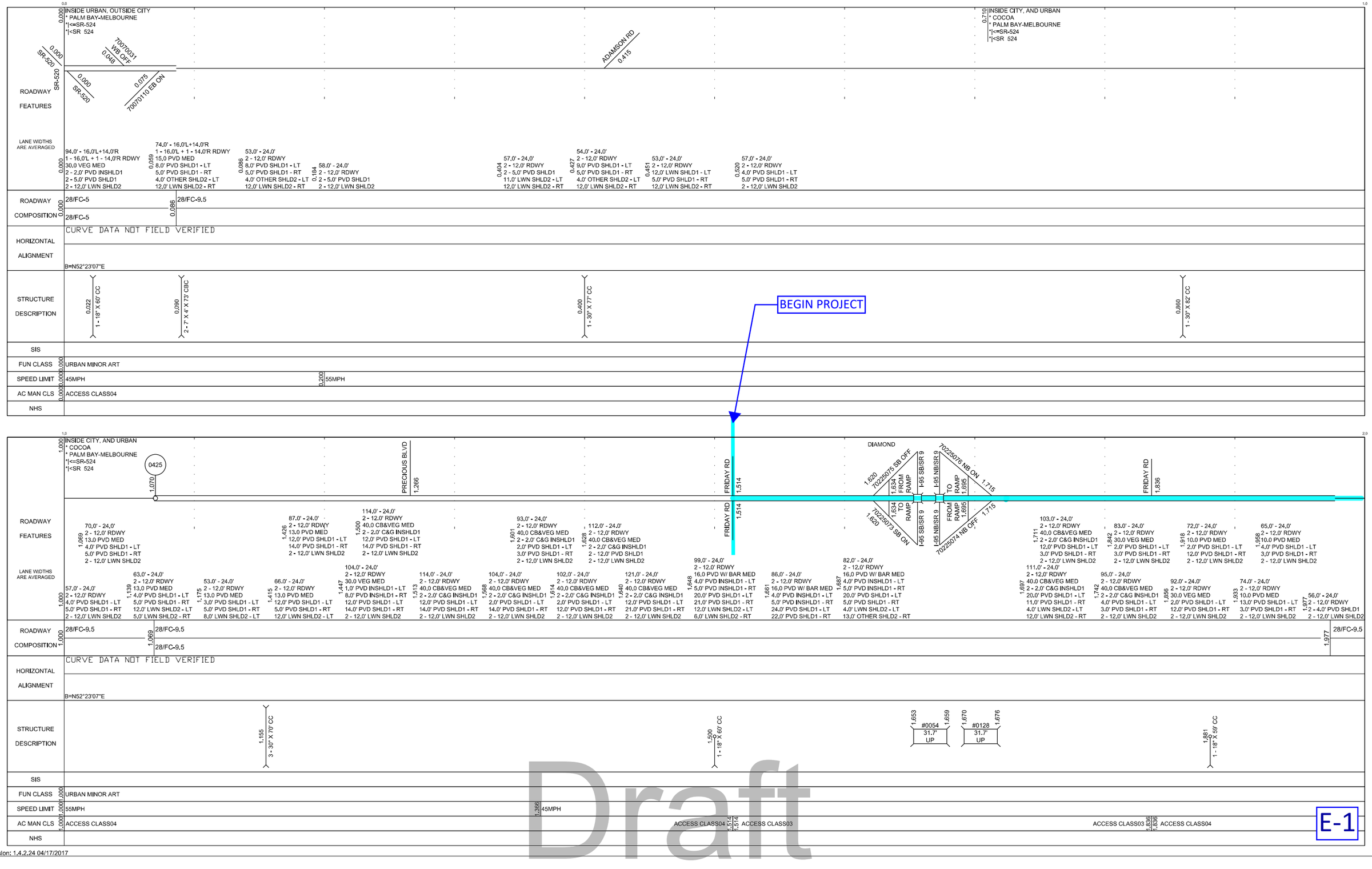
STRAIGHT LINE DIAGRAMS

	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	08/20/2016	09/26/2016	000.000	012.968	04/05/2017 MP	04/17/2017 GD
BY	TIFFANY HILL/BARRY HALLMAN	GLEN DVOROVY				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 524/SR 528	BREVARD	05	70070000	1 OF 4



