BOARD OF COUNTY COMMISSIONERS OF CITRUS COUNTY, FLORIDA
Citrus County Courthouse
Room 100, 110 N. Apopka Avenue, Inverness, FL 34450

WORKSHOP

FT. ISLAND TRAIL MULTI-PURPOSE PATH PROJECT

AGENDA

February 23, 2021 9:30 AM

Scott Carnahan, Chair, District 4	**Angela Vick, Clerk of the Circuit Court**
Ronald E. Kitchen Jr., 1st Vice Chair, District 2	**Charles R. Oliver, County Administrator**
Ruthie Davis Schlabach, 2nd Vice Chair, District 3	**Denise A. Dymond Lyn, County Attorney**
Jeff Kinnard D.C., Commissioner District 1	
Holly L. Davis, Commissioner, District 5	

MISSION

Citrus County Government is a value-driven organization dedicated to responsive citizen service by providing quality programs, services and facilities to build a strong community and promote the best quality of life for our citizens.

All persons desiring to address the County Commission will be asked to limit their comments to the specific subject being discussed.

The Board gives citizens multiple opportunities for **PUBLIC INPUT**. All members of the public wishing to speak at the "Open To The Public" portion of a meeting will have three (3) minutes per person to make their request or presentation or five (5) minutes if they represent an organization with the appropriate documentation on file with the Clerk of Courts. If the request or presentation deals with a matter that requires investigation by County Staff, the Chairman will refer it to the County Administrator to follow-up with the person making the request.

Any person who decides to appeal any decision of the Governing Body with respect to any matter considered at this meeting will need a record of the proceedings and for such purpose may need to provide that a verbatim record of proceeding is made which record includes testimony and evidence upon which the appeal is to be based. (Section 286.0105 Florida Statutes)

Any person requiring reasonable accommodation at this meeting because of a disability or physical impairment should contact the County Administrator's Office, Lecanto Government Bldg., 3600 W. Sovereign Path, Suite 267, Lecanto, FL 34461 (352) 527-5210, TTY (352) 527-5312 at least two days before the meeting.

A. CALL TO ORDER

A.1. Invocation

A.2. Pledge of Allegiance

A.3. Roll Call

B. WORKSHOP FT. ISLAND TRAIL MULTI-PURPOSE PATH PROJECT

B.1. Discussion of sequencing, timing and funding of Fort Island Trail Multi-Purpose Path

Board Direction as Appropriate.

C. OPEN TO THE PUBLIC

D. UPCOMING MEETINGS

1. Regular Meeting: **February 23, 2021 at 1:00 PM**, Citrus County Courthouse, Room 100, 110 N. Apopka Avenue, Inverness, FL 34450
2. Regular Meeting: **March 9, 2021 at 1:00 PM**, Citrus County Courthouse, Room 100, 110 N. Apopka Avenue, Inverness, FL 34450
3. Regular Meeting: **March 23, 2021 at 1:00 PM**, Citrus County Courthouse, Room 100, 110 N. Apopka Avenue, Inverness, FL 34450

E. UPCOMING WORKSHOPS AND SPECIAL MEETINGS

Special Meeting-Presentations for CARES Act Funds to Non-Profits: **Tuesday March 16, 2021 at 9:00 AM**, Citrus County Courthouse, Room 100, 110 N. Apopka Avenue, Inverness, FL 34450

F. ADJOURN

AGENDA MEMORANDUM

FROM:	Charles R. Oliver, County Administrator
SUBJECT:	Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-Purpose Path
AGENDA DATE:	**February 23, 2021**

BRIEF OVERVIEW:

The Board requested that staff hold a workshop regarding the sequencing, timing and funding for the Fort Island Multipurpose Path. We will play the video that accompanied the County's legislative request last year for this project to give everyone an overview of the project.

BUDGET IMPACT/FUNDING SOURCE:

Account No.	Account Title	Current Budget	YTD Expenditures	Encumbrances	Available Balance
					$0

RECOMMENDED ACTION:

Board Direction as Appropriate.

FORT ISLAND TRAIL MULTI-USE TRAIL

Citrus County

Board of County Commissioners Workshop

February 23, 2021

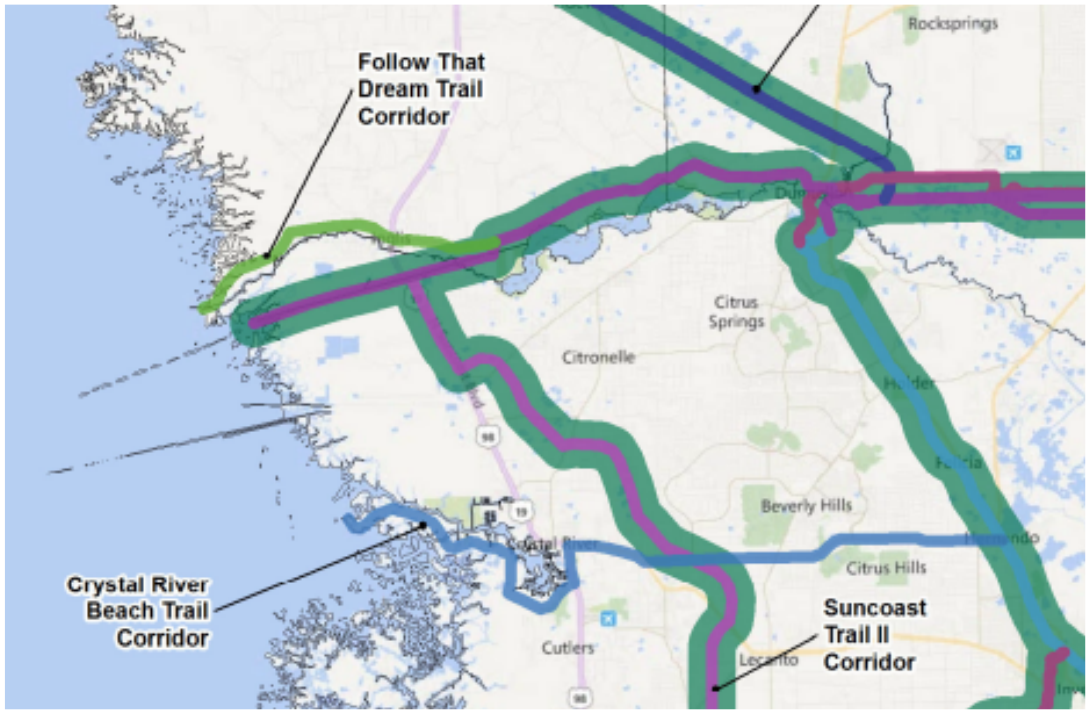
Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Outline

- Project Background
- Existing Conditions and Constraints
- Typical Section Alternatives
- Next Steps

Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Project Background

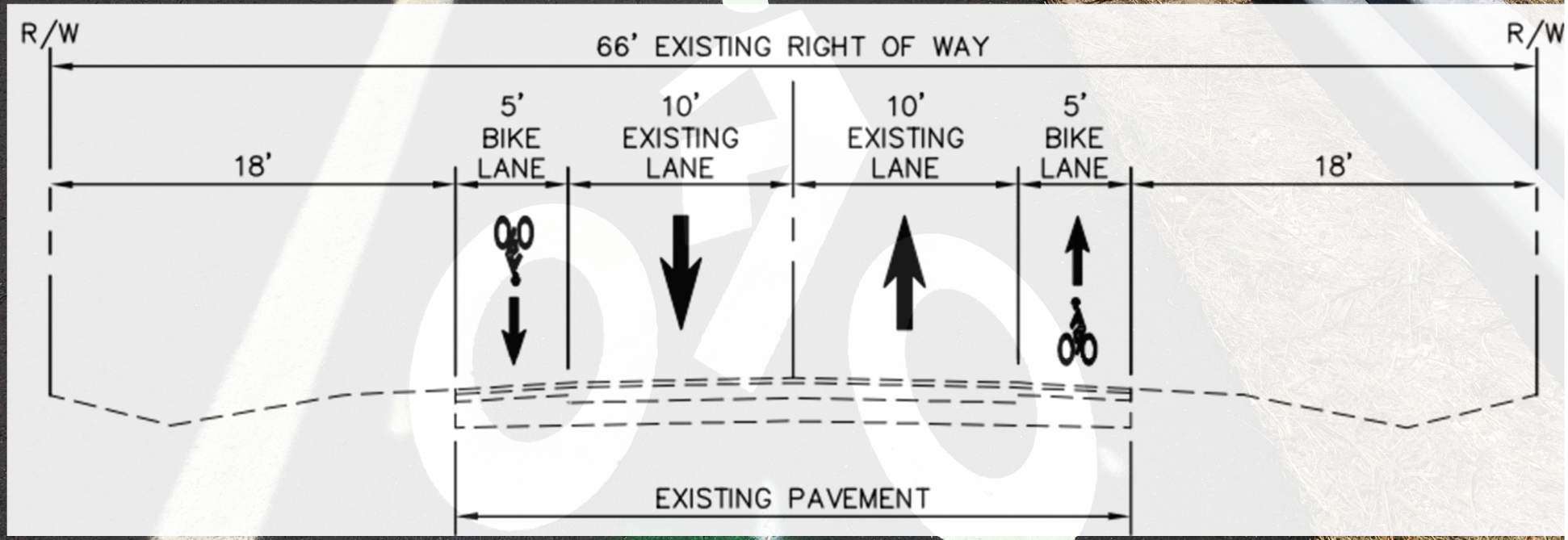


- Land Trail Opportunity Corridor on the Florida Greenways & Trails System Plan
- Listed in the Hernando-Citrus MPO 2040 Long Range Transportation Plan
- Listed on the Citrus County Complete Streets Priority Projects list for FY 2018/2019
- Not included on the SUN Trail Priorities Network

Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Existing Conditions

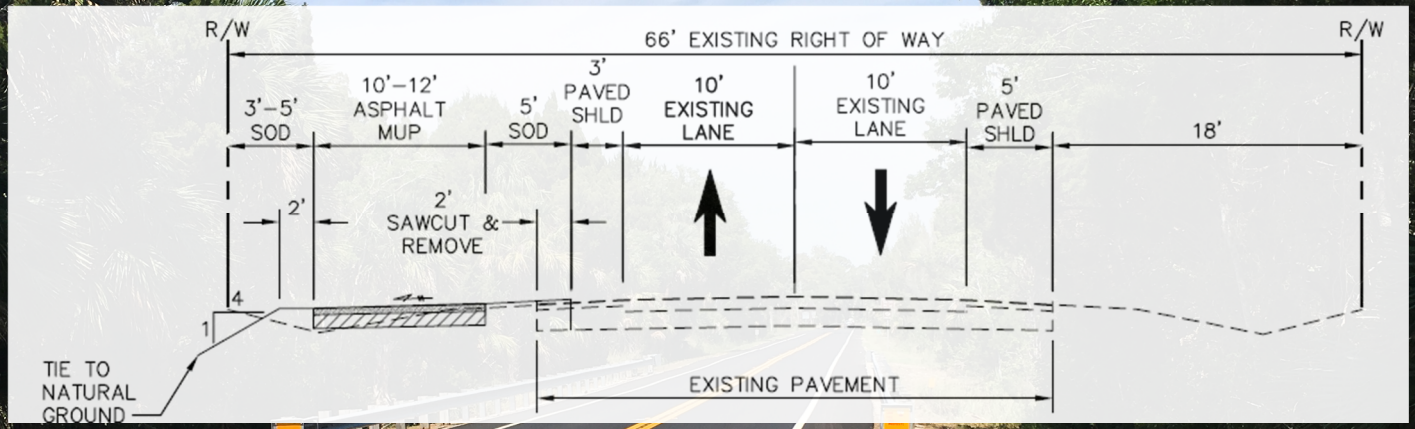
- Right-of-way:
  66-ft to 100-ft
- Speed Limit:
  30-mph to 45-mph
- Existing roadway structure limits reconstruction

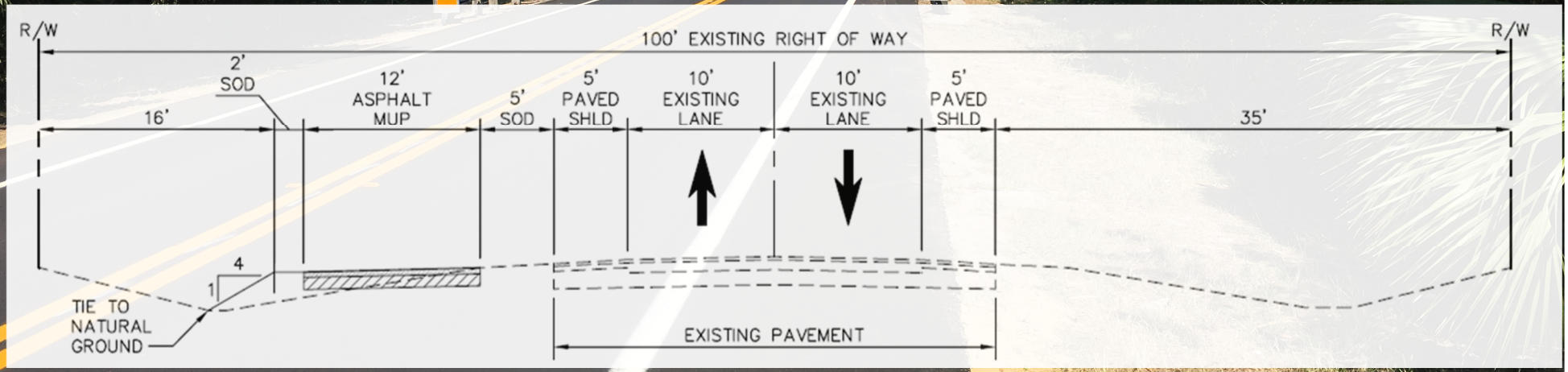


Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Existing Conditions

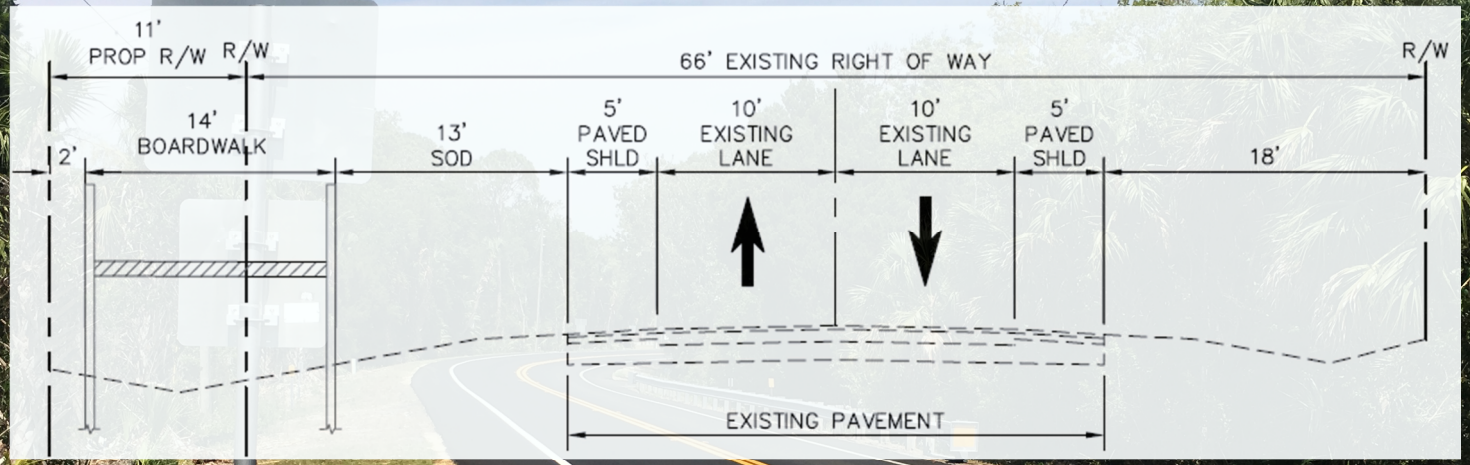
Typical Section Alternative: A

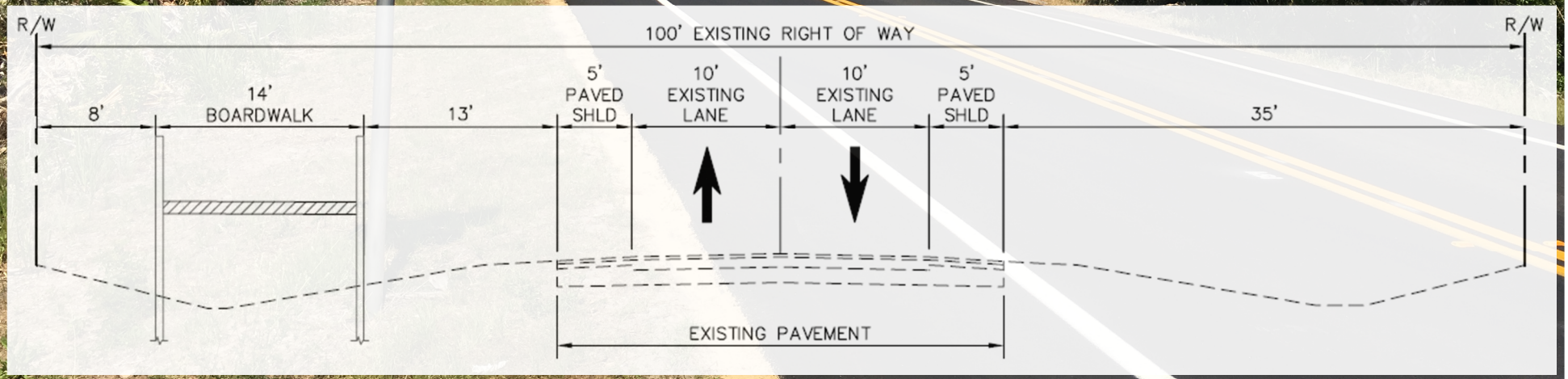




Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Typical Section Alternative: B & C





Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Cost Estimates

Opinion of Probable Cost	Alternative A	Alternative B	Alternative C
Construction	$13,728,600	$44,258,000	$17,441,100
Design	$2,059,000	$6,639,000	$2,616,000
Construction Engineering Inspection	$1,373,000	$4,426,000	$1,744,000
Potential Wetland Mitigation	$3,661,200	$1,636,200	$3,450,100
Total	**$20,821,800**	**$56,959,200**	**$25,251,200**

Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Potential Right of Way/Easement Impacts

Potential Private Property Impacts	Alternative A	Alternative B	Alternative C
Properties	48	39	45
Area (acres)	3.60	2.35	3.35

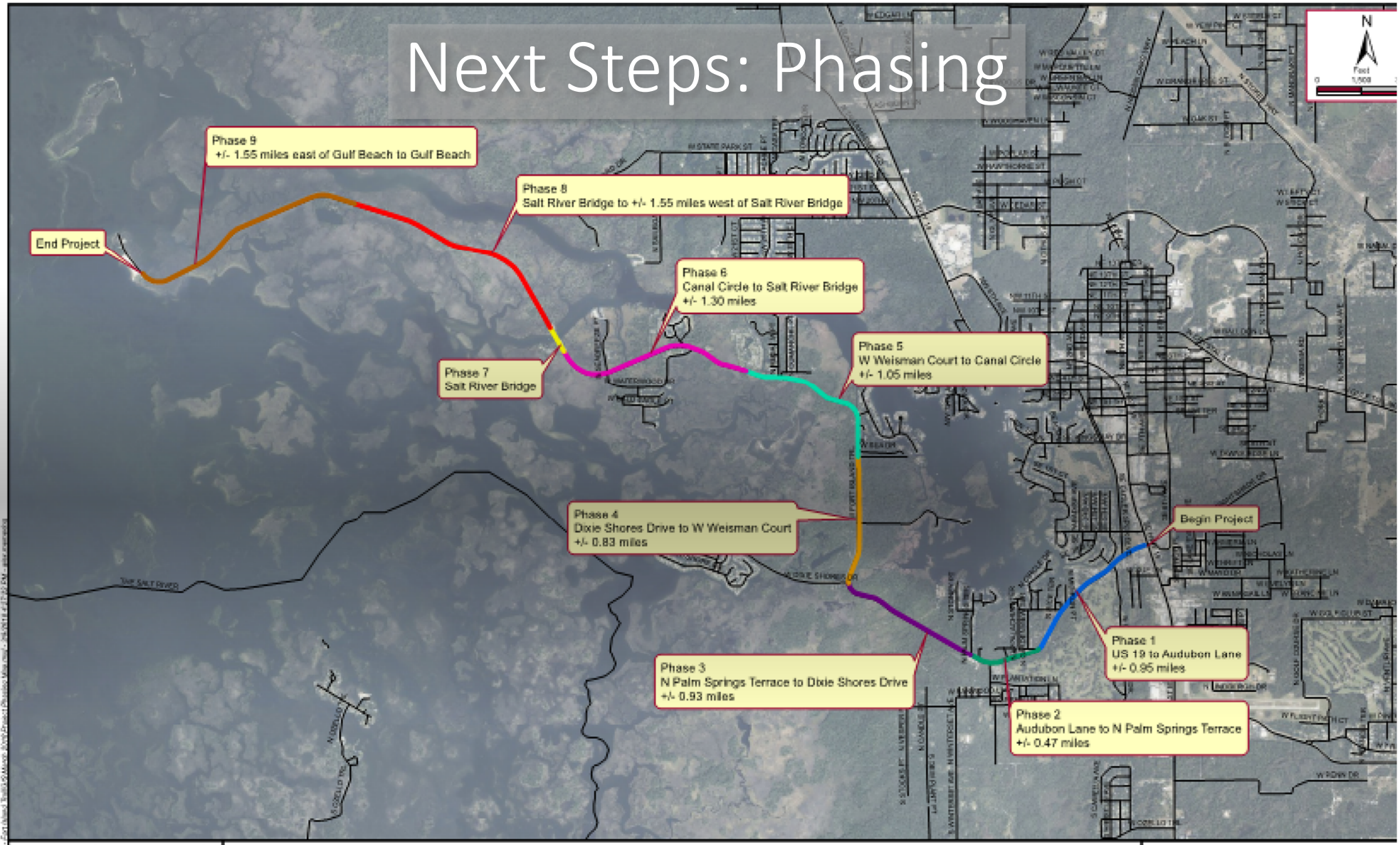
Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Next Steps

- More detailed planning study (PD&E) – gives more certainty for future phases
  - Engineering design
  - Right-of-way acquisition and/or easements
  - Construction
- Phasing – Determine potential project phases
- Partnership with Hernando-Citrus MPO required for State/SunTrail or Federal funding requests

Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Next Steps: Phasing



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101 E Silver Springs Blvd, Suite 400, Ocala FL 34470
Phone: 352 438 3000

POTENTIAL PROJECT PHASING MAP

FORT ISLAND TRAIL MULTI-USE PATH FEASIBILITY STUDY
CITRUS COUNTY, FLORIDA

Project No. 142271008

March 2018

Scale As Noted Sheet 1 of 1

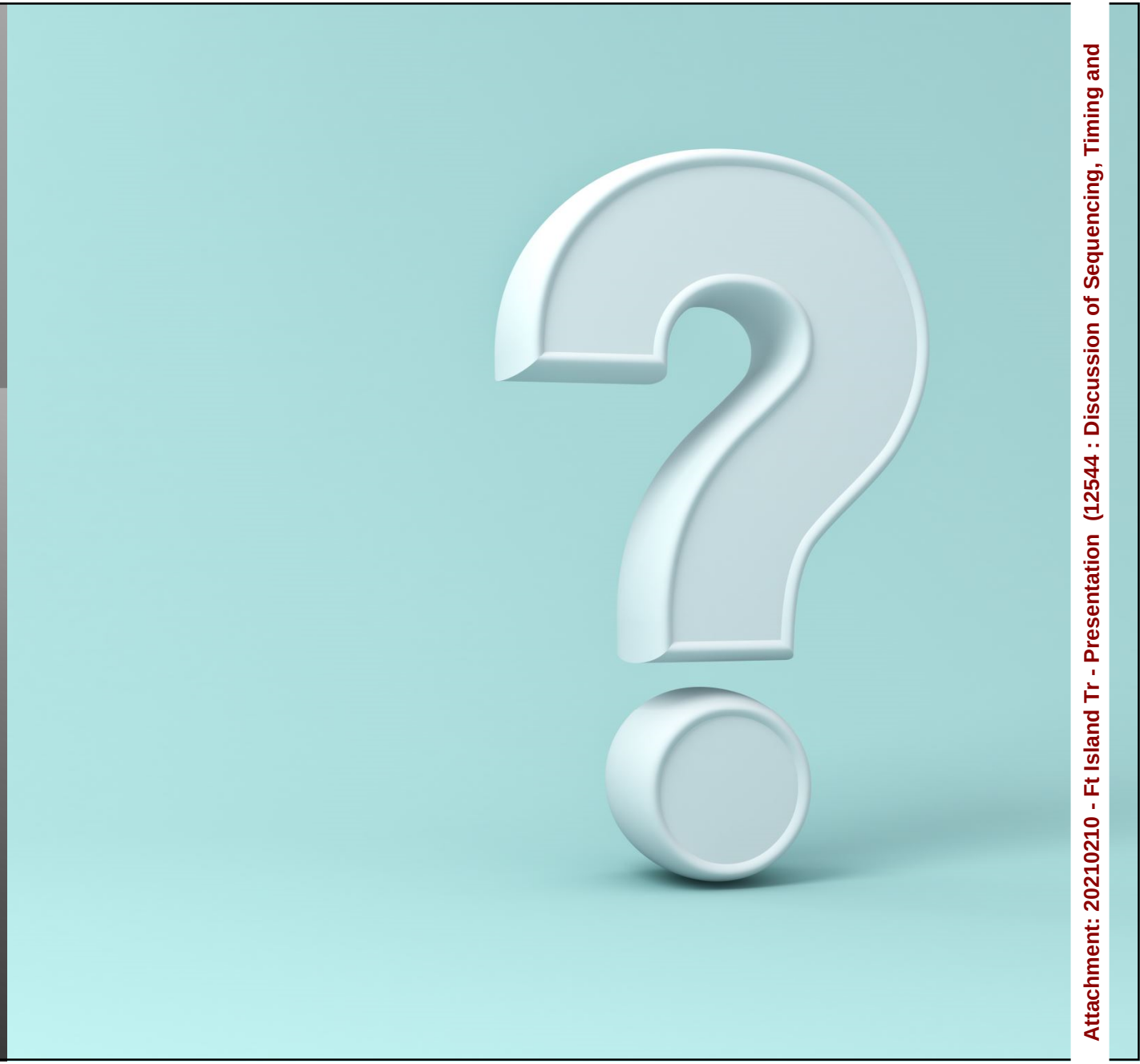
Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

SunTrail Funding

- Apply to Florida Greenways & Trails Council and request project to be a Priority Corridor on the Florida Greenways and Trails System – required for SunTrail funding ***(Program is updated every five years, with the next updated planned for 2023)***
- Make Application for SunTrail Funding through the MPO

Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

Questions/Comments



Attachment: 20210210 - Ft Island Tr - Presentation (12544 : Discussion of Sequencing, Timing and

FORT ISLAND TRAIL MULTI-USE TRAIL FEASIBILITY STUDY

Citrus County

Board of County Commissioners Meeting

2:00 PM May 22, 2018

Kimley»Horn

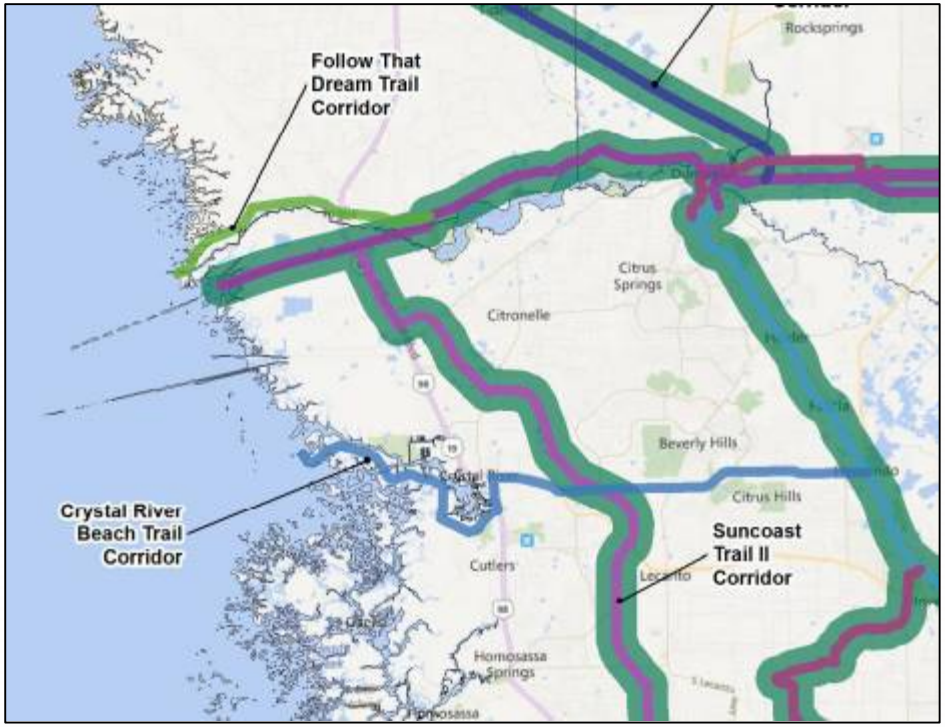
Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Outline

- Project Background
- Study Area and Purpose
- Existing Conditions and Constraints
- Typical Section Alternatives
- Alternative Comparison
- Next Steps

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

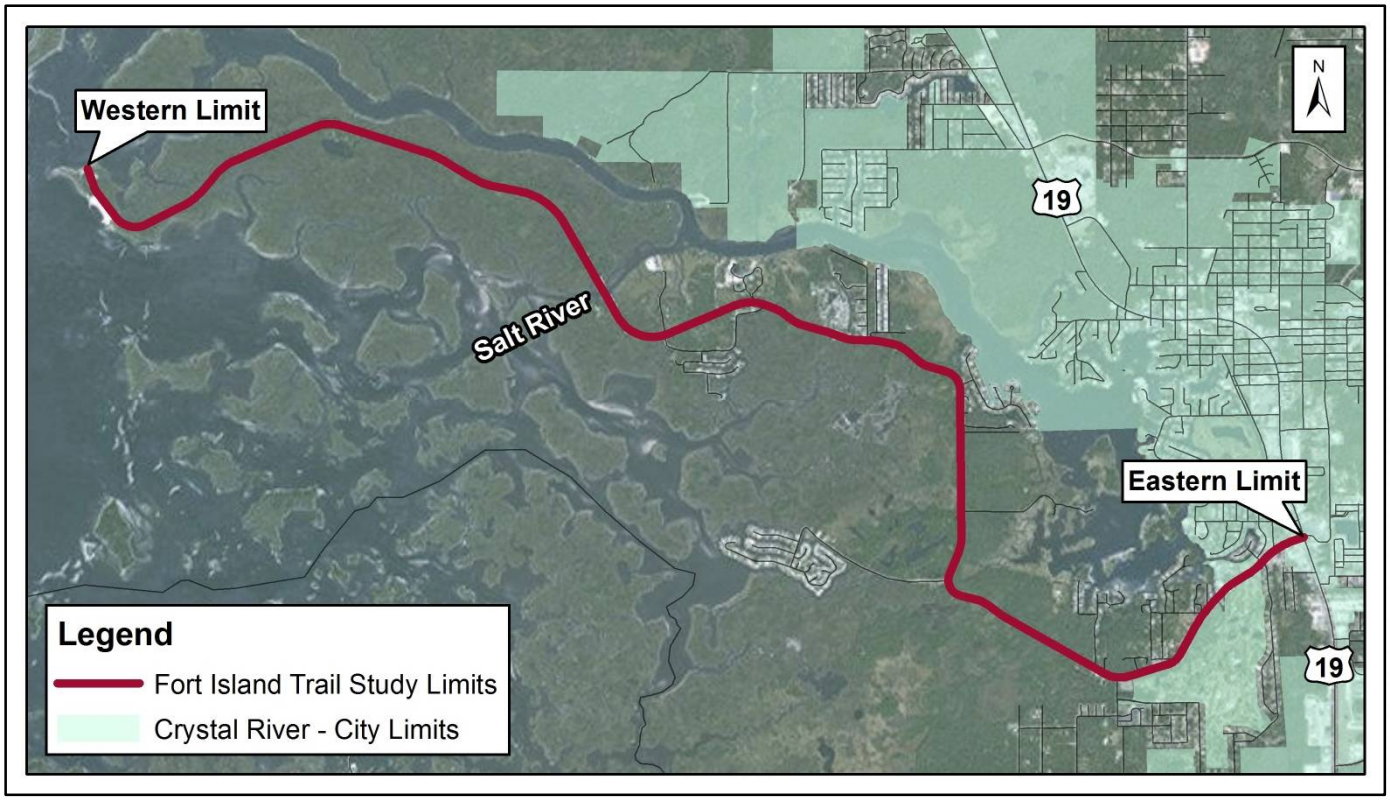
Project Background



- Land Trail Opportunity Corridor on the Florida Greenways & Trails System Plan
- Listed in the Hernando-Citrus MPO 2040 Long Range Transportation Plan
- Listed on the Citrus County Complete Streets Priority Projects list for FY 2018/2019
- Not included on the SUN Trail Network

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

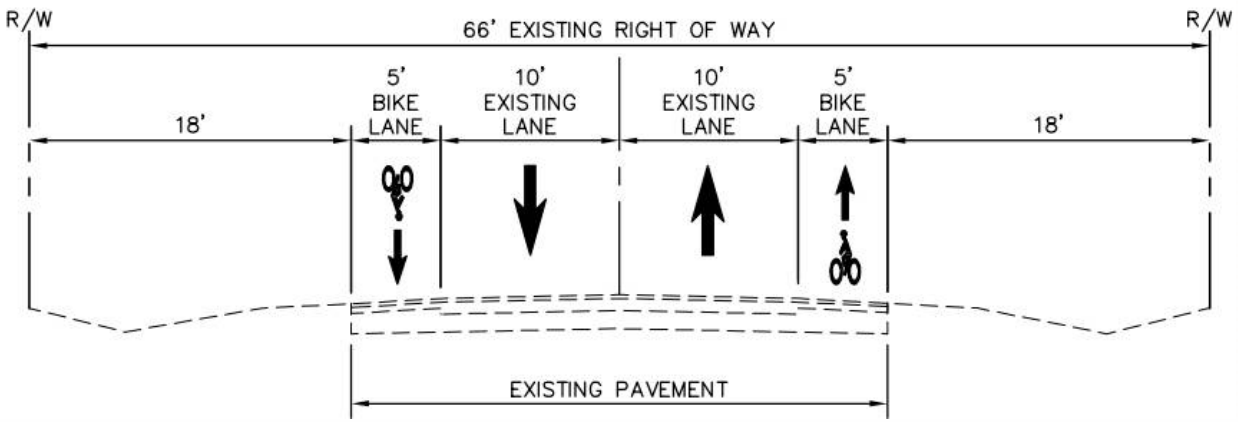
Study Area and Purpose



- 8.9 miles
- Connect Fort Island Gulf Beach to US 19
- Provide off-road multi-use trail
- Identify impacts, constraints, planning level costs

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Existing Conditions



- Right-of-way:
  66-ft to 100-ft
- Speed Limit:
  30-mph to 45-mph
- Existing roadway structure limits reconstruction

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

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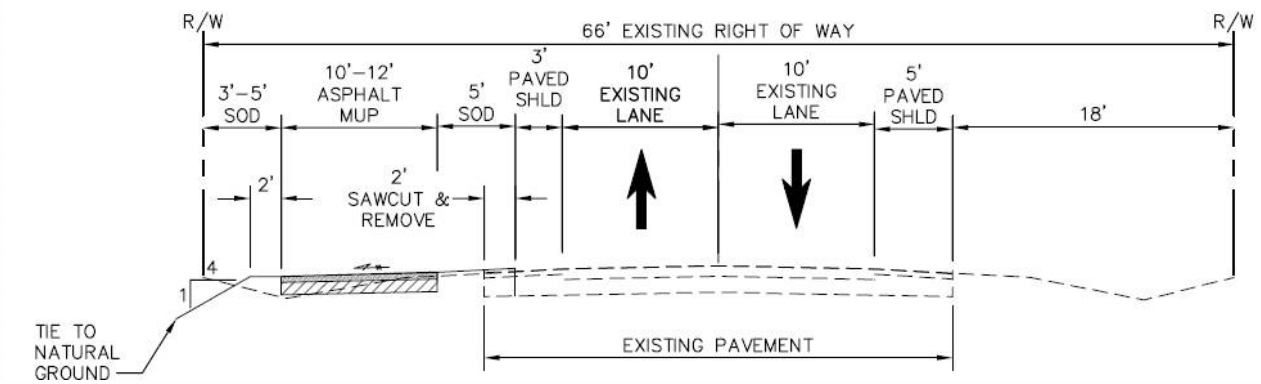
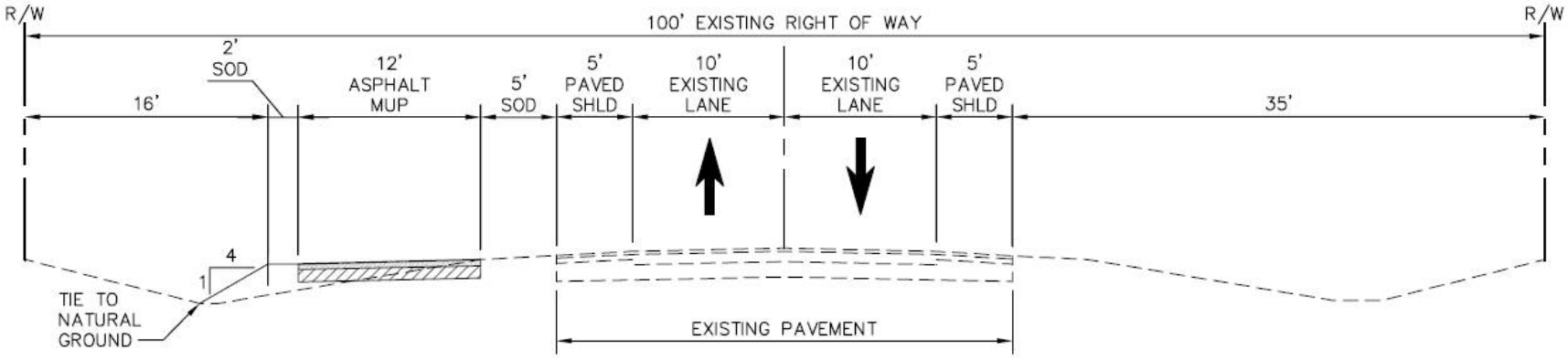
Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Fort Island Trail

Multi-Use Trail Feasibility Study



Typical Section Alternative



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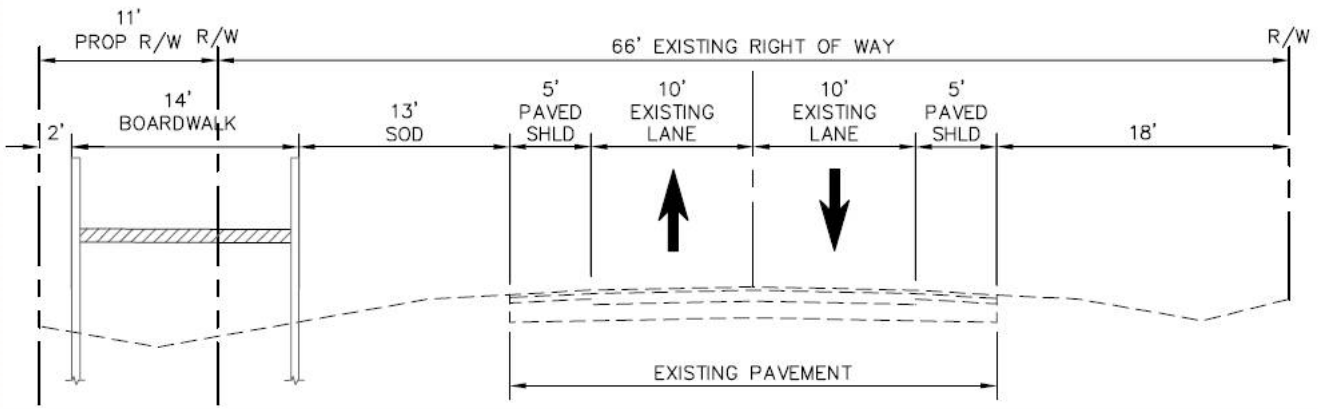
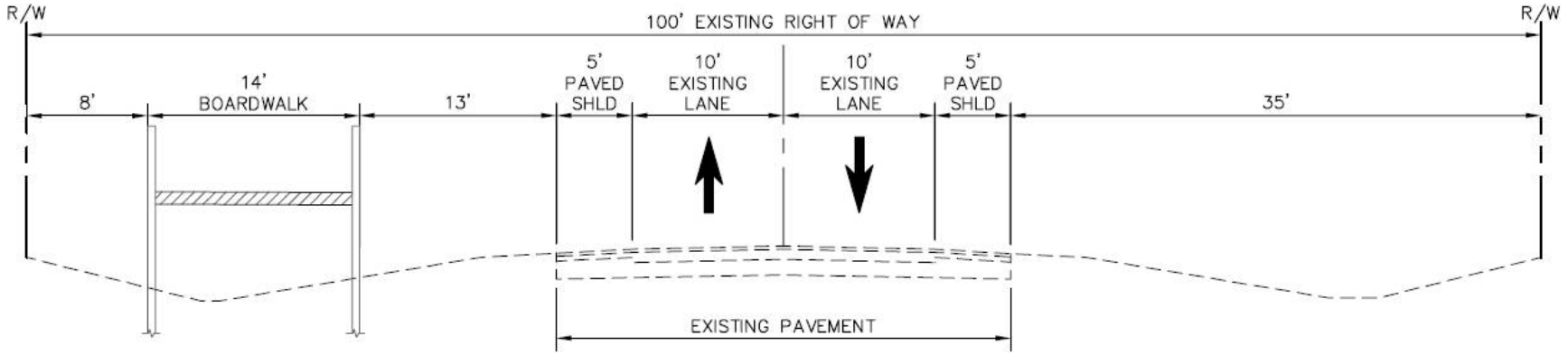
Fort Island Trail

Multi-Use Trail Feasibility Study



Typical Section Alternative



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Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Alternatives Considered

- Alternative A - Asphalt surface trail full length of study area
- Alternative B - Asphalt surface trail outside of direct wetland impact areas, boardwalk trail for all potentially impacted wetland areas
- Alternative C - Boardwalk trail for potentially impacted wetland areas ½ mile or less in total continuous length, asphalt surface trail all other areas
- All alternatives include new pedestrian bridge across Salt River
- All alternatives include bridge crossings of 4 major canals/waterways
- Other alternatives could be considered between Alternative A and Alternative B

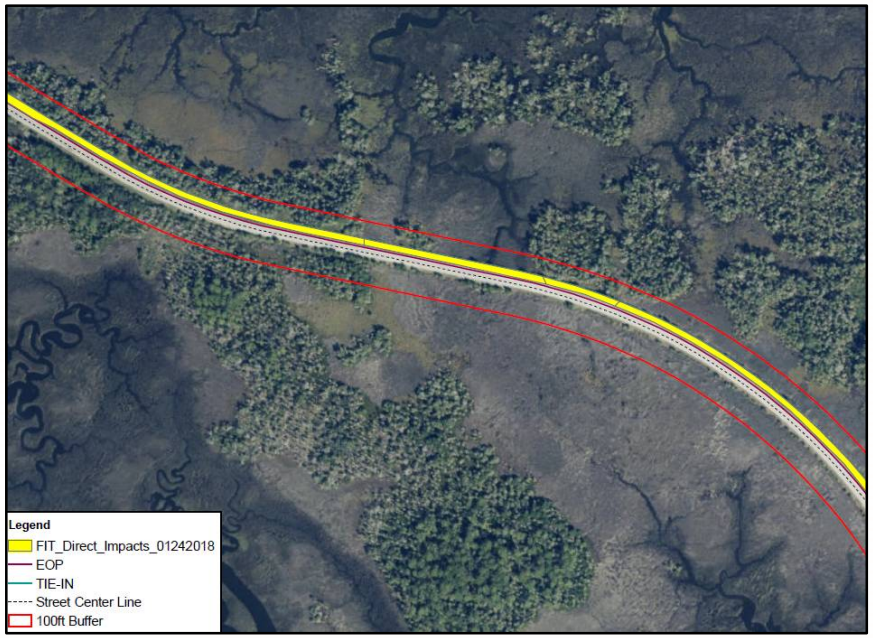
Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Engineering Considerations

- Grading tie-ins/easements
- Private roadway connections / easements
- Clear zone and potential right-of-way impacts
- Potential utility impacts
- Marine environment
- Public roadway crossings
- Canal crossings/cross-drains
- Salt River Bridge

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Environmental Review



- Identified potential listed species impacts
- Identified potential to impact archaeological and historical sites
- Identified potential wetland impacts and estimated cost of mitigation

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Opinion of Probable Cost

Opinion of Probable Cost	Alternative A	Alternative B	Alternative C
Construction	$13,728,600	$44,258,000	$17,441,100
Design	$2,059,000	$6,639,000	$2,616,000
Construction Engineering Inspection	$1,373,000	$4,426,000	$1,744,000
Potential Wetland Mitigation	$3,661,200	$1,636,200	$3,450,100
Potential Private Property	48 Properties	39 Properties	45 Properties
ROW / Easement Impact	3.60 Acres	2.35 Acres	3.35 Acres
Total	**$20,821,800**	**$56,959,200**	**$25,251,200**

* Costs are based on 2017 dollars and are not inflated for future years. **Potential easement or right-of-way acquisition costs have not been included in the cost estimates.**

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Alternative Comparison

Evaluation Criteria	No Build	Alternative A	Alternative B	Alternative C
Trail user experience	Low	High	Low	Moderate
ROW impacts	None	Low	Low	Low
Construction cost	None	Moderate	High	Moderate
Environmental impact cost	None	High	Low	High
Environmental permittability	N/A	Low	High	Moderate
Operating and maintenance costs	Low	Low	High	Moderate
Consistency with Transportation Plans	Low	High	High	High
Safety Improvement	None	High	High	High

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Next Steps

- More detailed planning study (PD&E) – gives more certainty for future phases
  - Engineering design
  - Right-of-way acquisition and/or easements
  - Construction
- Phasing – 9 potential project phases identified, starting at US 19
- Partnership with Hernando-Citrus MPO required for State or Federal funding requests
- Request for project to be a Priority Corridor on the Florida Greenways and Trails System – required for SunTrail funding

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Questions/Comments

Attachment: 1st FtIslandTrail_Presentation_180522 (12544 : Discussion of Sequencing, Timing and

Feasibility Study

FORT ISLAND TRAIL MULTI-USE PATH

Prepared for:

Citrus County

Prepared by:

Kimley-Horn and Associates, Inc.

142271008
April 2018
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101 E Silver Springs Boulevard, Suite 400
Ocala, FL 34470
352 438 3000

Kimley»Horn

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

TABLE OF CONTENTS

INTRODUCTION 1
Consistency with Area Transportation Plans 1
EXISTING CONDTIONS 3
Utilities 3
Drainage Structures / Crossings 4
Salt River Bridge 4
Historic Crash Data 5
SALT RIVER BRIDGE ASSESSMENT 7
Recommendation 9
Pedestrian Bridge Opinion of Probable Cost 12
MUP TYPICAL SECTIONS 13
Surface Trail 15
Elevated Trail 17
Drainage/Canal Crossings 20
Non-Qualifier Bridges 22
Other Design Considerations and Constraints 25
ALTERNATIVES 26
Alternative A 26
Alternative B 26
Alternative C 27
Alternative Boardwalk Materials 28
ENVIRONMENTAL EVALUATION 29
OPINION OF PROBABLE COST 33
ALTERNATIVES EVALUATION 34
Alternative A 34
Advantages 34
Disadvantages 34
Alternative B 34
Advantages 34
Disadvantages 34

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Alternative C 34
Advantages 34
Disadvantages 34
Alternatives Comparison 35
BPAC MEETING SUMMARY 36
NEXT STEPS 37
SUMMARY 38

LIST OF FIGURES

Figure 1 – Project Location Map 2
Figure 2 – Salt River Pedestrian Bridge Typical Section 11
Figure 3 – Salt River Pedestrian Approach Span Typical Section 11
Figure 4 – Existing Roadway Typical Section 14
Figure 5 – Surface MUP Trail Section 16
Figure 6 – Elevated Trail/Boardwalk Bridge Typical Section 18
Figure 7 – Elevated Trail/Boardwalk Bridge Typical Section 19
Figure 8 – Non-Qualifier MUP Bridge Typical Section 24
Figure 9 – Environmental Constraints Map 32

LIST OF TABLES

Table 1 - Crash Data Summary 6
Table 2 - Canal Crossing/Cross-Drain Locations and Recommendations 21
Table 3 - Opinion of Probable Cost 33
Table 4 - Alternatives Evaluation Matrix 35

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

APPENDICES

Appendix A: Area Transportation Plans

Appendix B: Site Photographs

Appendix C: Existing ROW Maps

Appendix D: BPAC Meeting

Appendix E: Alternatives Evaluation Criteria

Appendix F: SHPO Correspondence

Appendix G: Potential Wetland Impact Areas

Appendix H: Potentially Affected Parcels

Appendix I: Opinion of Probable Cost

Appendix J: Recommended Alternative Conceptual Layout

Appendix K: Potential Project Phasing Map

Appendix L: Trail Median and Side Street Crossing Detail

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

INTRODUCTION

Citrus County retained Kimley-Horn to prepare a feasibility study for a new multi-use path along Fort Island Trail, from the Fort Island Gulf Beach to US 19. The purpose of the study is to identify constraints, evaluate impacts, and provide planning level cost estimates for construction of a new multi-use path (MUP) along the Fort Island Trail roadway alignment. The County desires for the multi-use path to be separated from the roadway, and be between 10-feet and 12-feet wide to provide for bi-directional pedestrian and bicycle travel. Fort Island Trail is owned and maintained by Citrus County, with portions located within the City of Crystal River. The total project length is +/- 9 miles. The project location is illustrated in **Figure 1**.

There are existing bicycle lanes on both sides of Fort Island Trail from the Fort Island Gulf Beach to US 19. The County desires for an off-road multi-use path to provide for a safer and more enjoyable pedestrian and bicycle experience through the scenic area along Fort Island Trail and ultimately the tourist destination at Fort Island Gulf Beach.

The proposed multi-use path will enhance the safety of bicyclists, pedestrians, and motorists along Fort Island Trail by providing a physical separation between the motorists and pedestrians/bicyclists. The existing bike lane could be used exclusively for a paved shoulder, which would provide for improved safety for motorists. The proposed multi-use path will improve the existing transportation facilities by providing for more efficient and safer travel for pedestrians and bicyclists.