Draft

E-1

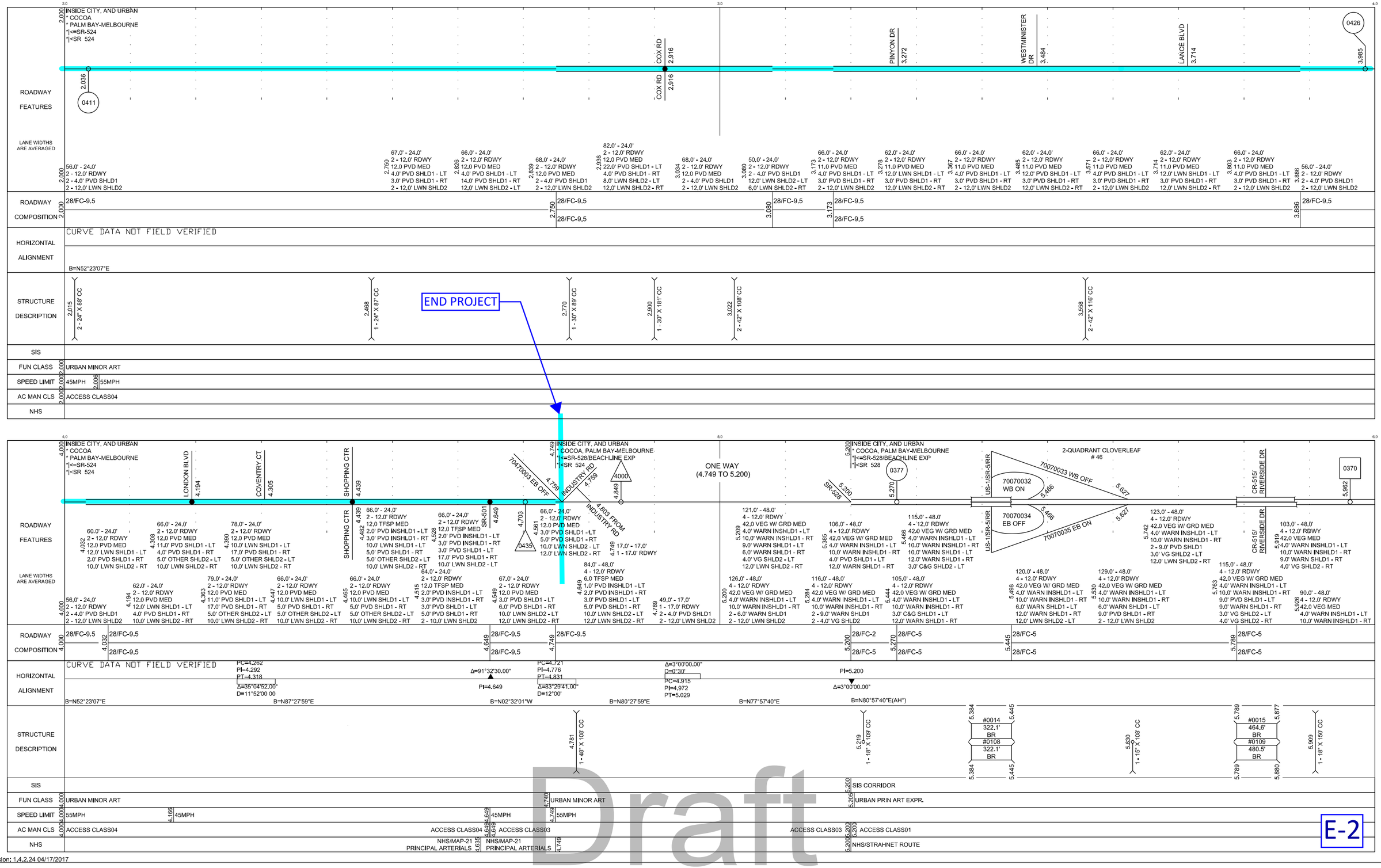
Version: 1.4.2.24 04/17/2017

	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	08/20/2016	09/26/2016	000.000	012.968	04/05/2017 MP	04/17/2017 GD
BY	TIFFANY HILL/BARRY HALLMAN	GLEN DVOROVY				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 524/SR 528	BREVARD	05	70070000	2 OF 4