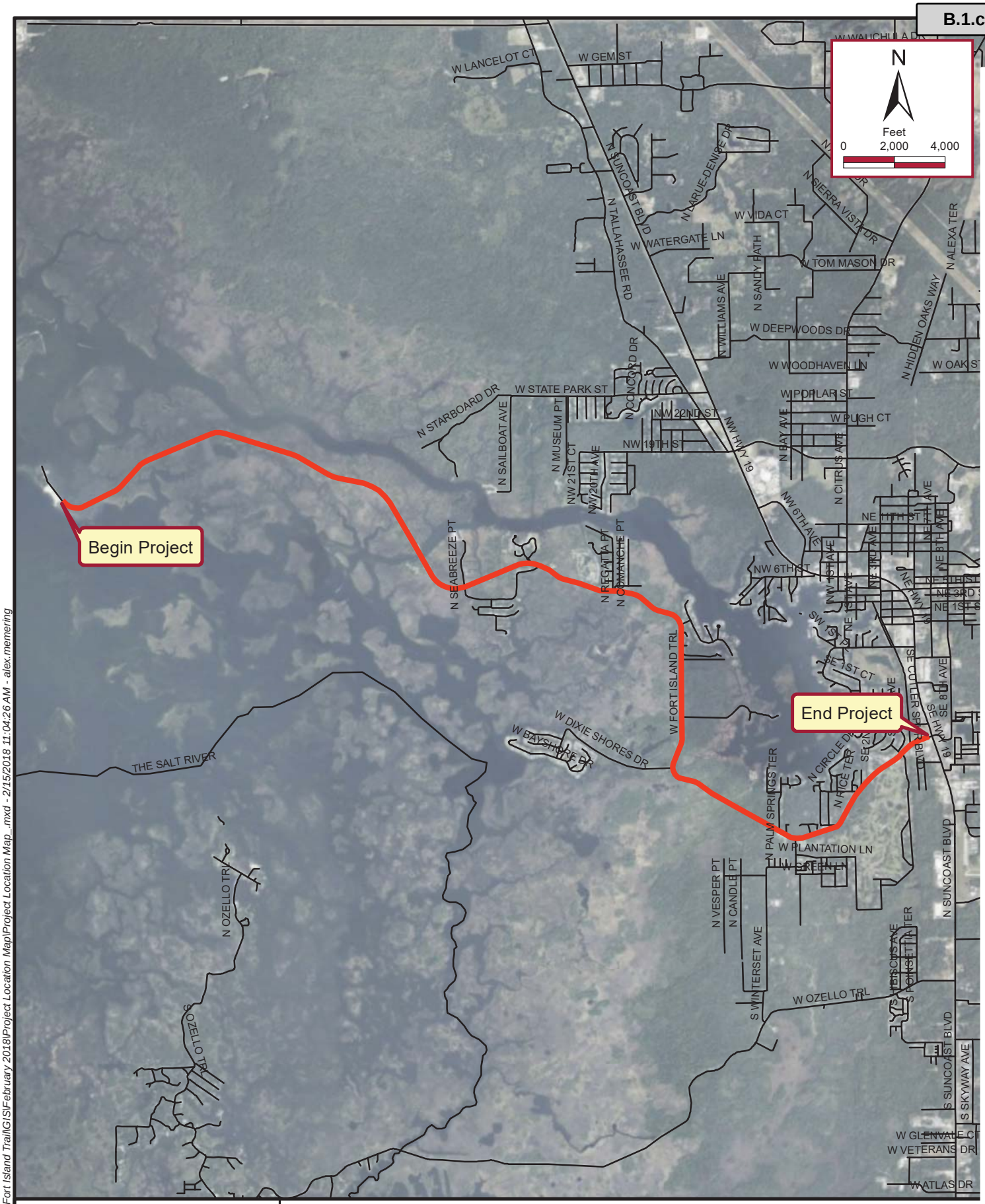
The proposed multi-use path will provide for regional trail connections, as it will connect to the trail on US 19 and the trail along Cutler Spur Boulevard/Three Sisters Springs Trail, which is planned to connect to the CR 486 trail. The proposed trail will provide connection between downtown Crystal River and the Fort Island Gulf Beach, which will improve connectivity between destinations and enhance economic opportunities through recreation. There is also potential for environmental education along the corridor, as much of the proposed trail is bordered by wetlands and marsh areas.

This feasibility study provides a summary of the existing conditions within the study area, an evaluation of the anticipated environmental impacts of an off-road MUP, identification of engineering constraints and impacts of a future MUP, recommendation of the MUP location and treatment, and planning level cost estimates. An evaluation is provided for different MUP treatments based on trail user experience, environmental impact, construction costs, operation and maintenance costs, and potential right-of-way impacts. The feasibility study also outlines the next steps for planning, design, and construction of the desired MUP.

Consistency with Area Transportation Plans

A trail/multi-use path along Fort Island Trail has been identified as priority number 7 in the Hernando-Citrus County Metropolitan Planning Organization (MPO) Complete Streets List of Priority Projects (FY 2018/2019). The proposed trail is also shown as a need on the Hernando-Citrus County MPO 2040 Long Range Transportation Plan (LRTP). The trail is shown as an Opportunity Trail on the Florida Greenways & Trails System Plan (Crystal River Beach Trail Corridor). Excerpts from the relevant documents are provided as an attachment.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-



K:\OCA_Civil\142271008 - Fort Island Trail\GIS\February 2018\Project Location Map\Project Location Map_.mxd - 2/15/2018 11:04:26 AM - alex.memering

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Kimley»Horn
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101 E Silver Springs Blvd, Suite 400, Ocala FL 34470
Phone: 352 438 3000
www.kimley-horn.com CA 00000696

PROJECT LOCATION MAP

FORT ISLAND TRAIL MULTI-USE PATH FEASIBILITY STUDY
CITRUS COUNTY, FLORIDA

Project No: 142271008	Scale: As Noted	March 2018	

EXISTING CONDTIONS

Fort Island Trail is a two-lane undivided roadway with 10-foot travel lanes and paved 5-foot bicycle lanes. Based on information from Citrus County, vehicles will off-track the travel lanes into the bicycle lanes, particularly vehicles towing boats to the Fort Island Gulf Beach and boat ramp.

The existing right-of-way of the roadway ranges from 66 feet to 100 feet. The posted speed limit ranges from 30 mph to 45 mph. The reported annual average daily traffic volume is between 5,700 vehicles per day and 6,700 vehicles per day.

Fort Island Trail is an old corduroy roadway, with palm trees utilized as a subbase material. The existing substructure of the roadway provides limitations for reconstruction and rehabilitation. The roadway has been resurfaced in recent years within several phases.

There are several superelevated curves along Fort Island Trail, some with guardrail installed.

Utilities

A listing of potential utilities within the study area was obtained from Sunshine One-Call. There are several utilities along Fort Island Trail, either within the roadway right-of-way, or **outside of the right-of-way within an easement**. There is a potential for the project to impact existing utility easements outside of the roadway right-of-way. If an utility easement is impacted by the project, additional replacement utility easements will need to be acquired as part of the project and any associated utility relocation costs would be incurred by the project on behalf of the impacted utility.

Most of the utilities are within the eastern portion of the study area, within the more populated areas. The following utility companies were provided by Sunshine One-Call to potentially have utilities within the study area:

- Duke Energy Distribution
- Century Link
- AT&T Distribution
- Level 3 Communications
- Brighthouse (Charter)
- Central Florida Gas
- Ozello Water Association, Inc.
- City of Crystal River

Below is a general description of the utility locations, based on information provided by the individual utility companies.

Duke Energy has overhead distribution lines along the entire length of the project. The overhead lines are along both the north and south sides of the roadway. Brighthouse/Charter has wire utilities on the overhead lines.

Level 3 Communications has underground wire utilities between SE Cutler Spur Boulevard and US 19.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Central Florida Gas has a 2-inch line from Plantation Inn to SE Cutler Spur Boulevard, along the north side of the roadway. There are no other lines within the project area.

The City of Crystal River has a vacuum main and force main along the north side of Fort Island Trail, from N Palm Springs Terrace to SE Cutler Spur Boulevard, and a gravity line from SE Cutler Spur Boulevard to US 19. There is also a sanitary force main along portions of the south side of Fort Island Trail, from N Palm Springs Terrace to US 19.

Ozello Water Association has a 4-inch force main along the north side of Fort Island Trail, from Islamir Way to approximately 190 feet west of Islamir Way. The force main is offset 40 feet from the edge of the right-of-way on the north side of the roadway. It crosses Fort Island Trail and runs along the south side of the roadway in a 10-foot utility easement to proposed lift station #1.

CenturyLink has utilities located on the north side of Fort Island Trail and extend from the intersection of US 19 & West Fort Island Trail to the western terminus of West Fort Island Trail. The utility lines serve customers on both sides of West Fort Island Trail and are generally 24 to 30 inches below the ground, except for service lines which connect to individual homes which are 2 to 12 inches below the ground. The lines are located on the edge and within the right-of-way for West Fort Island Trail.

AT&T utilities are located along the west side of US 19 and cross West Fort Island Trail at the intersection of US 19 & West Fort Island Trail. AT&T utilities are located within a CenturyLink manhole duct system on the north side of West Fort Island Trail at US 19 and within a direct buried 4" duct system on the south side of West Fort Island Trail at US 19. These utility lines continue south along US 19.

There are also 3 concrete siren poles located along the north side of Fort Island Trail within the project limits. These are old poles for the nuclear power plant, that are no longer in use.

Drainage Structures / Crossings

There is a total of 18 cross drains underneath the roadway within the project limits. Some of the cross drains have mitered end sections, but most have headwalls on either side of the roadway. Some cross-drain locations have guardrails between the roadway and the pipe termination/headwall. Each location was reviewed and assessed in the field to determine the appropriate alternative for construction of a MUP along the roadside. More details regarding impacts to the existing drainage structures are provided in subsequent sections of this report.

Salt River Bridge

The Salt River Bridge is a concrete structure spanning approximately 400 feet of the Salt River. The existing bridge consists of one 10-foot vehicular travel lane and a 4-foot to 4.5-foot paved shoulder in each direction. There is a raised (+/- 10-inch) curb with railing on the outside of the shoulder. Additional details regarding the Salt River Bridge, and recommendations for a MUP crossing the Salt River are provided in subsequent sections of this report.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Historic Crash Data

Five years (2012-2016) of historic crash data were obtained within the project corridor from Citrus County. The crash data was separated into three segments; from the Fort Island Gulf Beach to Seabreeze Point (+/-3.65 Miles), from Seabreeze Point to Dixie Shores Drive (+/- 2.85 miles), and from Dixie Shores Drive to US 19 (+/- 2.40 miles).

There was a total of 93 crashes reported along Fort Island Trail within the study area between the years of 2012 and 2017 (incomplete year). The number of crashes per year was relatively consistent between 2013 and 2016, with a significantly lower number of crashes reported in 2012 and a slightly higher number of crashes reported in 2015. The predominant crash type was “Other” (40 crashes), followed by Off-road crashes (17 crashes). Three of the “Other” crashes had animal in the roadway as a contributing cause.

Of the 93 reported crashes, there was one crash resulting in a fatality and 35 crashes resulting in injury (57 injuries). There were two reported pedestrian crashes and two reported bicycle crashes. Seven crashes were reported as having alcohol as a contributing cause, and eight crashes were reported as being distraction related. Over 33 percent of the crashes occurred under dark conditions.

The number of off-road and rollover type crashes suggests that modification of the roadway to incorporate an off-street MUP should not remove the paved shoulders that currently exist on the roadway. A summary of the crash data is provided in **Table 1** below.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Table 1 - Crash Data Summary

Harmful Event	West Fort Island Trail, from Gulf Beach to Seabreeze Pt						
	2012	2013	2014	2015	2016	2017	Total
Off Road	0	0	0	0	1	1	2
Other	0	0	2	2	1	2	7
Rollover	0	0	1	0	0	0	1
Pedestrian	0	0	0	0	0	1	1
Subtotal	0	0	3	2	2	4	11
Harmful Event	West Fort Island Trail, from Seabreeze Pt to Dixie Shores Dr						
	2012	2013	2014	2015	2016	2017	Total
Left-Turn	0	0	0	1	0	0	1
Angle	0	0	0	0	1	0	1
Rear-End	1	0	0	0	0	0	1
Off Road	0	0	1	2	1	0	4
Other	0	6	1	3	3	1	14
Subtotal	1	6	2	6	5	1	21
Harmful Event	West Fort Island Trail, from Dixie Shores Dr to US 19						
	2012	2013	2014	2015	2016	2017	Total
Left-Turn	0	2	1	0	1	1	5
Head on	0	1	0	0	0	0	1
Sideswipe	0	0	0	0	0	1	1
Angle	0	0	1	0	3	2	6
Rear-End	0	2	3	2	3	1	11
Off Road	3	2	1	2	2	1	11
Other	0	2	5	8	2	2	19
Rollover	0	0	1	1	0	0	2
Bicycle	0	0	1	0	0	1	2
Pedestrian	0	0	0	0	0	1	1
Animal	0	0	1	1	0	0	2
Subtotal	3	9	14	14	11	10	61
Total	4	15	19	22	18	15	93

k:\oca_civil\142271008 - fort islandtrail\traffic information\crashdata\crashdata summary.xlsx

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

SALT RIVER BRIDGE ASSESSMENT

Along the project corridor, there is a bridge that spans the Salt River (Bridge Number 024015). The existing bridge is composed of eight (8) 50'-0" spans for a total bridge length of 400'-0" with no skew. The bridge superstructure is composed of AASHTO Beams supporting a cast-in-place deck. The substructure is composed of pile bents with slope abutments for the end bents and seven intermediate pile bents with 24" square pre-stressed concrete piles supporting a cast-in-place concrete cap. The overall bridge width is 33'-6" carrying one lane of traffic and a paved shoulder in each direction. To accommodate a 10-foot to 12-foot MUP, the existing bridge would have to be widened.

Photographs illustrating the existing conditions of the Salt River Bridge are provided below.

Photograph 1 - Salt River Bridge, looking west from east

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Photograph 2 - Salt River Bridge structure

Bridges are inventoried based on a national system and given a Sufficiency Rating. A threshold of 50 has been established as the breakpoint between “Structurally Deficient” (in need of replacement) status and “No Significant Deficiency” (to be monitored and maintained) status; however, before preparing widening plans, a review of the latest bridge inspection report and the existing load rating analysis should be performed. Preliminary review of the latest bridge inspection report revealed a sufficiency rating of 53.5 for Bridge 024015 which indicates this structure to be eligible for widening. However, this bridge was built in 1968 and an older method (load factor) was used for the load rating analysis; therefore, a new LRFR load rating (MBE Section 6, Part A) of the existing bridge will need to be performed in accordance with SDG 1.7. If any LRFR design inventory or any FL120 Permit rating factors are less than 1.0, replacement or strengthening of the existing structure is required unless a design variation is approved. If any LRFR or LFR inventory load rating factors are less than 1.0, a revised load rating may be performed using one of the additional procedures listed below:

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

1. **Approximate Method of Analysis:** When using LRFD approximate methods of structural analysis and live load distribution factors, a rating factor of 0.95 may be rounded up to 1.0 for the existing portion of the bridge.

2. **Refined Method of Analysis:** Refined methods of structural analyses (e.g. using finite elements) may be performed to establish an enhanced live load distribution factor and improved load rating.

3. **Service Limit State:** If a Service Limit State rating factor is less than 1.0 and the current bridge inspection is showing no signs of either shear or flexural cracking, the capacity may be established using the Strength Limit State. A Design Variation for a Service Limit State inventory load rating factor of less than 1.0 must be submitted to the State Structures Design Engineer.

The most recent bridge inspection report was reviewed. Preliminary information from the load rating report for Bridge 024015 revealed the rating factor (RF) is 0.617 using load factor methodology; therefore, it is anticipated that the new load rating analysis using the LRFR methodology will have RF less than 1.0 and replacement of the structure will be required. In addition, this bridge is also classified to have unknown foundations due to a lack of pile driving records from the original construction. Therefore, the substructure stability is susceptible to major storm events due to the pile embedment depths being unknown at the pile bents which results in this bridge not being a candidate for bridge widening.

Recommendation

Based on a review of published information regarding Bridge 024015, the existing bridge cannot be modified to include a dedicated MUP. In order to accommodate a 10-foot to 12-foot MUP trail crossing the Salt River, a new bridge structure will need to be built adjacent to Bridge 024015.

The new pedestrian bridge typical section is proposed to consist of a 12-feet clear width bounded by two 12-inch-wide barriers for a total out-to-out width of the deck of 14-feet, as illustrated in **Figure 2** below. The pedestrian bridge and approach ramps will have 0% cross slope.

The proposed pedestrian bridge will be required to meet or exceed the horizontal and vertical clearances of parallel Bridge 024015. The minimum vertical clearance will be satisfied with the proposed profile of the pedestrian bridge over Salt River matching the parallel bridge and the reduced structural depth of the superstructure. The horizontal clearance will be increased due to the span increase from 50'-0" to 100'-0".

The new pedestrian bridge is proposed to span over Salt River with four (4) 100'-0" spans for a total bridge length of 400'-0" with no skew. The approach ramps will consist of 30-feet clear spans with 8.33% grade equaling to a 30-inch rise. Level landings measuring 5-feet in length will be provided at the top, intermediate, and bottom portion of the ramps.

The proposed approach span on the east side will require ten (10) 30-feet clear spans with 8.33% grade and ten (10) 5-feet level landings for a total length of 350'-0". The proposed approach span on the west side will require four (4) 30-feet clear spans with 8.33% grade and four (4) 5-feet level landings for a total length of 140'-0". The total length for the approach spans is estimated at 490'-0".

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Two typical sections for the bridge construction have been evaluated for this feasibility study. First, the main bridge will have a superstructure composed of two (2) 36" Florida-I Beams (FIB) supporting an 8-inch cast-in-place concrete deck with two 1'-0" wide concrete parapets (see **Figure 2** below). Second, the approach spans will have a superstructure composed of a 12-inch cast-in-place slab with two 1'-0" wide concrete parapets (see **Figure 3** below). A planning level cost for the bridge construction has been developed considering conventional substructure and foundation components that include hammerhead piers or pile bents supporting the approach spans on deep foundations. The deep foundations evaluated for this feasibility study include 24-inch square PPC piles and 42-inch and 48-inch drilled shafts.

In the event that Bridge 024015 is reconstructed or replaced prior to a new adjacent pedestrian bridge being constructed, the new vehicular bridge should be designed to accommodate a separated shared-use path for pedestrians and bicyclists.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Figure 2 – Salt River Pedestrian Bridge Typical Section

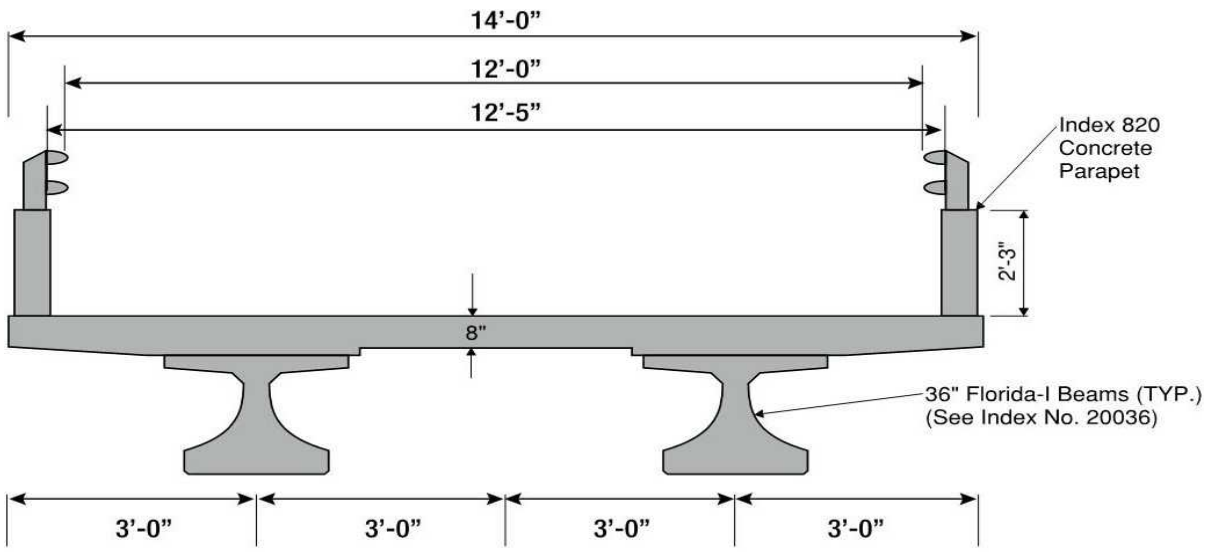
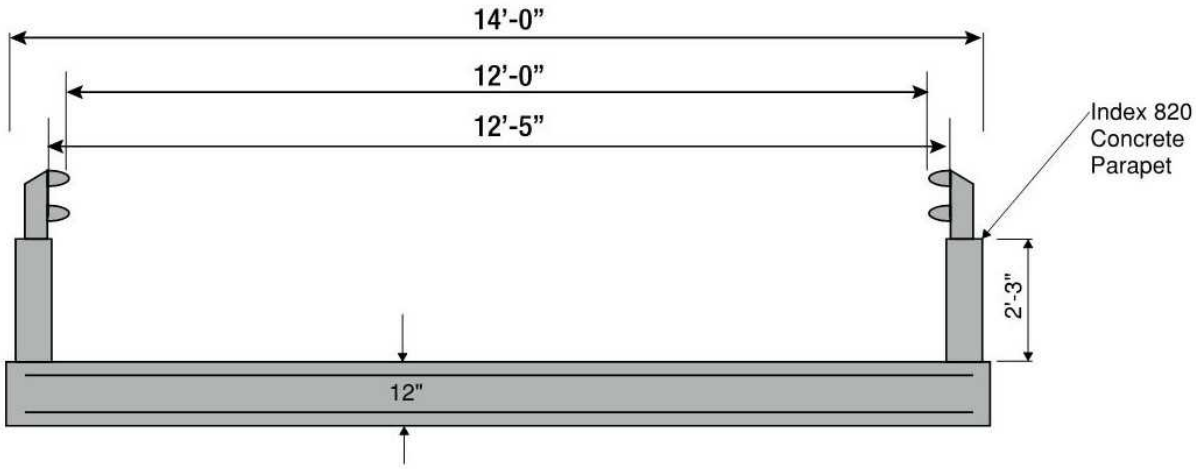


Figure 3 – Salt River Pedestrian Approach Span Typical Section



Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Pedestrian Bridge Opinion of Probable Cost

A planning level opinion of probable construction cost was developed for the proposed pedestrian bridge based on FDOT historical cost information. The following bridge cost per square foot have been used for each structure type, based on historical cost information from FDOT:

- Concrete Deck/Pre-Stressed Girder: $124.00/ ft^2
- Reinforced Concrete Flat Slab: $145.00/ ft^2

A planning level construction cost estimate of $1,700,000 has be utilized for the pedestrian bridge. A breakdown of the construction cost per square foot of the main span and approach spans is provided below.

- Main Span: $124.00/ft^2 x 400ft long x 14ft wide = $694,400.00
- Approach Spans: $145.00/ ft^2 x 490ft long x 14ft wide = $994,700.00

A design estimate of 10-15% of the bridge construction cost is in line with industry standards and man-hour estimates for this type of structure. A design estimate of 15% was utilized for this feasibility study.

Due to current conditions in the construction industry, this Opinion of Probable Cost is based on our most current data. We have added a 25% contingency onto the OPC and it may still be below actual construction bids.

The total planning level opinion of probable cost for the new pedestrian bridge crossing Salt River, including 10% mobilization and maintenance of traffic, a 25% contingency, 15% design and 10% CEI, is $3,187,500.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

MUP TYPICAL SECTIONS

Fort Island Trail within the project limits has a right-of-way width ranging from 66 feet to 100 feet. The portion of roadway near the Fort Island Gulf Beach has a 100-foot right-of-way, with the right-of-way narrowing as the roadway enters the residential areas within Crystal River approaching US 19.

The existing roadway typical section is one 10-foot travel lane and a 5-foot bicycle lane/paved shoulder in each direction. The posted speed limit varies from 30 mph to 45 mph, with a majority of the project area having a 45 mph speed limit. The roadway drains to low areas adjacent to the roadway and/or roadside swales. A majority of the study area has wetlands and/or marshes adjacent to the roadway. The existing typical section is illustrated in Error! Reference source not found. below.

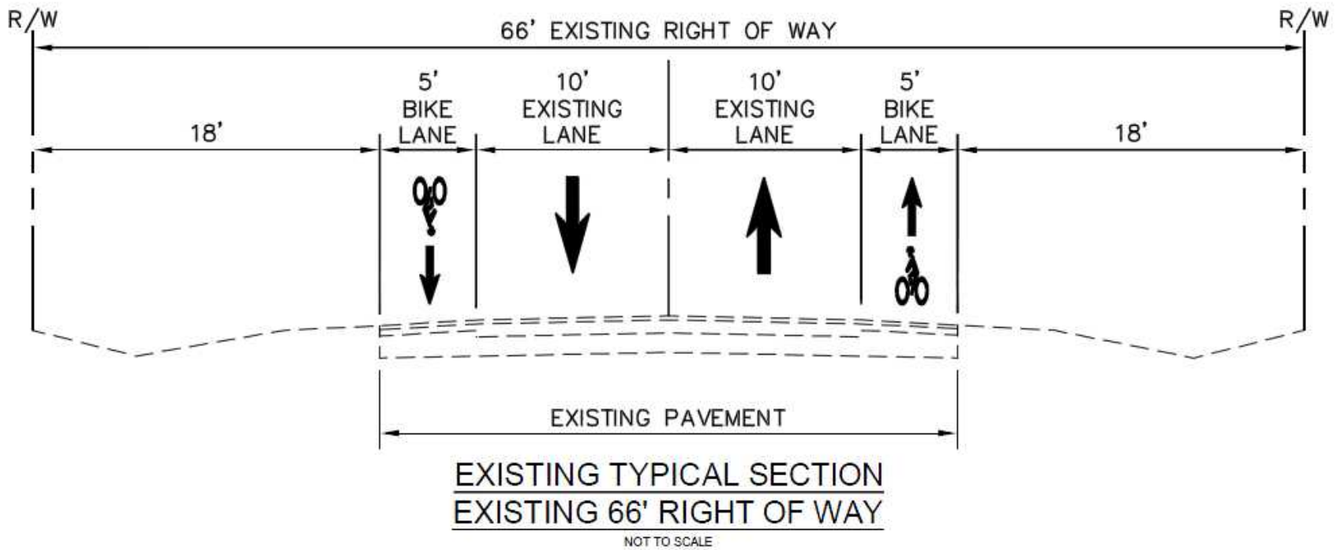
The County desires a paved MUP separated from the roadway. The standard width of a paved MUP is 12 feet, with the minimum paved width for a two-way path being 10 feet based on the FDOT Greenbook. The Greenbook allows for a reduced width of 8 feet for short distances due to physical constraints such as environmental features, bridge abutments, utility structures, or fences.

The MUP is recommended to be on the north side of the roadway to provide for greater access to the roadway network, residential areas, and uses along Fort Island Trail.

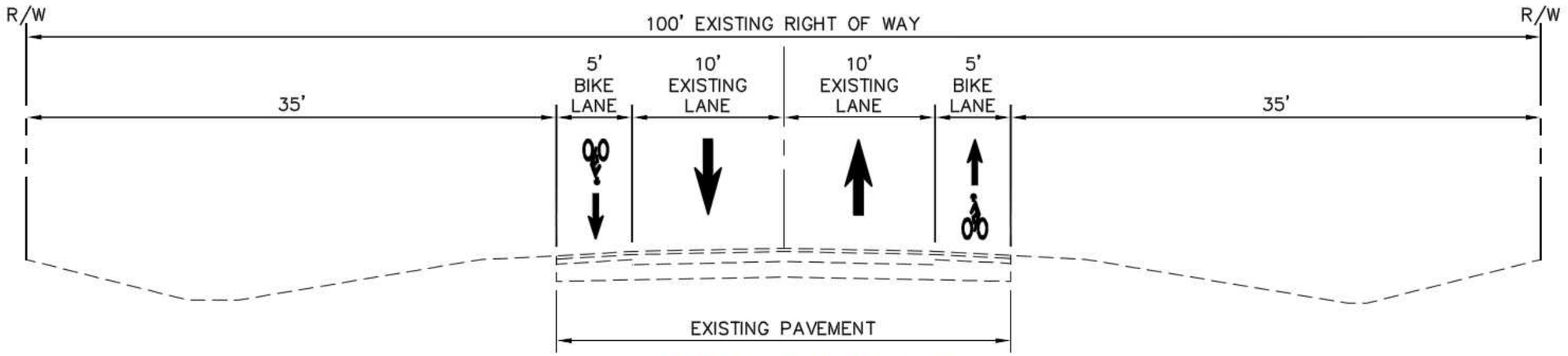
Typical section alternatives for reconstruction of the existing roadway were considered; however, due to the structure of the roadway, these options have been deemed to be infeasible. Two MUP treatments have been evaluated as part of this feasibility study; an asphalt surface trail option and an elevated trail option. The elevated trail typical section has been included in the evaluation to reduce direct wetland impacts and also provide for crossings of existing drainage canals. Additional details of each typical section are provided below. **Figures 5-7** illustrate the recommended typical sections.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Figure 4 – Existing Roadway Typical Section



EXISTING TYPICAL SECTION
EXISTING 66' RIGHT OF WAY
NOT TO SCALE



EXISTING TYPICAL SECTION
EXISTING 100' RIGHT OF WAY
NOT TO SCALE

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Surface Trail

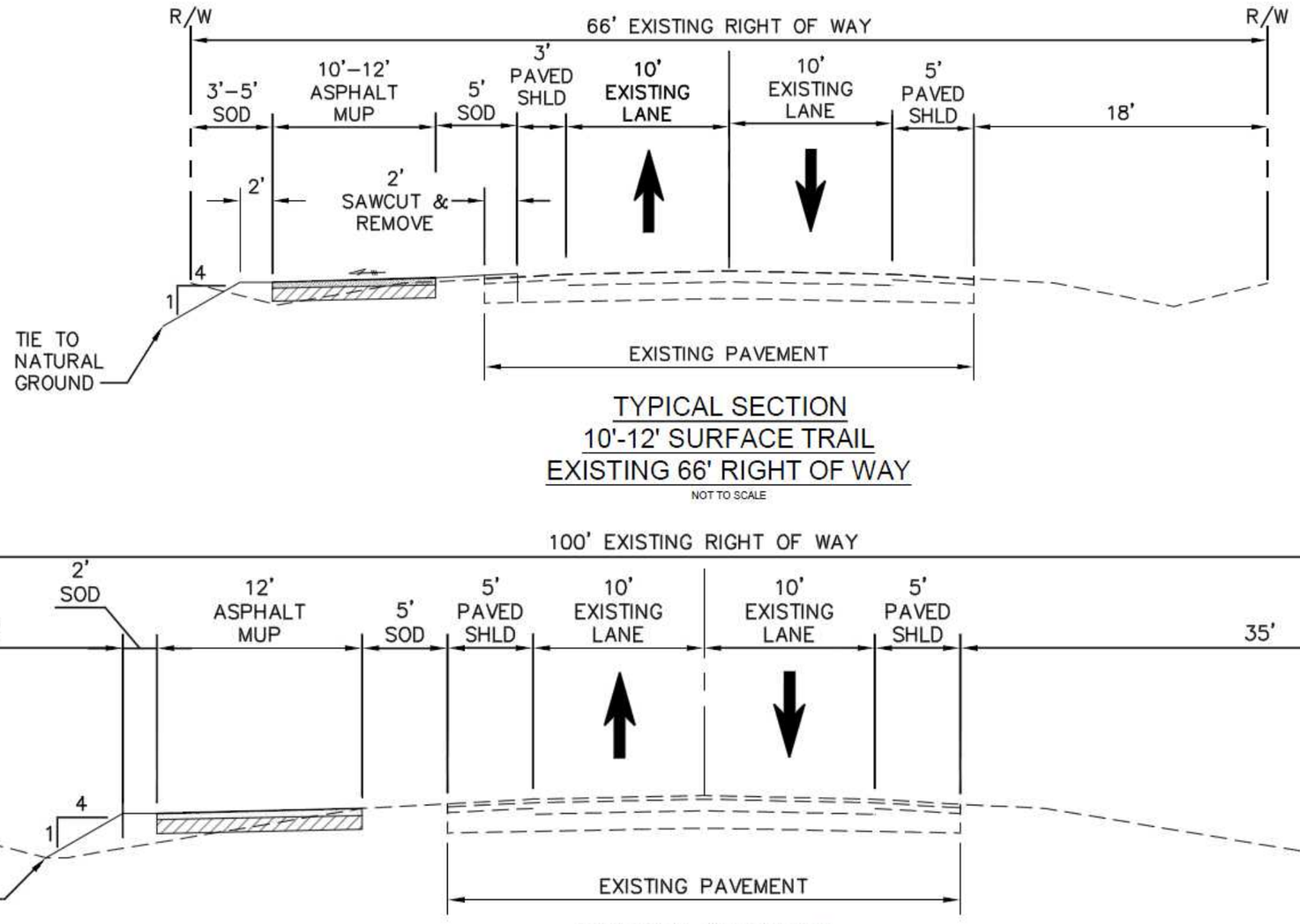
The recommended typical section is a 12-foot asphalt MUP separated from the roadway by a 5-foot grass strip. The recommended separation is based on guidance within the FDOT Greenbook. For constrained areas, a 10-foot MUP width can be utilized and/or guardrail can be installed between the roadway and MUP to allow for lesser separation. Within areas that have a 66-foot right-of-way, the existing 5-foot paved shoulder can be reduced to 3 feet to allow for a 5-foot grassed separation between the edge of the shoulder and the MUP and maintain the improvements within the existing right-of-way. Alternatively, the MUP can be reduced to 10 feet to maintain the existing 5-foot paved shoulder.

A minimum 2-foot flat grass area on the back side of the MUP is required to provide for a recovery area behind the trail. A slope of 1:4 is recommended to tie to natural grade behind the flat area. For areas with an existing 66-foot right-of-way, grading easements may be required for slope tie-ins. For the purpose of this feasibility study, it has been assumed that a 10-foot grading easement is required for a surface trail construction within a 66-foot right-of-way.

The FDOT Greenbook provides additional guidance on providing railings for areas with less than a 5-foot recovery area and slopes between 1:1 and 1:3. During design, specific constrained areas may require railings due to the drop-off conditions behind the trail and to reduce grading easements and/or right-of-way.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Figure 5 – Surface MUP Trail Section



Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Elevated Trail

An elevated trail typical section has been evaluated as a part of this study to provide for lesser wetland impacts and allow for crossing of existing canals along the project length. Several options for an elevated trail structure have been reviewed. The recommended width of the elevated trail structure is 14 feet, which will allow for comfortable two-way bicycle and pedestrian travel within the railings. There are a range of products that can be utilized for an elevated trail system, including a boardwalk pressure treated wood structure, pre-fabricated boardwalk structure, or a concrete pre-cast bicycle and pedestrian structure. The systems vary widely in cost depending on the manufacturer and product specifications.

Due to the location of Fort Island Trail, any elevated trail system should ensure that all elements are designed for marine salt water environments. Special design considerations include exposure to corrosive salt water, potential for rising floodplain waters and coastal storm surges, appropriate design wind loading, and tidal debris. Even with proper design, there is still the potential for damage from major storms.

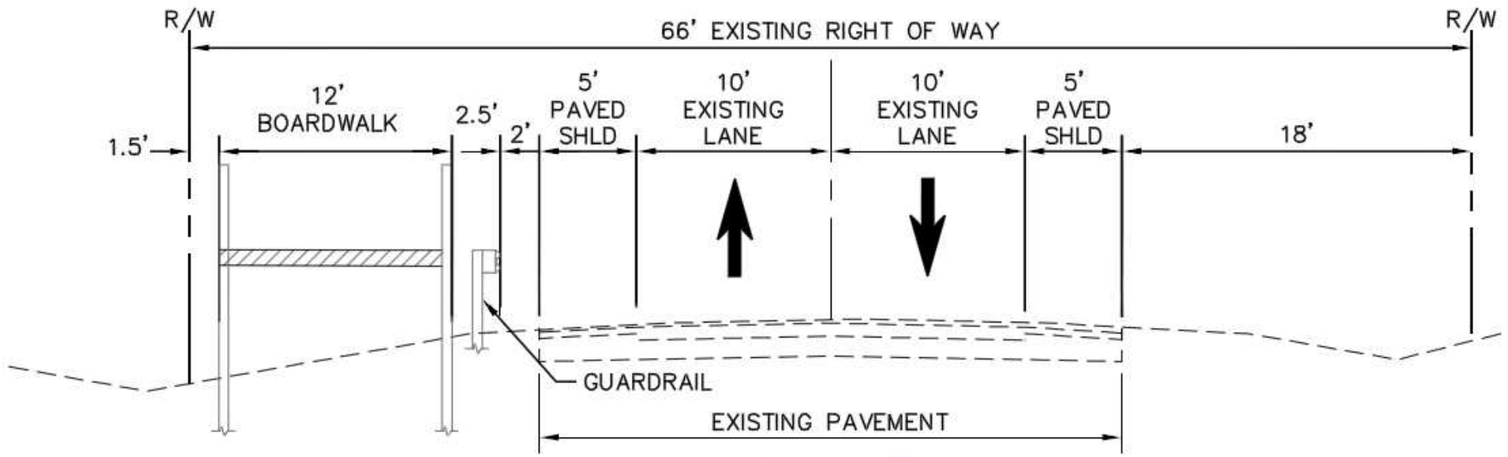
Information provided by a precast boardwalk system was revised for application on this project. This type of system provides durability in saltwater environments, low maintenance, and ease of installation due to the product being precast. These systems have been utilized in Florida for similar treatments. For the purpose of this study, the pre-cast boardwalk system was not assumed due to the higher cost when compared to a construct-in-place boardwalk system.

Contech or other similar type pre-cast pedestrian and bicycle bridge options with a smooth riding surface were also evaluated. These systems have a much higher cost. Long distances of elevated structure are anticipated along the length of this project. Therefore, these types of systems have been deemed infeasible for long stretches of trail due to high cost anticipated for the total project length. Sections of pre-cast pedestrian and bicycle bridge were assumed within the feasibility study for crossing wide canals as described in following sections of this report.

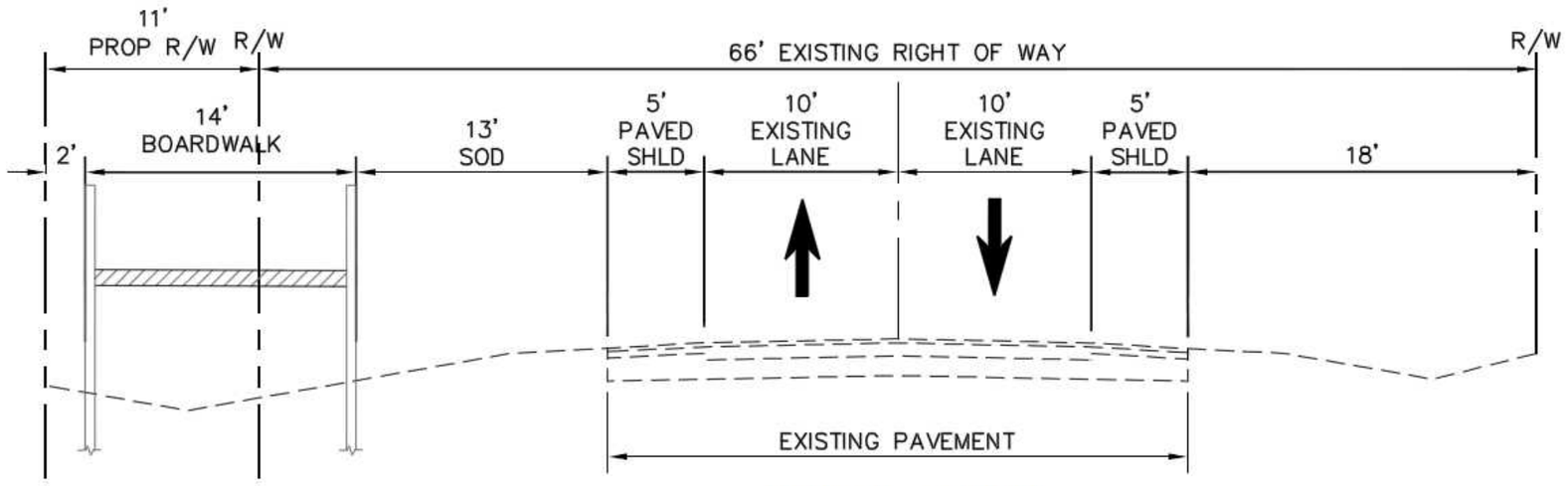
The elevated trail section is required to be separated a sufficient distance from the roadway to meet the roadway clear zone requirements. The clear zone requirement for the existing posted 45 mph speed limit is 18 feet based on the FDOT Green Book. The clear zone can be accommodated within areas of existing 100-foot right of-way. However, to construct an elevated structure outside of the roadside clear zone within the 66-foot right-of-way sections, an additional +/- 11 feet of right-of-way would be required for construction of a 14-foot wide structure. A narrower 10-foot to 12-foot structure could be utilized with guardrail between the roadway and trail structure to allow for construction within the existing roadway right-of-way. Sections of elevated structures have been identified to cross canals or to minimize wetland impacts within areas of existing 66-foot roadway right-of-way, as detailed in later sections of this study.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Figure 6 – Elevated Trail/Boardwalk Bridge Typical Section



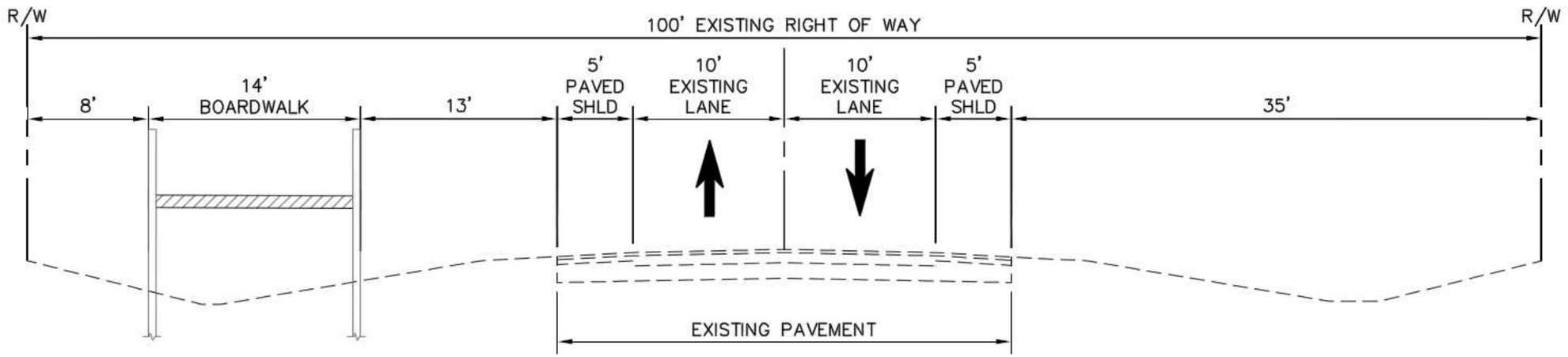
TYPICAL SECTION
12' BOARDWALK
EXISTING 66' RIGHT OF WAY
NOT TO SCALE



TYPICAL SECTION
14' BOARDWALK
EXISTING 66' RIGHT OF WAY
NOT TO SCALE

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Figure 7 – Elevated Trail/Boardwalk Bridge Typical Section



TYPICAL SECTION
14' BOARDWALK
EXISTING 100' RIGHT OF WAY
NOT TO SCALE

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Drainage/Canal Crossings

There is a total of 18 cross-drains/canal crossings along Fort Island Trail within the project limits. Each cross-drain/canal crossing was reviewed in the field to identify the existing characteristics and development an appropriate recommendation to allow for construction of an off-roadway MUP. The structures were numbered sequentially based on location along the corridor, from the west to the east. Structure 3 is the existing bridge over the Salt River.

There are three different recommended treatments identified for the cross-drains:

- Extension of the existing pipe, constructing a new headwall, constructing an asphalt MUP on top of the extended pipe, placing new bike railing behind the asphalt MUP
- Construction of a boardwalk MUP behind the existing headwall/box culvert to cross the drainage ditch/canal
- Construction of a bridge structure behind the existing culvert to cross the drainage ditch/canal

A summary of each cross-drain/structure location and recommendation is provided in **Table 2** below. The information shown is for Alternative C. These recommendations have been considered in the planning level opinions of probable cost for the project. The location of each structure is located in **Appendix J**.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Table 2 - Canal Crossing/Cross-Drain Locations and Recommendations

Location	Description	Recommendation
Structure 1	Box culvert with guard railing	Separate Multi-Use Trail Precast Pedestrian Structure
Structure 2	24-inch concrete storm drain with headwall and guardrail	Extend pipe, place new handrail and replace headwall structure
Structure 3	Salt River Bridge	Separate Pedestrian/Bicycle Bridge
Structure 4	Box culvert with guard railing	Separate Precast Pedestrian/Bicycle Structure
Structure 5	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 6	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 7	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 8	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 9	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 10	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 11	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 12	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 13	36-inch concrete storm drain with headwall and guardrail	Separate Boardwalk
Structure 14	18-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 15	Twin 24-inch concrete storm drain with headwall and guardrail	Separate Boardwalk
Structure 16	24-inch concrete storm drain with headwall and guardrail	Extend pipe and replace headwall structure
Structure 17	Twin 24-inch concrete storm drain with headwall and guardrail	Separate Boardwalk
Structure 18	Concrete culvert structure with mitered-end metal piping	Separate Pedestrian/Bicycle Bridge
Structure 19	Concrete culvert structure with mitered-end metal piping	Separate Pedestrian/Bicycle Bridge

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Non-Qualifier Bridges

Structure 18 and Structure 19 are non-qualifier bridges along the study area. These bridges were reviewed in the field to identify recommendations for accommodating an off-road multi-use path.

Structure 18 is located 0.05 miles west of Falls Terrace. This structure is composed of corrugated metal pipe arch with mitered ends (see **Photograph 3**). Structure 19 is located 0.05 miles east of North Midiron Point. This structure is composed of corrugated metal pipe arch with mitered ends (see **Photograph 4**).

Since no information is available for either structure, the live load carrying capacity is unknown; therefore, the existing structures are not candidates for widening. To accommodate the off-road MUP, a new bridge structure will need to be built adjacent to the existing Structure 18 and existing Structure 19.

Photograph 3 - Structure 18

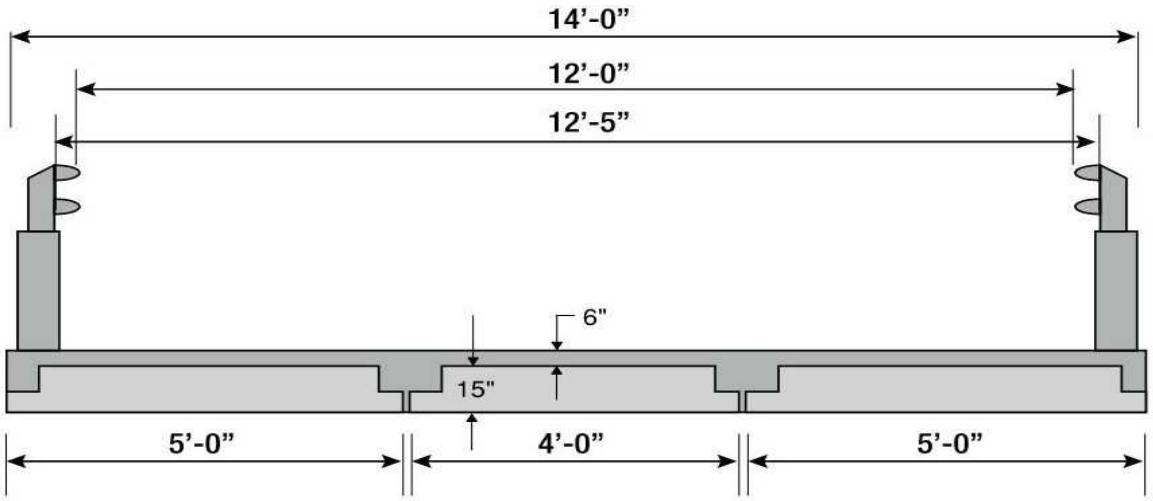
Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Photograph 4 - Structure 19

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

The proposed pedestrian bridge typical section will consist of a 12-feet clear width bounded by two 12-inch-wide barriers for a total out-to-out width of the deck of 14-feet (see Error! Reference source not found.). The pedestrian bridge and approach ramps will have 0% cross slope.

Figure 8 – Non-Qualifier MUP Bridge Typical Section



Each proposed pedestrian bridge will span over a creek with one (1) 50'-0" span for a total bridge length of 50'-0" with no skew. The approach ramps will consist of 30-feet clear spans with 8.33% grade equaling to a 30-inch rise. Level landings measuring 5-feet in length will be provided at the top, intermediate, and bottom portion of the ramps.

For the purpose of this feasibility study, two superstructure types have been considered. First, the main bridge will have a superstructure composed of three (3) 15" Precast Slab Units supporting a 6-inch cast-in-place concrete deck with two 1'-0" wide concrete parapets. Second, the approach spans will have a superstructure composed of a 12-inch cast-in-place slab with two 1'-0" wide concrete parapets. A planning level cost for the bridge construction has been developed considering conventional substructure and foundation components that include hammerhead piers or pile bents supporting the approach spans on deep foundations. The deep foundations evaluated for this feasibility study include 24-inch square PPC piles and 42-inch and 48-inch drilled shafts.

The proposed approach spans will span on both sides with two (2) 30-feet clear spans with 8.33% grade and two (2) 5-feet level landings for a total length of 70'-0. The total length for the approach spans will be 140'-0".

A planning level opinion of probable construction cost was developed for the proposed pedestrian bridge based on FDOT historical bid data. The following bridge cost per square foot have been used for each structure type, based on historical cost information from FDOT:

- Concrete Deck/Pre-Cast Slab $160.00/ ft^2
- Reinforced Concrete Flat Slab $145.00/ ft^2

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Assuming the dimensions provided above for each bridge and approach span, and a width of 14 feet, the estimated construction cost for each bridge structure is approximately $400,000. This is the construction cost used in the opinion of probable cost for each alternative.

Other Design Considerations and Constraints

There are other design considerations and constraints for construction of a MUP adjacent to the existing roadway. Below is a discussion of initial considerations for the design of a future MUP, but is not intended to be a full listing of all engineering design considerations.

There are several concrete residential driveways along the proposed MUP. These driveways will need to be reconstructed to accommodate the MUP. Coordination with the owners should occur during future planning and design to build consensus on the improvements. Grading will need to occur within some private residential properties to re-establish roadside swales after construction of the MUP.

There is an area along the north side of Fort Island Trail near the Plantation Inn with an existing drainage swale. Due to the constrained right-of-way, the roadside drainage within this area will need to be accommodated within a closed drainage pipe underneath the future MUP. Additional drainage design and calculations will need to be performed in future planning and design phase of the project.

Grading will be required to provide slope tie-ins from the back side of the MUP to the existing grade. There are some areas along the roadway that the adjacent grades will require grading outside of the existing 66-foot right-of-way, and easements will be required to provide grading within private property. For the purpose of this study, a 10-foot grading easement has been assumed for proposed surface trail sections within 66-feet of right-of-way. In addition, tie-in and reconstruction of connecting private roadways may be required outside of the Citrus County roadway right-of-way. Easement rights will need to be purchased for any reconstruction required within private roadways. The length of potential private roadway easements will need to be evaluated and determined with future phases of the project. Grading outside of the right-of-way will not be required in the 100-foot right-of-way sections.

Guardrail may be utilized in constrained areas to provide for lesser separation between the roadway and MUP. There is also existing guardrail within the project limits. Some guardrail may need to be relocated and/or replaced for the MUP construction.

The proposed MUP will cross several public roadways. High emphasis crosswalk markings are recommended at all roadway crossings. Crosswalk locations will need to be designed to appropriate ADA requirements and include detectable warning surfaces. In addition, the County's typical treatment for median/landscape areas on approach to side street crossings is recommended at public roadway crossings. This includes longer concrete aprons on approach to street crossings consistent with other MUP's within Citrus County.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

ALTERNATIVES

Three alternatives have been considered for this evaluation. For all three alternatives, the recommendation for a bridge crossing the Salt River have been assumed. For all three alternatives, the recommendation for a bridge crossing two creek locations (Structure 18, and Structure 19) have been assumed. A precast pedestrian/bicycle structure was assumed for every alternative due to the canal/creek crossings identified at the locations of Structure 1 and Structure 4. The differences between the alternatives is described below.