E-2

	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	08/20/2016	09/26/2016	000.000	012.968	04/05/2017 MP	04/17/2017 GD
BY	TIFFANY HILL/BARRY HALLMAN	GLEN DVOROVY				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 524/SR 528	BREVARD	05	70070000	3 OF 4

6.0 7.0 8.0

ROADWAY FEATURES

6.000 INSIDE CITY, AND URBAN
* COCOA
* PALM BAY-MELBOURNE
*|<=SR-528/BEACHLINE EXP
*|<SR 528

6.559 INSIDE URBAN, OUTSIDE CITY
* PALM BAY-MELBOURNE
*|<=SR-528/BEACHLINE EXP
*|<SR 528

RIVER INDIAN

LANE WIDTHS ARE AVERAGED

6.000 78,0' - 48,0'
4 - 12,0' RDWY
30,0 VEG MED
4.0' WARN INSHLD1 - LT
12.0' PVD INSHLD1 - RT

6.011 78,0' - 48,0'
4 - 12,0' RDWY
30,0 VEG W/ GRD MED
4.0' WARN INSHLD1 - LT
12,0' PVD INSHLD1 - RT

6.031 78,0' - 48,0'
4 - 12,0' RDWY
30,0 VEG MED
4.0' WARN INSHLD1 - LT
12,0' PVD INSHLD1 - RT

6.076 81,0' - 24,0'L+27,0'R
2 - 12,0'L + 2 - 13.5'R RDWY
30,0 VEG MED
4.0' WARN INSHLD1 - LT
18,0' WARN INSHLD1 - RT

6.747 105,0' - 24,0'L+27,0'R
2 - 12,0'L + 2 - 13.5'R RDWY
30,0 VEG MED
4,0' WARN INSHLD1 - LT
18,0' WARN INSHLD1 - RT
12.0' WARN SHLD1 - LT
12,0' LWN SHLD2 - LT

6.800 102,0' - 48,0'
4 - 12,0' RDWY
30,0 VEG MED
4.0' WARN INSHLD1 - LT
12,0' WARN INSHLD1 - RT
12.0' WARN SHLD1 - LT
12,0' LWN SHLD2 - LT

7.045 114.0' - 48.0'
4 - 12.0' RDWY
30,0 VEG W/ GRD MED
4,0' WARN INSHLD1 - LT
12,0' WARN INSHLD1 - RT
12.0' WARN SHLD1 - LT
9,0' WARN SHLD1 - RT
12.0' LWN SHLD2 - LT
3,0' VG SHLD2 - RT

7.072 123.0' - 48.0'
4 - 12,0' RDWY
30,0 VEG W/ GRD MED
4,0' WARN INSHLD1 - LT
12,0' WARN INSHLD1 - RT
12,0' WARN SHLD1 - LT
9.0' PVD SHLD1 - RT
2 - 12,0' LWN SHLD2

7.100 123.0' - 48.0'
4 - 12,0' RDWY
30,0 VEG MED
4,0' WARN INSHLD1 - LT
12,0' WARN INSHLD1 - RT
9.0' PVD SHLD1 - RT
2 - 12,0' LWN SHLD2

7.110 123.0' - 48.0'
4 - 12,0' RDWY
30,0 VEG MED
4,0' PVD INSHLD1 - LT
12,0' WARN INSHLD1 - RT
12.0' WARN SHLD1 - LT
2 - 12,0' LWN SHLD2

7.210 133.0' - 48.0'
4 - 12,0' RDWY
30,0 VEG MED
2 - 4.0' PVD INSHLD1
8,0' PVD SHLD1 - RT
2 - 12,0' LWN SHLD2

ROADWAY COMPOSITION

6.000 28/FC-5 / 28/FC-5
6.141 28/FC-5 / 08/FC-5
6.312 08/FC-5 / 08/FC-5
6.747 28/FC-5 / 08/FC-5
6.868 28/FC-5 / 28/FC-5
7.274 28/FC-5 / 28/FC-5
7.660 28/FC-5 / 28/FC-5