Alternative A

Alternative A assumes an asphalt surface trail along the entire length of the project, with the exception of the four locations identified previously as needed for crossing canals and the new pedestrian bridge crossing the Salt River. This alternative has the lowest construction cost but also has the greatest wetland impacts requiring mitigation.

For the purpose of this study, a 10-foot grading easement has been assumed for proposed surface trail sections within 66-feet of right-of-way. This results in an estimated 3.60 acres of potential right-of-way/easement required for the surface trail within 48 private properties. Citrus County may also need to request easements within State of Florida and City of Crystal River owned parcels. With this alternative, the trail and/or right-of-way is estimated to potentially impact 1.40 acres of State and City owned land.

It is estimated that 48 private properties, 2 City properties, 1 County property, and 4 State properties may require grading easements within areas of existing 66-foot roadway right-of-way. In addition, tie-in and reconstruction of connecting private roadways may be required outside of the Citrus County roadway right-of-way. Easement rights will need to be purchased for any reconstruction required within private roadways. The length of potential private roadway easements will need to be evaluated and determined with future phases of the project.

The potentially impacted parcels are illustrated in **Appendix H**.

Alternative B

Alternative B assumes an elevated/boardwalk trail section in all areas identified for potential direct wetland impacts with the construction of a surface trail. This alternative results in approximately 5.50 miles of elevated trail section to avoid potential direct wetland impacts. The length of boardwalk is based on a desktop review and is conservative; after a more detailed wetland evaluation is performed, boardwalk lengths may decrease. The potentially impacted areas are illustrated in **Appendix G**.

For locations where a cross-drain is located adjacent to a proposed boardwalk section, the boardwalk is assumed to continue across the drainage canal and extension of the existing cross-drain is not needed. For locations where a cross-drain is located adjacent to an asphalt surface trail section, the recommendations previously provided in **Table 2** have been assumed.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

As described above, a 10-foot grading easement has been assumed for proposed surface trail sections within 66-feet of right-of-way. This results in an estimated 2.35 acres of potential right-of way/easement required for the surface trail within private property. Additionally, Citrus County may need to request easements within State of Florida and City of Crystal River owned parcels. With this alternative, the trail is estimated to potentially impact 1.45 acres of State and City owned land.

It is estimated that 39 private properties, 1 City property, 0 County properties, and 4 State properties may require grading easements and/or right-of-way within areas of existing 66-foot roadway right-of-way. In addition, tie-in and reconstruction of connecting private roadways may be required outside of the Citrus County roadway right-of-way. Easement rights will need to be purchased for any reconstruction required within private roadways. The length of potential private roadway easements will need to be evaluated and determined with future phases of the project.

There is also a potential for right-of-way needed for boardwalk sections constructed within areas of 66-foot roadway right-of-way. Use of a narrower boardwalk and guardrail could eliminate the need for additional right-of-way. For the purpose this feasibility study, it is assumed that boardwalk sections within 66-feet of right-of-way will be reduced in width and separated from the vehicular travel lanes by a guardrail to avoid the need for right-of-way acquisition. If a 14-foot boardwalk is constructed outside of the clear zone it is estimated that an additional 1.35 acres of right-of-way from 9 private parcels would be required.

This alternative has the highest construction cost, but the lowest impact to wetlands.

Alternative C

Alternative C assumes that an asphalt surface trail section will be constructed in all areas where direct wetland impacts are greater than 0.50 miles continuously along West Fort Island Trail. This allows for the east section of the roadway (east of W Pinebark Lane) to have elevated boardwalks were there are direct wetland impacts, as most impacted areas are less than 0.50 miles in continuous length. The west portion of the roadway (west of W Pinebark Lane) would have a surface trail typical section to the western terminus. This alternative allows for reduced wetland impacts in some areas while providing wetland mitigation in others, with the intent to provide improved rider experience for long sections that would require boardwalk to result in no wetland impacts.

This alternative results in approximately 0.68 miles of elevated trail section to avoid direct wetland impacts. The length of boardwalk is based on a desktop review and is conservative; after a more detailed wetland evaluation is performed, boardwalk lengths may decrease. The recommendations provided in **Table 2** have been assumed for this alternative.

This alternative provides a balance between cost and wetland impacts. This alternative also considers the experience of the trail users by trying to minimize long sections of boardwalk travel, which is less desirable from a user standpoint than an asphalt surface trail.

There are other combinations and/or alternatives that could be considered between Alternative A and Alternative B. For the purpose of this feasibility study, the delineation between utilizing an asphalt

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

surface trail and boardwalk section within areas of potential wetland impact has been made for continuous segments greater than 0.5 miles.

As described above, a 10-foot grading easement has been assumed for proposed surface trail sections within 66-feet of right-of-way. This results in an estimated 3.35 acres of potential right-of way/easement required for the surface trail within private property. Additionally, Citrus County may need to request easements within State of Florida and City of Crystal River owned parcels. Based on this alternative, the trail is estimated to potentially impact 1.45 acres of State and City owned land.

It is estimated that 45 private properties, 1 City property, 0 County properties, and 4 State properties may require grading easements and/or right-of-way within areas of existing 66-foot roadway right-of-way. In addition, tie-in and reconstruction of connecting private roadways may be required outside of the Citrus County roadway right-of-way. Easement rights will need to be purchased for any reconstruction required within private roadways. The length of potential private roadway easements will need to be evaluated and determined with future phases of the project.

There is also a potential for right-of-way needed for boardwalk sections constructed within areas of 66-foot roadway right-of-way. Use of a narrower boardwalk and guardrail could eliminate the need for additional right-of-way. For the purpose this feasibility study, it is assumed that boardwalk sections within 66-feet of right-of-way will be reduced in width and separated from the vehicular travel lanes by a guardrail to avoid the need for right-of-way acquisition. If a 14-foot boardwalk is constructed outside of the clear zone it is estimated that an additional 0.25 acres of right-of-way from 3 private parcels would be required.

Alternative Boardwalk Materials

There is a wide range of options that can be considered for the boardwalk trail construction. The systems differ in construction materials, construction type, cost, appearance, and rideability. Three different boardwalk and pre-cast bicycle/pedestrian systems were reviewed for this feasibility study; however, there are multiple other options that could be utilized during design. Due to the location of Fort Island Trail, any elevated trail system should ensure that all elements are designed for marine salt water environments. Special design considerations include exposure to corrosive salt water, potential for rising floodplain waters and coastal storm surges, appropriate design wind loading, and tidal debris. Even with proper design, there is still the potential for damage from major storms.

Contech or other similar type pre-cast pedestrian and bicycle bridge options provide for the fastest construction and best rideability, but have a much higher cost. Estimated costs for this type of system based on information from a Contech representative is $2,150 per linear foot. This type of trail system has been deemed infeasible for long stretches of trail due to high cost anticipated for the total project length. Precast pedestrian/bicycle bridge sections have been assumed for crossings of large canals.

A pre-fabricated Permatrak boardwalk structure and construct-in-place pressure-treated wood structure were also reviewed. Based on information from the product manufacturers, as well as recent similar type projects in Florida, the estimated cost of a construct-in-place pressure treated wood structure is $800 per linear foot and the estimated cost of a Permatrak pre-fabricated system is $1,100 per linear foot.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

ENVIRONMENTAL EVALUATION

The three multi-use path alternatives were evaluated for the potential of environmental constraints relative to threated and endangered species and their habitat, ecological communities, wetlands, and archaeological and historical resources. **Figure 8** provides an environmental constraints map for the corridor. Below is a summary of the environmental constraints common to all three alternatives.

Each alternative falls within the United States Fish and Wildlife Service (USFWS) Consultation Area for the following species:

- West Indian Manatee
- Red Cockaded Woodpecker
- Florida Scrub-Jay

Each alternative also traverses USFWS Critical Habitat for the West Indian Manatee at the CR-44 crossing over the Salt River (Bridge No. 024015). No other USFWS Critical Habitat was identified within or adjacent to the trail corridor.

Additionally, several state and federally listed species have been documented within the study area; however, none of these species were identified during field reconnaissance. Species historically documented within the study area include: hawksbill sea turtle, bald eagles, little blue herons, snowy egrets, white ibis, wood stork, osprey, and Sherman's fox squirrel.

Construction will look to minimize impacts to these areas by utilizing already existing right-of-way adjacent to existing roadways where possible. After an alternative is selected, additional surveys may be required to determine potential impacts to these species. If during design development, potential impacts of the proposed trail construction increase, coordination with permitting agencies and species specific surveys may be required.

A determination from the Department of State, State Historic Preservation Office (SPHO) Division of Historical Resources Florida Master Site File (FMSF) was requested regarding the presence of known historical and archeological finding within the project area. The FMSF indicates that there are five archaeological sites, seven field surveys, one resource group, and no standing structures found within 0.25-mile buffer of the trail corridor. However, based on the location of the proposed trail and the scope of work, impacts are not anticipated with regard to historical and archeological resources. Further coordination with SHPO may be required during permitting.

A review of National Wetland Inventory (NWI) data shows wetlands and surface waters are present within each of the proposed alternatives. A summary of each alternative and their approximate wetland and surface water impacts per acre is provided below.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Alternative A Potential Wetland Impacts

Fort Island Trail - Alternative A		
FLUCFCS (Code)	***Direct Impacts (Acre)***	***Secondary Impacts (Acre)***
Reservoirs (530)	0.00	0.03
Bays and Estuaries (540)	0.24	0.37
Surface Water Totals	**0.24**	**0.40**
Wetland Forested Mixed (630)	6.24	9.04
Freshwater Marshes (641)	0.28	0.33
Saltwater Marshes (642)	5.46	7.83
Wetland Totals	**11.98**	**17.20**

Alternative B Potential Wetland Impacts

Fort Island Trail - Alternative B		
FLUCFCS (Code)	***Direct Impacts (Acre)***	***Secondary Impacts (Acre)***
Reservoirs (530)	0.00	0.00
Bays and Estuaries (540)	0.12	0.12
Surface Water Totals	**0.12**	**0.12**
Wetland Forested Mixed (630)	3.12	3.12
Freshwater Marshes (641)	0.14	0.14
Saltwater Marshes (642)	2.73	2.73
Wetland Totals	**5.99**	**5.99**

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Alternative C Potential Wetland Impacts

Fort Island Trail - Alternative C		
East		
FLUCFCS (Code)	***Direct Impacts (Acre)***	***Secondary Impacts (Acre)***
Reservoirs (530)	0.00	0.00
Bays and Estuaries (540)	0.015	0.015
Surface Water Totals	**0.015**	**0.015**
Wetland Forested Mixed (630)	0.815	0.815
Freshwater Marshes (641)	0.11	0.11
Saltwater Marshes (642)	0.00	0.00
Wetland Totals	**0.925**	**0.925**
West		
FLUCFCS (Code)	***Direct Impacts (Acre)***	***Secondary Impacts (Acre)***
roReservoirs (530)	0.00	0.03
Bays and Estuaries (540)	0.21	0.31
Surface Water Totals	**0.21**	**0.34**
Wetland Forested Mixed (630)	4.61	6.87
Freshwater Marshes (641)	0.06	0.10
Saltwater Marshes (642)	5.46	7.83
Wetland Totals	**10.13**	**14.80**

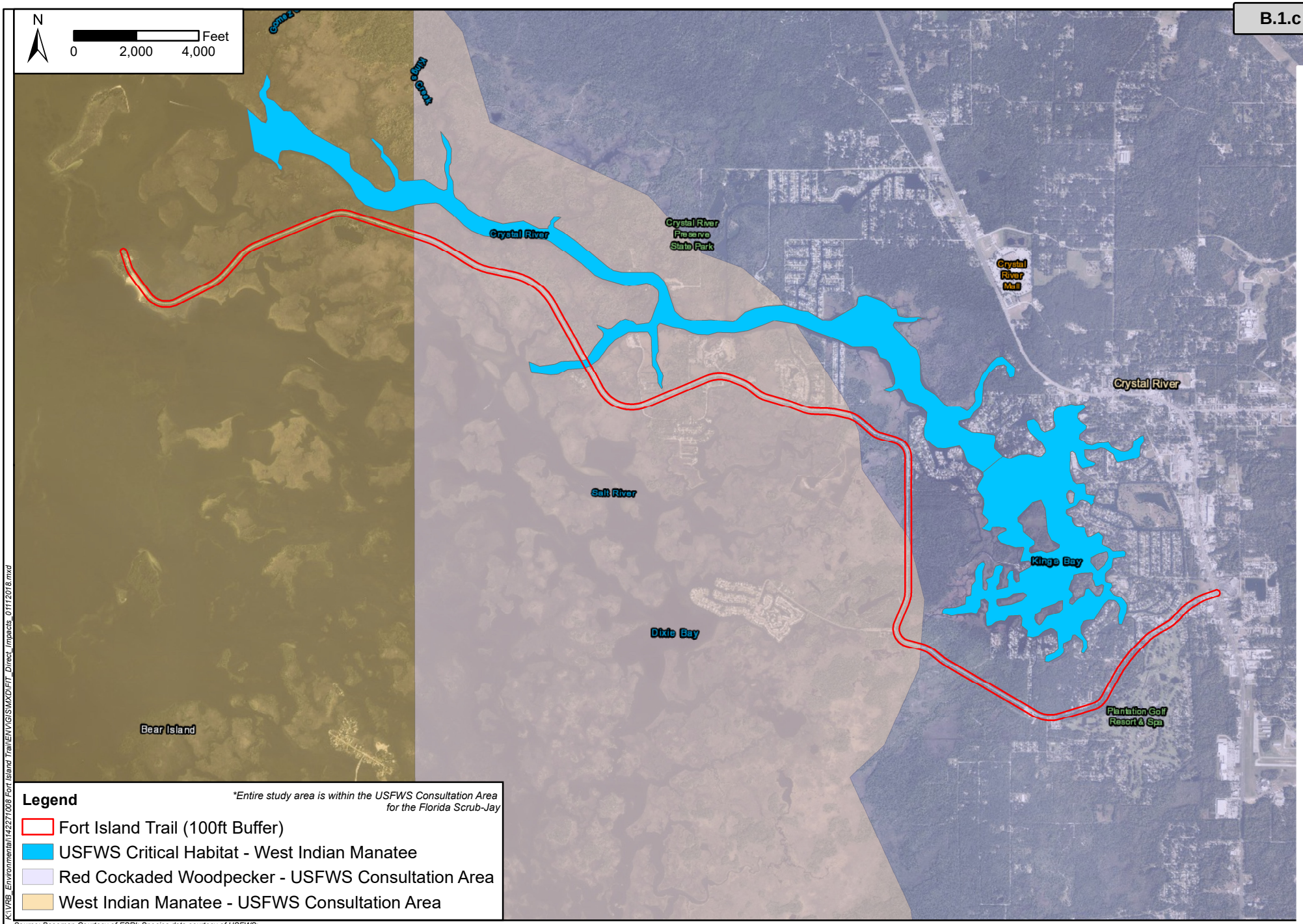
Required mitigation credit quantities were calculated by utilizing the Uniform Mitigation Assessment Method (UMAM) to determine the proposed function loss, and multiplying by the anticipated impact acreage for each of the proposed alternatives.

Estimated costs for the potential wetland impacts were calculated using information from the Florida Gulf Coast Mitigation Bank, provided by the Mitigation Banking Group, Inc. These costs are bundled costs for mitigating for both Water Management District and Army Corps. At the time of inquiry, the estimated wetland mitigation costs are approximately $180,000 per freshwater credit and $330,000 per saltwater tidal marsh credit. However, due to the supply and demand of mitigation credits within the State of Florida, these prices are subject to change.

The estimated wetland mitigation cost was calculated by applying the estimated mitigation credit cost to the anticipated wetland credits for each alternative. A summary of the estimated wetland mitigation costs for each alternative is provided below.

- Alternative A - $3,661,200
- Alternative B - $1,636,200
- Alternative C - $3,450,100

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-



K:\VRB_Environmental\142271008 Fort Island Trail\ENV\GIS\MXD\FIT_Direct_Impacts_01112018.mxd

Source: Basemap Courtesy of ESRI; Species data courtesy of USFWS;

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Environmental Constraints Map

Fort Island Trail
Citrus County, Florida

1 inch = 4,000 feet	FEBRUARY 2018	JOB NUMBER: 142271008	FI

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

OPINION OF PROBABLE COST

A planning level Opinion of Probable Cost (OPC) has been developed for the three different alternatives described previously. The planning level OPCs include estimated construction costs, design costs, and construction engineering and inspection costs. The estimated construction costs were developed using the latest historical cost information published by the Florida Department of Transportation (FDOT). The amounts shown are based on current year dollars and are not escalated for future years. A 25% contingency has been added onto the planning level OPC and it may still be below a future project bid due to current conditions in the construction industry.

A cost of $800 per linear foot was assumed for the boardwalk trail for all alternatives. Actual costs will differ depending on the actual type and product of boardwalk or pedestrian bridge selected for construction. For each of the alternatives, the length of boardwalk is based on a desktop review and is conservative; after a more detailed wetland evaluation is performed, boardwalk lengths and construction costs may decrease.

All alternatives consider new pedestrian bridge structures for crossing the Salt River and two drainage canals/creeks identified as Structure 18 and Structure 19. A precast pedestrian/bicycle structure was assumed for every alternative due to the canal/creek crossings identified at the locations of Structure 1 and Structure 4.

Design fees were estimated as 15% of the planning level construction costs. The estimated design fees using this approach are reasonable based on the scope of work for each alternative. Construction Engineering Inspection is estimated as 10% of the planning level construction costs.

A summary of the estimated costs for each alternative is provided in **Table 3** below.

Table 3 - **Opinion of Probable Cost**

Opinion of Probable Cost	*Alternative A*	*Alternative B*	*Alternative C*
Construction	$13,728,600	$44,258,000	$17,441,100
Design	$2,059,000	$6,639,000	$2,616,000
Construction Engineering Inspection	$1,373,000	$4,426,000	$1,744,000
Potential Wetland Mitigation	$3,661,200	$1,636,200	$3,450,100
Potential Private Property ROW	48 Properties	39 Properties	45 Properties
Easement Impact	3.60 Acres	2.35 Acres	3.35 Acres
Total	**$20,821,800**	**$56,959,200**	**$25,251,200**

The planning level costs shown include estimated costs for wetland mitigation based on the desktop review. The length of boardwalk is based on a desktop review and is conservative; after a more detailed wetland evaluation is performed, wetland mitigation may decrease.

Potential right-of-way/easement costs have not been included in the cost estimates. Potential right-of-way acreage is based on private property acquisition, and excludes State, County, or City lands potentially impacted by the project. Acreages and parcel impacts shown assume that a 14-foot boardwalk section is constructed outside of clear zone, requiring 11-feet of additional right-of-way and providing the most conservative estimate.

Prior to design, more detailed planning study (PD&E) is recommended to be performed for the project. The estimated cost for a PD&E study is between $700,000 and $800,000.

ALTERNATIVES EVALUATION

An alternatives evaluation matrix is utilized to compare the three alternatives within this study. The alternatives evaluation matrix considers the experience of trail riders, use of available right-of-way and private property impacts, construction costs, environmental impact area, environmental impact cost and permittability, constructability, operating and maintenance cost, and safety.

Alternative A

The following are advantages and disadvantages of Alternative A

Advantages

- Most cost effective from a construction standpoint
- Provides the most efficient tie-ins for adjacent properties and roadway connections

Disadvantages

- Has the highest amount of potential environmental impact
- Is the least likely to be permittable from an environmental standpoint

Alternative B

The following are advantages and disadvantages of Alternative B.

Advantages

- No direct wetland impacts
- Is the most permittable from an environmental standpoint

Disadvantages

- Has the highest cost
- Long distance of travel on boardwalk surface is less desirable from a trail user perspective

Alternative C

The following are advantages and disadvantages of Alternative C.

Advantages

- Reduced direct wetland impacts from Alternative A
- Provides for reduced cost from Alternative B
- Provides moderate distances of travel on boardwalk surface, making it more desirable from a trail user perspective than Alternative B

Disadvantages

- Has direct wetland impacts resulting in wetland mitigation cost

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Alternatives Comparison

An alternatives matrix was utilized to compare the build alternatives and no-build alternative, and is provided in **Table 4** below. Each criterion was scored with high, moderate, or low ranking for each alternative. The scoring criteria is provided in **Appendix E.**

Table 4 - Alternatives Evaluation Matrix

Evaluation Criteria	No Build	Alternative A	Alternative B	Alternative C
Trail user experience	Low	High	Low	Moderate
ROW impacts	None	Low	Low	Low
Construction cost	None	Moderate	High	Moderate
Environmental impact cost	None	High	Low	High
Environmental permittability	N/A	Low	High	Moderate
Operating and maintenance costs	Low	Low	High	Moderate
Consistency with Transportation Plans	Low	High	High	High
Safety Improvement	None	High	High	High

Alternative A represents the lowest cost alternative, with the most potential wetland impacts and the most difficulty from an environmental permitting standpoint. Alternative B represents the least amount of wetland impacts, but with significant and infeasible construction costs. Alternative C represents a balance between cost and wetland impacts, based on a maximum continuous boardwalk length of 0.5 miles to account for trail user experience. However, there are other combinations of surface trail and boardwalk along the project area that could be implemented as a balance between Alternative A and Alternative B.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

BPAC MEETING SUMMARY

An informational presentation was given to the Hernando/Citrus Metropolitan Planning Organization (MPO) Bicycle Pedestrian Advisory Committee on Thursday October 26, 2017. The presentation provided background on the proposed trail corridor, an overview of the study area and purpose of the feasibility study, overview of the existing conditions, overview of environmental and engineering constraints of the corridor, discussion on the proposed trail typical sections that will be evaluated as part of the feasibility study, and next steps of the feasibility study and overall trail project.

The Committee members provided information on bicycle / pedestrian events that currently occur on Fort Island Trail. There is an annual triathlon that has a large volume of participants utilizing the roadway for the event. The Committee members expressed support of the trail project as a way to separate runners and bicyclists during this event.

The Committee members expressed support for a smooth surface on an elevated structure, where recommended due to environmental and/or engineering constraints. A smooth surface is preferred over a typical boardwalk section due to improved rider experience, especially for longer distances as is likely with this project.

The presentation included discussion of phasing to implement this project in a more feasible way due to the anticipated cost of the full project. It was suggested that the initial phases should be on the eastern portion of the project within Crystal River, because it would provide connection to existing trails and destinations along Fort Island Trail. The Committee members were in support of segmentation of the project and of initial phases being within the more populated areas within Crystal River.

Chris Speese, the FDOT District 7 Bicycle/Pedestrian Liaison and Sun Trail District 7 Coordinator recommended that both Citrus County and the MPO be active in submitting a request to FDEP to change the trail from an Opportunity Corridor to a Priority Corridor so that a request can be made to add it to the SUN Trail network.

A copy of the agenda and PowerPoint presentation is provided as an attachment.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

NEXT STEPS

This feasibility study identifies constraints and potential impacts of the proposed MUP along Fort Island Trail. The overall cost of the entire length of trail is anticipated to range between $21,000,000 and $57,000,000 depending on the alternative chosen and will have direct and indirect environmental impacts. Following is a discussion on the recommended next steps for the project.

Project Development & Environment (PD&E) - For projects that are anticipating the use of either State of Federal funds for current or future phases in the project delivery process, FDOT's PD&E process must be followed, with National Environmental Policy Act (NEPA) requirements being addressed through this PD&E process for those projects that currently involve or may involve Federal funding. Based on the anticipated cost of the proposed MUP, addressing the Federal NEPA requirements through the PD&E process is likely the best option, as it allows for the greatest number of funding sources to remain viable. The estimated cost for the PD&E study is between $700,000 and $800,000.

The anticipated outcome of this process is the typical section would be better defined and the mitigation requirements and right-of-way needs would be better known. The most important outcome would be that there would be enough certainty to fund and move forward with design, right-of-way acquisition (if needed), and construction.

Engineering Design – Due to the unique challenges and constraints along this corridor, full detailed design plans will be required. It is necessary to complete the project design in phases based on the design plans percent of completion. For this type of trail design, it is typical to complete plan submittals at the 30% (or concepts plan), 60% (the permitting and right-of-way stage), and 90% stages. Once the 90% plans have been completed and reviewed, and all comments have been addressed, 100% plans are used to prepare bid documents. The design phase would allow for a clearer estimation of right-of-way needs, environmental impacts, and costs.

Right-of-Way (ROW) Acquisition/ Easements – Following the approval of the 60% plans, right-of-way acquisition can commence. Easements can also be secured, but there may be some funding limitations as some sources of funds require the right-of-way to be owned fee-simple. The estimated acreage and cost of right-of-way, if any, can be generally known during the PD&E phase of the project.

Construction – Once the design is completed and permits and right-of-way are in hand, the project can be let for construction bidding and contracting. This feasibility study has determined planning level cost estimates for construction, design and CEI.

Phasing – The project should be phased to provide for feasibility of construction. A logical progression is starting at US 19 on the east end of the project. This section will provide access to a majority of the residential properties along Fort Island Trail, and is within an area of little environmental impact. The Citrus-Hernando MPO BPAC was in agreement with the initial phase being at the east end of the project. A preliminary phasing plan based on estimated construction costs of approximately $2 Million (excluding design, right-of-way, and CEI) has been developed and is presented in **Appendix K**.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

SUMMARY

This feasibility study has been performed to identify the constraints, potential impacts, and planning level costs for a multi-use path along Fort Island Trail to accommodate bi-directional pedestrian and bicycle traffic separated from the travel lanes. The project corridor is from the Fort Island Gulf Beach to US 19, for a total project length of approximately 9 miles.

There are several constraints within the project limits, including overhead and underground utilities, limited right-of-way within the eastern portions of the project that will likely require additional right-of-way or easements, existing cross drains under Fort Island Trail that will require modification and/or trail bridge crossings, residential driveway impacts, grading and slope tie-ins potentially impacting private properties, potential wetland impacts and required mitigation, and a new multi-modal bridge required for crossing Salt River. The speed limit on Fort Island Trail is 45 mph for a majority of the corridor. An elevated boardwalk system is required to be constructed outside of the clear zone for the posted speed of the roadway, which would require additional right-of-way within roadway sections with an existing 66-foot right-of-way.

Three different alternative typical section alternatives have been considered for this feasibility study to compare potential wetland impacts and mitigation costs, construction costs, and constructability. Alternative C is a combination of surface trail and elevated boardwalk trail to provide for reduced environmental impacts from Alternative A and reduced cost from Alternative B. Depending on the design and permitting, the actual cost of the project could be within the range of any of the three alternatives.

The trail connector should be phased in shorter segments to provide for a more cost feasible project. A logical initial phase is starting at US 19 on the east end of the project to Audubon Lane, approximately 0.95 miles west of US 19. This section will provide access to a majority of the residential properties along Fort Island Trail, and is within an area of little environmental impact. The Citrus-Hernando MPO BPAC was in agreement with the initial phase being at the east end of the project. A potential phasing plan is presented in **Appendix K**.

The Salt River crossing is recommended as one of the last phase of the project, as it is the costliest portion of the project. Additionally, the Salt River Bridge is likely to be replaced in the future. If the bridge is replaced prior to a separate bicycle/pedestrian bridge, then bicycle and pedestrian accommodations should be included in the new bridge design.

The proposed multi-use path will enhance the safety of bicyclists, pedestrians, and motorists along Fort Island Trail by providing a physical separation between the motorists and pedestrians/bicyclists. The existing bike lane could be used exclusively for a paved shoulder, which would provide for improved safety for motorists. The proposed multi-use path will improve the existing transportation facilities by providing for more efficient and safer travel for pedestrians and bicyclists.

Providing an off-roadway bicycle and pedestrian trail will facilitate for increased use for recreation and travel to the Fort Island Gulf Beach. This proposed trail/MUP system will also be utilized for larger

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

recreational events and allow for expansion of triathlon events and bicycle clubs that currently utilize this corridor. The proposed multi-use path will provide for regional trail connections, as it will connect to the existing trail along Cutler Spur Boulevard/Three Sisters Springs Trail, which is planned to connect to the CR 486 trail. The proposed multi-use path along Fort Island Trail will also connect to the planned trail along US 19, south of Fort Island Trail. The proposed trail will provide connection between downtown Crystal River and the Fort Island Gulf Beach, which will improve connectivity between destinations and enhance economic opportunities through recreation. There is also potential for environmental education along the corridor, as much of the proposed trail is bordered by wetlands and marsh areas.

It is recommended that an initial phase of this project be moved into PD&E. Alternative funding sources can be sought to construct this trail connection. The project is not currently eligible for SUNTrail funding, as it is not listed as a priority corridor on the Florida Greenways and Trails System (FGTS) Priority Land Trail Network and is not shown on the SUN Trail Network. However, this project is shown as an opportunity corridor on the FGTS. The proposed trail will provide for significant recreational and economic enhancements and provide for environmental education. Citrus County should request that the corridor be moved from an opportunity corridor to a priority corridor on the FGTS, and explore funding opportunities through SUNTrail and other FDOT grant funding sources. Partnership with the Hernando-Citrus MPO will be required to facilitate State and Federal funding requests.

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

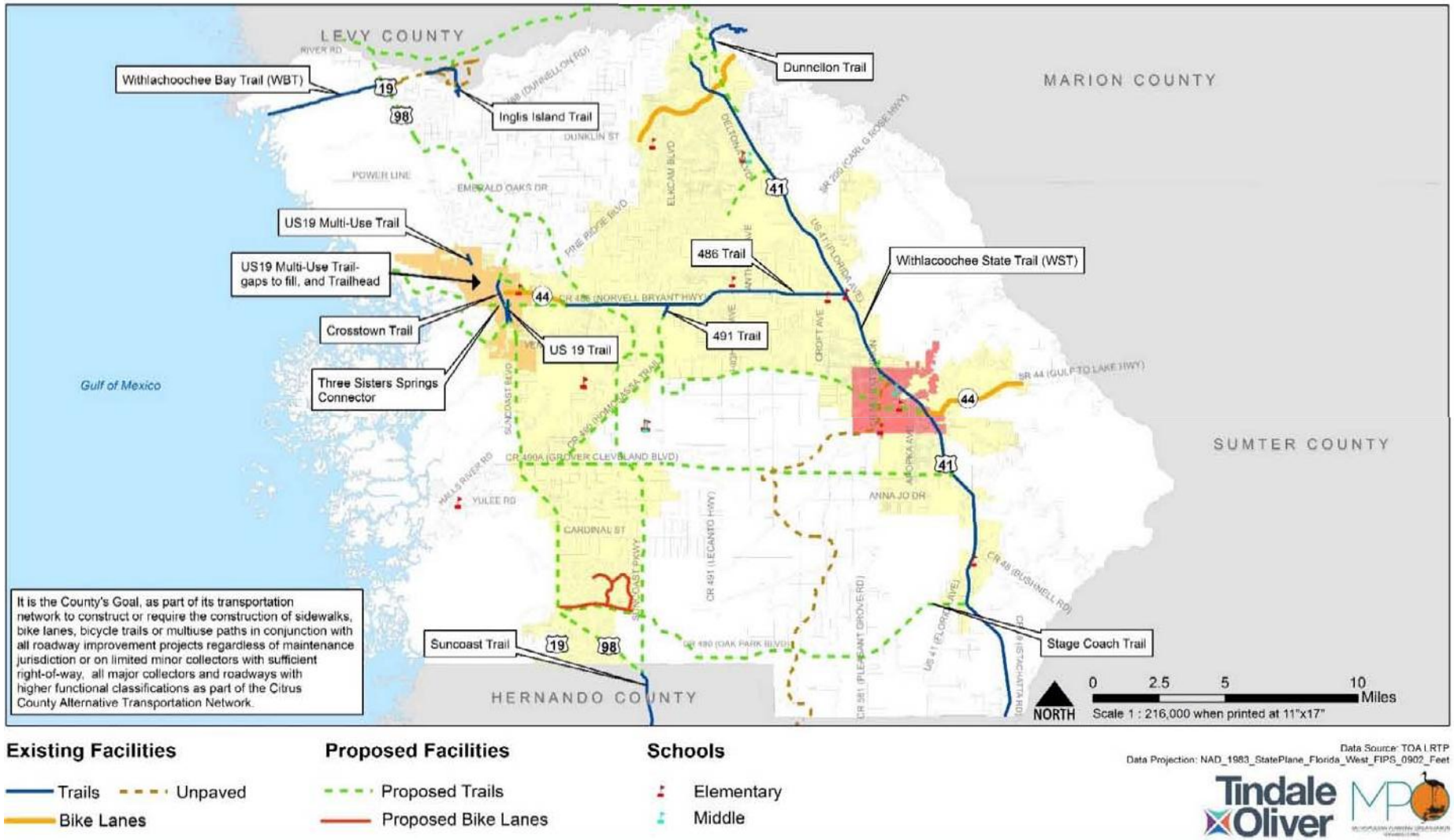
APPENDICES

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Appendix A: Area Transportation Plans

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Map 4-10: Citrus County Bicycle, Pedestrian, and Multiuse Trail Needs



Packet Pg. 80
B.1.c
Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

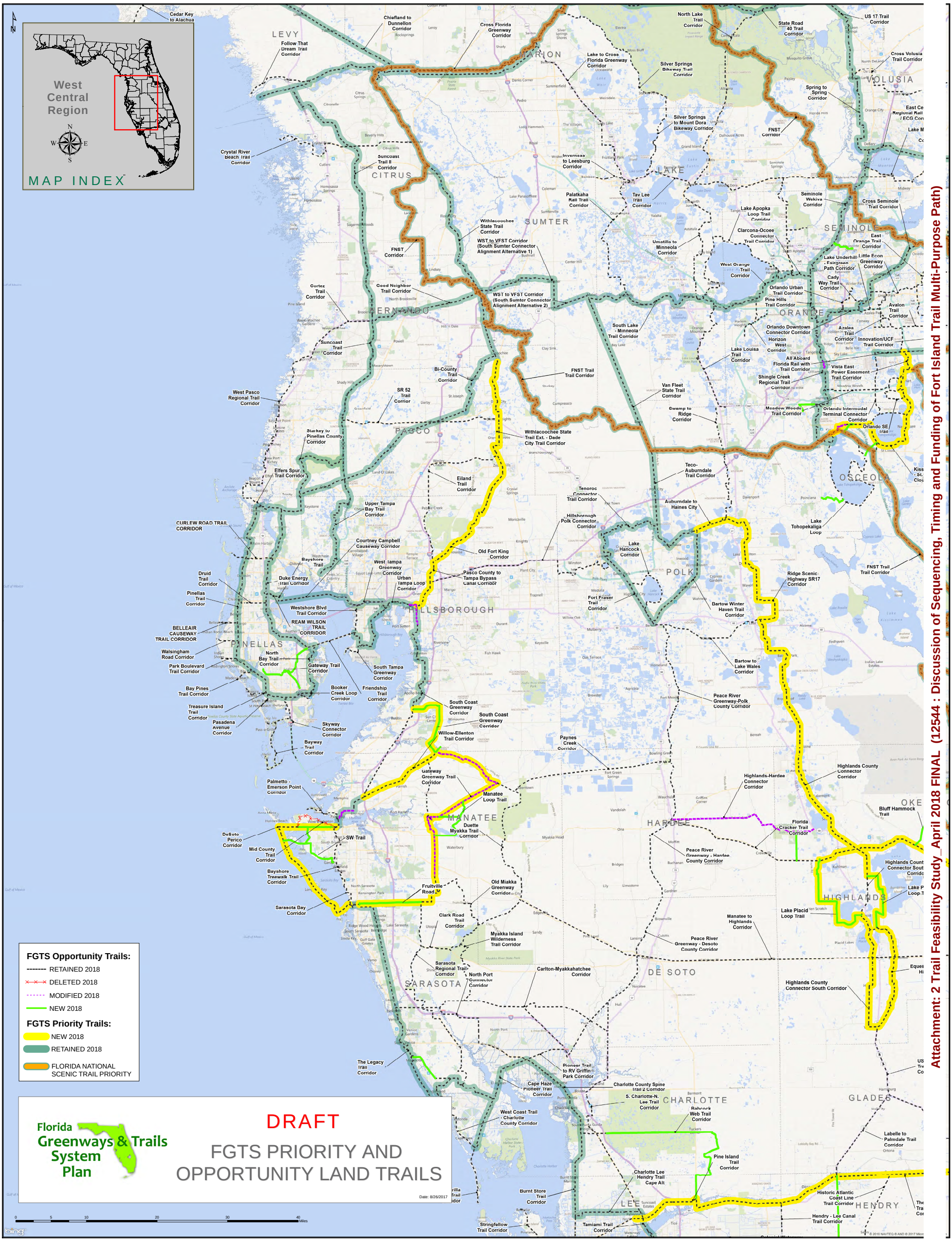
Citrus County
FY 2018/2019
Complete Streets Priority Projects
Adopted June 20, 2017

Project Rank	FPN / Resp. Agency	Project/Description	From	To	Area	Project Type	Project Phase/ Year
CONSTRUCTION	4325811 / FDOT	W. Yulee Dr. - Sidewalk	W. Central St.	US 19 (S Suncoast Blvd.)	CC	TA	CST 2018
	4375141 / FDOT	US 19/SR 55/S. Suncoast Blvd. - Multi-Use Trail	Hernando/Citrus County Line	W. Green Acres St.	CCR	RRR	CST 2020
	4058223 / FDOT	US 19/SR 55/S. Suncoast Blvd. - Multi-Use Trail	W. Jump Ct.	Ft. Island Trail	CC/CR	RRR	CST 2018
	4396981 / FDOT	Forest Ridge Elementary - Phase I Sidewalk	W. Norvell Bryant Hwy (CR 486)	W. Lake Beverly Dr.	CC	SRTS	CST 2021
	4373491 / FDOT	Withlacoochee State Trail (WST) Connector	WST Northern Terminus	Dunnellon Trailhead	CC	ST	CST 2019
	4396991 / FDOT	Pleasant Grove Elementary (CR 581) - Sidewalk	Pleasant Grove Rd.	W. Gulf to Lake Hwy (SR 44)	CC/INV	SRTS	CST 2020
1		Withlacoochee State Trail (WST) - Rehabilitation	Hernando/Citrus County Line	Citrus/Marion County Line	CC	ST	Application Submitted
2		Forest Ridge Elementary - Phase II Sidewalk	W. Lake Beverly Dr.	N. Lecanto Hwy (CR 491)	CC	SRTS	Application Submitted
3		Crystal River Middle School - Covered Sidewalk	On-Site		CCR	SRTS	
4		N. Turkey Oak Dr. - Sidewalk	E. Gulf to Lake Hwy (SR 44)	Holiday Dr.	CC	SRTS	Application Submitted
5		Rock Crusher Elementary - Sidewalk	W. Homosassa Trail (CR 490)	W. Gulf to Lake Hwy (SR 44)	CC	TA	
6		Three Sisters Springs Connector - Multi-Use Trail	US 19/Kings Bay Drive	486 Trail	CC/CCR	TA	Consultant Study Complete
7		Ft. Island Trail - Multi-Use Trail	Gulf of Mexico	Three Sisters Trail	CCR	TA	Under Review
8		Sugarmill Woods - Multi-Use Trail along US 98	Oak Village Blvd.	Trailhead/Parking lot near the Suncoast Parkway I	CC	TA	
9		W. Cardinal St. - Sidewalk	US 19 (S. Suncoast Blvd.)	S. Lecanto Hwy (CR 491)	CC	TA	
10		E. Vine St.& E. Gospel Is. Rd.- Sidewalk	N. Apopka Ave.	W. Gulf to Lake Hwy (SR 44)	CC	TA	
11		N. Independence Hwy. - PS/Sidewalk	E. Gulf to Lake Hwy (SR 44)	N. Florida Ave (US 41)	CC	TA	
12		US 19 Trailhead & Crossing	Crosstown Trail at US 19 - (In City of Crystal River)		CR	N	
13		Inverness Historic Train Station	Downtown Inverness				
14		W. Halls River Rd. (CR 490A) - Sidewalk	S. Riverview Circle	US 19 (S. Suncoast Blvd.)	CC	TA	
15		New Depot/Open Air Pavilion	Downtown Inverness				
16		Forest Dr. Trail/Trailhead Project	Forest Dr.	WST	CC	TA	
17		Forest Dr. Sidewalk	W. Main St. (SR44)	Independence Hwy.	CC	TA	
18		Turner Camp Rd./Ella Ave. - PS/Sidewalk	US 41	Inverness MS	CC	TA	
19		Citrus Springs Blvd. - Bicycle Lane/PS	Dunklin Blvd.	W. Deltona Blvd.	CC	TA	
20		Elkcam Blvd. - Bicycle Lane/PS	Pine Ridge Blvd	N Citrus Springs Blvd.	CC	TA	
21		Pine Ridge Blvd. - Bicycle Lane/PS	CR 486	Pine Ridge Blvd. Trail	CC	TA	
22		MLK Ave./Dampier St. - Sidewalk	US 41	Dampier St.	CC	TA	
23		Mossy Oak Sidewalk	US 41 and Eden Dr.	WST	WST	TA	
24		Sugarmill Woods Bicycle Lane along: a. W. Oak Park Blvd. b. Cypress Blvd. E c. Corkwood Blvd.	 Shoppes at Sugarmill Woods W. Oak Park Blvd. W. Oak Park Blvd.	 Corkwood Blvd. Cypress Circle E Cypress Blvd. E	CC CC CC CC	TA TA TA TA	
U		Suncoast Parkway - Ext. to 486	CR 491 - possible trail extension	CR 486 trail	CC	TA	ROW issues
U		W. Miss Maggie Dr. (CR 480) - Sidewalk/PS	Chassowitzka River Campground	US 19 (S. Suncoast Blvd.)	CC	TA	ROW issues
U		Floral City Sidewalk	Floral City		CC	TA	

Terms Key

CC	Citrus County	**P**	Programmed for a production phase	**ST**	SunTrail Funding
CCR	City of Crystal River	**PE**	Preliminary Engineering/Design	**TA**	Transportation Alternatives
CR	Crystal River	**PS**	Paved Shoulders	**U**	Unranked
CST	Construction	**ROW**	Right-of-Way	**WST**	Withlacoochee State Trail
INV	Inverness	**RRR**	Resurfacing, Restoration and Rehabilitation	**RED**	New Projects
OGT	Office of Greenways & Trails	**SRTS**	Safe Routes to School	**REHAB**	Rehabilitation (funding TBD)

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-


MAP INDEX
West Central Region
N
W
E
S
Cedar Key to Alachua
Chiefland to Dunnellon Corridor
Cross Florida Greenway Corridor
Follow That Dream Trail Corridor
LEVY
MARION
North Lake Trail Corridor
State Road 40 Trail Corridor
US 17 Trail Corridor
Cross Volusia Trail Corridor
VOLUSIA
Lake to Cross Florida Greenway Corridor
Silver Springs Bikeway Trail Corridor
Spring to Spring Corridor
Silver Springs to Mount Dora Bikeway Corridor
FNST Corridor
Crystal River Beach Trail Corridor
Suncoast Trail II Corridor
CITRUS
Inverness to Leesburg Corridor
LAKE
Palatkaha Rail Trail Corridor
Tav Lee Trail Corridor
Seminole Wekiva Corridor
Cross Seminole Trail Corridor
Withlacoochee State Trail Corridor
SUMTER
Lake Apopka Loop Trail Corridor
Clarcona-Ocoee Connector Trail Corridor
SEMINOLE
East Orange Trail Corridor
Umatilla to Minneola Corridor
FNST Corridor
WST to VFST Corridor (South Sumter Connector Alignment Alternative 1)
Lake Underhill - Fairgreen Path Corridor
Little Econ Greenway Corridor
West Orange Trail Corridor
Cady Way Trail Corridor
Cortez Trail Corridor
Good Neighbor Trail Corridor
WST to VFST Corridor (South Sumter Connector Alignment Alternative 2)
HERNANDO
Orlando Urban Trail Corridor
Pine Hills Trail Corridor
ORANGE
Avalon Trail Corridor
South Lake - Minneola Trail Corridor
Orlando Downtown Connector Corridor
Azalea Trail Corridor
Innovation/UCF Trail Corridor
Horizon West Corridor
Lake Louisa Trail Corridor
All Aboard Florida Rail with Trail Corridor
Vista East Power Easement Trail Corridor
Shingle Creek Regional Trail Corridor
Bi-County Trail Corridor
FNST Trail Corridor
Van Fleet State Trail Corridor
West Pasco Regional Trail Corridor
SR 52 Trail Corrior
Meadow Woods Trail Corridor
Orlando Intermodal Terminal Connector Corridor
Swamp to Ridge Corridor
Orlando SE Trail
Suncoast Trail Corridor
PASCO
Starkey to Pinellas County Corridor
Withlacoochee State Trail Ext. - Dade City Trail Corridor
Elfers Spur Trail Corridor
Eiland Trail Corridor
Teco-Auburndale Trail Corridor
OSCEOLA
Tenoroc Connector Trail Corridor
Auburndale to Haines City
Upper Tampa Bay Trail Corridor
Hillsborough Polk Connector Corridor
Lake Tohopekaliga Loop
CURLEW ROAD TRAIL CORRIDOR
Courtney Campbell Causeway Corridor
Old Fort King Corridor
Lake Hancock Corridor
Bayshore Trail
West Tampa Greenway Corridor
Pasco County to Tampa Bypass Canal Corridor
FNST Trail Corridor
Druid Trail Corridor
Duke Energy Trail Corridor
Urban Tampa Loop Corridor
POLK
Ridge Scenic Highway SR17 Corridor
Pinellas Trail Corridor
Fort Fraser Trail Corridor
Bartow Winter Haven Trail Corridor
Westshore Blvd Trail Corridor
HILLSBOROUGH
REAM WILSON TRAIL CORRIDOR
BELLEAIR CAUSEWAY TRAIL CORRIDOR
PINELLAS
Walsingham Road Corridor
North Bay Trail Corridor
Gateway Trail Corridor
South Tampa Greenway Corridor
Park Boulevard Trail Corridor
Bartow to Lake Wales Corridor
Bay Pines Trail Corridor
Booker Creek Loop Corridor
Friendship Trail Corridor
Treasure Island Trail Corridor
South Coast Greenway Corridor
Pasadena Avenue Corridor
Skyway Connector Corridor
South Coast Greenway Corridor
Peace River Greenway-Polk County Corridor
Willow-Ellenton Trail Corridor
Bayway Trail Corridor
Paynes Creek Corridor
Highlands County Connector Corridor
Gateway Greenway Trail Corridor
Palmetto - Emerson Point Corridor
Highlands-Hardee Connector Corridor
Manatee Loop Trail
Bluff Hammock Trail
OKE
MANATEE
HARDEE
Florida Cracker Trail Corridor
Duette Myakka Trail Corridor
DeSoto Perico Corridor
SW Trail
Peace River Greenway - Hardee County Corridor
Mid County Trail Corridor
Highlands Count Connector Sout Corrido
Bayshore Treewalk Trail Corridor
Fruitville Road
Old Miakka Greenway Corridor
HIGHLANDS
Lake P Loop T
Sarasota Bay Corridor
Lake Placid Loop Trail
Clark Road Trail Corridor
Manatee to Highlands Corridor
Myakka Island Wilderness Trail Corridor
Peace River Greenway - Desoto County Corridor
Sarasota Regional Trail Corridor
North Port Connector Corridor
Carlton-Myakkahatchee Corridor
DE SOTO
SARASOTA
Highlands County Connector South Corridor
The Legacy Trail Corridor
Pioneer Trail to RV Griffin Park Corridor
Charlotte County Spine Trail 2 Corridor
Cape Haze Pioneer Trail Corridor
S. Charlotte-N. Lee Trail Corridor
CHARLOTTE
GLADES
Babcock Web Trail Corridor
West Coast Trail - Charlotte County Corridor
Labelle to Palmdale Trail Corridor
Pine Island Trail Corridor
Charlotte Lee Hendry Trail Cape Alt
Historic Atlantic Coast Line Trail Corridor
Burnt Store Trail Corridor
LEE
HENDRY
Stringfellow Trail Corridor
Tamiami Trail Corridor
Hendry - Lee Canal Trail Corridor
FGTS Opportunity Trails:
RETAINED 2018
DELETED 2018
MODIFIED 2018
NEW 2018
FGTS Priority Trails:
NEW 2018
RETAINED 2018
FLORIDA NATIONAL SCENIC TRAIL PRIORITY
Florida Greenways & Trails System Plan
DRAFT
FGTS PRIORITY AND OPPORTUNITY LAND TRAILS
Date: 8/26/2017
0 5 10 20 30 40 Miles
Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-Purpose Path)

Appendix B: Site Photographs

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Pedestrian features at the intersection of Fort Island Trail and US 19, looking east

Looking east towards US 19 from Three Sisters Springs Trail along the northern right-of-way

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Looking west along the north right-of-way of Fort Island Trail towards Planation Inn

Looking west along Fort Island Trail from the intersection with W Pinebark Lane

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Looking west along Fort Island Trail

Looking west along Fort Island Trail

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Looking west along the Salt River Bridge, towards the Academy of Environmental Science

Canal Crossing under Fort Island Trail

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Canal Crossing under Fort Island Trail

Looking east along Fort Island Trail from the Gulf Beach

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Appendix C: Existing ROW Maps

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

B.1.c

FED. ROAD DIV. No.	STATE	SEC. AND JOB No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
3	FLA.	0262-150	'57	1	1

EXISTING POWER & TEL. POLES

STATION	LT.	RT.	TYPE	OWNER
6+13	22'		Tel.	Fla. Tel. Corp
10+19		26'	Power	Fla. Pow. Corp.
12+43	21'		Tel. Guy	Fla. Tel. Corp.
12+43	55'		Tel.	"
15+56	34'		"	"
18+02	23'		"	"
20+59	33'		"	"
23+09	28'		"	"
25+19	25'		"	"
27+15	18'		"	"
29+30		19'	"	"
31+77		20'	"	"
34+44		22'	"	"
36+85		30'	"	"
38+64		40'	Comb. Tel.	"
41+47		24'	Power	Fla. Pow. Corp.
43+87		21'	Tel.	Fla. Tel. Corp.
46+26		20'	"	"
48+18		32'	"	"
49+67		37'	"	"
49+72		23'	" (Anchor)	"

Scale 1" = 500'

Sta. 0+00 Begin Survey

P.I. Sta. 4+09.40 Δ = 10°-37' Lt. D = 1°-30' T = 354.91' L = 707.78' R = 3819.83'

P.I. Sta. 35+05.70 Δ = 2°-50' Lt. D = 2°-00' T = 120.90' L = 241.47' R = 2864.93

P.I. Sta. 13+00.40 Δ = 12°-22' Lt. D = 4°-30' T = 160.51' L = 319.26' R = 1273.57'

P.I. Sta. 31+39.90 Δ = 14°-13'-30" Lt. D = 4°-00' T = 179.76' L = 353.62' R = 1432.69'

P.I. Sta. 23+91.50 Δ = 12°-57' Lt. D = 4°-00' T = 167.99' L = 323.75' R = 1432.69'

P.I. Sta. 19+07.90 Δ = 10°-30' Rt. D = 4°-00' T = 205.61' L = 408.33' R = 1432.69

P.I. Sta. 54+93.84 Δ = 44°-40' Rt. D = 10°-00' T = 235.68' L = 446.67' R = 573.69'

P.I. Sta. 74+73.30 Δ = 46°-34' Rt. D = 6°-00' T = 405.49' L = 773.33' R = 955.37'

P.I. Sta. 118+91.12 Δ = 23°-30' Lt. D = 6°-00' T = 198.72' L = 391.67' R = 955.37'

P.I. Sta. 118+47.12 Δ = 6°-00' Rt. D = 11°-00' T = 100.19' L = 200.00' R = 1432.69'

P.I. Sta. 129+05.84 Δ = 98°-40' Rt. D = 12°-00' T = 536.77' L = 592.22' R = 478.34'

P.I. Sta. 140+55.43 Δ = 23°-09' Lt. D = 6°-00' T = 195.67' L = 385.83' R = 955.37'

N. 60°-29'-02" W.

Sta. 272+40.00 End of Survey

Kings Bay

Govt. Lot 1

Govt. Lot 2

Govt. Lot 3

Govt. Lot 4

Govt. Lot 5

Govt. Lot 6

Govt. Lot 7

Buzzard Island

Crystal River

Match Line

Sta. 144+93.85

Sta. 160+93.96

Sta. 161+12

Sta. 272+40.00

S.R. 55 (U.S. Highway 19) To Homosassa Springs

Atlantic Coast Line R.R.

Concrete Monument Sta. 2741+25.73 S.W. Cor. Sec. 20, T-18-S., R-17-E.

Concrete Monument Sta. 2741+25.73 S.W. Cor. Sec. 20, T-18-S., R-17-E.

N.E. Cor. of W½ of S.W¼ of Sec. 29, T-18-S, R-17-E.

N.W. Cor. of S.W¼ of Sec. 29, T-18-S, R-17-E.

1½" Iron Pipe

Sta. 36+40.65 on curve 1½" Iron Pipe Fla. Sec. Cor. at S.W. Corner of S.E. ¼ of Sec. 28, T-18-S, R-17-E

Sta. 144+93.85 1½" Iron Pipe

Sta. 146+93.85

Sta. 161+12

Sta. 272+40.00

Sta. 1319.60

Sta. 2397.15

Sta. 2741+25.73

Sta. 2741+25.73

Sta. 2741+25.73

FED. ROAD DIV. No.	STATE	PROJECT No.	FISCAL YEAR	SHEET No.
3	FLA.	02620-2601	65	1

BEGIN R/W STA. 444+0.59

BEGIN SURVEY STA. 10+00.00

FORT GULF LAND

GULF OF MEXICO

S 36°32'34" E.

P.C. STA. 9+57.5

P.T. STA. 11+45

5 Pump House 105' Rt.

5 Sta. C.B. House 138' Rt.

T. 18 S. R. 16 E.

GOVT. LOT 5

GOVT. LOT 6

GOVT. LOT 8

GOVT. LOT 7

GOVT. LOT 10

GOVT. LOT 9

GOVT. LOT 1

GOVT. LOT 2

GOVT. LOT 3

GOVT. LOT 4

GOVT. LOT 5

GOVT. LOT 6

GOVT. LOT 9

GOVT. MEANDER LINE

1917.96'

Scale: 1"=400'

C.M.

1618.51' W

P.C. Sta. 20+12.28

P.T. Sta. 30+18.53

N. 62°51'26" E.

P.C. Sta. 41+65.32

P.T. Sta. 49+12.63

N. 40°32'16" E.

P.C. Sta. 55+50.82

P.T. Sta. 62+13.46

N. 67°02'36" E.

2038.37

118°30'34"

395.28'

754.78'

Sta. 39+62.10

Corner in water

HAUL ROAD STA. RT. 34+18.31

P.C. Sta. 81+60.53

N. 82°26'36" E.

S. 17°26'36" W.

S. 82°26'36" W.

N. 17°26'36" E.

50' Haul Rd.

BORROW PIT No. 2

S. 74°42'18" W.

S. 17°26'36" W.

N. 17°26'36" E.

S. 72°53'24" E.

Govt. Lot 11 or Island 11 0.25 Acres

Govt. Lot 12 or Island 12 1.26 Acres

11a Cor.

118.53'

I.P.

Note: All Corners Shown on this Section Line are U.S.G.L.O. Markers

999.25'

167.25'

Sta. 100+91.81

1356.08'

I.P. 43.79'

1650.00'

S. 72°18'24" E.

16.12'

S. 39°39'34" E.

P.C. Sta. 119+54.96

P.T. Sta. 126+16.49

GOVT. MEANDER LINE

T. 18 S. R. 17 E.

T. 18 S. R. 16 E.

I.P. N.W. Cor. of S.W. 1/4 Sec. 13

N. 22°22' W.

1123.92'

Sta. 157+84.73

P.C. Sta. 135+96.52

P.T. Sta. 142+39.11

S. 59°39'34" E.

S. 78°56'14" E.

P.C. Sta. 150+03.21

54°58'30" T.C.

148.30'

Haul Rd. Sta. 167+20.58

63°29'44" T.C.

All Pts. Δ = 90°

N. 30°04'44" W.

600'

S. 59°55'16" W.

BORROW No. 3 Rev.

S. 30°04'44" E.

N. 59°55'16" E.

50' HAUL RD.

S. 89°57'45" E. (Calc.)

Sta. 176+38.96 (Calc.)

4288.20' (Calc.)

1062.61' (Calc.)

S. 30°06'44" E.

P.T. Sta. 166+30.71

P.C. Sta. 197+40.09

P.T. Sta. 214+00.20

CRYSTAL RIVER

SALT CREEK

Sta. 233+67.01

Corner in Crystal River

102.30'

N. 66°52'56" E.

67°30'06"

P.C. Sta. 235+04.58

T. 18 S. R. 17 E.

1118.20'

Power Pole

Power Guy Pole 5.11' Rt.

S.R.D. R/W Markers 33' Lt.

S.R.D. R/W Markers 33' Rt.

Power Pole 43.37' Lt.

Power Pole 26' Lt.

S. 70°07'04" E

S.R. 5-44 (Paved)

To Crystal River

END SURVEY STA. 243+64.58 = STA. 247+15.74 STATE ROAD 5-44

P.T. Sta. 243+64.58

Conc. Mon. N.E. Cor. of S.E. 1/4 Sec. 24

GOVT. LOT 1

GOVT. LOT 2

GOVT. LOT 3

GOVT. LOT 4

GOVT. LOT 5

GOVT. LOT 6

GOVT. LOT 9

GOVT. LOT 10

GOVT. LOT 7

GOVT. LOT 8

GOVT. LOT 5

GOVT. LOT 6

TABULATION OF UTILITY POLES

STA.	LT.	RT.	TYPE	OWNER
242+29.71		5.11'	Power Guy	F.P.C.
242+45.89	43.37'		Power	F.P.C.

CURVE DATA TABULATIONS

NO.	P.I. STA.	P.C. STA.	P.T. STA.	Δ	DIR.	D	T	L	R
1	26+19.08	20+12.28	30+18.53	80°30'	Lt.	8°00	606.80	1006.25	716.78
2	45+43.86	41+65.32	49+12.63	22°25 10"	Lt.	3°00	378.54	747.31	1910.08
3	58+88.25	55+50.82	62+13.46	26°30 20"	Rt.	4°00	337.43	662.64	1432.69
4	90+98.89	87+50.53	94+18.31	40°04	Rt.	6°00	388.36	667.78	955.37
5	122+81.22	119+54.96	126+16.49	13°13'50"	Rt.	2°00	332.26	661.53	2864.93
6	139+20.92	135+96.52	142+39.11	19°16'40"	Lt.	3°00	324.40	642.59	1910.08
7	158+70.16	150+03.21	166+30.71	48°49'30"	Rt.	3°00	866.95	1627.50	1910.08
8	207+54.33	197+40.09	214+00.20	83°00'20"	Lt.	5°00	1014.24	1660.11	1146.28
9	239+56.11	235+04.58	243+64.58	43°00'	Rt.	5°00	451.53	860.00	1146.28
1A	10+51.86	9+57.5	11+45	15°00	Lt.	8°00	84.36	187.36	716.78

KING'S BAY EXTENSION

STATE OF FLORIDA
STATE ROAD DEPARTMENT

RIGHT OF WAY MAP

STATE ROAD No. 5-44 CITRUS COUNTY

	BY	DATE	APPROVED BY	DATE
DRAWN	J.R.D. F.P.C.	8-30-62 6-11-65		DISTRICT ENGINEER
TRACED	F.P.C.	6-11-65		
CHECKED	J.W.H.	7-13-65		
COMPARED				ENGINEER OF RIGHTS OF WAY
INDEXED				7-23-65 STATE HIGHWAY ENGINEER

REVISION	BY	DATE
Changed P.B.2 Rev. Added 5/W	HST-TDH-G.	10-14-66
	H.R.T.-W.C.S.	2-3-66
Added Borrow Pits	JWH-TDH	5-18-66
Added Govt Lots 11 & 12	JWH-T.D.H.	10-20-65
Added Govt Lots	JWH-T.D.H.	9-16-65

SECTION. 02620-2601 SHEET 1 OF

Attachment: 2 Trail Feasibility Study. April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-Purpose Path)

FED. ROAD DIV. No.	STATE	PROJECT No.	FISCAL YEAR	SHEET No.
3	FLA.	02620-2601	65	2

SEC. 16 T-18-S R-16-E

CURVE DATA
P.I. STA. 10+51.86
Δ = 15° LT.
D = 8°
T = 94.36'
L = 187.50'
R = 716.78'

SCALE: 1" = 100'

GULF

BEGIN SURVEY
STA. 10+00.00

BEGIN R/W
STA. 4+40.53

S 21° 32' 34" E.

230±

240±

PARKING AREA

150'

442.53

730.53

P.C. STA. 9+57.5

REF. STA. 11+45.00

P.T. STA. 11+45

FORT ISLAND

R/W LINE

S 36° 32' 34" E

SALT MARSH

CREEK

GULF OF MEXICO

P.I. STA. 26+19.08
Δ = 80° 30' LT.
D = 8° 00'
T = 606.80'
L = 1006.25'
R = 716.78

P.C. STA. 20+12.28

P.C. STA. 30+18.53

GOVT. LOT 8
GOVT. LOT 6

CREEK

REF P.I. STA. 26+19.08

TWP. 18 S., RGE. 16 E.

SCALE: 1" = 100'

P.I STA. 45+43.86
Δ = 22° 25' 10" LT.
D = 3° 00'
T = 378.54'
L = 747.31'
R = 1,910.08'

P.C. STA. 41+65.32

P.T. STA. 49+12.63

N 62° 57' 26" E

N 40° 32' 16" E

R/W LINE

CORNER IS IN WATER

NOTE: ALL P.I.'S, P.O.T.'S, P.C.'S AND P.T.'S ARE MARKED WITH 3/4" IRON PIPE.

REVISION	BY	DATE
Added R/W	J.A.H.-T.A.W.	10-28-66
Added R/W	N.S.T.-W.L.S.	9-9-66
Changed R/W	J.W.H.-T.A.W.	9-20-65
Added Govt Lots	J.W.H.-T.O.W.	9-16-65

STATE OF FLORIDA
STATE ROAD DEPARTMENT

RIGHT OF WAY MAP

STATE ROAD No. 5-44 CITRUS COUNTY

	BY	DATE	APPROVED BY	DATE
DRAWN	C.G.B.	5-28-65		7-14-65 DISTRICT ENGINEER
TRACED	B.H.D. III	6-11-65		
CHECKED	J.W.H.	7-13-65		ENGINEER OF RIGHTS OF WAY
COMPARED				7-23-65 for STATE HIGHWAY ENGINEER
INDEXED				

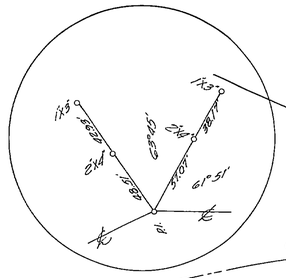
SECTION. 02620-2601 SHEET 2 OF 6

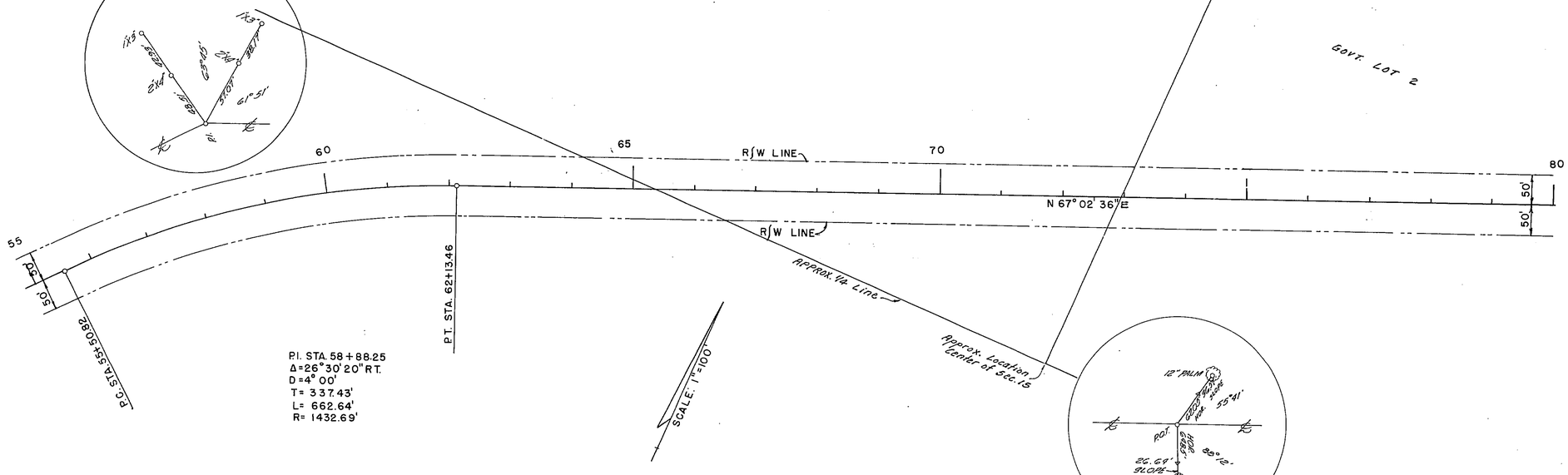
Attachment: 2 Trail Feasibility Study. April 2018 FINAL. (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-Purpose Path)

FED. ROAD DIV. No.	STATE	PROJECT No.	FISCAL YEAR	SHEET No.
3	FLA.	02620-2601	65	3

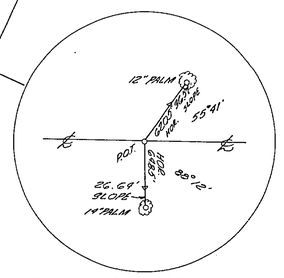
SEC. 15 T-18-S R-16-E

REF. P.I. STA. 58+88.25





P.I. STA. 58+88.25
Δ=26°30'20" RT.
D=4° 00'
T= 337.43'
L= 662.64'
R= 1432.69'

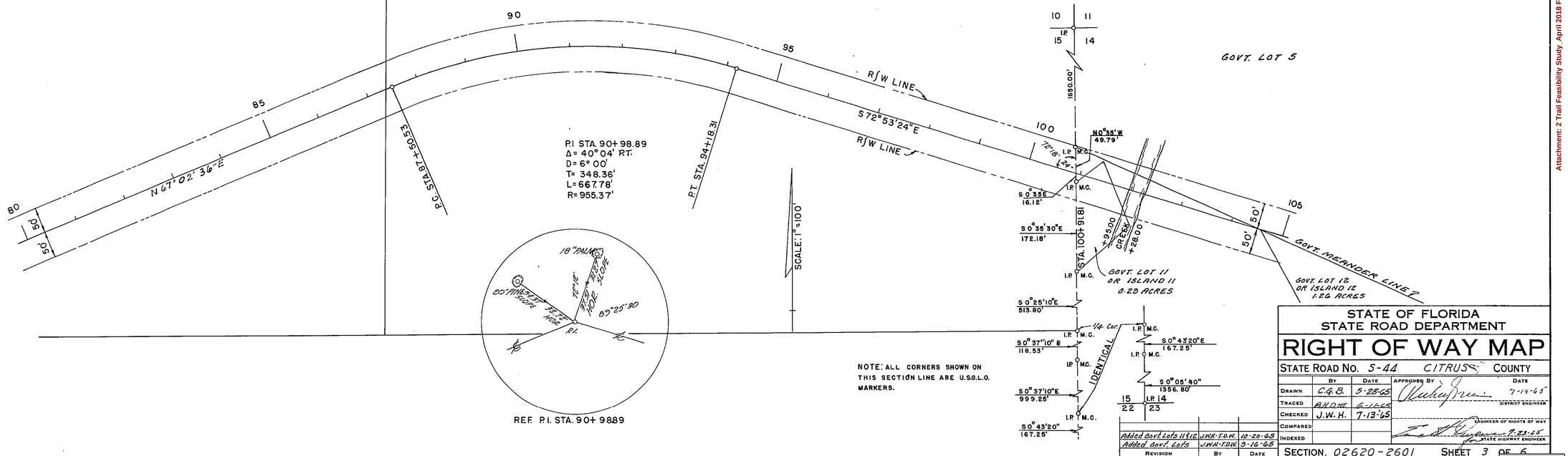


REF P.O.T. STA. 74+70.55

GOVT. LOT 2

GOVT. LOT 1

TWP. 18 S., RGE. 16 E.



P.I. STA. 90+98.89
Δ= 40° 04' RT.
D= 6° 00'
T= 348.36'
L=667.78'
R=955.37'

REF P.I. STA. 90+98.89

NOTE: ALL CORNERS SHOWN ON THIS SECTION LINE ARE U.S.G.L.O. MARKERS.

STATE OF FLORIDA
STATE ROAD DEPARTMENT

RIGHT OF WAY MAP

STATE ROAD No. 5-44 CITRUS COUNTY

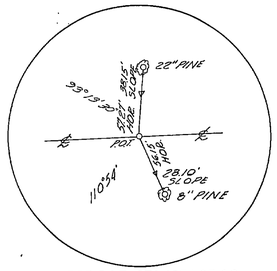
	BY	DATE	APPROVED BY	DATE
DRAWN	C.G.B.	5-28-65		
TRACED	BHDM	6-11-65	DISTRICT ENGINEER	7-14-65
CHECKED	J.W.H.	7-13-65		
COMPARED			ENGINEER OF RIGHTS OF WAY	
INDEXED			STATE HIGHWAY ENGINEER	7-23-65

REVISION	BY	DATE
Added Govt Lots 11&12	JWH-TDW	10-20-65
Added Govt Lots	JWH-TDW	5-16-66

SECTION. 02620-2601 SHEET 3 OF 6

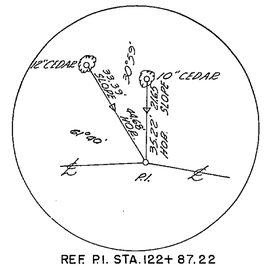
Attachment: 2 Trail Feasibility Study. April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-Purpose Path)

FED. ROAD DIV. No.	STATE	PROJECT No.	FISCAL YEAR	SHEET No.
3	FLA.	02620-2601	65	4

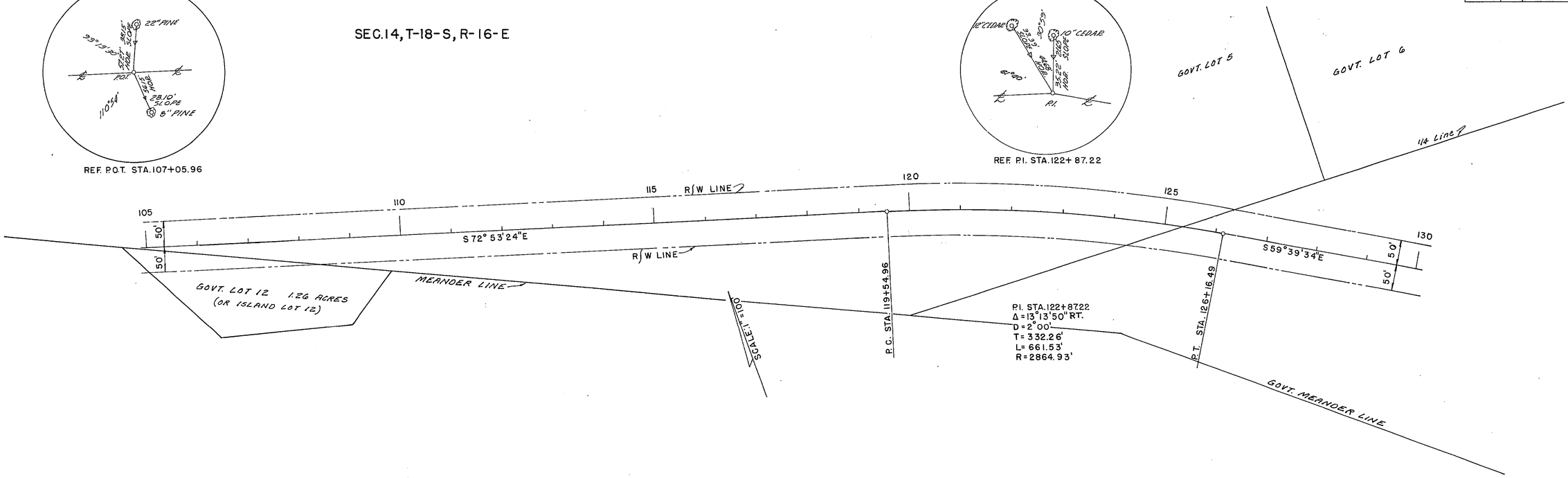


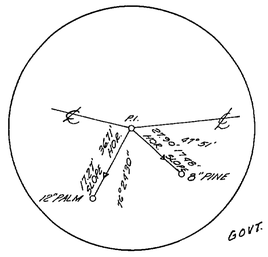
REF. P.O.T. STA. 107+05.96

SEC. 14, T-18-S, R-16-E

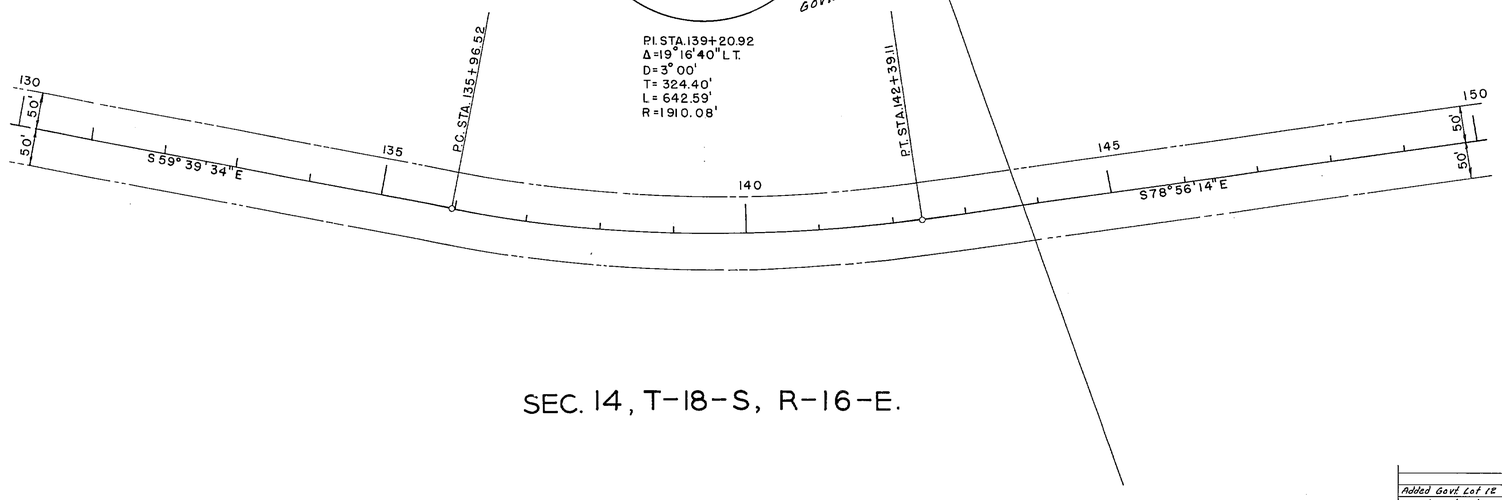


REF. P.I. STA. 122+87.22





P.I. STA. 139+20.92
Δ = 19°16'40" L.T.
D = 3° 00'
T = 324.40'
L = 642.59'
R = 1910.08'



SEC. 14, T-18-S, R-16-E.

STATE OF FLORIDA
STATE ROAD DEPARTMENT

RIGHT OF WAY MAP

STATE ROAD NO. 5-44 CITRUS COUNTY

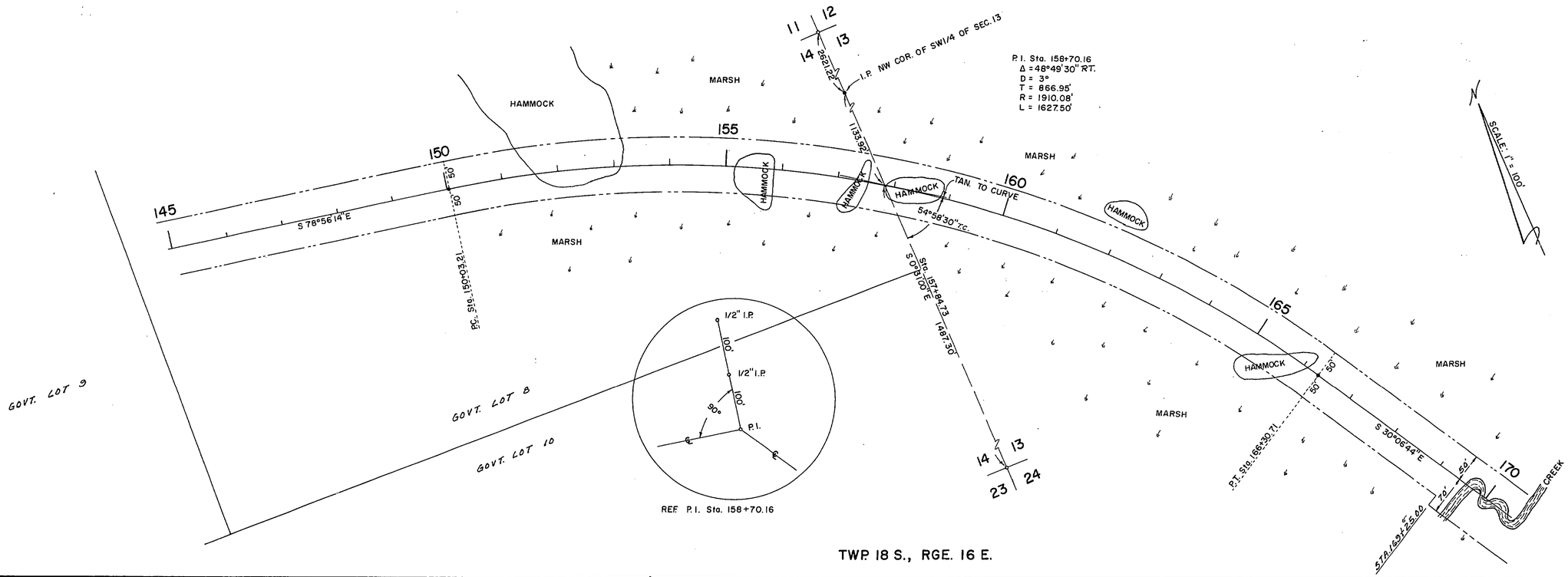
	BY	DATE	APPROVED BY	DATE
DRAWN	C.G.B.	5-28-65		
TRACED	B.M.D.III	6-11-65	DISTRICT ENGINEER	7-19-65
CHECKED	J.W.H.	7-13-65		
COMPARED			ENGINEER OF RIGHTS OF WAY	
INDEXED			STATE HIGHWAY ENGINEER	7-27-65

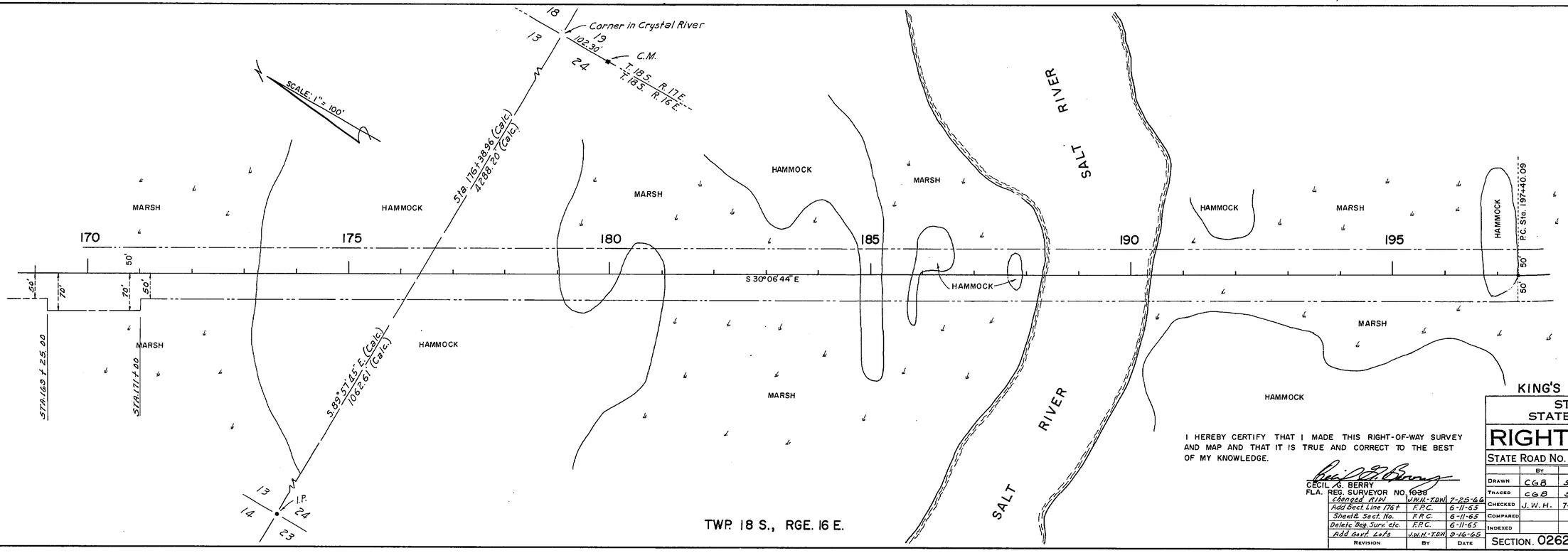
REVISION	BY	DATE
Added Govt Lot 12	J.W.H-T.O.W.	10-20-65
Added Govt Lots	J.W.H-T.O.W.	9-16-65

SECTION. 02620-2601 SHEET 4 OF 6

Attachment: 2 Trail Feasibility Study. April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-Purpose Path)

FED. ROAD DIV. No.	STATE	PROJECT No.	FISCAL YEAR	SHEET No.
3	FLA.	02620-2601	65	5





I HEREBY CERTIFY THAT I MADE THIS RIGHT-OF-WAY SURVEY AND MAP AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

CECIL G. BERRY
FLA. REG. SURVEYOR NO. 1038

REVISION	BY	DATE
Changed R/W	J.W.H.-T.D.W.	7-25-66
Add Sect. Line 176+	F.P.C.	6-11-65
Sheet & Sect. No.	F.P.C.	6-11-65
Delete Beg. Surv. etc.	F.P.C.	6-11-65
Add Govt. Lots	J.W.H.-T.D.W.	9-16-65

KING'S BAY EXTENSION

STATE OF FLORIDA
STATE ROAD DEPARTMENT

RIGHT OF WAY MAP

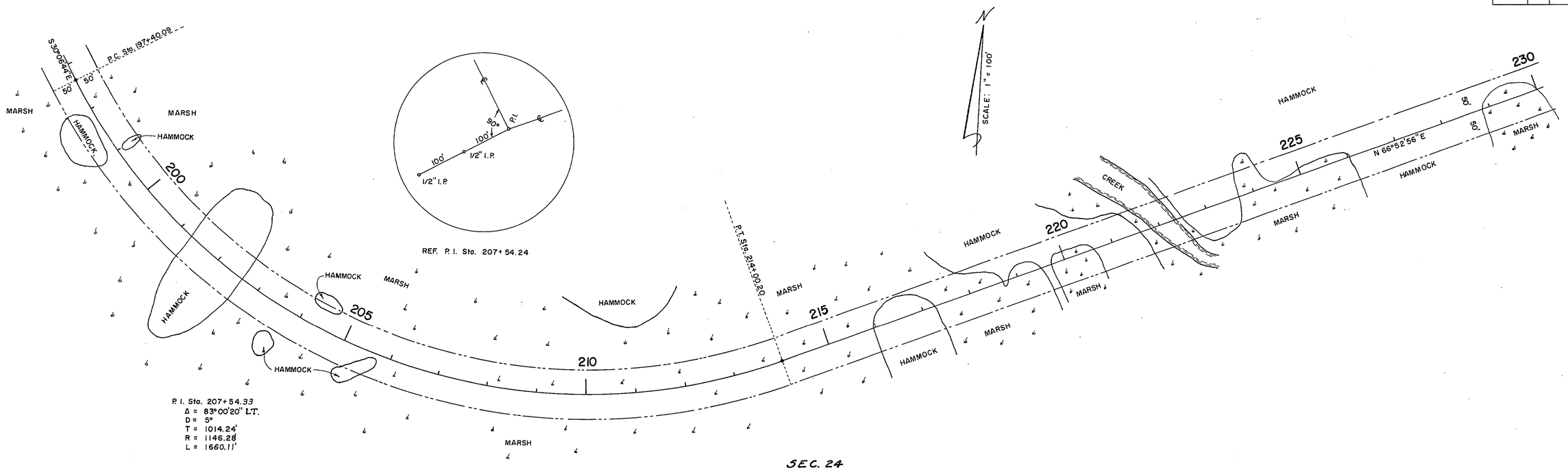
STATE ROAD NO. S-44 Citrus COUNTY

	BY	DATE	APPROVED BY	DATE
DRAWN	CGB	5-21-65		7-14-65
TRACED	CGB	5-28-65	DISTRICT ENGINEER	
CHECKED	J.W.H.	7-13-65		
COMPARED			ENGINEER OF RIGHTS OF WAY	
INDEXED				7-23-65
			STATE HIGHWAY ENGINEER	

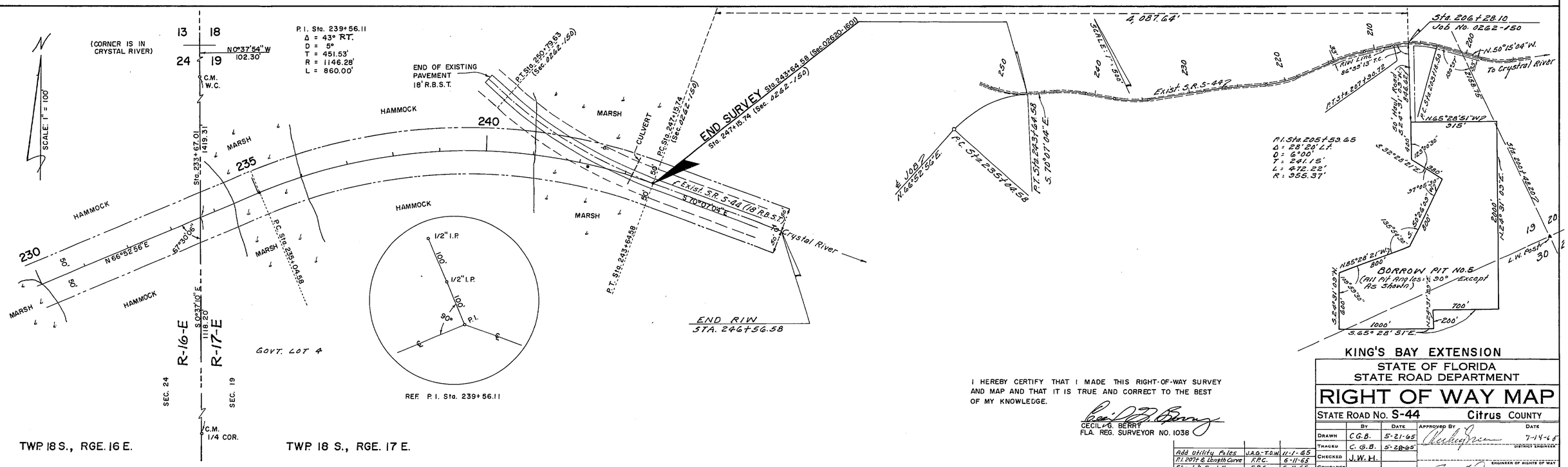
SECTION 02620-2601 SHEET 5 OF 6

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-Purpose Path)

FED. ROAD DIV. No.	STATE	PROJECT No.	FISCAL YEAR	SHEET No.
3	FLA.	02620-2601	65	6



SEC. 24
TWP. 18 S., RGE. 16 E.



KING'S BAY EXTENSION

I HEREBY CERTIFY THAT I MADE THIS RIGHT-OF-WAY SURVEY AND MAP AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

CECIL V.G. BERRY
FLA. REG. SURVEYOR NO. 1038

STATE OF FLORIDA
STATE ROAD DEPARTMENT

RIGHT OF WAY MAP

STATE ROAD NO. S-44 Citrus COUNTY

	By	Date
DRAWN	C.G.B.	5-21-65
TRACED	C. G. B.	5-28-65
CHECKED	J.W.H.	
COMPARED		
INDEXED		

APPROVED BY — DATE 7-14-65 — DISTRICT ENGINEER

ENGINEER OF RIGHTS OF WAY — 7-23-65

STATE HIGHWAY ENGINEER

REVISION	BY	DATE
Add Utility Poles	J.A.G.-T.D.W.	11-1-65
P.I. 207+ & Length Curve	F.P.C.	6-11-65
Sheet & Sect. No.	F.P.C.	6-11-65
Delete Sta. 230+00 etc.	F.P.C.	6-11-65
Added Bank Cor. Changed Rad.	J.W.H.-T.D.W.	3-22-66 9-26-66

SECTION. 02620-2601 SHEET 6 OF 6

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-Purpose Path)

Appendix D: BPAC Meeting

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Kimley»Horn

MEETING SUMMARY
Hernando/Citrus MPO Bicycle Pedestrian Advisory Committee
3:30 PM on Thursday October 26, 2017

W Fort Island Trail Multi-Use Trail Feasibility Study

Jon Sewell with Kimley-Horn gave an informational presentation to the Hernando/Citrus Metropolitan Planning Organization (MPO) Bicycle Pedestrian Advisory Committee on Thursday October 26, 2017. The presentation provided background on the proposed trail corridor, an overview of the study area and purpose of the feasibility study, overview of the existing conditions, overview of environmental and engineering constraints of the corridor, discussion on the proposed trail typical sections that will be evaluated as part of the feasibility study, and next steps of the feasibility study and overall trail project.

The Committee members provided information on bicycle / pedestrian events that currently occur on Fort Island Trail. There is an annual triathlon that has a large volume of participants utilizing the roadway for the event. The Committee members expressed support of the trail project as a way to separate runners and bicyclists during this event.

The Committee members expressed support for a smooth surface on an elevated structure, where recommended due to environmental and/or engineering constraints. A smooth surface is preferred over a typical boardwalk section due to improved rider experience, especially for longer distances as is likely with this project.

The presentation included discussion of phasing to implement this project in a more feasible way due to the anticipated cost of the full project. It was suggested that the initial phases should be on the eastern portion of the project within Crystal River, because it would provide connection to existing trails and destinations along Fort Island Trail. The Committee members were in support of segmentation of the project and of initial phases being within the more populated areas within Crystal River.

Chris Speese, the FDOT District 7 Bicycle/Pedestrian Liaison and Sun Trail District 7 Coordinator recommended that both Citrus County and the MPO be active in submitting a request to FDEP to change the trail from an Opportunity Corridor to a Priority Corridor so that a request can be made to add it to the SUN Trail network.

A copy of the agenda and PowerPoint presentation is provided as an attachment to this summary.

K:\OCA_Civil\142271008 - Fort Island Trail\doc\171026_BPAC-Meeting\BPAC Meeting Summary.docx

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

HERNANDO/CITRUS
METROPOLITAN PLANNING ORGANIZATION

BICYCLE/PEDESTRIAN ADVISORY COMMITTEE (BPAC)

THURSDAY, OCTOBER 26, 2017 – 3:30 P.M.

MEETING LOCATION:
Brooksville City Hall
201 Howell Avenue
Brooksville, FL 34601

AGENDA

A. CALL TO ORDER AND INTRODUCTIONS

B. REVIEW/APPROVAL OF MINUTES – July 20, 2017

C. FY 2019 – FY 2023 FDOT TENTATIVE FIVE-YEAR WORK PROGRAM

D. INFORMATION ITEMS
Dunnellon Trail Connector Update

E. OTHER ISSUES/CITIZENS COMMENTS

F. ADJOURNMENT AND NEXT MEETING – The next BPAC meeting is tentatively scheduled for January 18, 2018, beginning at 3:30 p.m., at the Citrus Transit Center, 1300 S. Lecanto Highway, Lecanto, Florida.

The meeting agenda and back-up materials are available online at www.hernandocitrusmpo.us

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

FORT ISLAND TRAIL MULTI-USE TRAIL FEASIBILITY STUDY

Hernando-Citrus MPO

Bicycle/Pedestrian Committee Meeting

3:30 PM October 26, 2017

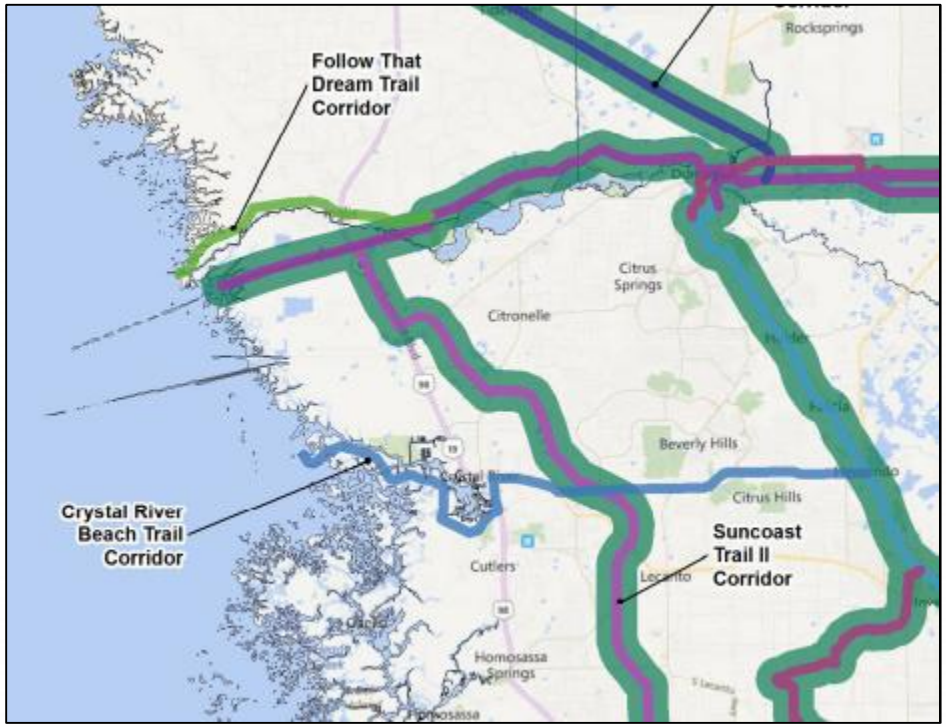
Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Outline

- Project Background
- Study Area and Purpose
- Existing Conditions and Planning Considerations
- Multi-use Trail Typical Sections
- Next Steps

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

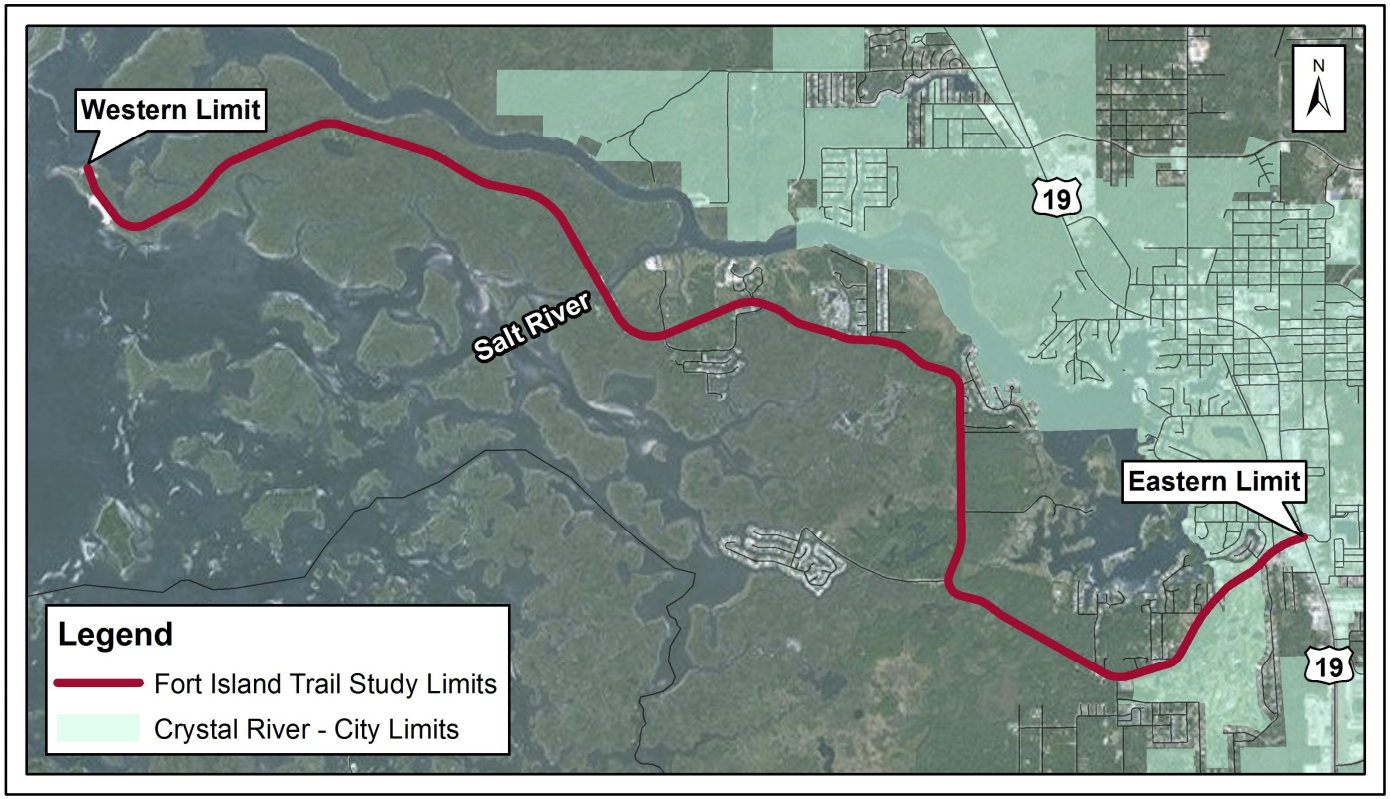
Project Background



- Land Trail Opportunity Corridor on the Florida Greenways & Trails System Plan
- Listed in the Hernando-Citrus MPO 2040 Long Range Transportation Plan
- Listed on the Citrus County Transportation Alternatives Priority Projects list for FY 2017/18 – 2021/22
- Not included on the SUN Trail Network

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Study Area and Purpose

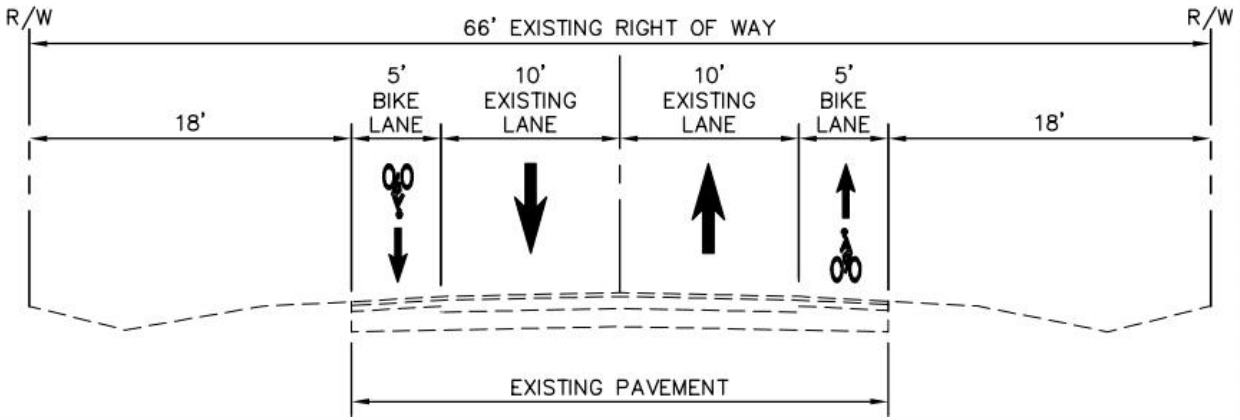


- 8.9 miles
- Connect Fort Island Gulf Beach to US 19
- Provide off-road multi-use trail
- Identify impacts, constraints, costs of improvements

Kimley»Horn

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Existing Conditions



- Right-of-way:
  66-ft to 100-ft
- Speed Limit:
  30-mph to 45-mph
- Existing roadway structure limits reconstruction

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Existing Conditions

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Existing Conditions

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Existing Conditions

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Planning Considerations – Utilities

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Planning Considerations – Drainage

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

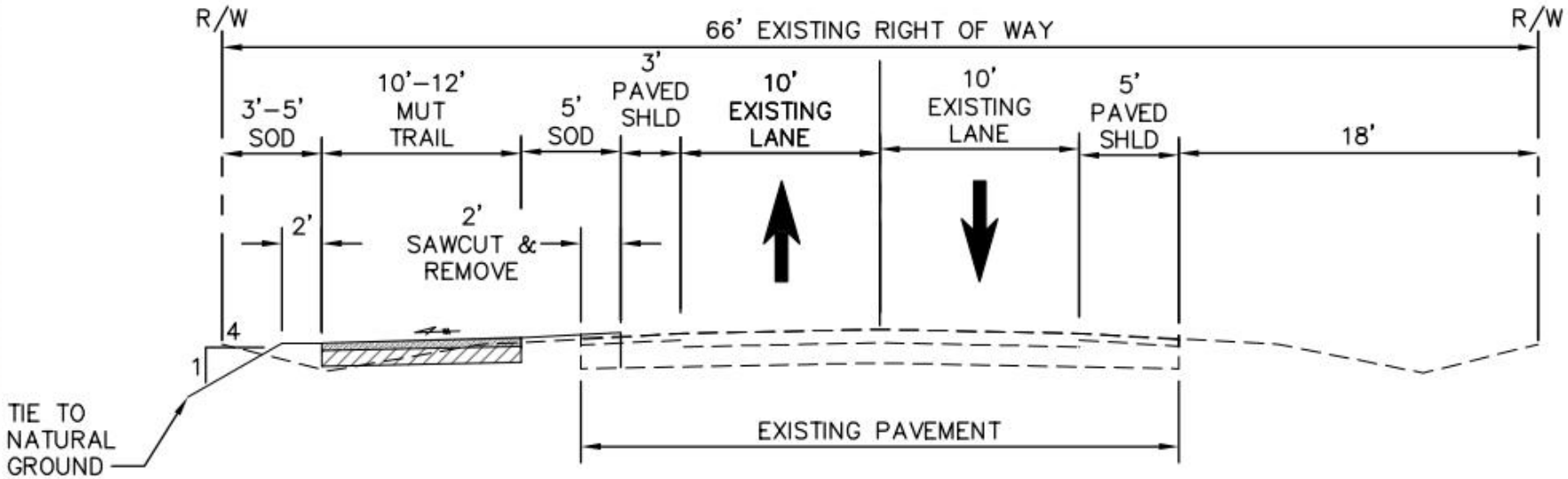
Planning Considerations – Environmental

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Planning Considerations – Engineering

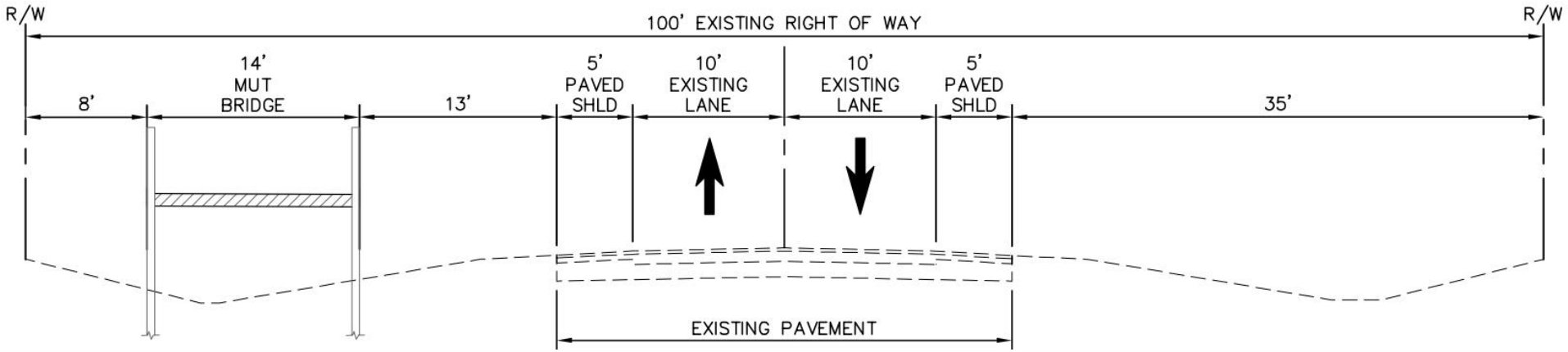
Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Surface Trail Typical Section



Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Elevated Trail Typical Section



Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Alternative Evaluation

- Trail User Experience
- Safety
- Constructability/Feasibility
- ROW Acquisition & Cost
- Environmental Impact, Cost, & Permitability
- Construction Cost
- Operating and Maintenance Cost

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Next Steps

- Alternatives evaluation
- Identify potential costs and phasing
- Present findings to the BOCC
- Seek funding for next phases of project (PD&E, design, construction)

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Questions/Comments

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Appendix E: Alternatives Evaluation Criteria

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Table A - Fort Island Trail MUP Evaluation Criteria

Evaluation Criteria	Evaluation Description		
	Low	Moderate	High
Trail user experience	Majority boardwalk with less desirable travel experience or non-separated travel from the roadway	Some sections of boardwalk and some sections of surface trail	Most desirable trail surface and width for ridability
ROW impacts	Some private property acquisition or permanent easements anticipated	A majority of the study area requires private property acquisition or permanent easements	The entire study area requires private property acquisition or permanent easements
Construction cost	Lowest construction cost - off-road construction with typical trail section	Moderate construction cost - requires some reconstruction of existing roadway facilities, requires alternative trail construction (boardwalk, roadway pavement section)	Highest construction cost - requires a high percentage of roadway modification and/or alternative trail section (boardwalk, roadway pavement section)
Environmental impact cost	Minimal to no wetland mitigation cost	Moderate environmental impact costs	High environmental impact costs
Environmental permittability	Minimal to no environmental impacts/permits	Moderate environmental impact requiring permits that are achievable	More significant environmental impacts that require permits that may be difficult to achieve or costly
Operating and maintenance costs	Low operating and maintenance cost (i.e. standard trail section requiring standard maintenance procedures)	Moderate operating maintenance cost	High operating and maintenance cost (i.e. includes high percentage of alternative trail section requiring routine maintenance and repair)

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Appendix F: SHPO Correspondence

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

This record search is for informational purposes only and does NOT constitute a project review. This search only identifies resources recorded at the Florida Master Site File and does NOT provide project approval from the Division of Historical Resources. Contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333 for project review information.