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED

PC=7.532
PI=7.632
PT=7.733
Δ=8°49'48.00"
D=0°50'00 00

B=N80°57'40"E(AH")

B=N89°47'28"E

STRUCTURE DESCRIPTION

6.174 1 - 30" X 93' CC
6.193 1 - 15" X 46' CC
6.312 #0110 2296,8' BR #0221 2296,8' BR 6.747
6.742 1 - 30" X 115' CC
6.761 1 - 15" X 35' CC
6.979 1 - 24" X 86' CC - LT 1 - 18" X 50' CC - RT
7.045 1 - 18" X 168' CC
7.221 1 - 15" X 94' CC
7.711 1 - 15" X 74' CC

SIS	6.000	SIS CORRIDOR
FUN CLASS	6.000 6.005	URBAN PRIN ART EXPR.
SPEED LIMIT	6.005 6.850	55MPH 60MPH
AC MAN CLS	6.005	ACCESS CLASS01
NHS	6.000 6.006	NHS/STRAHNET ROUTE

8.0 9.0 10.0

ROADWAY FEATURES

8.000 INSIDE URBAN, OUTSIDE CITY
* PALM BAY-MELBOURNE
*|<=SR-528/BEACHLINE EXP
*|<SR 528

8.159 70070036 WB ON
8.178 70070038 EB OFF
SR-3/ COURTNEAY PKWY
DIAMOND # 49
70070037 WB OFF 8.468
70070039 EB ON 8.468
CREEK SYKES
9.120 0360

8.051 121.0' - 48.0'
4 - 12.0' RDWY
40.0 VEG MED
2 - 4,0' PVD INSHLD1
8.0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
4.0' VG SHLD2 - LT
12.0' LWN SHLD2 - RT

LANE WIDTHS ARE AVERAGED

8.000 133.0' - 48,0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4.0' PVD INSHLD1
12.0' WARN SHLD1 - LT
9.0' PVD SHLD1 - RT
2 - 12.0' LWN SHLD2

8.169 113.0' - 48,0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4.0' PVD INSHLD1
4.0' WARN SHLD1 - LT
9.0' PVD SHLD1 - RT
12.0' LWN SHLD2 - RT

8.178 104.0' - 48,0'
4 - 12,0' RDWY
40.0 VEG MED
2 - 4.0' PVD INSHLD1
4.0' WARN SHLD1 - LT
9.0' WARN SHLD1 - RT
3.0' VG SHLD2 - RT

8.234 104.0' - 48,0'
4 - 12,0' RDWY
40,0 VEG W/ GRD MED
2 - 4.0' PVD INSHLD1
4.0' WARN SHLD1 - LT
9.0' WARN SHLD1 - RT
3,0' VG SHLD2 - RT

8.325 120.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG W/ GRD MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9.0' WARN SHLD1 - RT
12.0' LWN SHLD2 - LT
3,0' VG SHLD2 - RT

8.379 120.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' WARN SHLD1 - RT
12.0' LWN SHLD2 - LT
3,0' VG SHLD2 - RT

8.464 129,0' - 48,0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
2 - 12,0' LWN SHLD2

8.913 120.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
12.0' LWN SHLD2 - LT
3,0' VG SHLD2 - RT

8.928 120.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG W/ GRD MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
12.0' LWN SHLD2 - LT
3,0' VG SHLD2 - RT

8.989 120.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
12.0' LWN SHLD2 - LT
3,0' VG SHLD2 - RT

8.998 104.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4,0' PVD INSHLD1
4,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
3,0' VG SHLD2 - RT

9.009 104,0' - 48,0'
4 - 12,0' RDWY
40,0 VEG W/ GRD MED
2 - 4,0' PVD INSHLD1
4,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
3,0' VG SHLD2 - RT