February 15, 2018

Florida Master Site File

Oliver Basse
Kimley-Horn
445 24th Street, Suite 200
Vero Beach, FL 32960
Phone: 772.794.4113
Email: Oliver.Basse@kimley-horn.com

In response to your inquiry of February 14, 2018 the Florida Master Site File lists five archaeological sites, seven field surveys, one resource group, and no standing structures found in the following section of Citrus County:

Corridor shown on provided shapefiles with a quarter mile buffer as shown on the corresponding maps.

When interpreting the results of our search, please consider the following information:

- **This search area may contain *unrecorded* archaeological sites, historical structures or other resources even if previously surveyed for cultural resources.**
- **Because vandalism and looting are common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.**
- **While many of our records document historically significant resources, the documentation of a resource at the Florida Master Site File does not necessarily mean the resource is historically significant.**
- **Federal, state and local laws require formal environmental review for most projects. This search DOES NOT constitute such a review. If your project falls under these laws, you should contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333.**

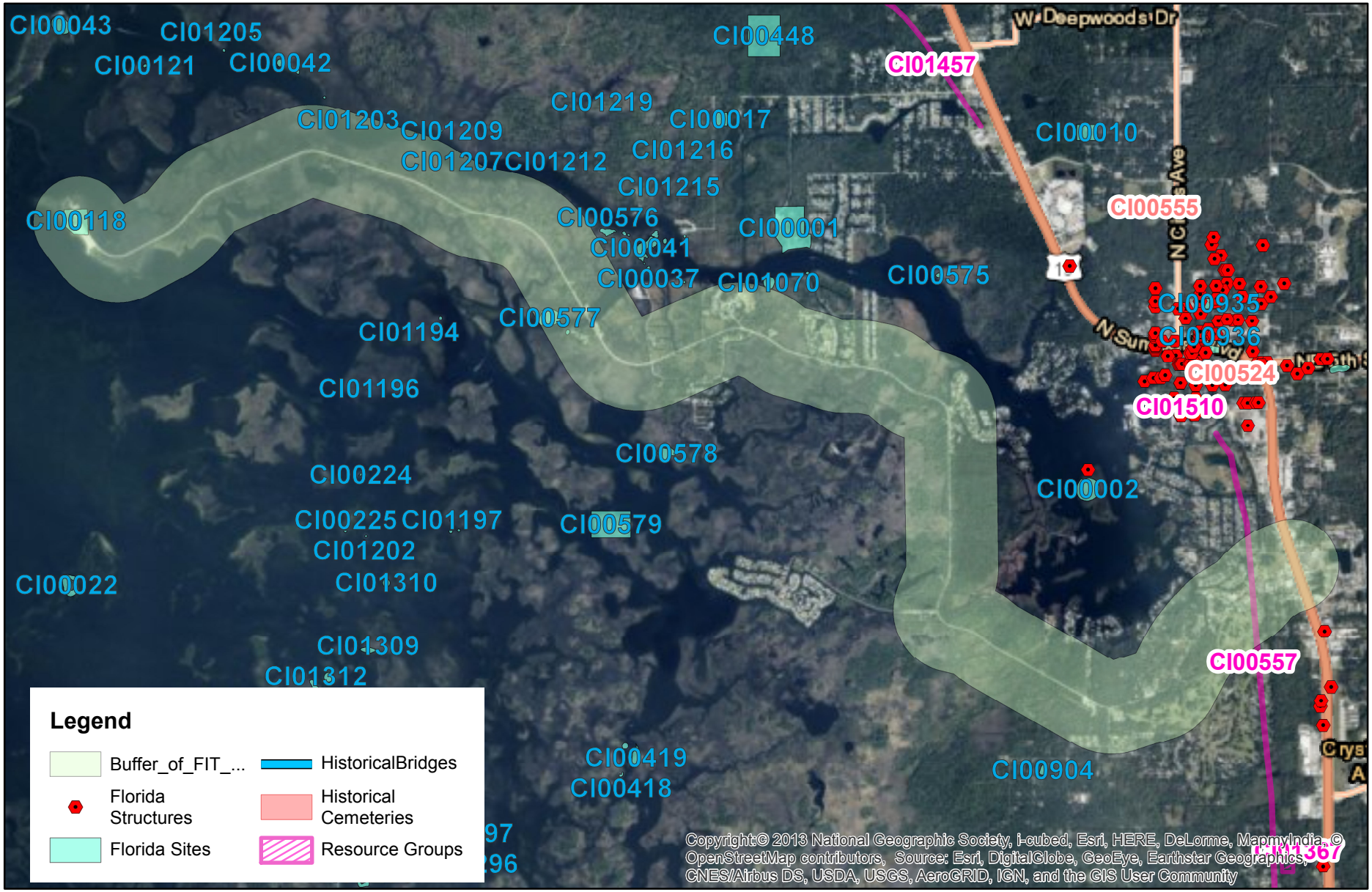
Please do not hesitate to contact us if you have any questions regarding the results of this search.

Sincerely,

Cody VanderPloeg
Archaeological Data Analyst
Florida Master Site File
Cody.VanderPloeg@dos.myflorida.com

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Cultural Resource Search
Quarter Mile APE
Citrus County



February 2018

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

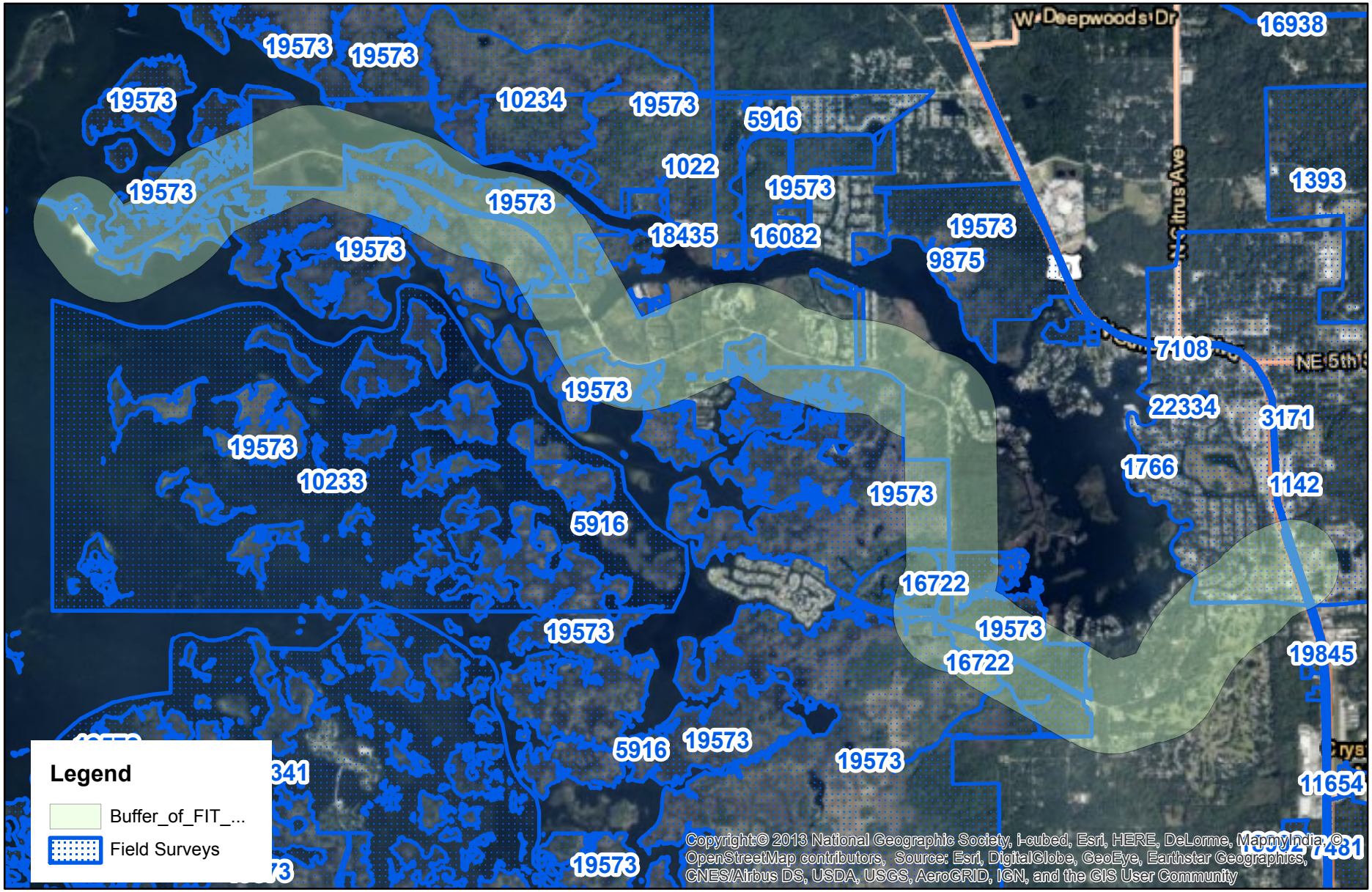
AR=5
SS=0
CM=0
RG=1
BR=0
Total=6

Cultural Resource Roster

SiteID	Type	Site Name	Address	Additional Info	SHPO Eval	NR Status
CI00118	AR	FORT ISLAND				
CI00204	AR	MARINE SCIENCE STATION				
CI00557	RG	OCALA & GULF RAILROAD		Linear Resource	Not Eligible	
CI00577	AR	NORTH COON GAP	CRYSTAL RIVER			
CI01070	AR	CRYSTAL RIVER SOUTH	UNSP			
CI01203	AR	East Peninsula Point	Crystal River			

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Cultural Resource Search
Quarter Mile APE
Citrus County



N

0 0.325 0.65 1.3 1.95 2.6
Miles

February 2018

Manuscript Roster

Total=7

MS#	Title	Publication Information	Year
19845	Cultural Resource Assessment Survey, Technical Memorandum: Littoral Shelf No. Pond Site and Historic Resources Survey Update of SR 55 (US 19) from N of West Green Acres Street to N of West Jump Court and from West Jump Court to CR 44, Citrus Co	2012, ACI Sarasota, P8007C.6 and P8007C.7	2013
18902	Cultural Resource Assessment Survey, Technical Memorandum, SR 55 (US 19) from West Jump Court to Cr 44 (West Fort Trail, Citrus County, Florida. FDIP No. 405822-3-52-01	2011, ACI Sarasota, P1123A.3	2012
19573	Archaeological Resource Sensitivity Modeling in Florida State Parks District 2: the Northeast Florida Region	2012 Collins, Lori D., Archaeological Resource Sensitivity Modeling in Florida State Parks District 2. Prepared by the Alliance for Integrated Spatial Technologies, University of South Florida, Tampa, Florida. Prepared for the Florida Park Service.	2012
16722	Archaeological Monitoring and Limited Testing for the Installation of Firelines and Vegetation Preparation II at Crystal River Preserve State Park, Crystal River, Citrus County, Florida	Florida Public Archaeology Network, Central Regional Center, Crystal River. Conducted for Crystal River Preserve State Park, Crystal River	2009
10234	Archaeological Reconnaissance of the South Buffer Preserve, Crystal Riverbank Tract, St. Martins Marsh Aquatic Preserve/Crystal River State Buffer Preserve, Citrus County, Florida	Gulf Archaeology Research Institute, Crystal River. Submitted to St. Martins Marsh Aquatic Preserve/ Crystal River State Buffer Preserve	2004
7108	Final Cultural Resource Assessment Survey, Project Development and Environmental Study US 19 (SR 55) From South of US 98 to CR 488 Citrus County	ARCHAEOLOGICAL CONSULTANTS, INC., SARASOTA, FL, SUBMITTED TO FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT SEVEN	2002
3171	Architectural and Historical Survey of Crystal River, Florida	Gainesville. Submitted to the City of Crystal River.	1992

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and

Appendix G: Potential Wetland Impact Areas

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

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Potential Wetland Impact Area Map

Fort Island Trail
Citrus County, Florida

1 inch = 300 feet	MARCH 2018	JOB NUMBER: 142271008	FI

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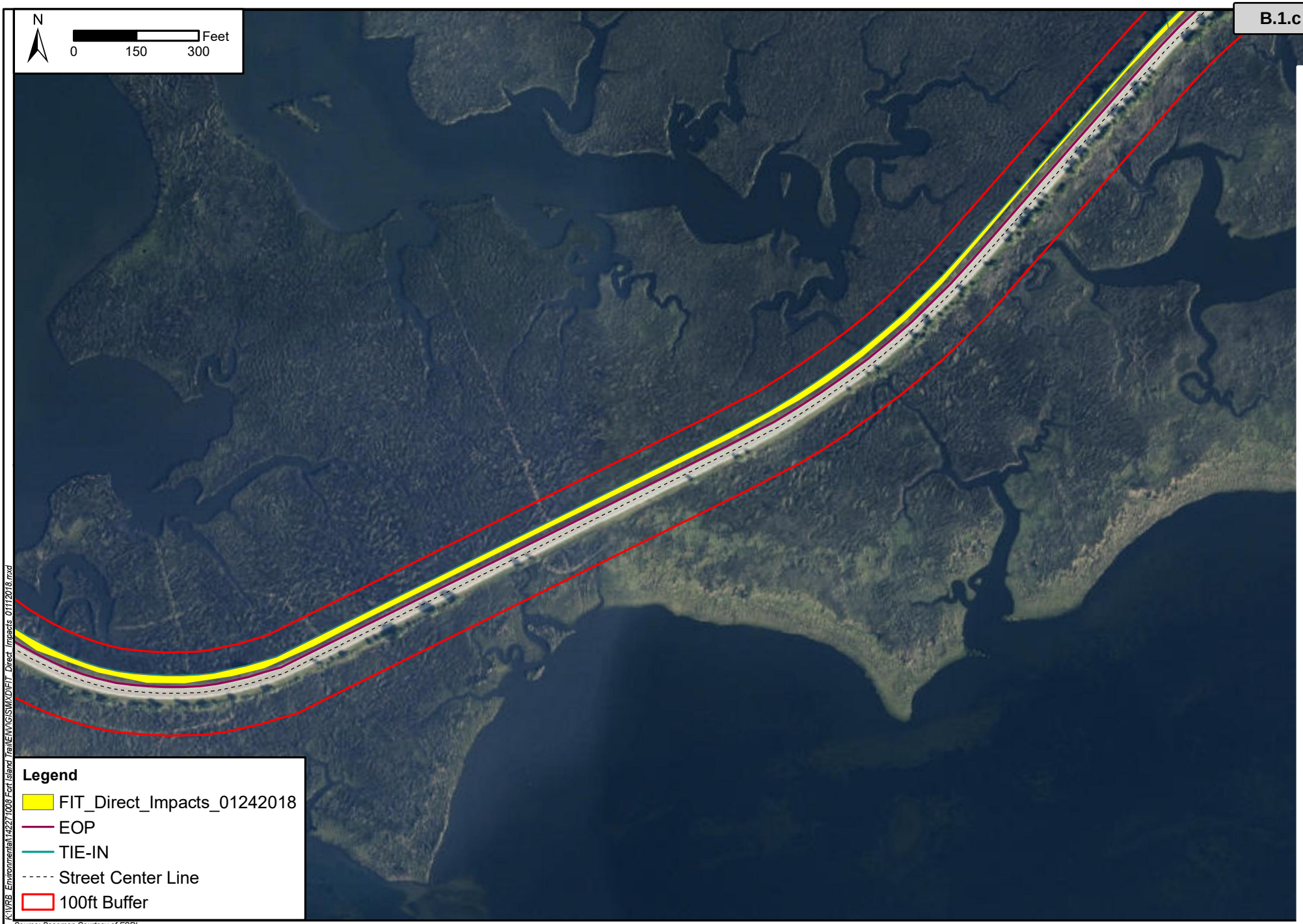

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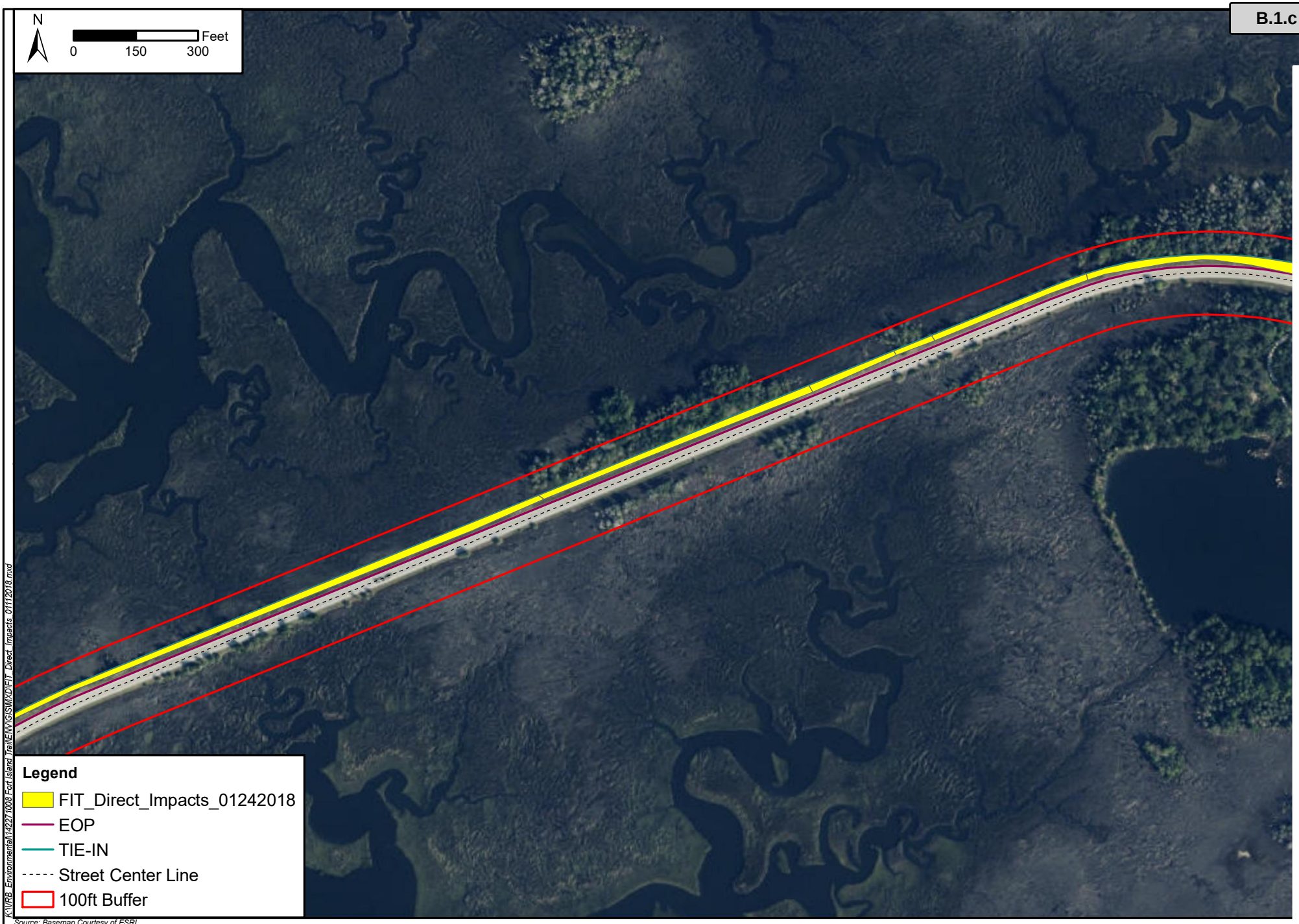

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Source: Basemap Courtesy of ESRI

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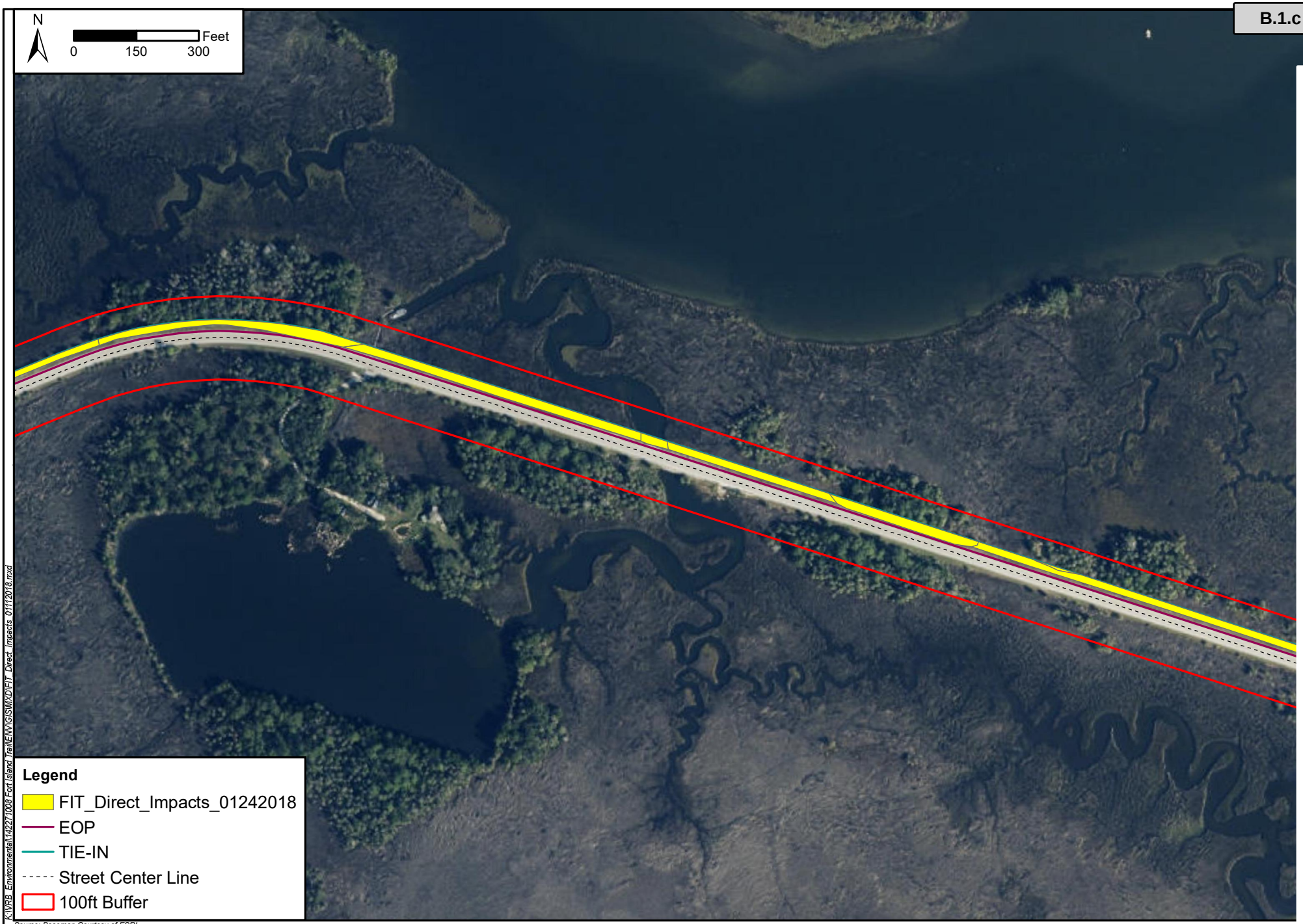

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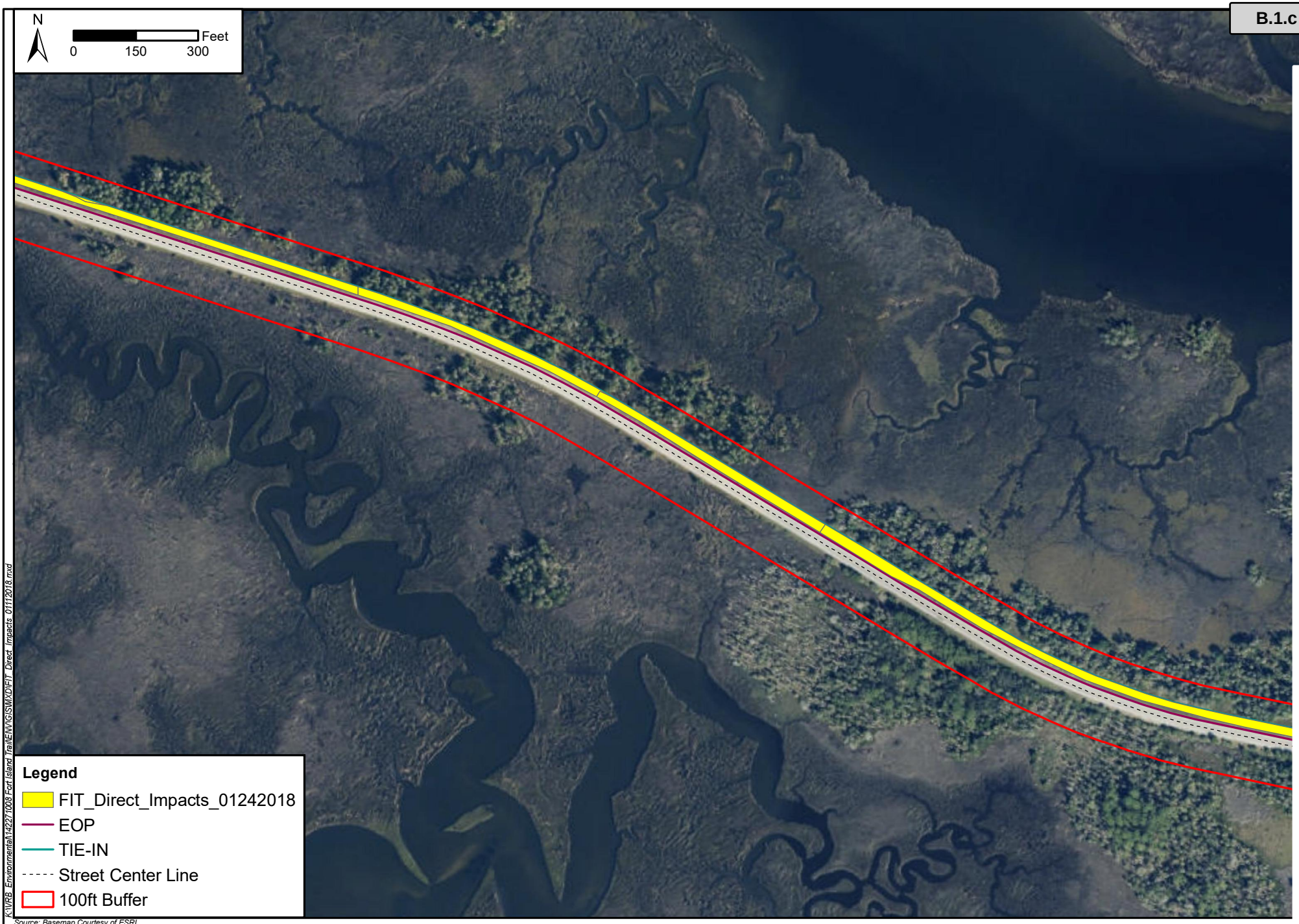

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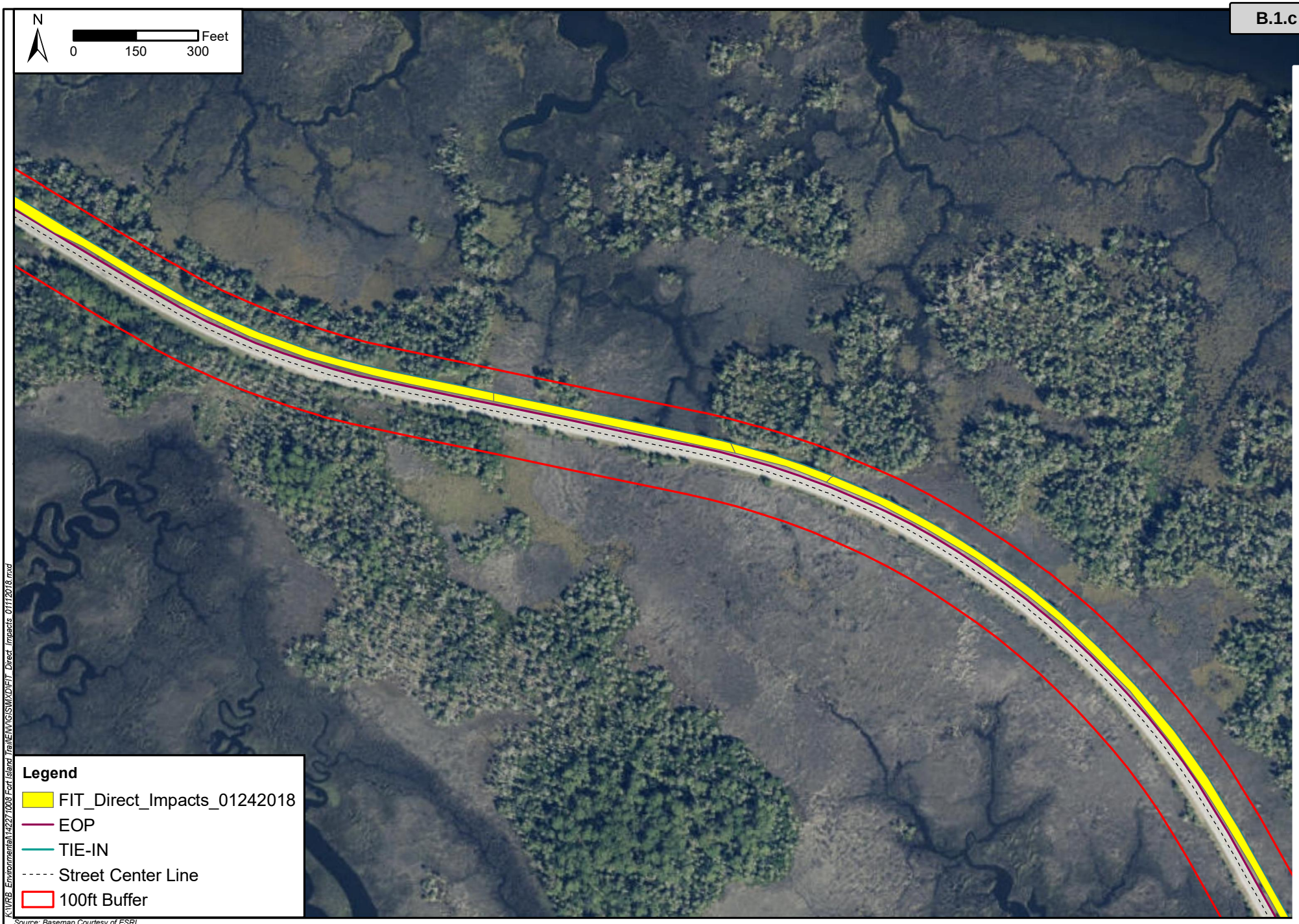

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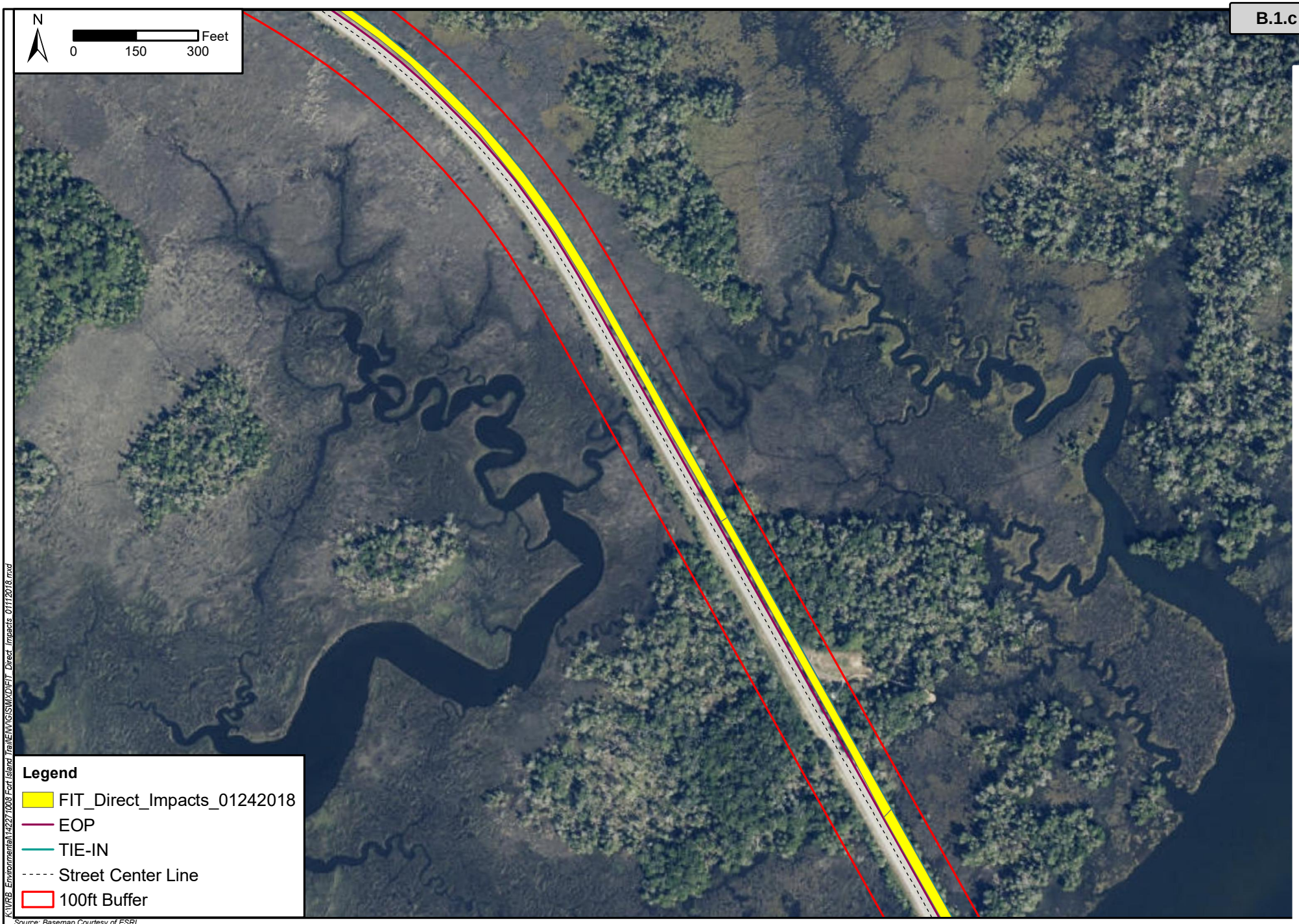

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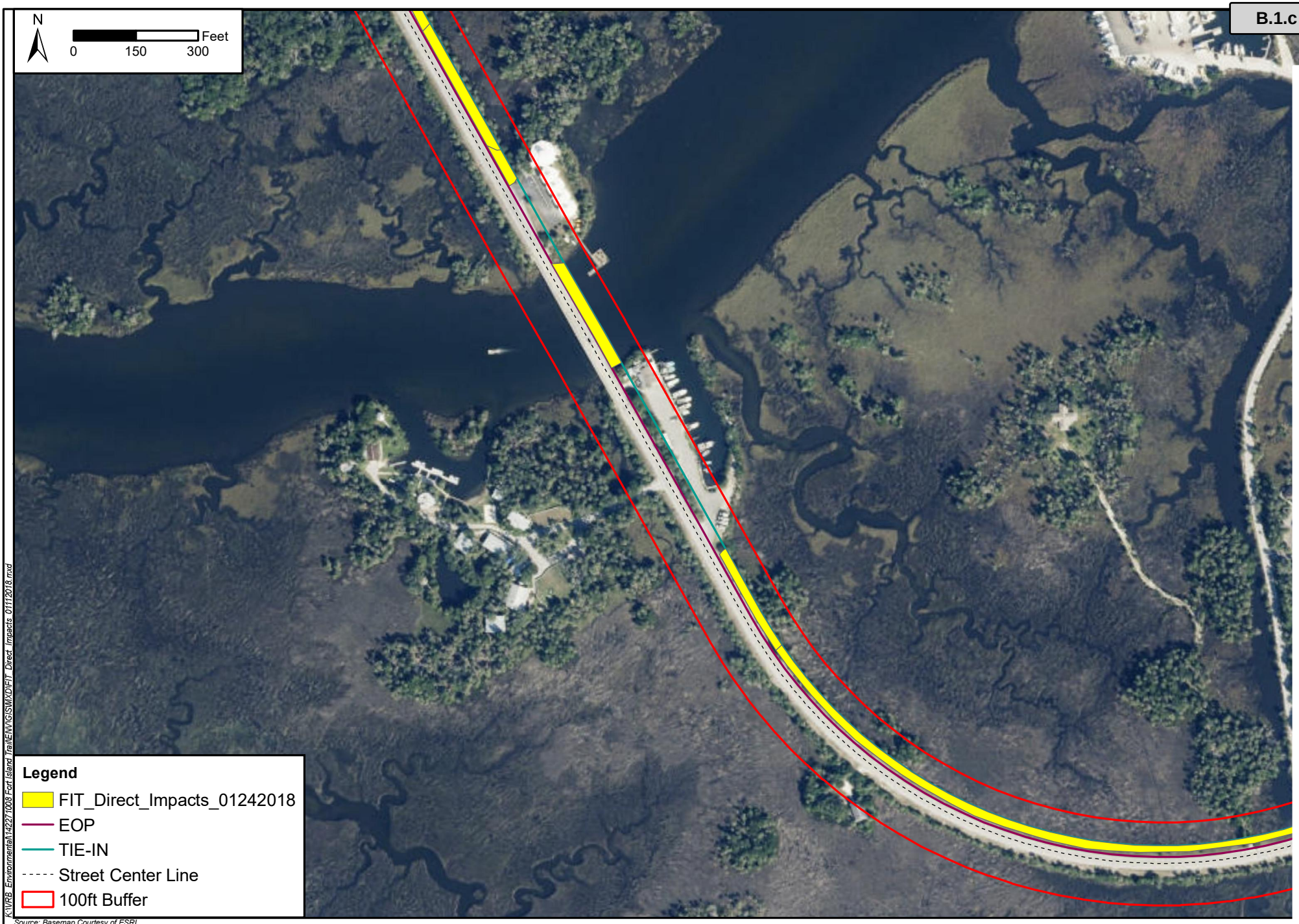

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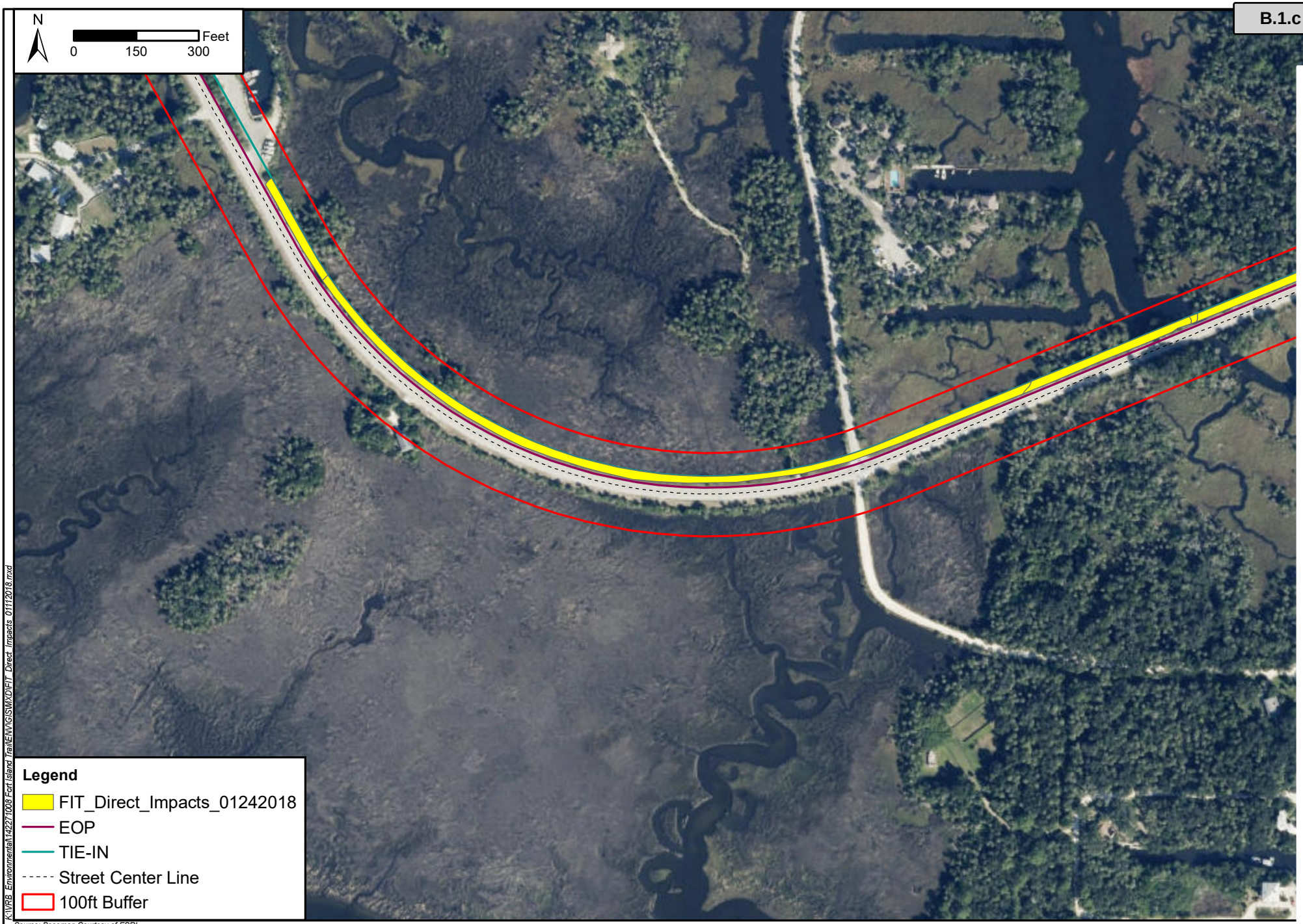

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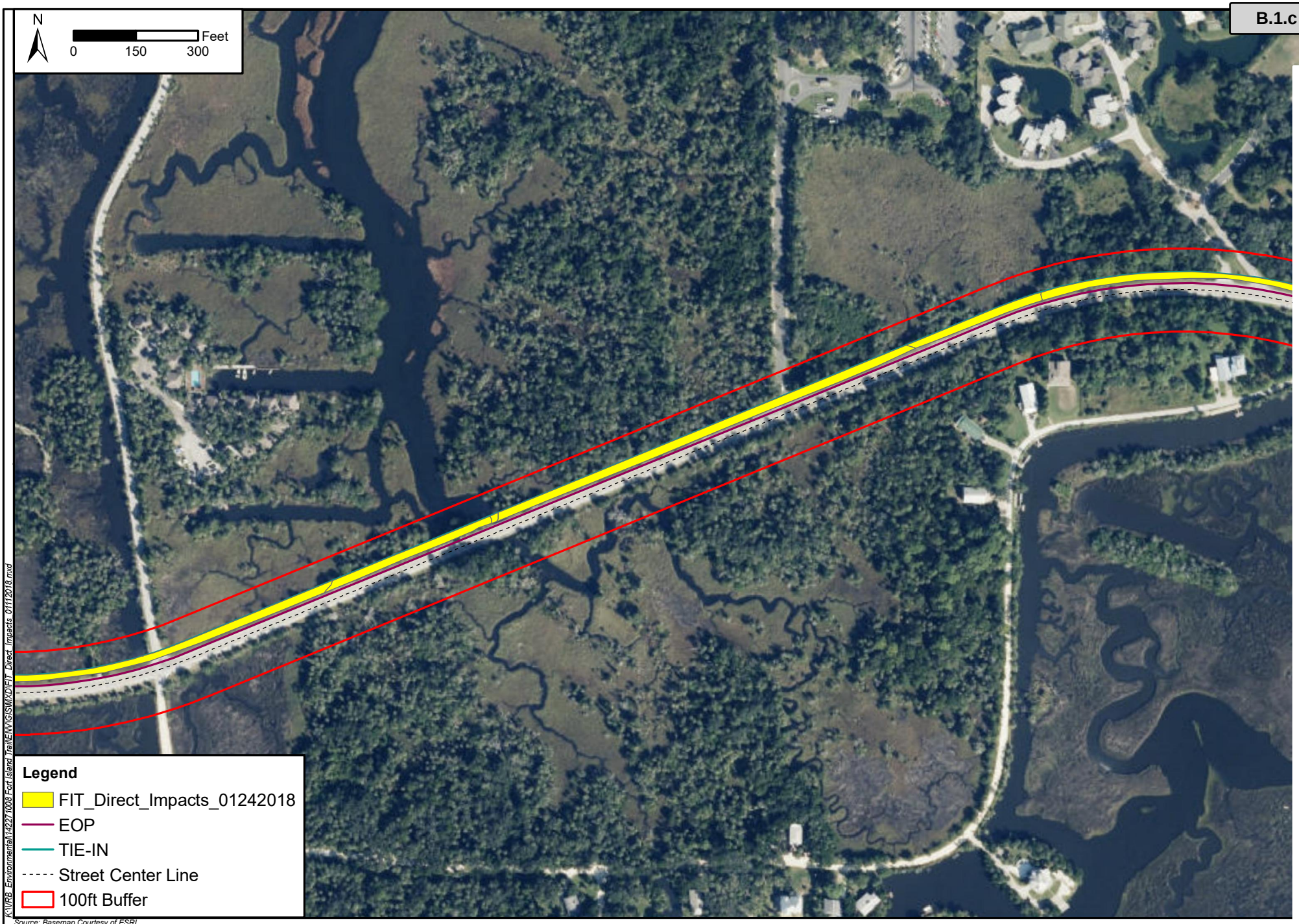

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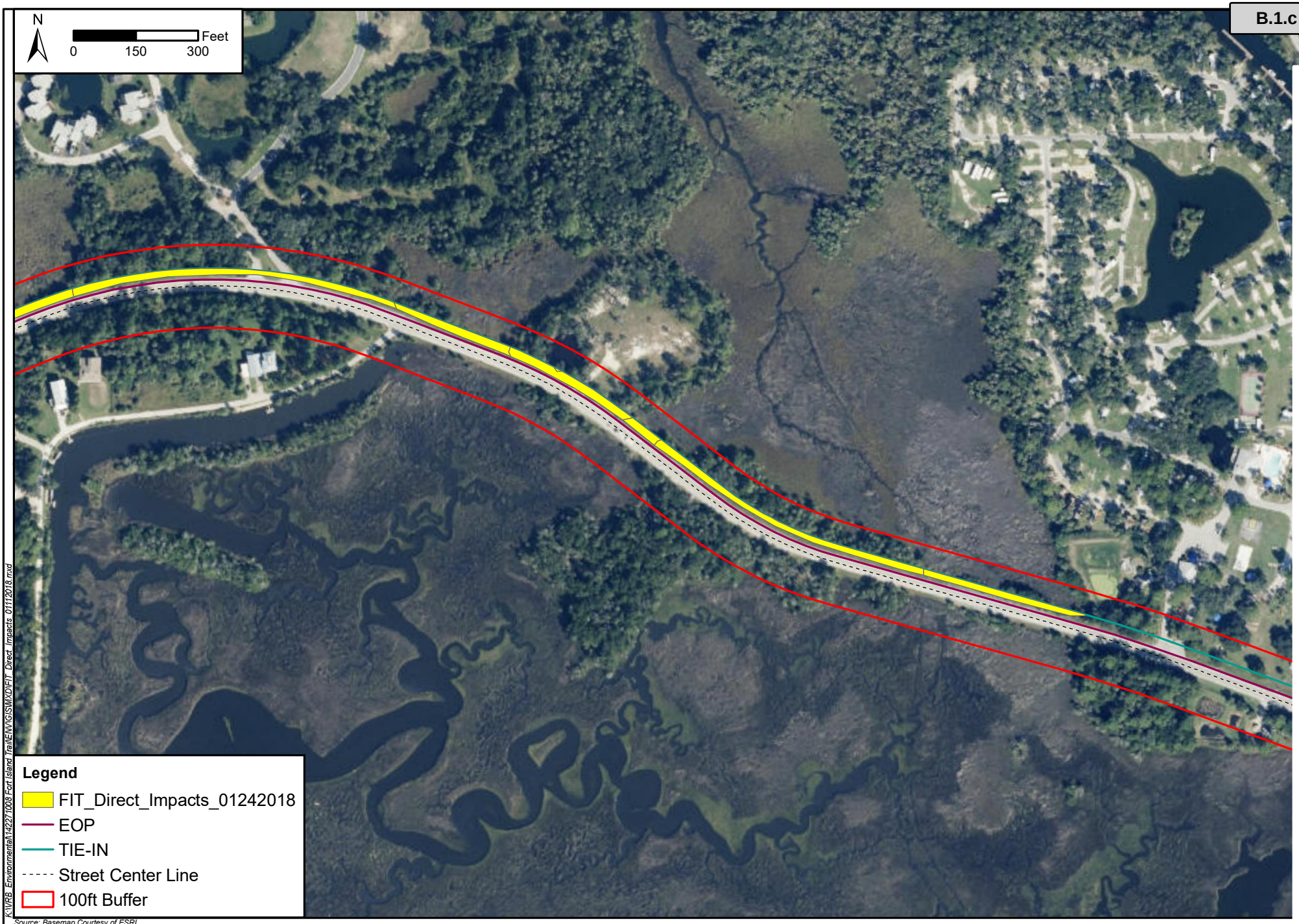

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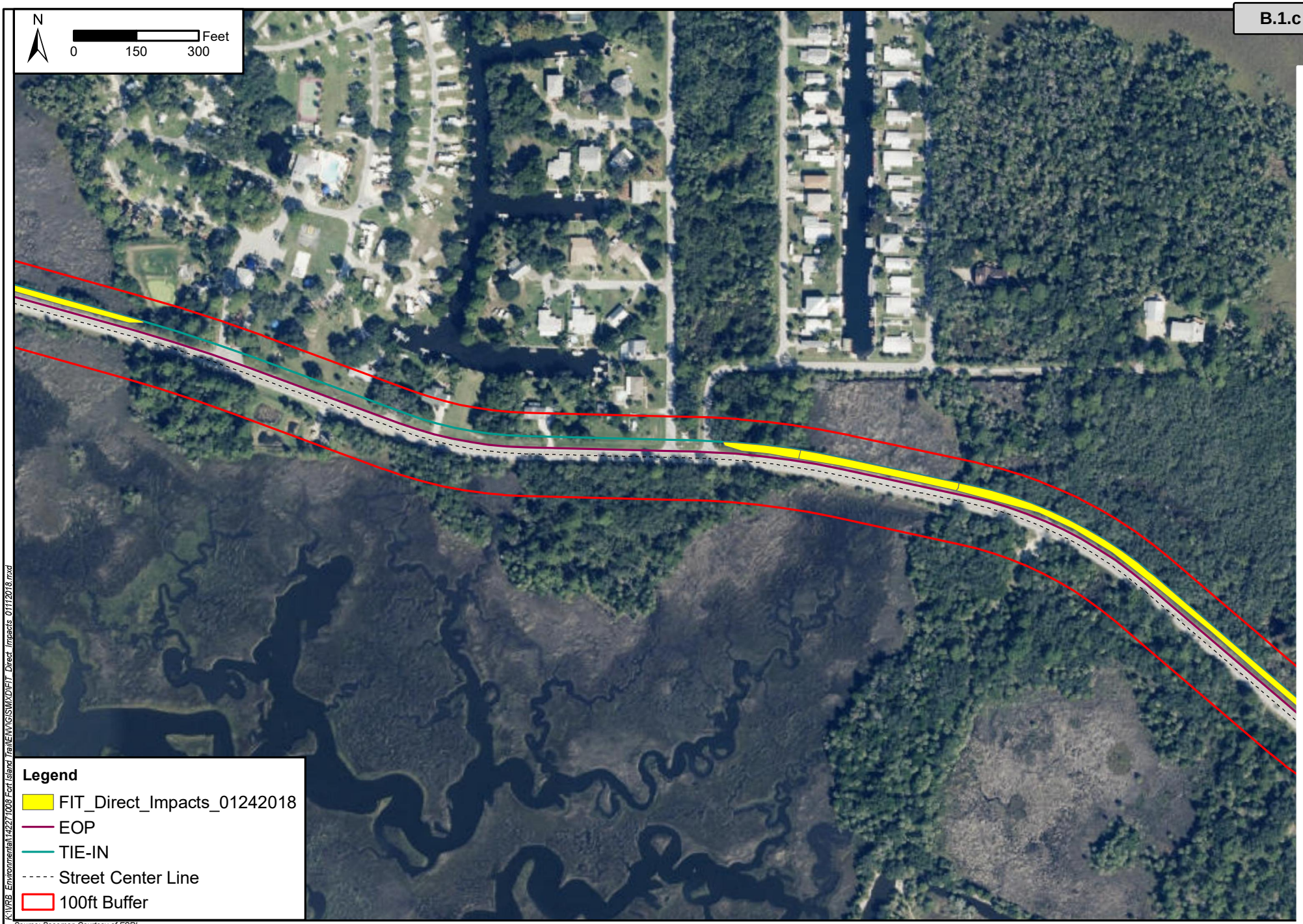

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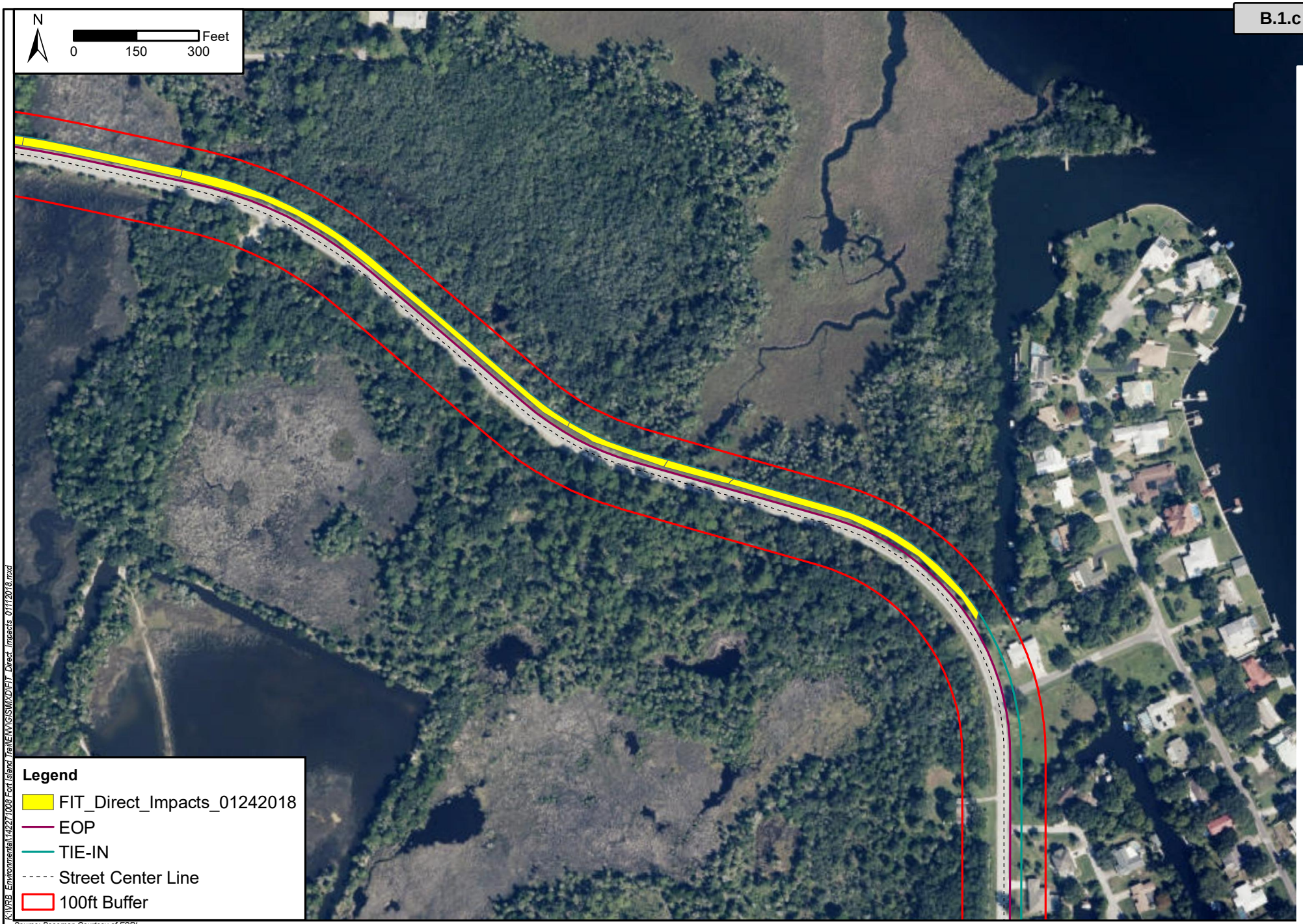

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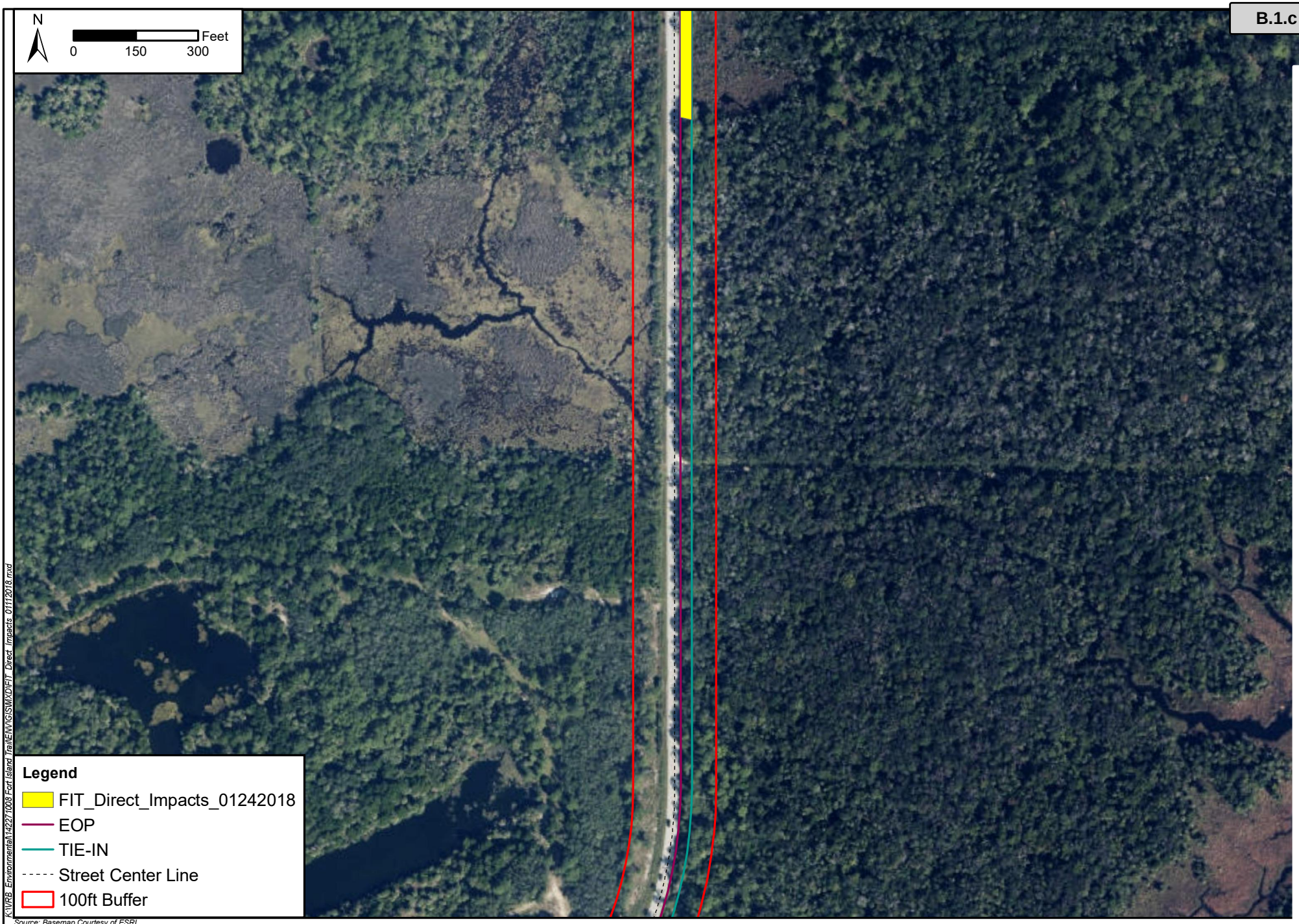

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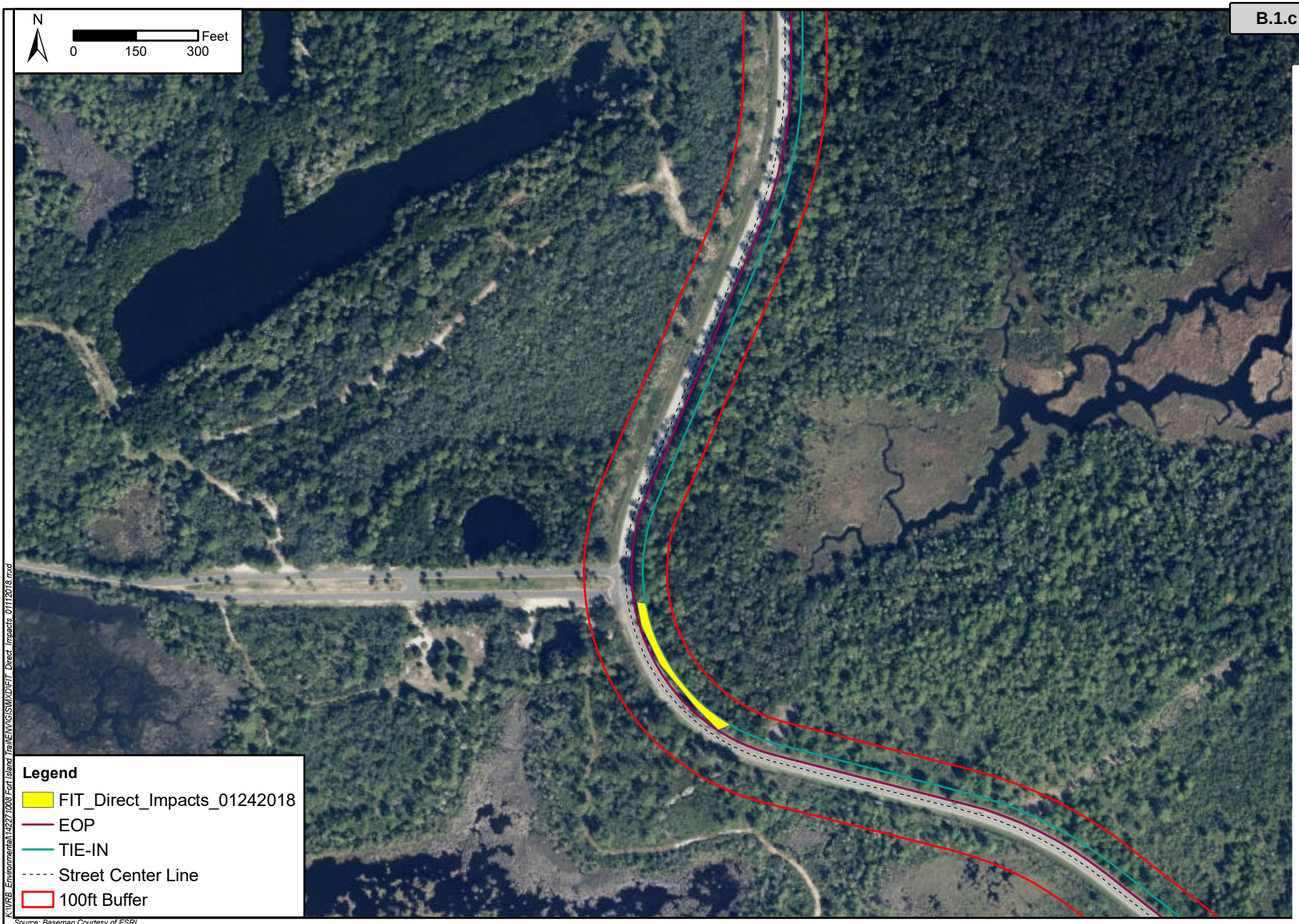

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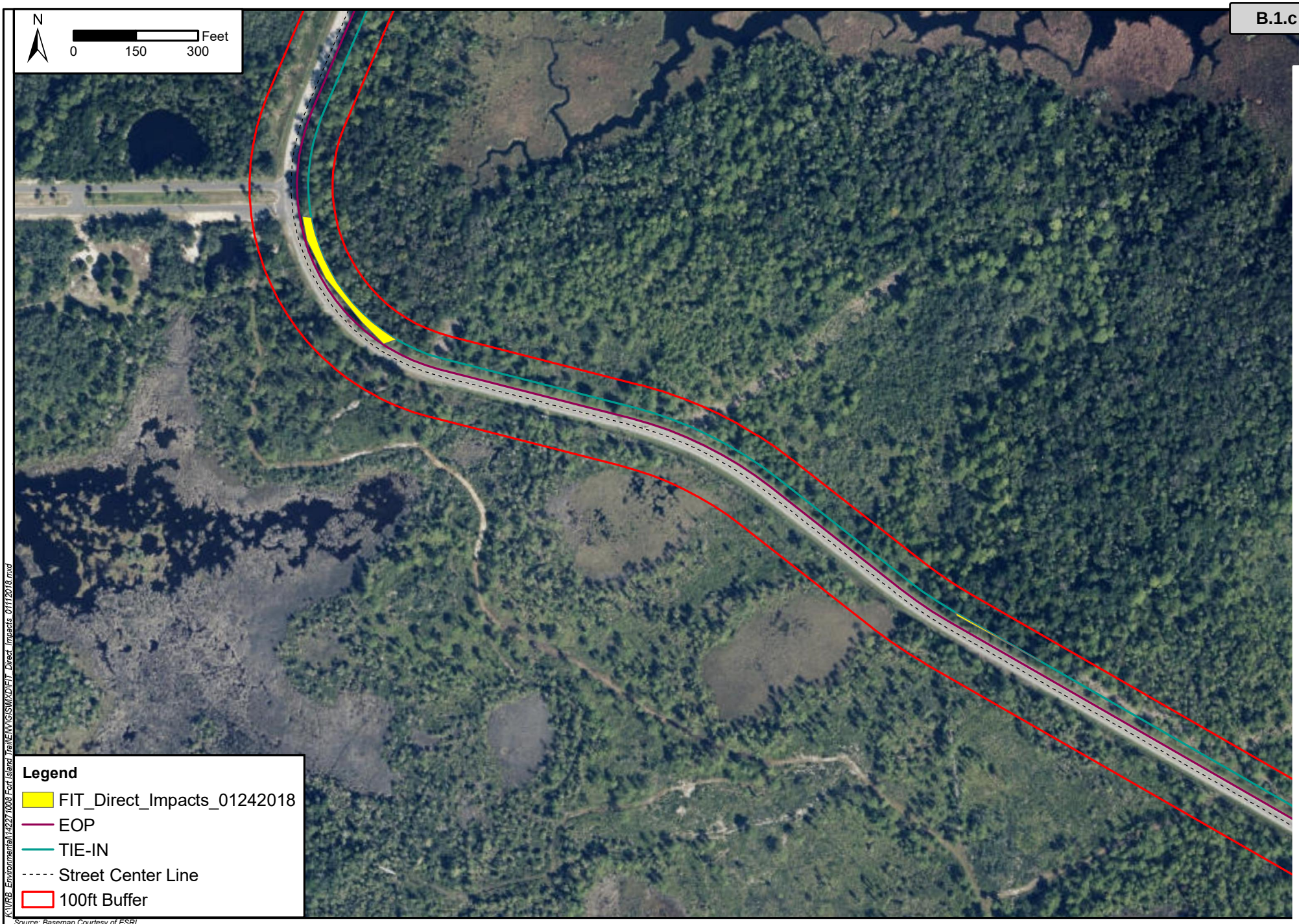

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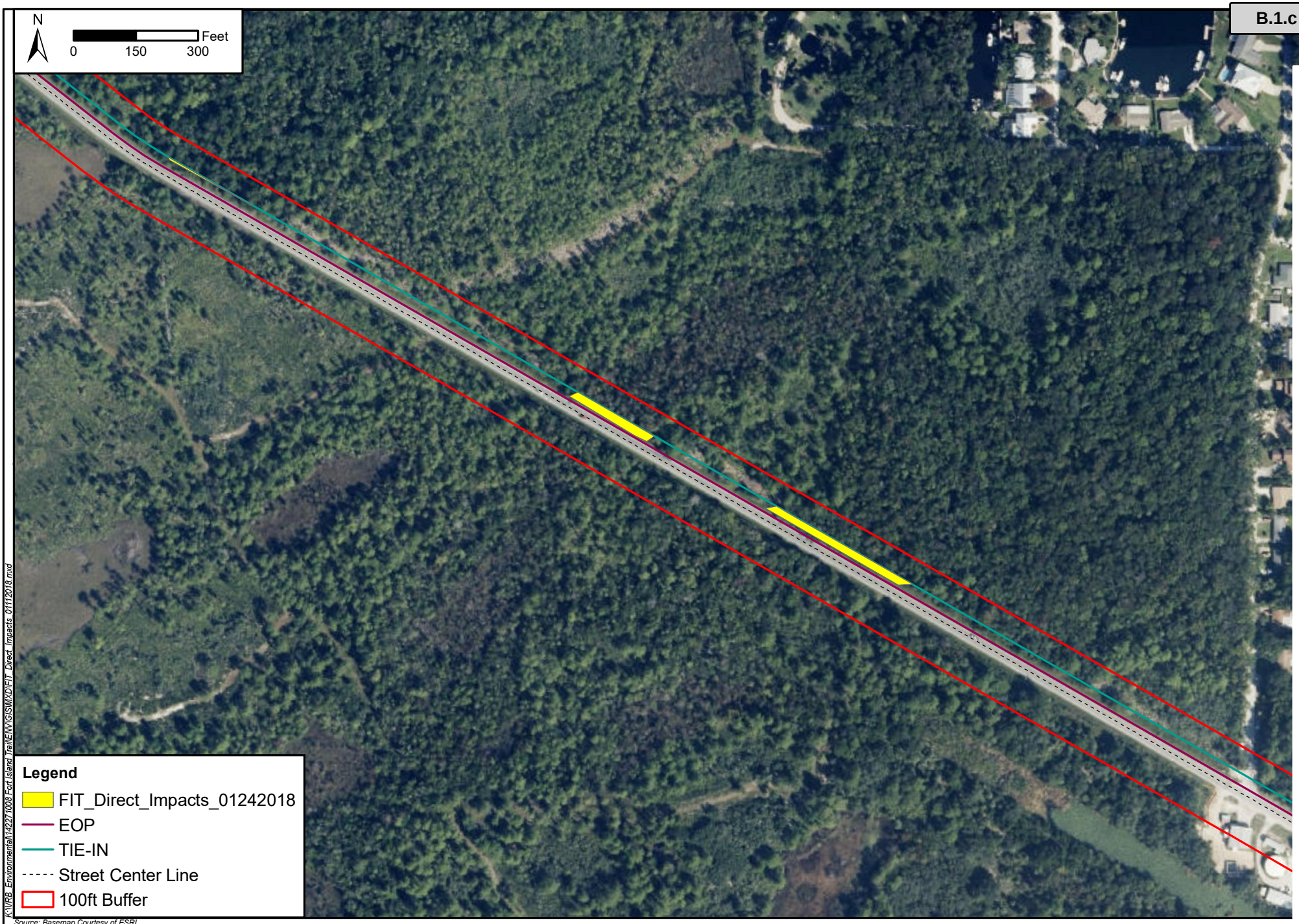

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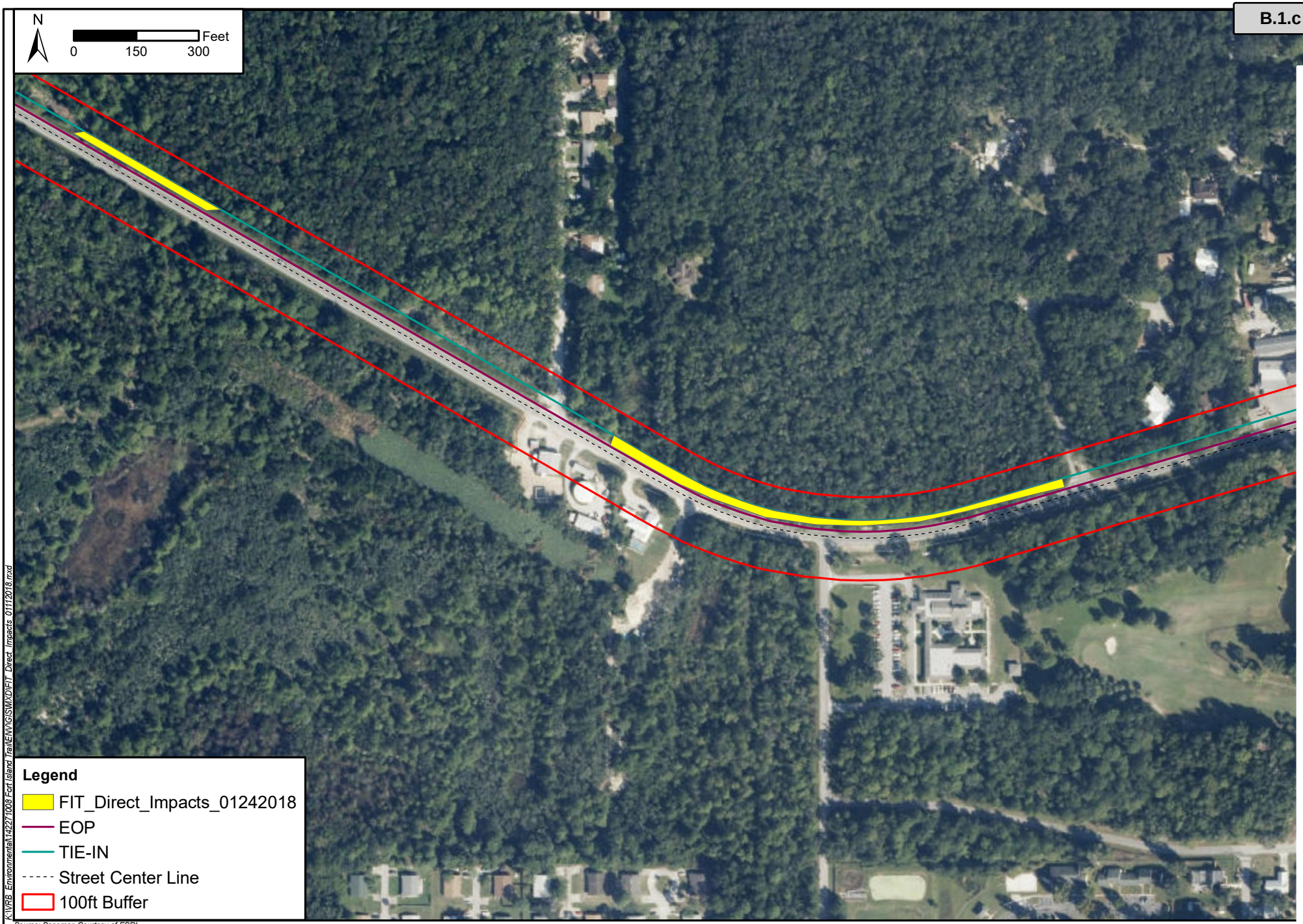

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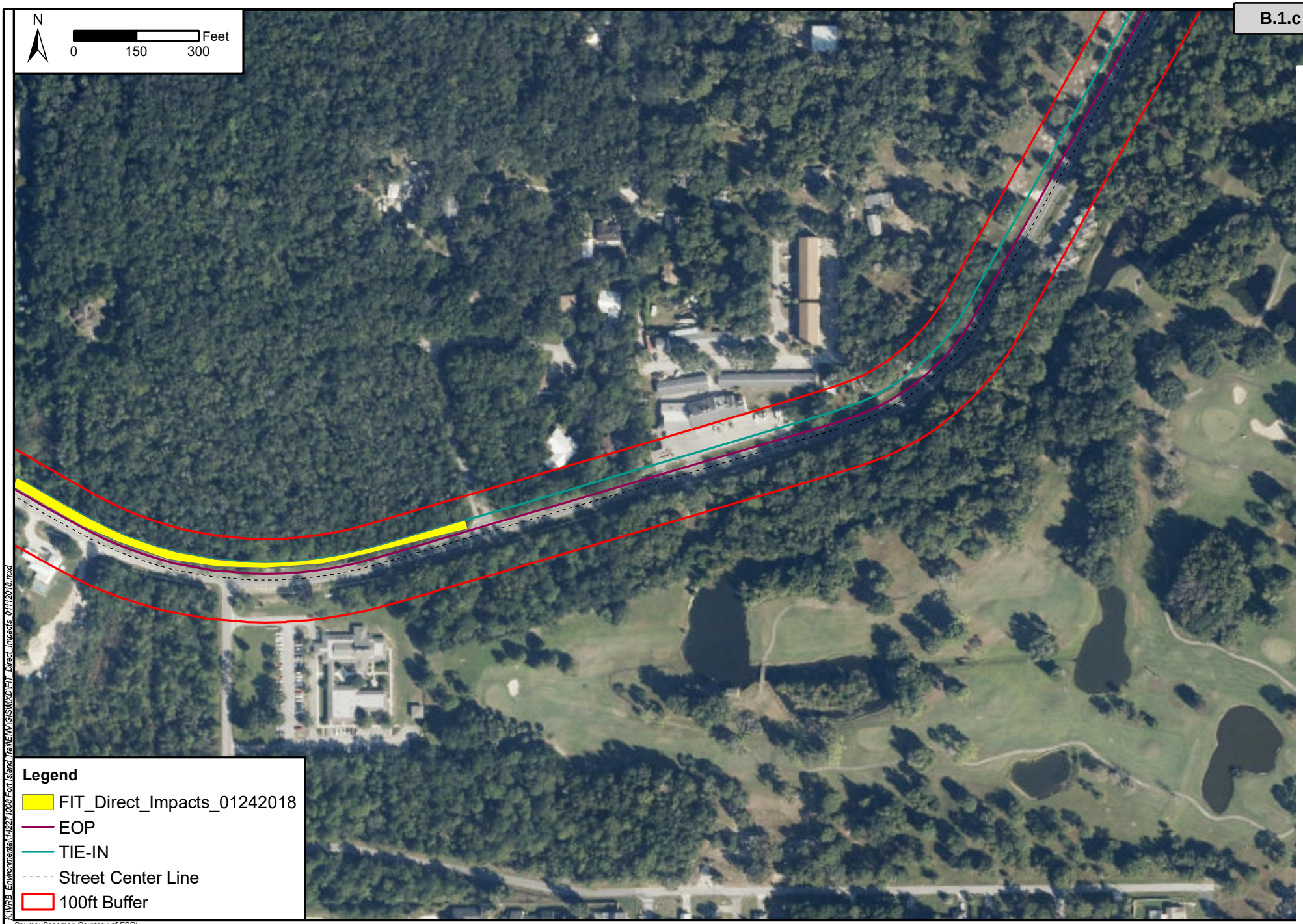

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Potential Wetland Impact Area Map

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Appendix H: Potentially Affected Parcels

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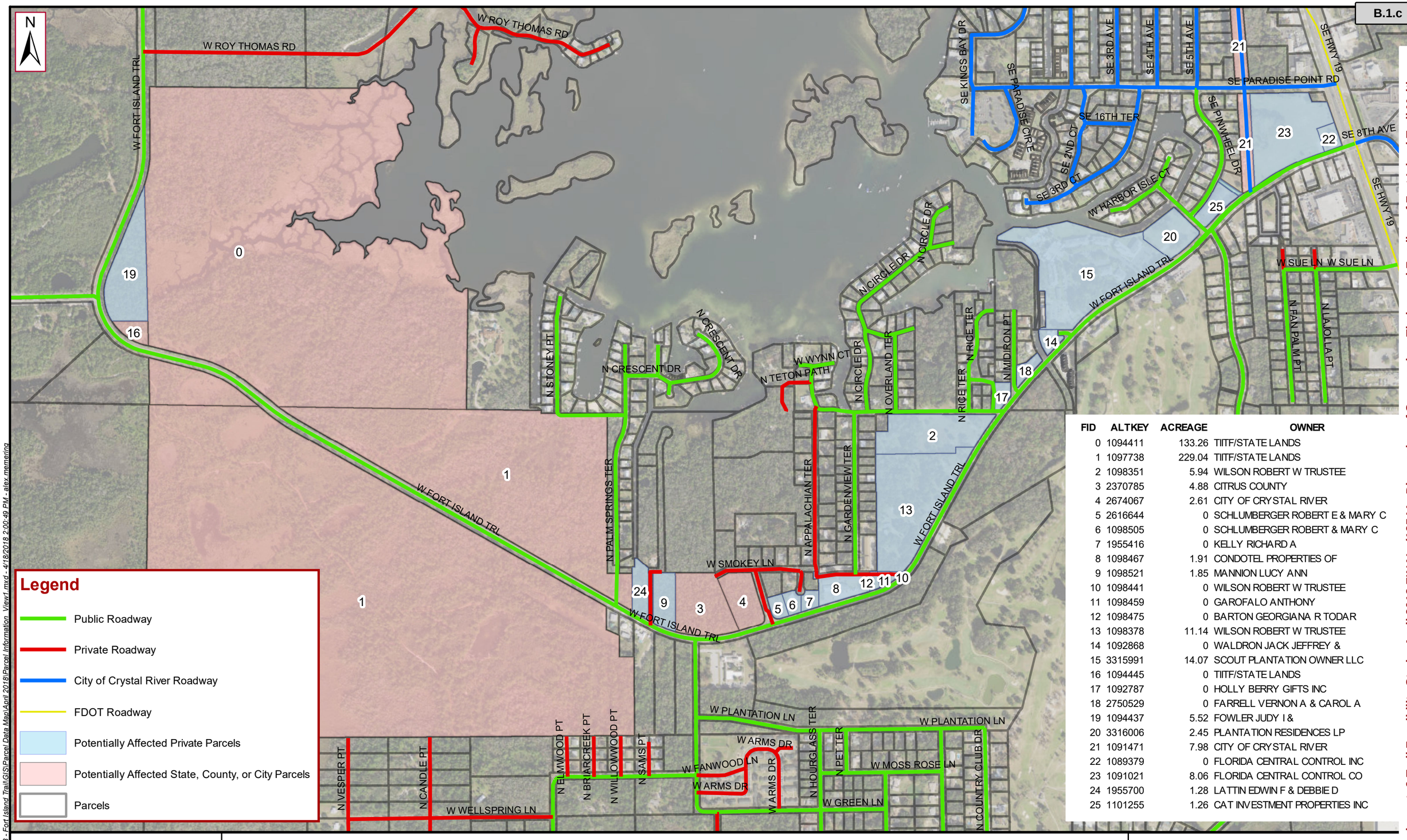

FID	ALTKEY	ACREAGE	OWNER
0	1094411	133.26	TIITF/STATE LANDS
1	1097738	229.04	TIITF/STATE LANDS
2	1098351	5.94	WILSON ROBERT W TRUSTEE
3	2370785	4.88	CITRUS COUNTY
4	2674067	2.61	CITY OF CRYSTAL RIVER
5	2616644	0	SCHLUMBERGER ROBERT E & MARY C
6	1098505	0	SCHLUMBERGER ROBERT & MARY C
7	1955416	0	KELLY RICHARD A
8	1098467	1.91	CONDOTEL PROPERTIES OF
9	1098521	1.85	MANNION LUCY ANN
10	1098441	0	WILSON ROBERT W TRUSTEE
11	1098459	0	GAROFALO ANTHONY
12	1098475	0	BARTON GEORGIANA R TODAR
13	1098378	11.14	WILSON ROBERT W TRUSTEE
14	1092868	0	WALDRON JACK JEFFREY &
15	3315991	14.07	SCOUT PLANTATION OWNER LLC
16	1094445	0	TIITF/STATE LANDS
17	1092787	0	HOLLY BERRY GIFTS INC
18	2750529	0	FARRELL VERNON A & CAROL A
19	1094437	5.52	FOWLER JUDY I &
20	3316006	2.45	PLANTATION RESIDENCES LP
21	1091471	7.98	CITY OF CRYSTAL RIVER
22	1089379	0	FLORIDA CENTRAL CONTROL INC
23	1091021	8.06	FLORIDA CENTRAL CONTROL CO
24	1955700	1.28	LATTIN EDWIN F & DEBBIE D
25	1101255	1.26	CAT INVESTMENT PROPERTIES INC

Legend

- Public Roadway
- Private Roadway
- City of Crystal River Roadway
- FDOT Roadway
- Potentially Affected Private Parcels
- Potentially Affected State, County, or City Parcels
- Parcels

Kimley»Horn
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101 E Silver Springs Blvd, Suite 400, Ocala FL 34470
Phone: 352 438 3000
www.kimley-horn.com CA 00000696

POTENTIALLY AFFECTED PARCEL INFORMATION

FORT ISLAND TRAIL
CITRUS COUNTY, FLORIDA

Project No. 142271008

April 2018

Not to Scale

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

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FID	ALTKEY	ACREAGE	OWNER
0	1064651	32.34	NHC FL 2 LP
1	3461777	18.43	LIU WEICHANG
2	3111194	1.49	CRYSTAL WATERS PROPERTY
3	3508665	19.7	RC LANDINGS DEVELOPMENT LLC
4	3461789	23.71	NCDC LLC
5	1938511	14.35	WEISMAN LEONARD M EST
6	2351683	0	GONSER BRIAN &
7	2351675	0	HAYNES WAYNE R & ROSALIE H
8	2351667	0	HOLLAND JEREMIAH P JR &
9	2351641	0	HAYDEN COOPER C
10	2891319	0	CONWAY FRED H & REBECCA H ETAL
11	2668393	0	HAYDEN COOPER C
12	2351632	0	BROWN ROXANNA LEE TRUSTEE
13	3105303	0	ROOKS GERALD A
14	2287705	0	BUSSELL DAVID D & SONDRA M
15	3127678	0	MEEKS KENNETH R & CATHLEEN A
16	3258246	0	RIGGS ELLA L
17	3258233	0	OZPREY INVESTORS GROUP LLC
18	3275894	0	CRESCENT GARY L & TERRI B
19	3477612	0	EMMONS STEPHEN N & IRENE P
20	3111222	3.39	CRYSTAL WATERS DEVELOPMENT CO
21	3111210	0	CRYSTAL WATERS PROPERTY OWNERS
22	3105342	0	ROOKS GERALD A
23	2611782	0	KAPLAN GEORGE & LINDA
24	3127666	0	PELESHOK TIMOTHY NEIL &
25	3484744	65.65	MITCHELL JAMES E & KATHY D
26	1064627	10	TIITF/STATE LANDS
27	3461791	27.97	LIU WEICHANG
28	3484732	5.8	NHC FL2 LP

N

W FORT ISLAND TRL
W WATERWOOD DR
W GULF BREEZE CT
W BALD EAGLE CT
W COOT CT
W EDGEVIEW CT
N REGATTA PT
SHADY LN
OAK ST
OAK ST
PALM ST
LAKE ST
CEDAR ST
POOL ST
CANAL ST
PINE ST
PINE ST
CANAL CIR
N REGATTA PT
N REGATTA PT
N SENECA PT
N COMANCHE PT
W CHICKASAW LN
W FORT ISLAND TRL
W FORT ISLAND TRL
N WATERSEDGE DR
N WATERSEDGE DR
N KINGS COVE PT
N PILOT PT
N WATERSEDGE DR
W SEA DR
W WEISMAN CT
W FORT ISLAND TRL
NW 2ND TER
NW 12TH AVE

3 3 3 3 25 25 28 0 26 27 4 1 19 18 17 16 24 15 23 22 13 21 2 20 5 12 11 9 8 6 10

Legend

- Public Roadway
- Private Roadway
- City of Crystal River Roadway
- Potentially Affected Private Parcels
- Potentially Affected State, County, or City Parcels
- Parcels

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101 E Silver Springs Blvd, Suite 400, Ocala FL 34470
Phone: 352 438 3000
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POTENTIALLY AFFECTED PARCEL INFORMATION

FORT ISLAND TRAIL
CITRUS COUNTY, FLORIDA

Project No. 142271008

April 2018

Not to Scale

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

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Appendix I: Opinion of Probable Cost

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

ALTERNATIVE A
WEST FORT ISLAND MULTI -USE TRAIL
PLANNING LEVEL OPINION OF PROBABLE CONSTRUCTION COST

Construction Costs						
ITEM #	FDOT PAY ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	101-1	MOBILIZATION	LS	1	$ 950,000.00	$ 950,000.00
2	102-1	MAINTENANCE OF TRAFFIC (MOT)	LS	1	$ 950,000.00	$ 950,000.00
3	104-10-3	EROSION AND SEDIMENT CONTROL	LS	1	$ 180,000.00	$ 180,000.00
4	110-1-1	CLEARING AND GRUBBING	AC	29.2	$ 12,000.00	$ 350,400.00
5	110-4-10	REMOVAL OF EXISTING CONCRETE	SY	400	$ 20.00	$ 8,000.00
6	120-6	EMBANKMENT	CY	70,000	$ 12.00	$ 840,000.00
7	515-2-211	PEDESTRIAN/BICYCLE RAILING	LF	1,400	$ 115.00	$ 161,000.00
8	522-1	CONC DRIVEWAY RECONSTRUCTION, 6" THICK	SY	400	$ 40.00	$ 16,000.00
9	570-1-2	RESTORATION	SY	51,000	$ 5.00	$ 255,000.00
10	--	12' ASPHALT SHARED USE PATH	MILE	8.60	$ 350,000.00	$ 3,010,000.00
11	--	MILL & RESURFACE ONE TRAVEL LANE	MILE	2.00	$ 240,000.00	$ 480,000.00
12	--	DRAINAGE MODIFICATIONS	LS	1	$ 130,000.00	$ 130,000.00
13	--	SIGNING AND MARKING	LS	1	$ 115,000.00	$ 115,000.00
14	--	OVERHEAD UTILITY ADJUSTMENTS	LS	1	$ 220,000.00	$ 220,000.00
15	--	STRUCTURE 1 - 1.55 miles east of Gulf Beach	LS	1	$ 360,000.00	$ 360,000.00
16	--	STRUCTURE 2 - 0.70 miles west of Salt River Bridge	LS	1	$ 6,500.00	$ 6,500.00
17	--	STRUCTURE 3 - Salt River Bridge	LS	1	$ 1,700,000.00	$ 1,700,000.00
18	--	STRUCTURE 4 - 0.60 miles east of Salt River Bridge	LS	1	$ 360,000.00	$ 360,000.00
19	--	STRUCTURE 5 - 0.10 miles east of Fort Island Trail Park	LS	1	$ 6,500.00	$ 6,500.00
20	--	STRUCTURE 6 - N Rivers Edge & Fort Island Trail	LS	1	$ 6,500.00	$ 6,500.00
21	--	STRUCTURE 7 - 0.09 miles east of W Waterwood Loop	LS	1	$ 6,500.00	$ 6,500.00
22	--	STRUCTURE 8 - 0.28 miles east of W Waterwood Loop	LS	1	$ 6,500.00	$ 6,500.00
23	--	STRUCTURE 9 - 0.07 miles west of N Regatta Point	LS	1	$ 6,500.00	$ 6,500.00
24	--	STRUCTURE 10 - 0.08 miles east of N Regatta Point	LS	1	$ 6,500.00	$ 6,500.00
25	--	STRUCTURE 11 - 0.29 miles east of N Regatta Point	LS	1	$ 6,500.00	$ 6,500.00
26	--	STRUCTURE 12 - 0.03 miles north of W Pinebark Lane	LS	1	$ 6,500.00	$ 6,500.00
27	--	STRUCTURE 13 - 0.23 miles north of W Roy Thoams Road	LS	1	$ 10,500.00	$ 10,500.00
28	--	STRUCTURE 14 - 0.11 miles south of W Roy Thomas Road	LS	1	$ 6,000.00	$ 6,000.00
29	--	STRUCTURE 15 - 0.04 miles south of W Dixie Shores Drive	LS	1	$ 8,000.00	$ 8,000.00
30	--	STRUCTURE 16 - 0.52 miles west of N Palm Springs Terrace	LS	1	$ 6,500.00	$ 6,500.00
31	--	STRUCTURE 17 - 0.21 miles west of N Palm Springs Terrace	LS	1	$ 8,000.00	$ 8,000.00
32	--	STRUCTURE 18 - 0.05 miles west of Falls Terrace	LS	1	$ 400,000.00	$ 400,000.00
33	--	STRUCTURE 19 - 0.05 miles east of N Midiron Point	LS	1	$ 400,000.00	$ 400,000.00
					SUBTOTAL =	$ 10,982,900.00

Total Costs	
CONTINGENCY (25%) =	$ 2,745,700
CONSTRUCTION TOTAL =	$ 13,728,600
PROFESSIONAL ENGINEERING DESIGN (15% of CONST)=	$ 2,059,000
CONSTRUCTION ENGINEERING AND INSPECTION (10% of CONST)=	$ 1,373,000
GRAND TOTAL =	$ 17,160,600

Note: FDOT Historical Cost information by pay item and the FDOT LRE's or generic cost per mile models were utilized. The costs are based on historical cost information from 2017 and not escalated for future years. The costs shown do not include potential right-of-way costs, the costs of trail easements, or the costs of potential wetland mitigation. A 25% contingency has been added onto the planning level OPC and it may still be below a future project bid due to current conditions in the construction industry.

Disclaimer: The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

K:\OCA_Civil\142271008 - Fort Island Trail\OPC\[West Fort Island Trail - OPC.xlsx]ALT 3 OPC wood

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

ALTERNATIVE B
WEST FORT ISLAND MULTI -USE TRAIL
PLANNING LEVEL OPINION OF PROBABLE CONSTRUCTION COST

Construction Costs						
ITEM #	FDOT PAY ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	101-1	MOBILIZATION	LS	1	$ 3,000,000.00	$ 3,000,000.00
2	102-1	MAINTENANCE OF TRAFFIC (MOT)	LS	1	$ 3,000,000.00	$ 3,000,000.00
3	104-10-3	EROSION AND SEDIMENT CONTROL	LS	1	$ 180,000.00	$ 180,000.00
4	110-1-1	CLEARING AND GRUBBING	AC	29.2	$ 12,000.00	$ 350,400.00
4	110-4-10	REMOVAL OF EXISTING CONCRETE	SY	400	$ 20.00	$ 8,000.00
5	120-6	EMBANKMENT	CY	24,500	$ 12.00	$ 294,000.00
6	515-2-211	PEDESTRIAN/BICYCLE RAILING	LF	200	$ 115.00	$ 23,000.00
7	522-1	CONC DRIVEWAY RECONSTRUCTION, 6" THICK	SY	400	$ 40.00	$ 16,000.00
8	570-1-2	RESTORATION	SY	18,000	$ 5.00	$ 90,000.00
9	--	12' ASPHALT SHARED USE PATH	MILE	3.05	$ 350,000.00	$ 1,067,500.00
10	--	BOARDWALK TRAIL	LF	29,000	$ 800.00	$ 23,200,000.00
11	--	MILL & RESURFACE ONE TRAVEL LANE	MILE	2.00	$ 240,000.00	$ 480,000.00
12	--	DRAINAGE MODIFICATIONS	LS	1	$ 130,000.00	$ 130,000.00
13	--	SIGNING AND MARKING	LS	1	$ 115,000.00	$ 115,000.00
14	--	OVERHEAD UTILITY ADJUSTMENTS	LS	1	$ 220,000.00	$ 220,000.00
15	--	STRUCTURE 1 - 1.55 miles east of Gulf Beach	LS	1	$ 360,000.00	$ 360,000.00
16	--	STRUCTURE 3 - Salt River Bridge	LS	1	$ 1,700,000.00	$ 1,700,000.00
17	--	STRUCTURE 4 - 0.60 miles east of Salt River Bridge	LS	1	$ 360,000.00	$ 360,000.00
18	--	STRUCTURE 9 - 0.07 miles west of N Regatta Point	LS	1	$ 6,500.00	$ 6,500.00
19	--	STRUCTURE 14 - 0.11 miles south of W Roy Thomas Road	LS	1	$ 6,000.00	$ 6,000.00
20	--	STRUCTURE 18 - 0.05 miles west of Falls Terrace	LS	1	$ 400,000.00	$ 400,000.00
21	--	STRUCTURE 19 - 0.05 miles east of N Midiron Point	LS	1	$ 400,000.00	$ 400,000.00
					SUBTOTAL =	$ 35,406,400.00

Total Costs	
CONTINGENCY (25%) =	$ 8,851,600
CONSTRUCTION TOTAL =	$ 44,258,000
PROFESSIONAL ENGINEERING DESIGN (15% of CONST)=	$ 6,639,000
CONSTRUCTION ENGINEERING AND INSPECTION (10% of CONST)=	$ 4,426,000
GRAND TOTAL =	$ 55,323,000

Note: FDOT Historical Cost information by pay item and the FDOT LRE's or generic cost per mile models were utilized. The costs are based on historical cost information from 2017 and not escalated for future years. The costs shown do not include potential right-of-way costs, the costs of trail easements, or the costs of potential wetland mitigation. A 25% contingency has been added onto the planning level OPC and it may still be below a future project bid due to current conditions in the construction industry.