9.021 120.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG W/ GRD MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
12.0' LWN SHLD2 - LT
3,0' VG SHLD2 - RT

9.106 119.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG W/ GRD MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
12.0' LWN SHLD2 - LT
2,0' LWN SHLD2 - RT

9.137 119.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
12.0' LWN SHLD2 - LT
2,0' LWN SHLD2 - RT

9.225 119.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG W/ FNC MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - LT
9,0' PVD SHLD1 - RT
12.0' LWN SHLD2 - LT
2,0' LWN SHLD2 - RT

9.275 119.0' - 48.0'
4 - 12,0' RDWY
40,0 VEG MED
2 - 4,0' PVD INSHLD1
8,0' PVD SHLD1 - RT
12.0' LWN SHLD2 - LT
2,0' LWN SHLD2 - RT

ROADWAY COMPOSITION

8.000 28/FC-5 / 28/FC-5
8.468 28/FC-5 / 28/FC-5

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED

PC=9.064
PI=9.177
PT=9.288
Δ=0°59'14.00"
D=0°05'00 00

B=N89°47'28"E

B=S89°13'18"E

STRUCTURE DESCRIPTION

8.170 1 - 15" X 99' CC
8.292 #0017 174.2' BR #0111 174.2' BR 8.325
8.465 1 - 15" X 179' CC
8.640 1 - 15" X 70' CC
8.998 #0025 121.4' BR #0112 121.4' BR 9.021
9.135 1 - 15" X 75' CC
9.303 1 - 15" X 74' CC
9.453 1 - 15" X 74' CC
9.813 1 - 15" X 73' CC

SIS	8.000	SIS CORRIDOR
FUN CLASS	8.000	URBAN PRIN ART EXPR.
SPEED LIMIT	8.000	60MPH
AC MAN CLS	8.000	ACCESS CLASS01
NHS	8.000	NHS/STRAHNET ROUTE

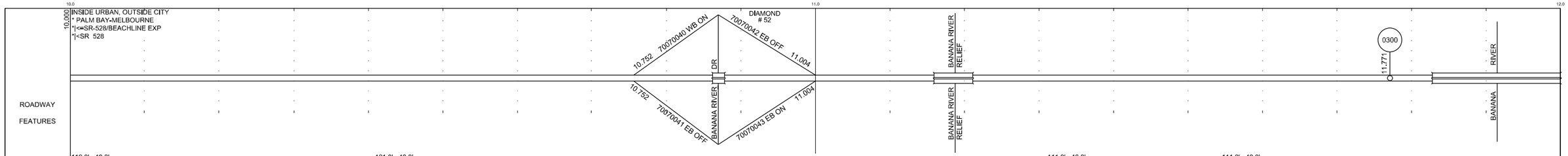
E-3

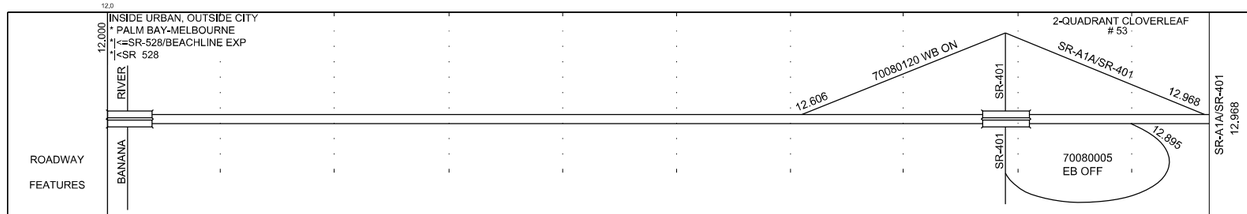
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	08/20/2016	09/26/2016	000.000	012.968	04/05/2017 MP	04/17/2017 GD
BY	TIFFANY HILL/BARRY HALLMAN	GLEN DVOROVY				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 524/SR 528	BREVARD	05	70070000	4 OF 4





END MP: 012.968
NET ROADWAY ID LENGTH: 12.968
STATE MAINTAINED LENGTH: 12.968

E-4

Version: 1.4.2.24 04/17/2017