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K:\OCA_Civil\142271008 - Fort Island Trail\OPC\[West Fort Island Trail - OPC.xlsx]ALT 3 OPC wood

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

ALTERNATIVE C
WEST FORT ISLAND MULTI -USE TRAIL
PLANNING LEVEL OPINION OF PROBABLE CONSTRUCTION COST

Construction Costs						
ITEM #	FDOT PAY ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	101-1	MOBILIZATION	LS	1	$ 1,200,000.00	$ 1,200,000.00
2	102-1	MAINTENANCE OF TRAFFIC (MOT)	LS	1	$ 1,200,000.00	$ 1,200,000.00
3	104-10-3	EROSION AND SEDIMENT CONTROL	LS	1	$ 180,000.00	$ 180,000.00
4	110-4-10	REMOVAL OF EXISTING CONCRETE	SY	400	$ 20.00	$ 8,000.00
4	110-1-1	CLEARING AND GRUBBING	AC	29.2	$ 12,000.00	$ 350,400.00
5	120-6	EMBANKMENT	CY	63,000	$ 12.00	$ 756,000.00
6	515-2-211	PEDESTRIAN/BICYCLE RAILING	LF	1,100	$ 115.00	$ 126,500.00
7	522-1	CONC DRIVEWAY RECONSTRUCTION, 6" THICK	SY	400	$ 40.00	$ 16,000.00
8	570-1-2	RESTORATION	SY	47,000	$ 5.00	$ 235,000.00
9	--	12' ASPHALT SHARED USE PATH	MILE	7.90	$ 350,000.00	$ 2,765,000.00
10	--	BOARDWALK TRAIL	LF	3,600	$ 800.00	$ 2,880,000.00
11	--	MILL & RESURFACE ONE TRAVEL LANE	MILE	2.00	$ 240,000.00	$ 480,000.00
12	--	DRAINAGE MODIFICATIONS	LS	1	$ 130,000.00	$ 130,000.00
13	--	SIGNING AND MARKING	LS	1	$ 115,000.00	$ 115,000.00
14	--	OVERHEAD UTILITY ADJUSTMENTS	LS	1	$ 220,000.00	$ 220,000.00
15	--	STRUCTURE 1 - 1.55 miles east of Gulf Beach	LS	1	$ 360,000.00	$ 360,000.00
16	--	STRUCTURE 2 - 0.70 miles west of Salt River Bridge	LS	1	$ 6,500.00	$ 6,500.00
17	--	STRUCTURE 3 - Salt River Bridge	LS	1	$ 1,700,000.00	$ 1,700,000.00
18	--	STRUCTURE 4 - 0.60 miles east of Salt River Bridge	LS	1	$ 360,000.00	$ 360,000.00
19	--	STRUCTURE 5 - 0.10 miles east of Fort Island Trail Park	LS	1	$ 6,500.00	$ 6,500.00
20	--	STRUCTURE 6 - N Rivers Edge & Fort Island Trail	LS	1	$ 6,500.00	$ 6,500.00
21	--	STRUCTURE 7 - 0.09 miles east of W Waterwood Loop	LS	1	$ 6,500.00	$ 6,500.00
22	--	STRUCTURE 8 - 0.28 miles east of W Waterwood Loop	LS	1	$ 6,500.00	$ 6,500.00
23	--	STRUCTURE 9 - 0.07 miles west of N Regatta Point	LS	1	$ 6,500.00	$ 6,500.00
24	--	STRUCTURE 10 - 0.08 miles east of N Regatta Point	LS	1	$ 6,500.00	$ 6,500.00
25	--	STRUCTURE 11 - 0.29 miles east of N Regatta Point	LS	1	$ 6,500.00	$ 6,500.00
26	--	STRUCTURE 12 - 0.03 miles north of W Pinebark Lane	LS	1	$ 6,500.00	$ 6,500.00
27	--	STRUCTURE 14 - 0.11 miles south of W Roy Thomas Road	LS	1	$ 6,000.00	$ 6,000.00
28	--	STRUCTURE 16 - 0.52 miles west of N Palm Springs Terrace	LS	1	$ 6,500.00	$ 6,500.00
29	--	STRUCTURE 18 - 0.05 miles west of Falls Terrace	LS	1	$ 400,000.00	$ 400,000.00
30	--	STRUCTURE 19 - 0.05 miles east of N Midiron Point	LS	1	$ 400,000.00	$ 400,000.00
					SUBTOTAL =	$ 13,952,900.00

Total Costs	
CONTINGENCY (25%) =	$ 3,488,200
CONSTRUCTION TOTAL =	$ 17,441,100
PROFESSIONAL ENGINEERING DESIGN (15% of CONST) =	$ 2,616,000
CONSTRUCTION ENGINEERING AND INSPECTION (10% of CONST)=	$ 1,744,000
GRAND TOTAL =	$ 21,801,100

Note: FDOT Historical Cost information by pay item and the FDOT LRE's or generic cost per mile models were utilized. The costs are based on historical cost information from 2017 and not escalated for future years. The costs shown do not include potential right-of-way costs, the costs of trail easements, or the costs of potential wetland mitigation. A 25% contingency has been added onto the planning level OPC and it may still be below a future project bid due to current conditions in the construction industry.

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K:\OCA_Civil\142271008 - Fort Island Trail\OPC\[West Fort Island Trail - OPC.xlsx]ALT 3 OPC wood

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Appendix J: Recommended Alternative Conceptual Layout

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

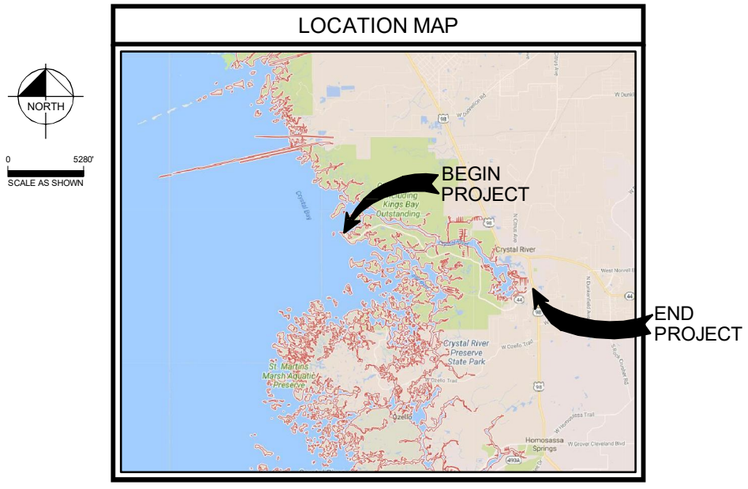
CONCEPTUAL LAYOUT PLAN FOR
FORT ISLAND TRAIL MULTI USE PATH

CITRUS COUNTY, FLORIDA
SECTIONS 6 & 7, TOWNSHIP 18 SOUTH, RANGE 24 EAST

CALL TWO (2) BUSINESS DAYS BEFORE YOU DIG
IT'S THE LAW! DIAL 811
Know what's below. Call before you dig.
SUNSHINE STATE ONE CALL OF FLORIDA, INC.

FEBRUARY 2018

LOCATION MAP



DRAWING INDEX

SHEET - TITLE

C-01 - COVER SHEET
C-02 TO C-05 - TYPICAL SECTIONS
C-06 - INDEX OF SHEETS
C-07 TO C-24 - CONCEPTUAL LAYOUT PLAN

CITRUS COUNTY OFFICIALS

COUNTY COMMISSIONERS:
DISTRICT 1 – JEFF KINNARD, 2ND VICE CHAIRMAN
DISTRICT 2 – RONALD E. KITCHEN, 1ST VICE CHAIRMAN
DISTRICT 3 – JIMMIE T. SMITH
DISTRICT 4 – SCOTT E. CARNAHAN, CHAIRMAN
DISTRICT 5 – BRIAN COLEMAN

COUNTY ADMINISTRATOR:
RANDY OLIVER.
3600 W. SOVEREIGN PATH, SUITE #267
LECANTO, FLORIDA 34461
(352) 527–5210

COUNTY ENGINEER:
RANDALL OLNEY.
3600 W. SOVEREIGN PATH, SUITE #241
LECANTO, FLORIDA 34461
(352) 527–5446

PROJECT OWNER AND CONSULTANTS

OWNER/APPLICANT:
CITRUS COUNTY BOARD OF
COUNTY COMMISSIONERS
110 N. APOPKA AVE.
INVERNESS, FLORIDA 34450
(352) 341–6560

CIVIL ENGINEERING CONSULTANT:
KIMLEY–HORN AND ASSOCIATES, INC.
101 EAST SILVER SPRINGS BLVD.,
SUITE 400
OCALA, FLORIDA 34470
(352) 438–3000

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K:\OCA_Civil\142271008 - Fort Island Trail\CAD\Phase4\VC-01 COVER SHEET.dwg, Layout:C-01 COVER SHEET Feb 15, 2018 Darryl.Courtney
XREFS: 142271008-Border Arterial-2x2 Drawing.dgnlib

KHA PROJECT	142271008
DATE	FEBRUARY 2018
SCALE	AS SHOWN
DESIGNED BY	KHA
DRAWN BY	DSC

LICENSED PROFESSIONAL
AMBER L GARTNER, P.E.
FLORIDA LICENSE NUMBER
72294

Kimley»Horn
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101 EAST SILVER SPRINGS BLVD, SUITE 400, OCALA, FL 34470
PHONE: 352–438–3000
WWW.KIMLEY–HORN.COM CA 00000696

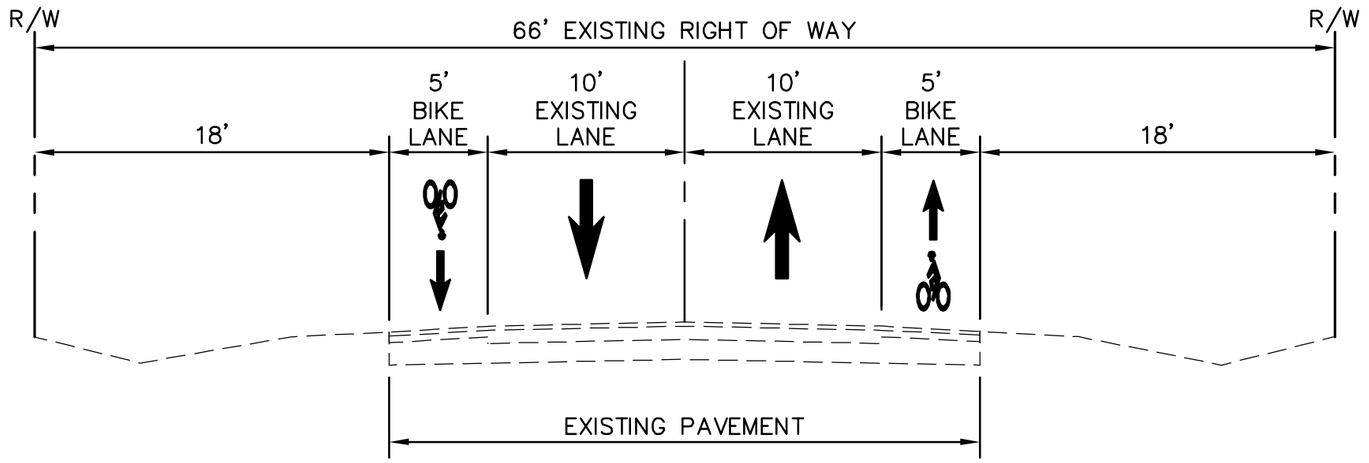
–	CONCEPT–NOT FOR CONSTRUCTION
DATE	

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

FORT ISLAND TRAIL MULTI USE PATH
PREPARED FOR
CITRUS COUNTY BOARD
OF COUNTY COMMISSIONERS

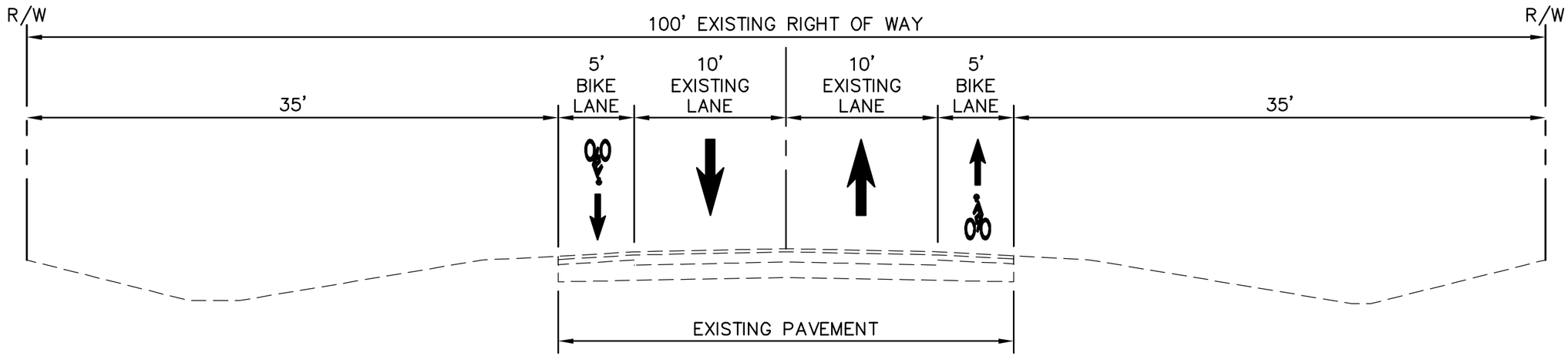
COVER SHEET

SHEET NUMBER
C-01



EXISTING TYPICAL SECTION
EXISTING 66' RIGHT OF WAY

NOT TO SCALE



EXISTING TYPICAL SECTION
EXISTING 100' RIGHT OF WAY

NOT TO SCALE

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K:\OCA_Civil\142271008 - Fort Island Trail\CAD\Sheets\C-02 TYPICAL SECTIONS.dwg, Layout: C-02 TYPICAL SECTIONS Feb 15, 2018 Darryl.Courtney
XREFS: 142271008-Border Architecture-ISO Drawingbits

LICENSED PROFESSIONAL
AMBER L GARTNER, P.E.
FLORIDA LICENSE NUMBER
72294

KHA PROJECT 142271008
DATE FEBRUARY 2018
SCALE AS SHOWN
DESIGNED BY KHA
DRAWN BY DSC

Kimley»Horn
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101 EAST SILVER SPRINGS BLVD, SUITE 400, OCALA, FL 34470
PHONE: 352-438-3000
WWW.KIMLEY-HORN.COM CA 00000696

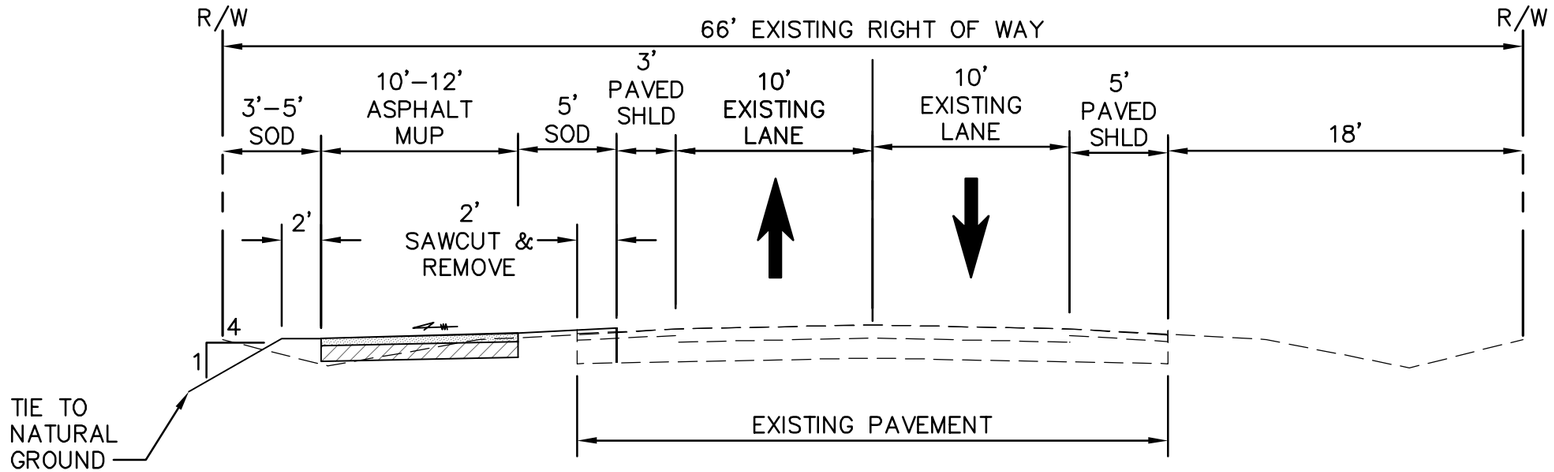
DATE	-
	CONCEPT-NOT FOR CONSTRUCTION

TYPICAL SECTIONS

FORT ISLAND TRAIL
MULTI USE PATH
PREPARED FOR
CITRUS COUNTY BOARD
OF COUNTY COMMISSIONERS

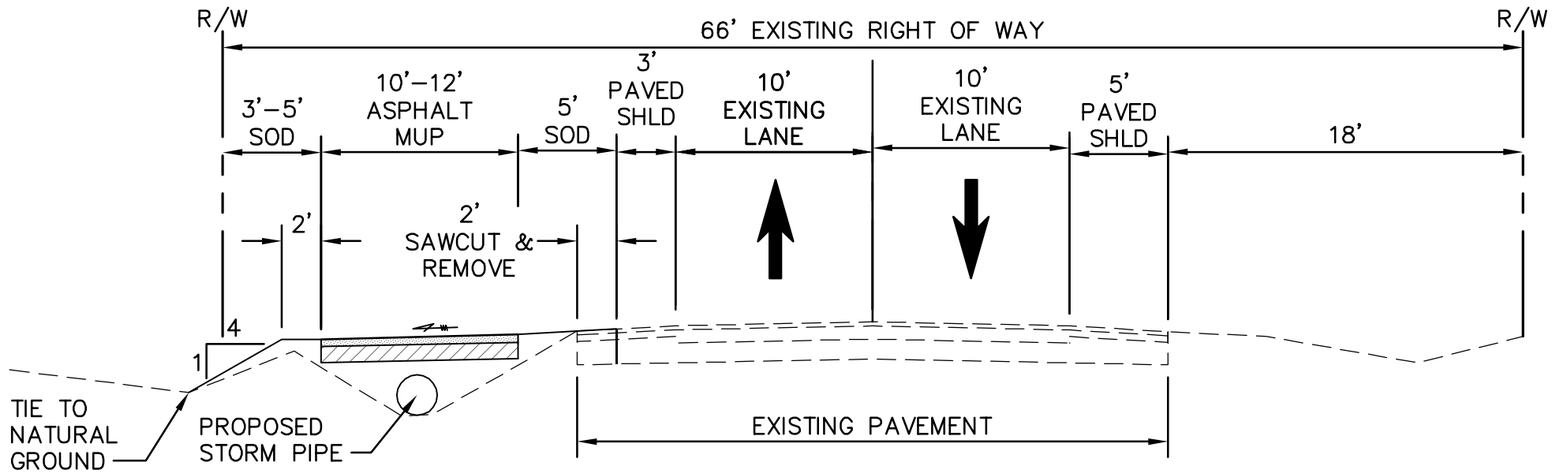
SHEET NUMBER
C

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-



TYPICAL SECTION
10'-12' SURFACE TRAIL
EXISTING 66' RIGHT OF WAY

NOT TO SCALE



TYPICAL SECTION
10'-12' SURFACE TRAIL
EXISTING 66' RIGHT OF WAY

NOT TO SCALE

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TYPICAL SECTIONS

FORT ISLAND TRAIL
MULTI USE PATH

PREPARED FOR
CITRUS COUNTY BOARD
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SHEET NUMBER

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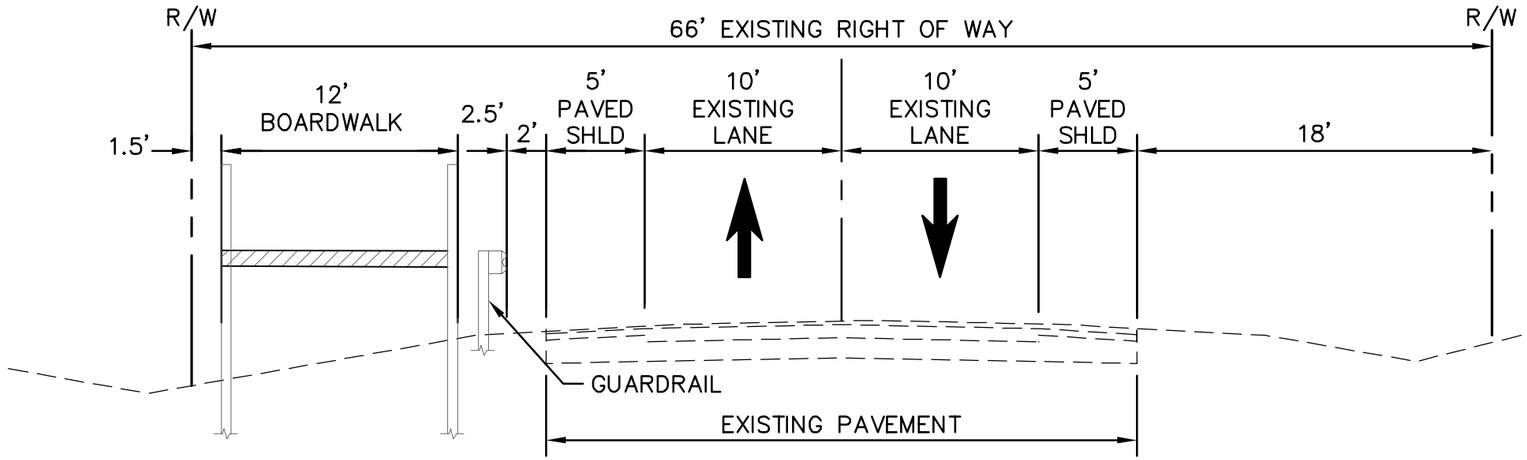
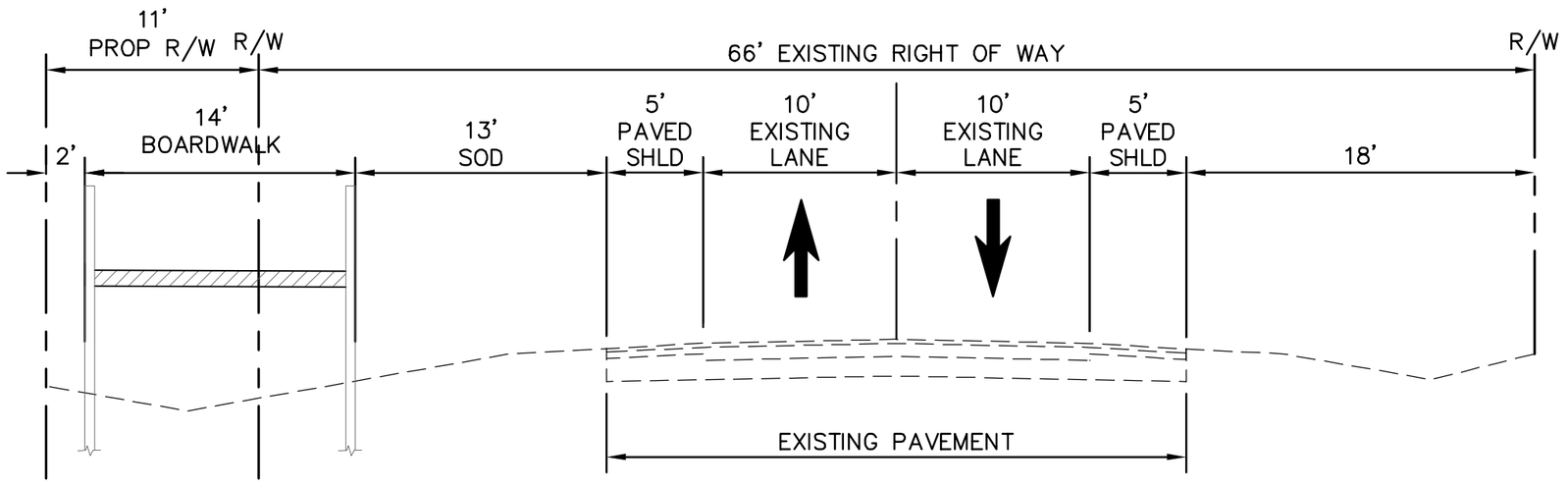


TYPICAL SECTION
12' BOARDWALK
EXISTING 66' RIGHT OF WAY

NOT TO SCALE



TYPICAL SECTION
14' BOARDWALK
EXISTING 66' RIGHT OF WAY

NOT TO SCALE

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TYPICAL SECTIONS

FORT ISLAND TRAIL
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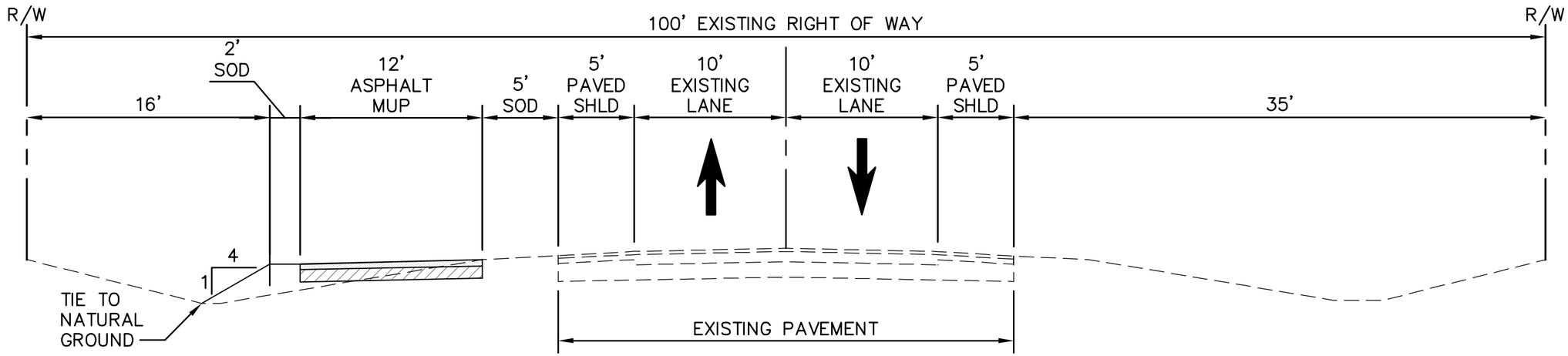
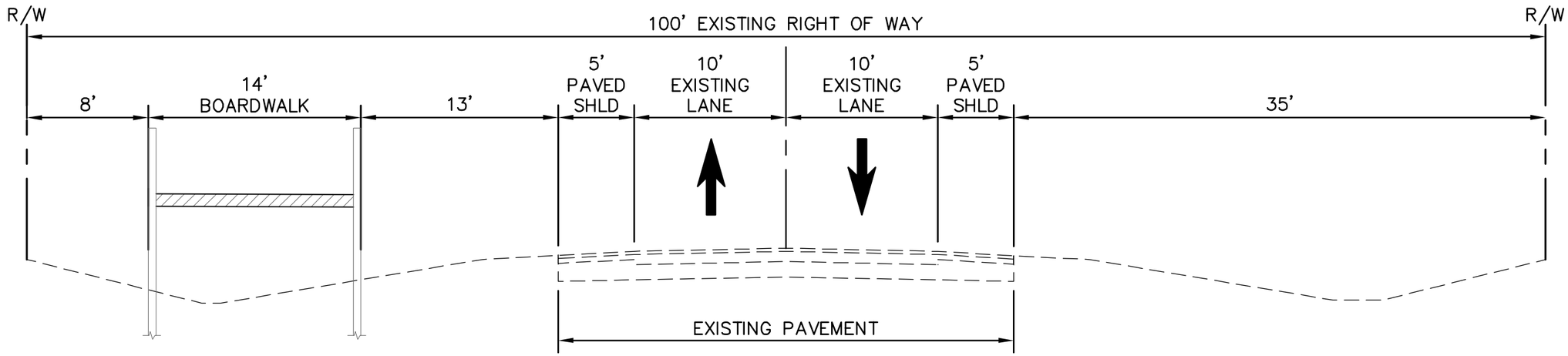


TYPICAL SECTION
12' SURFACE TRAIL
EXISTING 100' RIGHT OF WAY

NOT TO SCALE



TYPICAL SECTION
14' BOARDWALK
EXISTING 100' RIGHT OF WAY

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TYPICAL SECTIONS

FORT ISLAND TRAIL
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XREFs: 142271008-Border kh-address-oca DrawingData 142271008-Base 142271008-Parcels 142271008-Aerials

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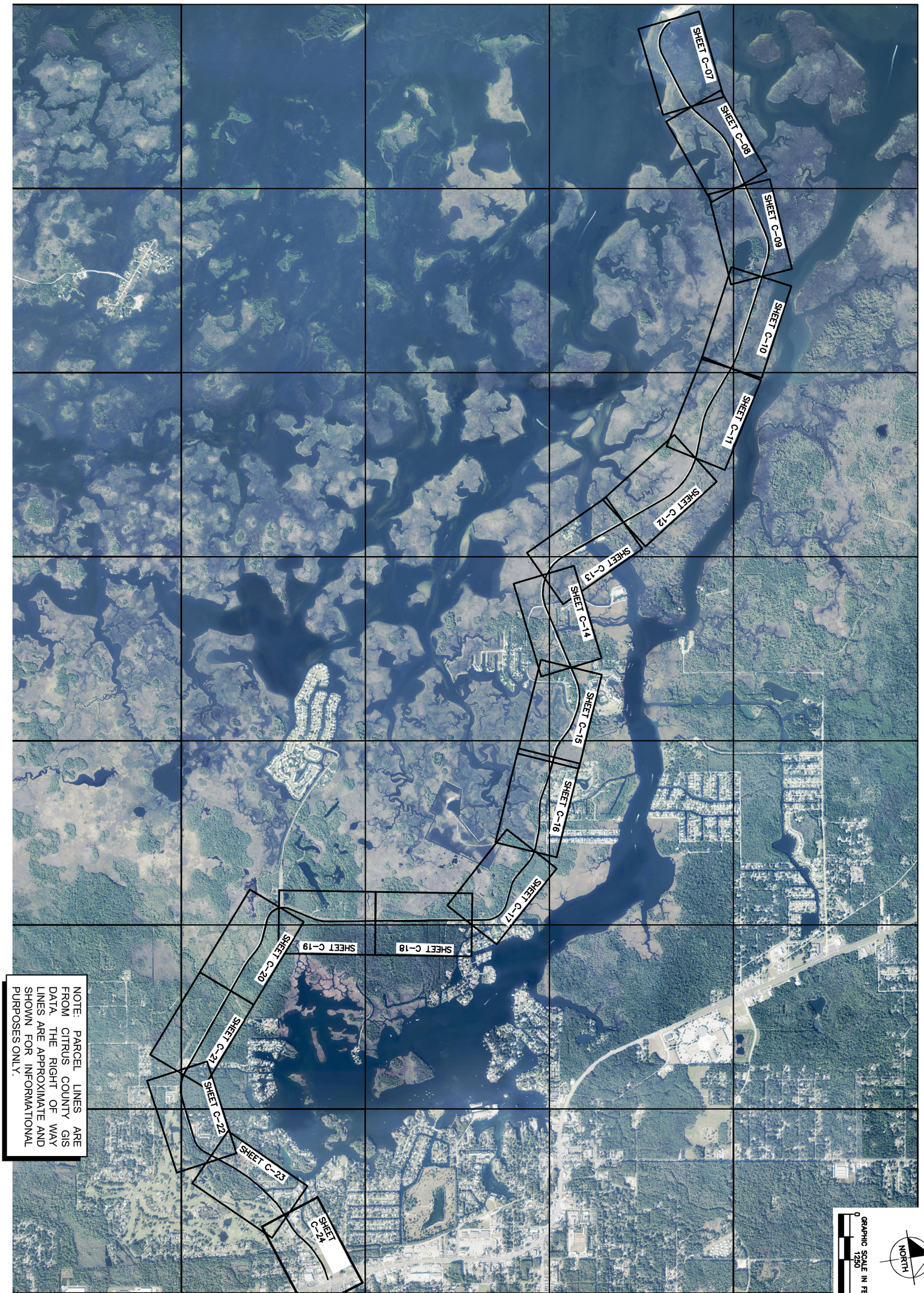

FORT ISLAND TRAIL
MULTI USE PATH
PREPARED FOR
CITRUS COUNTY BOARD
OF COUNTY COMMISSIONERS

INDEX OF SHEETS

KHA PROJECT	142271008
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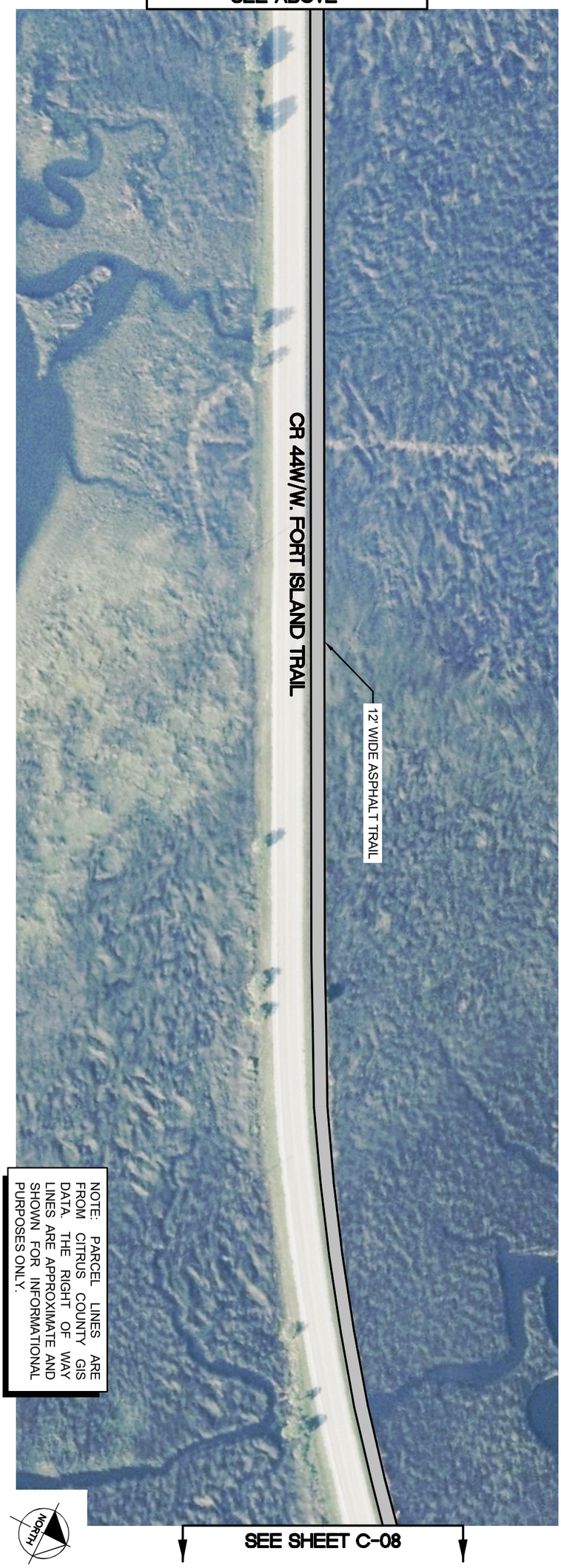

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GRAPHIC SCALE IN FEET
0 50 100

NORTH

FORT ISLAND TRAIL
MULTI USE PATH
PREPARED FOR
CITRUS COUNTY BOARD
OF COUNTY COMMISSIONERS

CONCEPTUAL
LAYOUT PLAN

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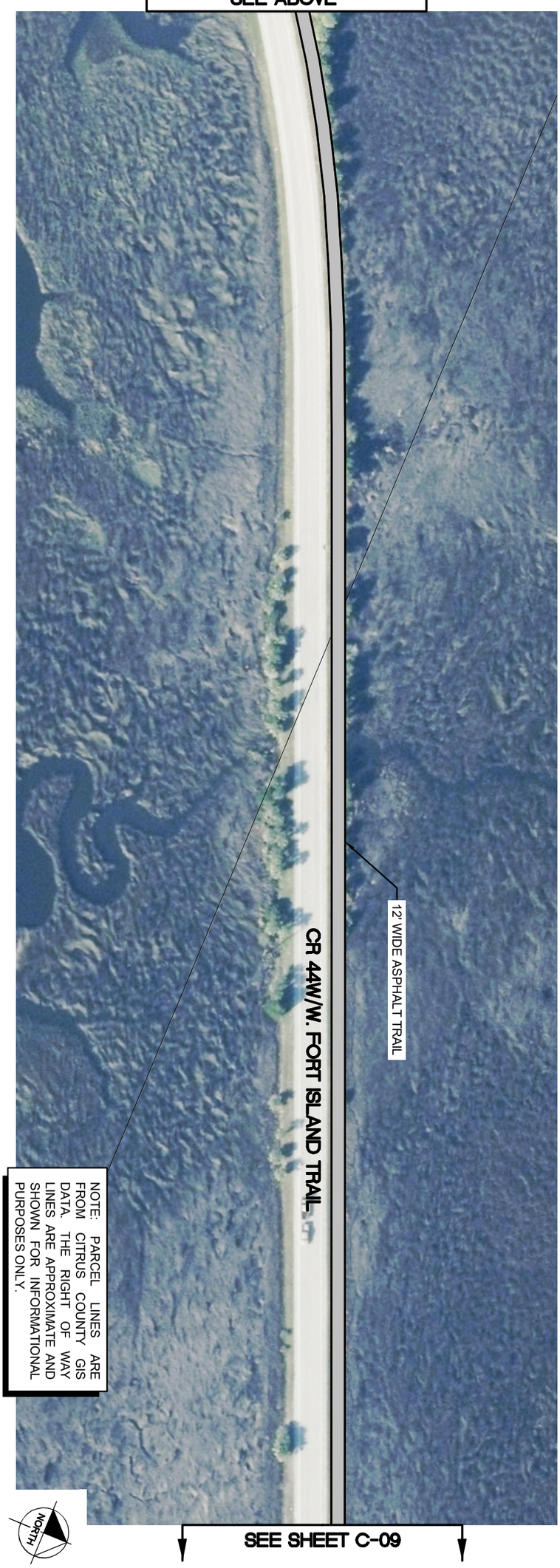

GRAPHIC SCALE IN FEET
0
50
100

FORT ISLAND TRAIL
MULTI USE PATH
PREPARED FOR
CITRUS COUNTY BOARD
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CONCEPTUAL
LAYOUT PLAN

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XREFs: 142271008-Base An-address-ocn Viewsplits 142271008-Area 142271008-Base

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CONCEPTUAL LAYOUT PLAN

FORT ISLAND TRAIL MULTI USE PATH

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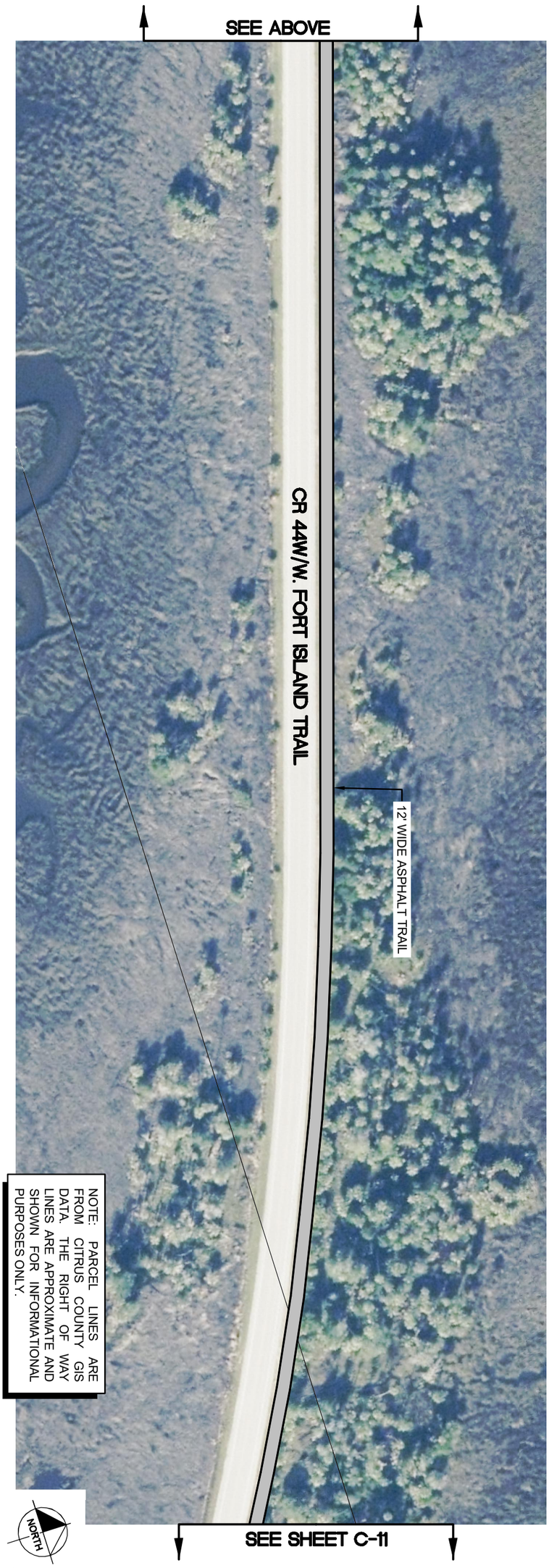

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0 50 100

FORT ISLAND TRAIL
MULTI USE PATH
PREPARED FOR
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CONCEPTUAL
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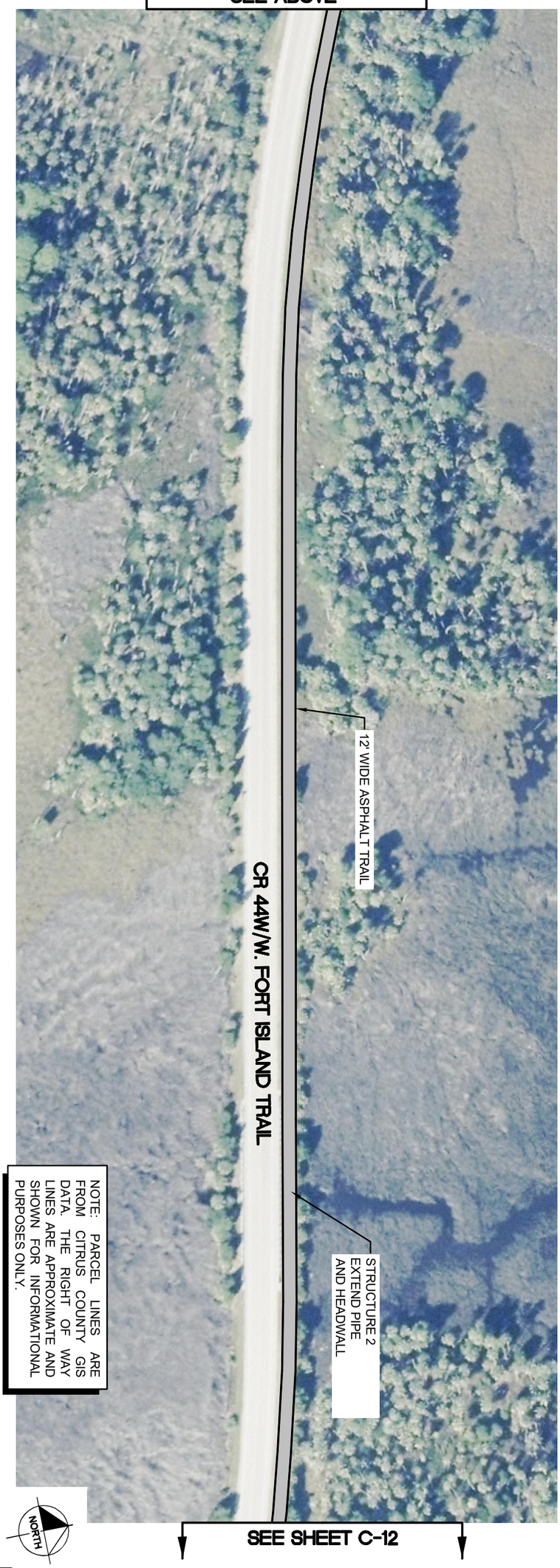

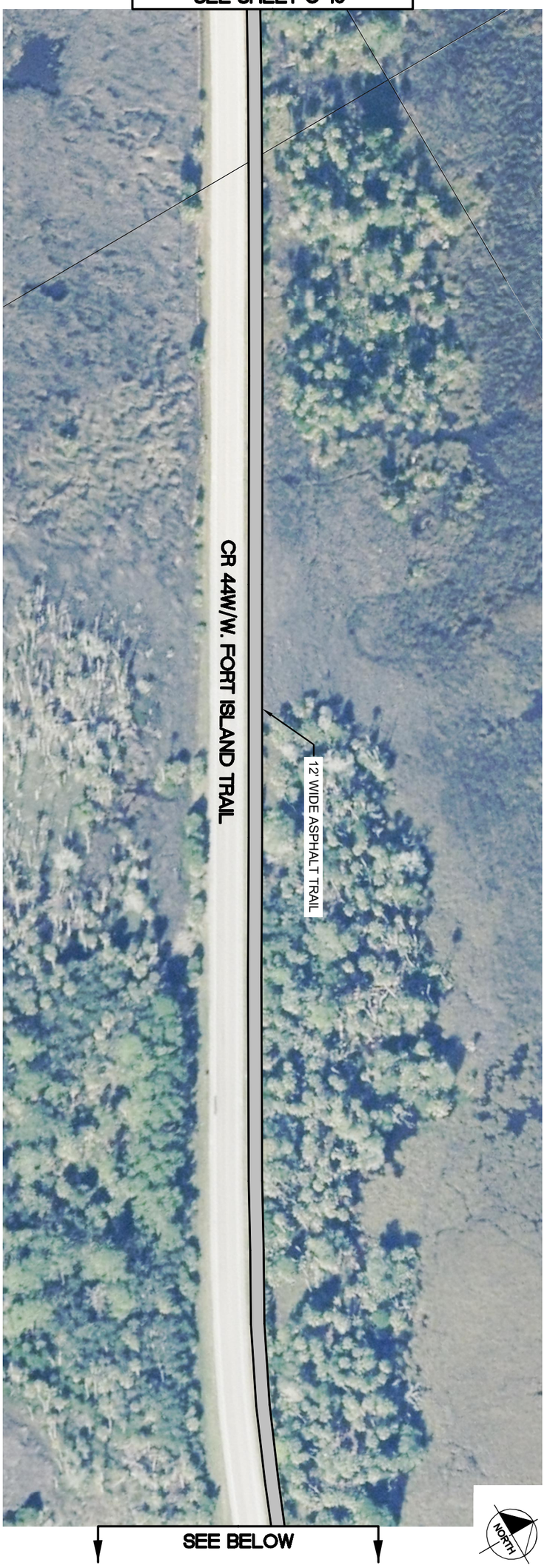

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0 50 100
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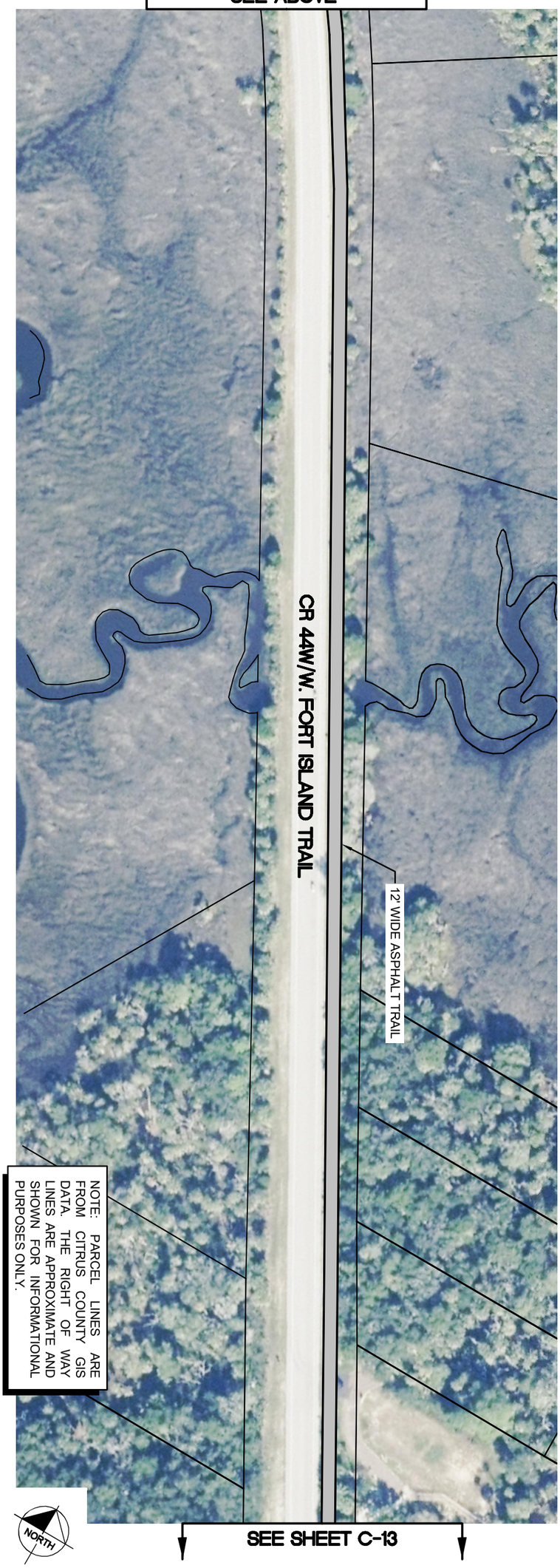

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FORT ISLAND TRAIL
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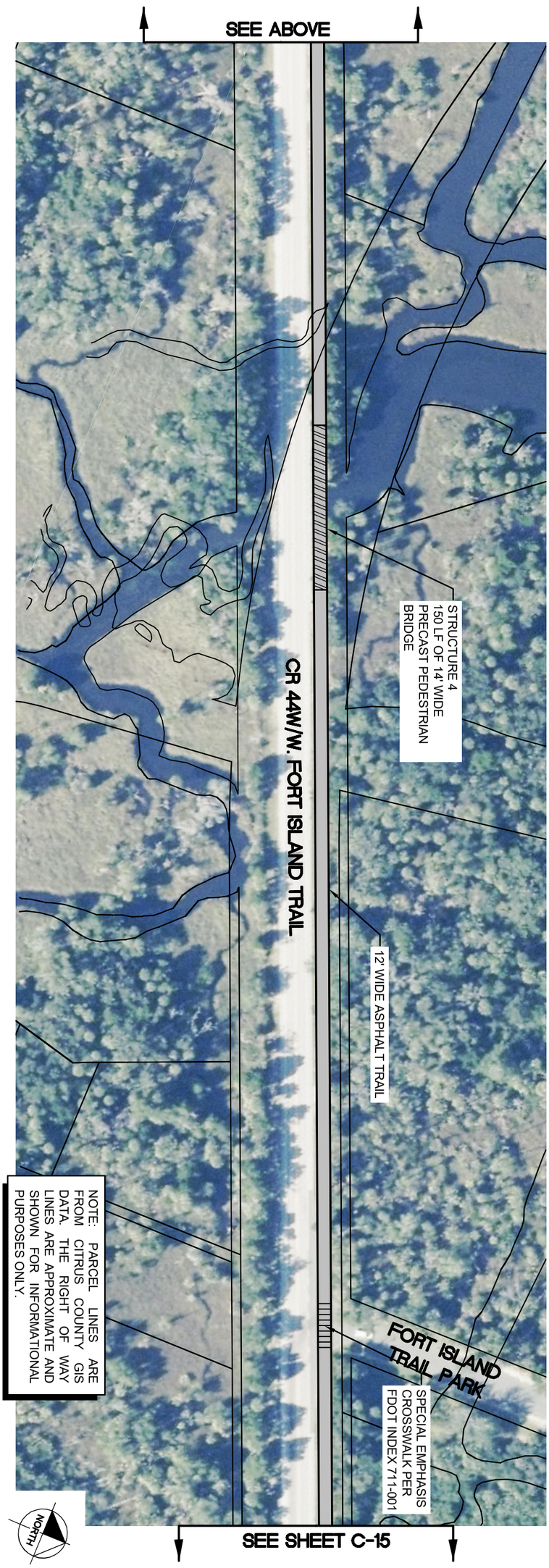

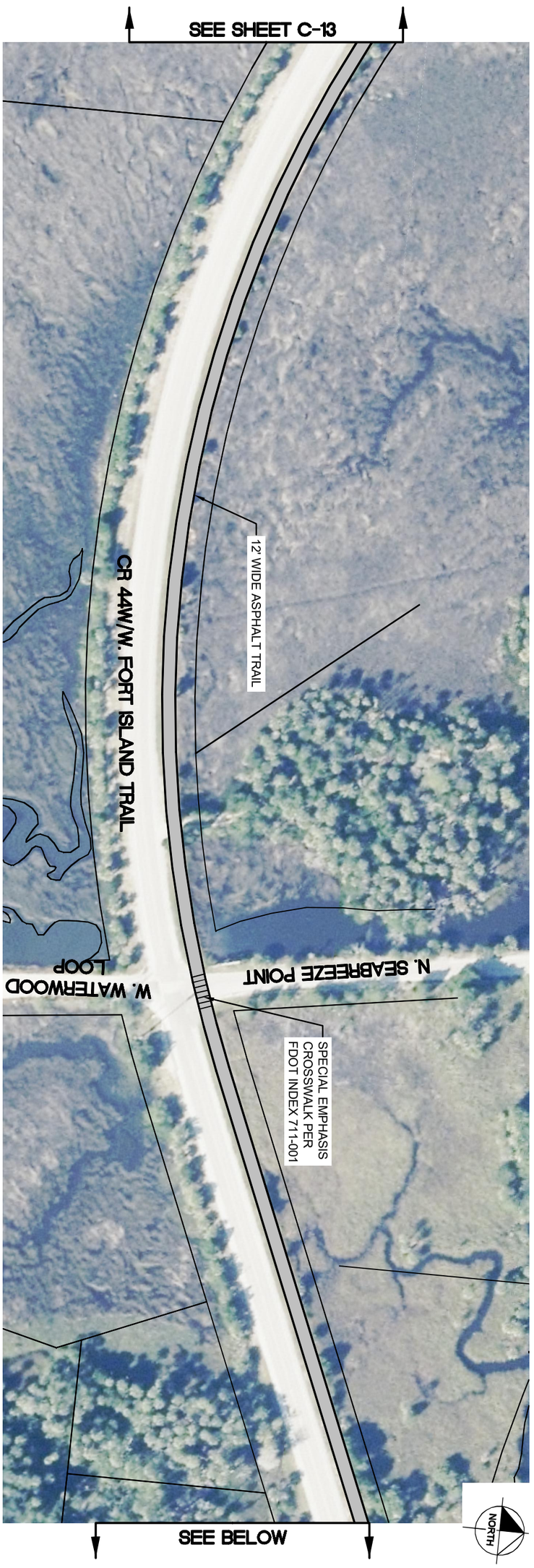

GRAPHIC SCALE IN FEET
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FORT ISLAND TRAIL
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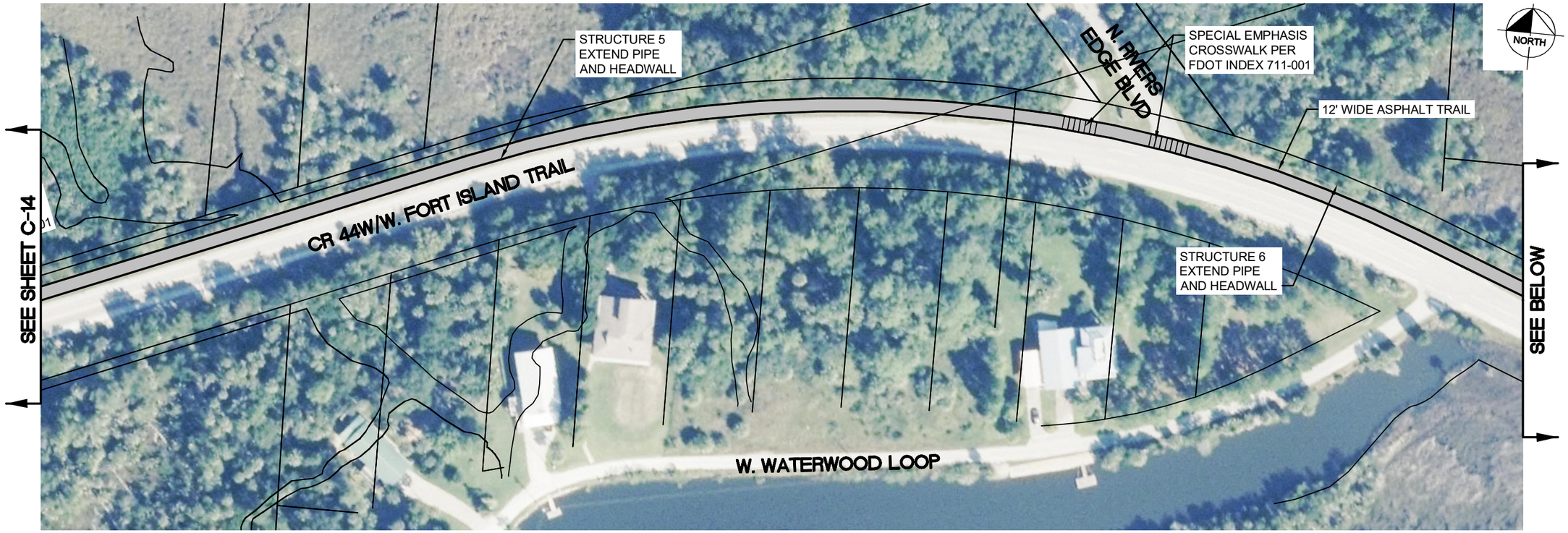

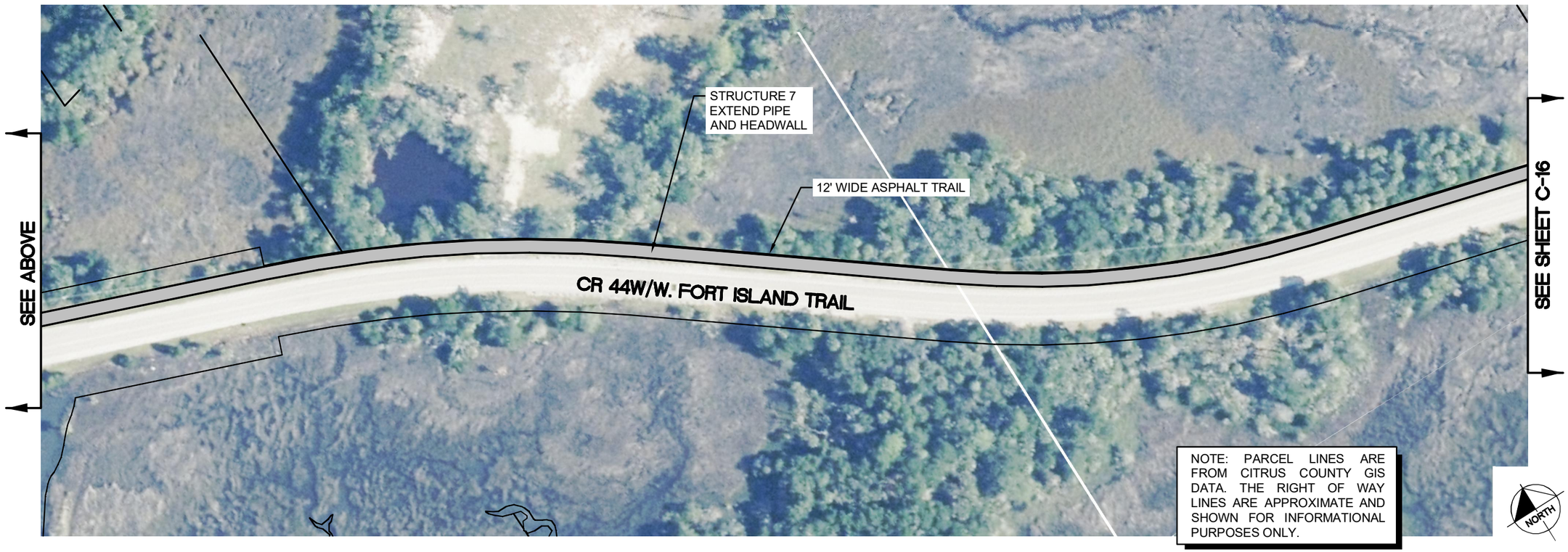

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CONCEPTUAL LAYOUT PLAN

FORT ISLAND TRAIL MULTI USE PATH

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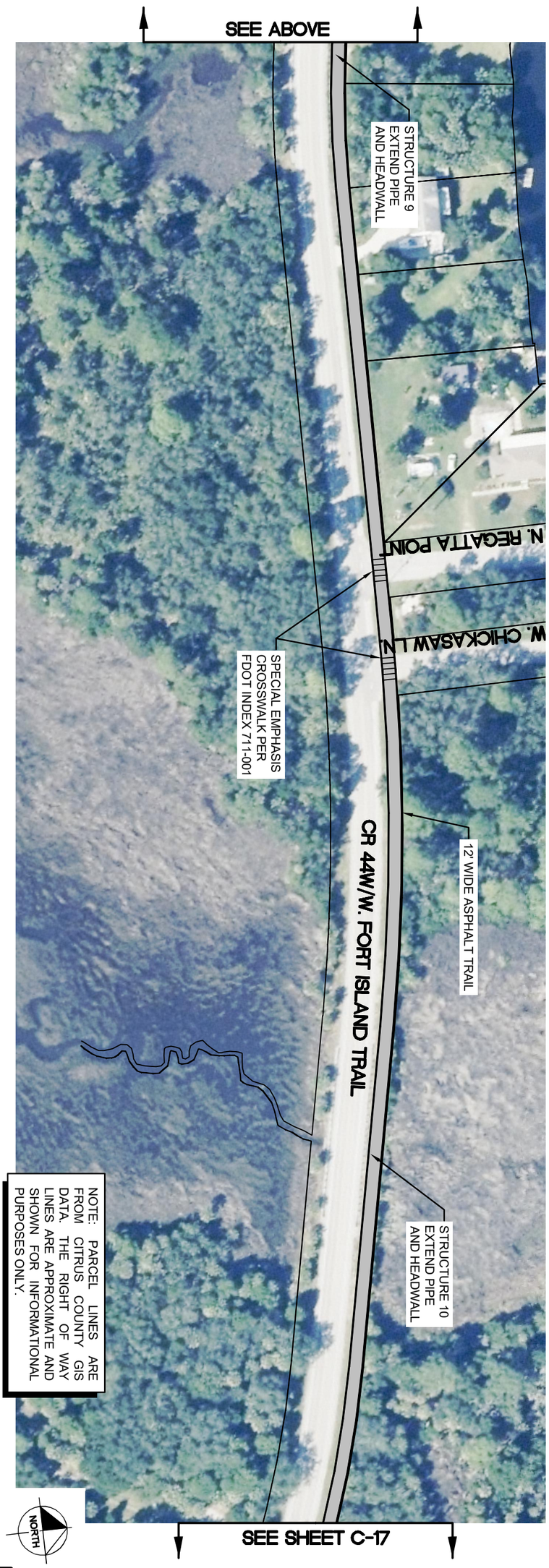

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FORT ISLAND TRAIL
MULTI USE PATH
PREPARED FOR
CITRUS COUNTY BOARD
OF COUNTY COMMISSIONERS

CONCEPTUAL
LAYOUT PLAN

KHA PROJECT	142271008
DATE	FEBRUARY 2018
SCALE	AS SHOWN
DESIGNED BY	KHA
DRAWN BY	DSC

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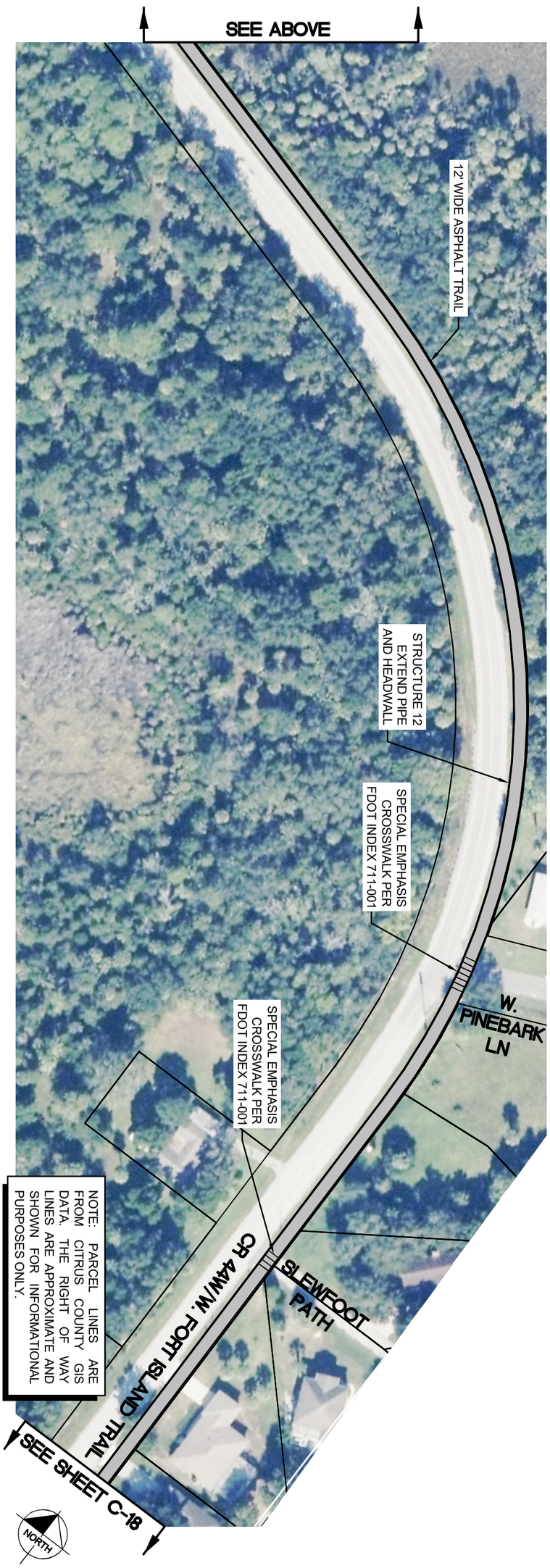

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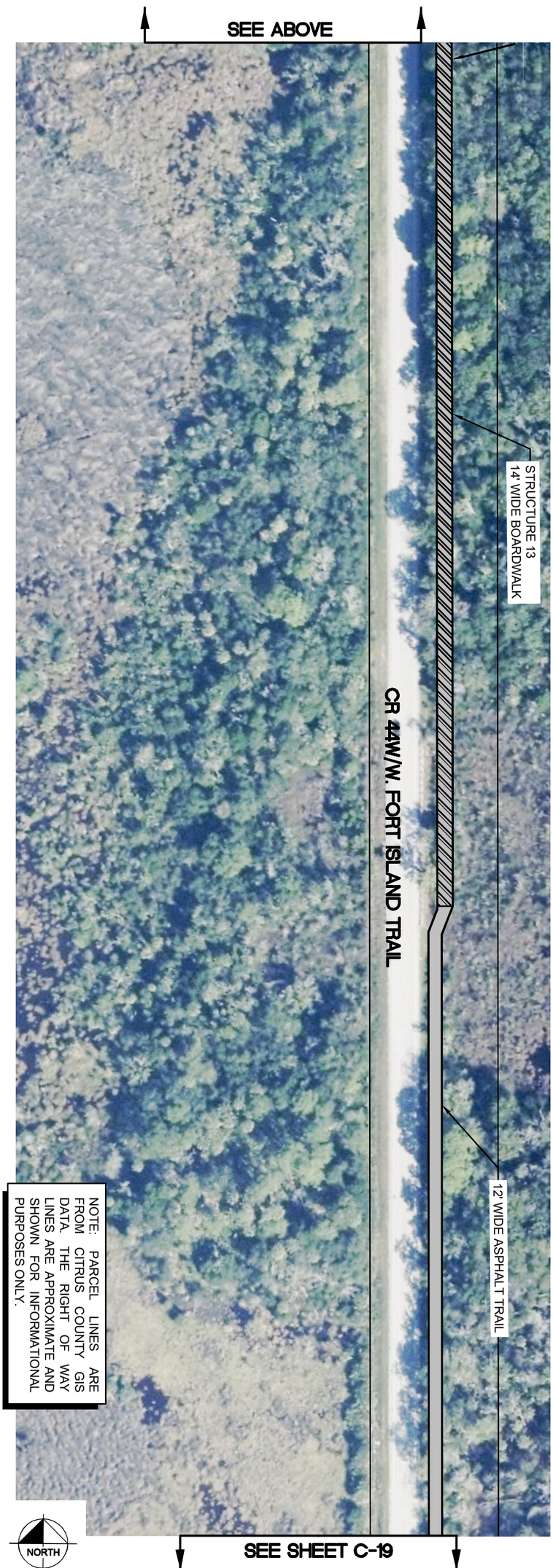

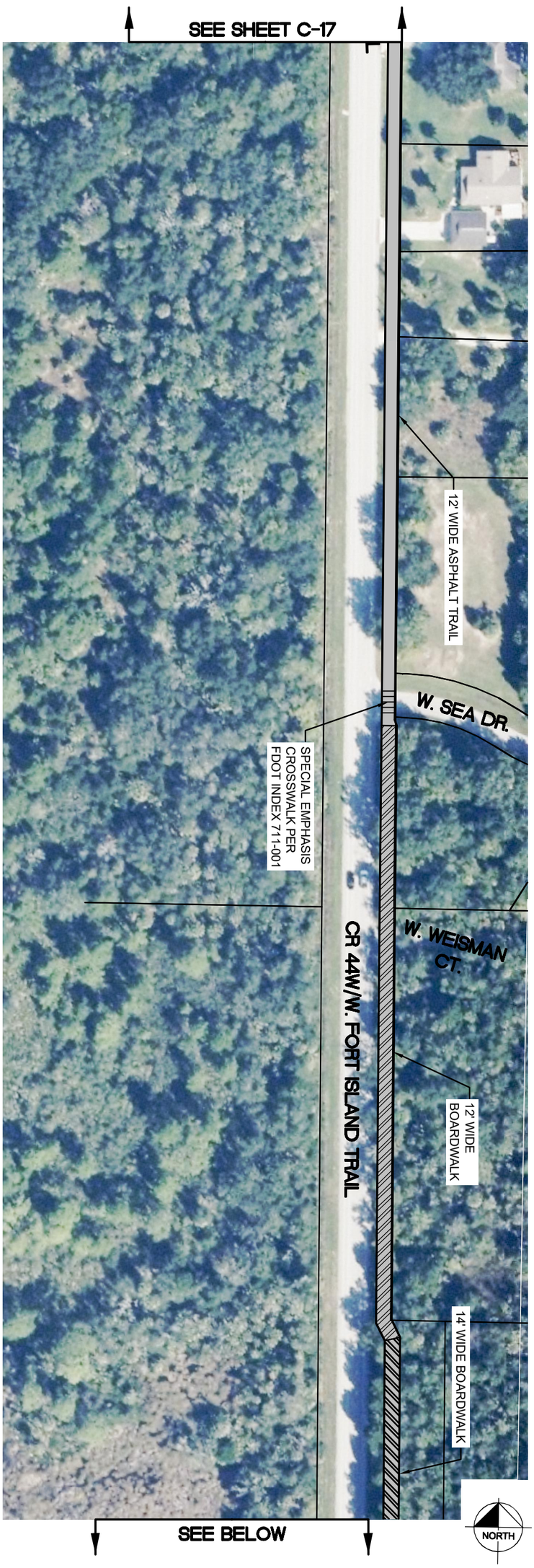

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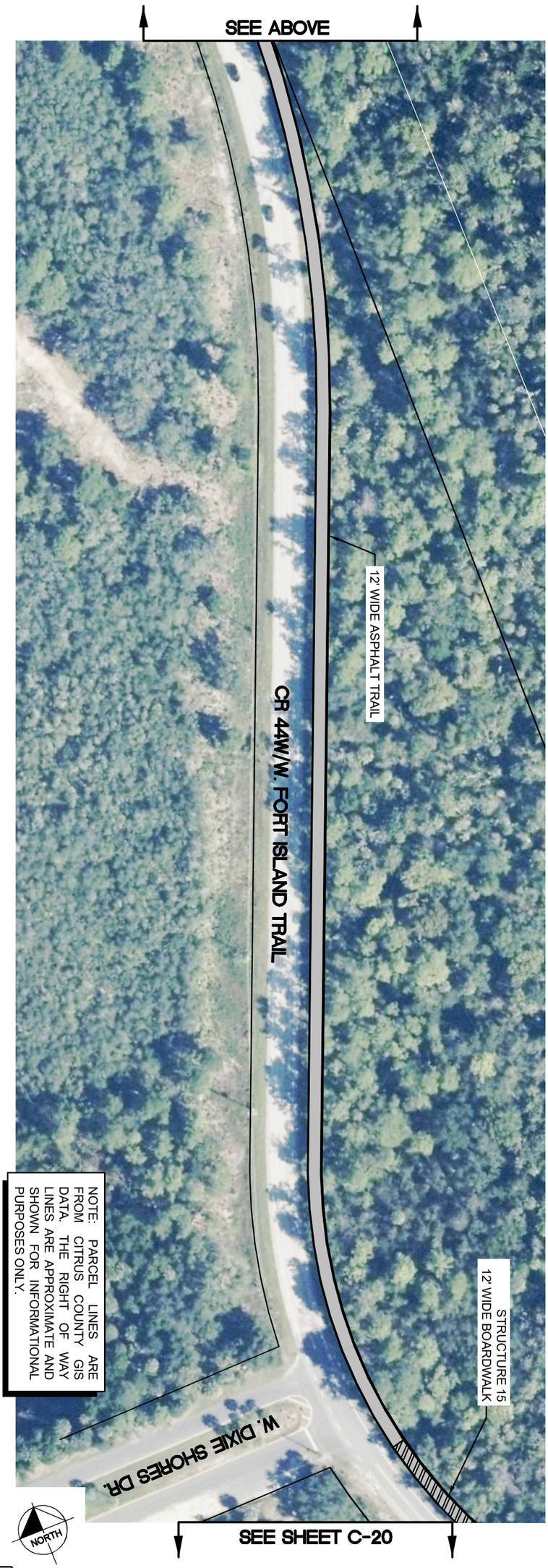

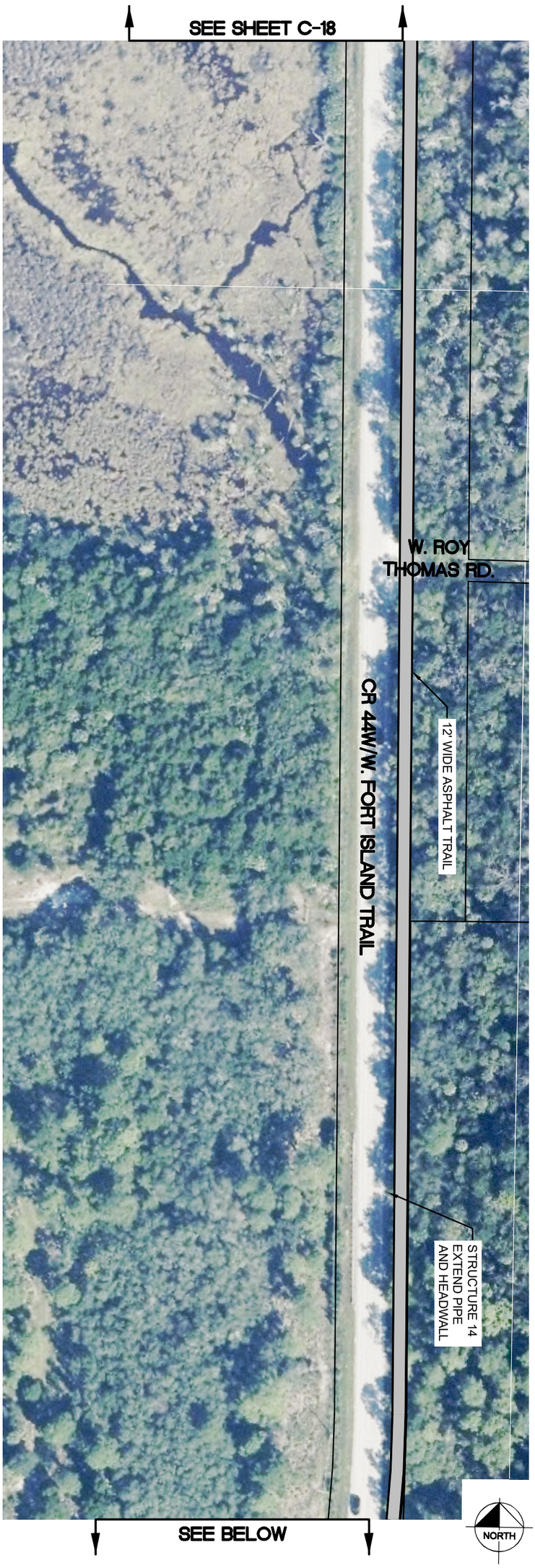

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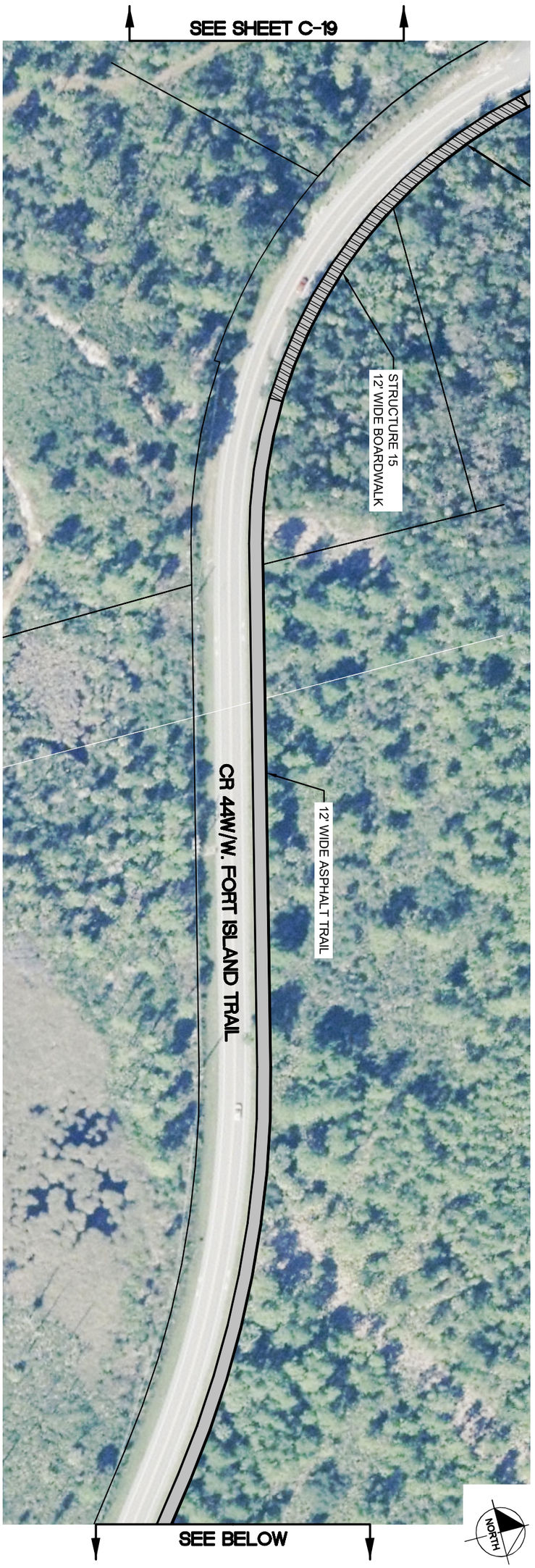

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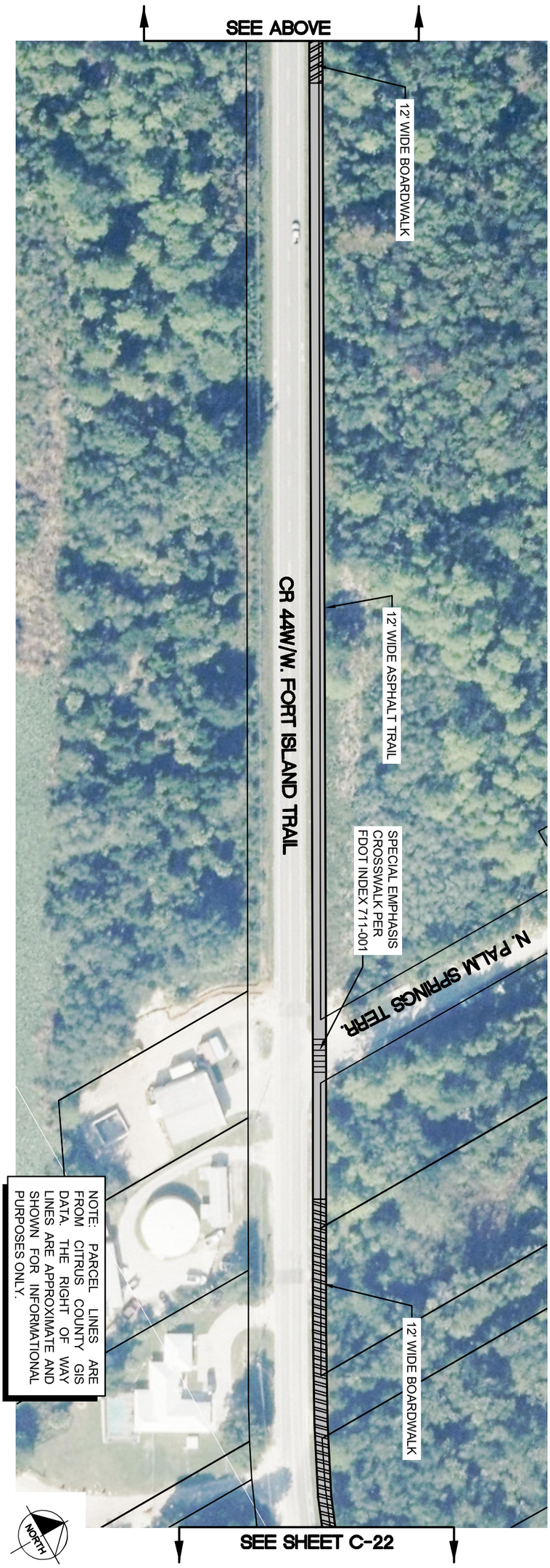

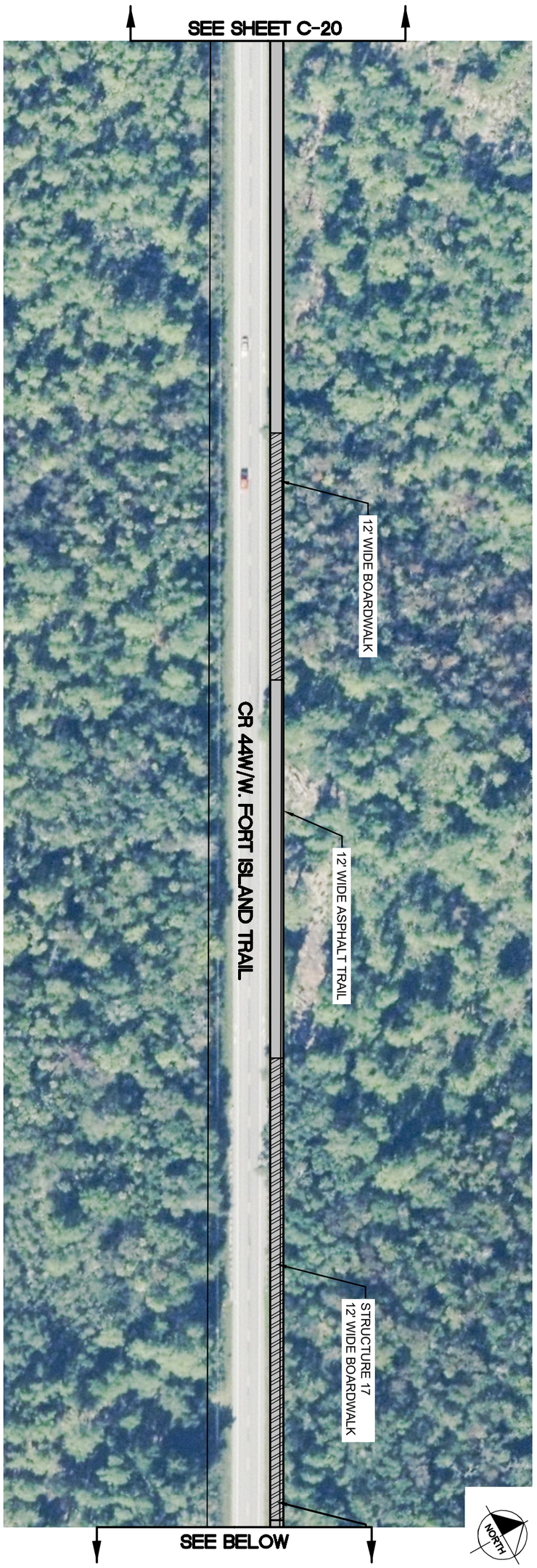

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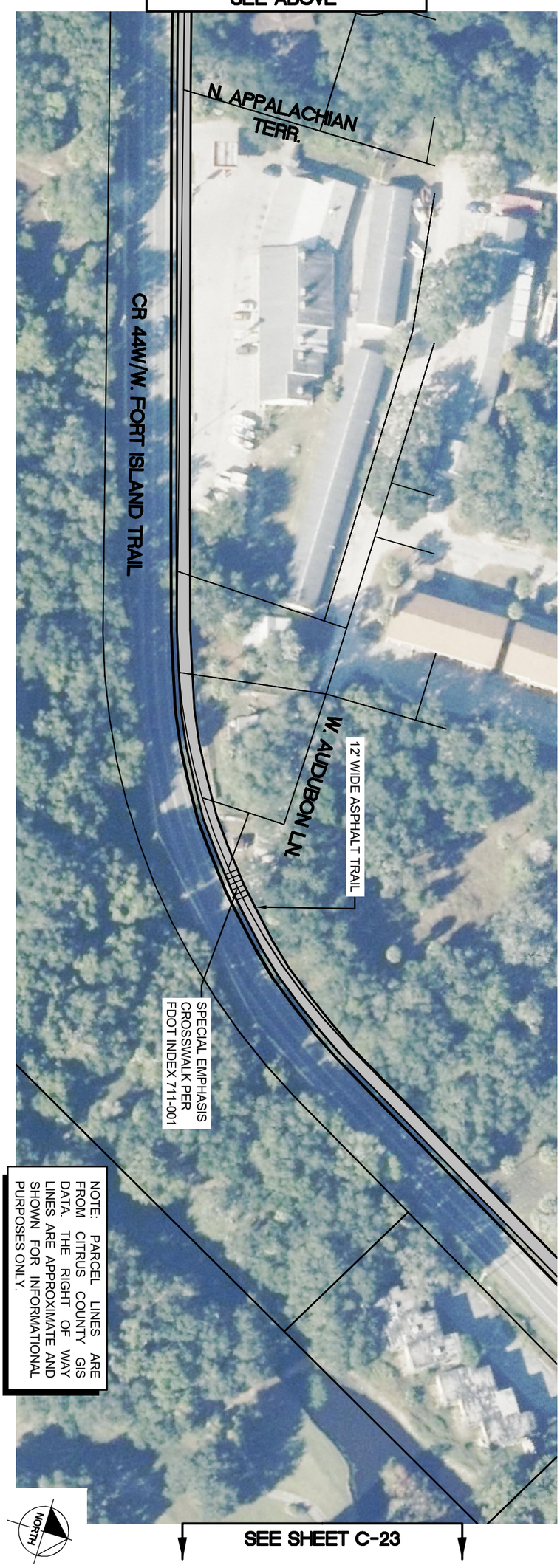

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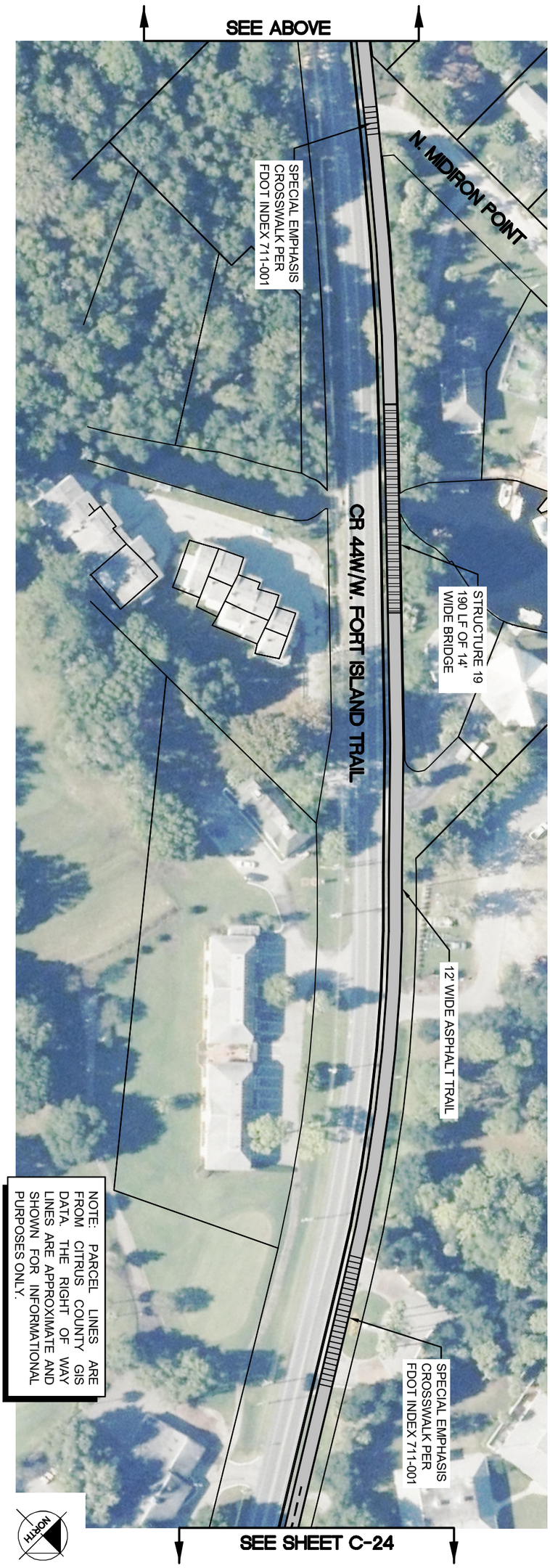

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FORT ISLAND TRAIL
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CONCEPTUAL LAYOUT PLAN

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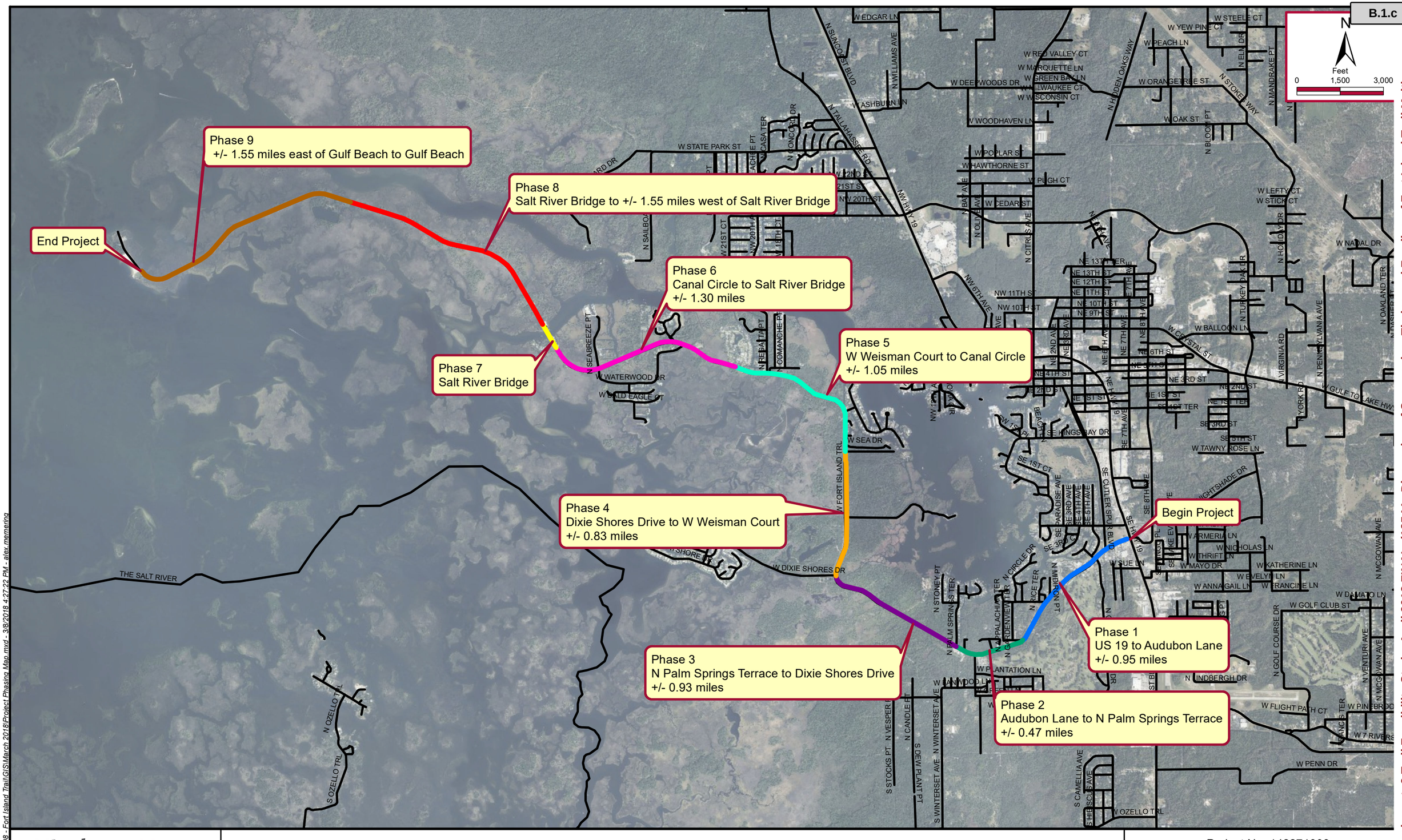
Appendix K: Potential Project Phasing Map

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-



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POTENTIAL PROJECT PHASING MAP

FORT ISLAND TRAIL MULTI-USE PATH FEASIBILITY STUDY
CITRUS COUNTY, FLORIDA

Project No. 142271008

March 2018

Scale As Noted

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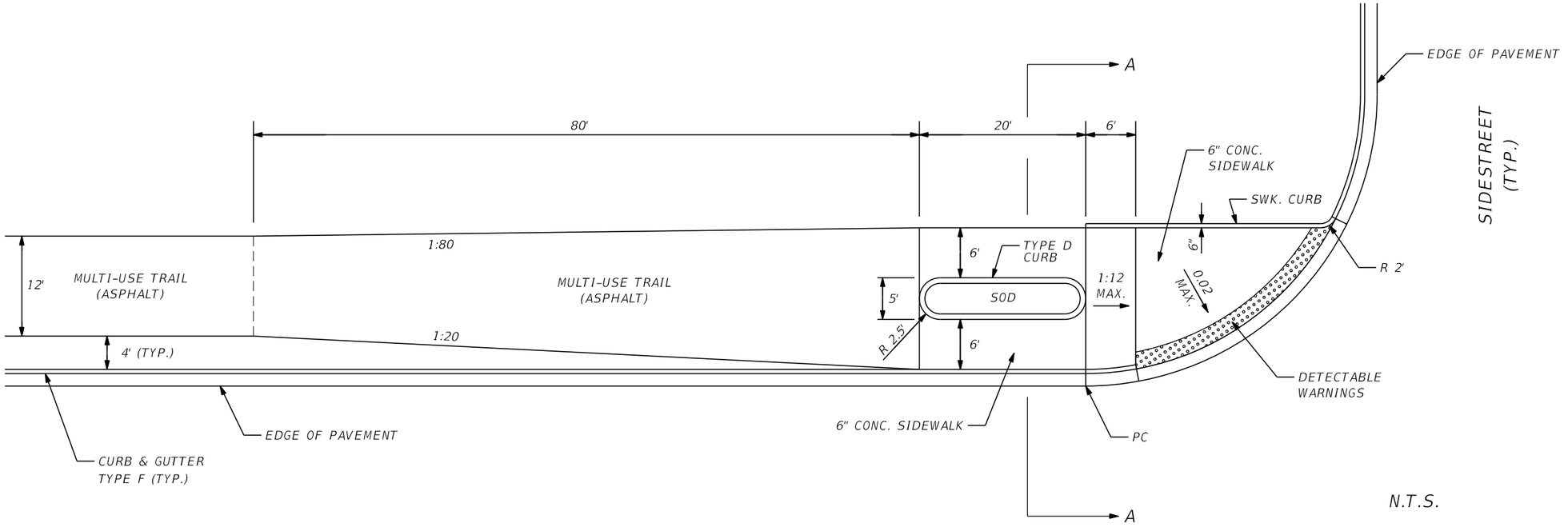
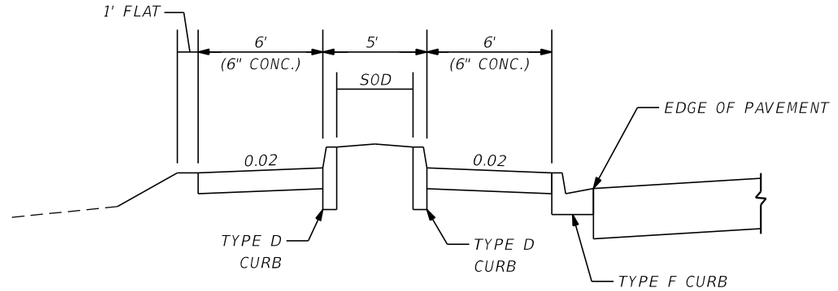
Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Appendix L: Trail Median and Side Street Crossing Detail

Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

TRAIL MEDIAN AND SIDESTREET CROSSING DETAIL (TYP.)





SECTION A-A
(TRAIL MEDIAN DETAIL)

N.T.S.

TYPICAL SECTION NOTES

1. SEE CROSS-SECTIONS FOR ADDITIONAL SLOPE DETAILS

PAVEMENT DESIGN

MULTI-USE TRAIL PAVEMENT

OPTIONAL BASE BASE GROUP 04 (6" LIMEROCK) (LBR 100)
SUPERPAVE ASPHALTIC CONCRETE (TRAFFIC LEVEL C) (FINE) (1.5")

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Pegasus ENGINEERING
JUAN FONG, JR., P.E.
LICENSE # 51932
PEGASUS ENGINEERING, LLC
301 WEST STATE ROAD 434, SUITE 309
WINTER SPRINGS, FLORIDA 32708
TEL. 407-992-9160
CERTIFICATE OF AUTHORIZATION NO. 27770

CITRUS COUNTY PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISON
3600 W. SOVEREIGN PATH, SUITE 212
LECANTO, FL. 34461

ROAD NO.	COUNTY	PROJECT NO.
491	CITRUS	26-095

TRAIL DETAILS

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Attachment: 2 Trail Feasibility Study_April 2018 FINAL (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-
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Attachment: DCR_Fort Island Trail Project_Economic

DISCOVER CRYSTAL RIVER FLORIDA

Economic Impact Research

Adventure Cycling Association

United States

Bicycle Tourism Contributes $83 Billion Annually to U.S. Economy

The Outdoor Industry Association released a study in 2017, The Outdoor Recreation Economy, which found that bicycling participants spend $83 billion on 'trip-related' sales (bicycle tourism), and generate $97 billion in retail spending. Bicycle recreation spending also contributes to the creation of 848,000 jobs.

Additionally, the Bureau of Economic Analysis included outdoor recreation in its calculations of the U.S. GDP for the first time in 2018. They estimate the economic output of outdoor recreation to be $734 billion, surpassing industries such as agriculture, petroleum and coal, and computer and electronic products (Outdoor Recreation Roundtable). The BEA estimates bicycling contributes $96 billion in annual retail sales.

Previous OIA reports:

2012: Outdoor Recreation Economy Report shows that bicycling participants spend $71 billion per year on "trip related sales," which is the category that best encompasses bicycle tourism. Overall spending for bicycling participants, which includes direct and indirect economic impacts, totals $198.7 billion, the second highest spending for any outdoor activity.

Attachment: DCR_Fort Island Trail Project_Economic

Adventure Cycling Association

Michigan

Phase I: $668 Million from Bicycling Per Year

The Michigan Department of Transportation released Phase I of "Community and Economic Benefits of Bicycling in Michigan" in August 2014. The first study shows an estimated $668 million per year in economic benefits to Michigan's economy from employment, retail revenue, tourism expenditure, and increased health and productivity.

Phase II: $21.9 Million from Events Per Year

The Michigan Department of Transportation released Phase II of "Community and Economic Benefits of Bicycling in Michigan in May 2015. Phase II examines the economic impacts of bicycle touring and events and found that events bring the state $21.9 million from out-of-state visitors and touring cyclists spend an average of $71/day with the average trip length of 6 days.

Attachment: DCR_Fort Island Trail Project_Economic

Adventure Cycling Association

Oregon

$400 Million Generated by Bicycle Tourism

Travel Oregon commissioned a study, The Economic Significance of Bicycle-Related Travel in Oregon, Detailed State and Travel Region Estimates (2012) to look at the economic impact of bicycling across Oregon, including mountain biking, scenic bikeways and local bicycle amenities.

$12.4 Million from Scenic Bikeways

The Economic Significance of Cycling on Oregon Scenic Bikeways study was conducted in 2014 and measured a $12.4 million economic impact from bicycling on Oregon's 14 official Scenic Bikeways. This spending directly supported over 150 jobs with earnings of approximately $3.4 million.

Attachment: DCR_Fort Island Trail Project_Economic

Adventure Cycling Association

Washington State

$3.1 Billion from Recreational Bicycling

Bicycling provides a recreational use value of over $3 billion in Washington State, according to the January 2020 study, *Economic, Environmental, & Social Benefits of Recreational Trails in Washington State* (p 17). Nearly 1.5 million people use trails for bicycling, contributing to $44.3 million in savings to the economy. The total economic value of trails is over $8.2 billion.

A January 2015 study, Economic Analysis of Outdoor Recreation in Washington State, prepared byEarth Economics and commissioned by the Task Force on Parks and Outdoor Recreation, shows that recreational bicyclists (local and out-of-state) spend $3.1 billion per year statewide and bicycling is the third largest outdoor recreational activity in the state by total expenditures.

Attachment: DCR_Fort Island Trail Project_Economic

Adventure Cycling Association

Arkansas

$137 Million from Bicycling in Northwest Region

The Walton Family Foundation, in collaboration with PeopleForBikes, commissioned BBC Research & Consulting (BBC) to conduct a study, Economic and Health Benefits of Bicycling in Northwest Arkansas, released in March 2018. Key results from the study include:

- Bicycling in Northwest Arkansas provides $137 million in benefits to the economy annually.
- Bike tourism is a significant economic driver with tourists spending $27 million at local businesses each year.
- Investment in soft-surface mountain bike trails is a key driver of tourism with at least 55% of mountain bikers traveling to Northwest Arkansas from outside the region.
- Bicycling in Northwest Arkansas generates $85 million annually in health related benefits.
- Residents of Northwest Arkansas spend more than $20 million on bicycling annually.
- Houses within .25 miles of the Razorback Greenway sell for an average of nearly $15,000 more than those two miles from the trail.

Attachment: DCR_Fort Island Trail Project_Economic

Adventure Cycling Association

Minnesota

$780 Million from Bicycling

Assessing the Economic Impact and Health Effects of Bicycling in Minnesota was published in 2016 by the University of Minnesota Tourism Center, and shows that bicycling contributed to $780 million in economic activity in 2014. Bicycling events produced a total of $14.3 million of economic activity in 2014. The economic impacts related to health show that bicycle commuting lowers medical costs and prevents 12 - 61 deaths per year, saving $100 million to $500 million.

An older study, the Economic Impact of Recreational Trail Use (PDF), was released in 2009 by the University of Minnesota Tourism Center and reported $427 million in spending from bicyclists using Minnesota trails and $2.4 billion in total spending statewide by all trail users.

In Bicycling In Minnesota by the Numbers, the Bicycle Alliance of Minnesota reported 5,000 jobs and $1 billion in revenue attributed to bicycling.

Attachment: DCR_Fort Island Trail Project_Economic

Adventure Cycling Association

North Carolina

Outer Banks: $60 Million from Bicycle Tourism

Pathways to Prosperity: The Economic Impact of Investments in Bicycle Facilities (2004) is a case study of the northern Outer Banks, which found that 680,000 bicyclists (17% of all visitors) each year generate a $60 million impact in the region.

Evaluating the Economic Impact of Shared Use Paths in North Carolina (2018) was prepared by the Institute for Transportation Research and Education at North Carolina State University with Alta Planning and Design. The study looked at four greenways and found:

- An impact of $19.4 million in total estimated revenue for local businesses.
- $684,000 in total estimated sales tax revenue.
- Benefits from the one-time expenditure of $26.7 million in trail construction are estimated at $48.7 million in total business revenue and 790 jobs from construction.
- $25.7 million impact from savings due to more physical activity, less pollution and fewer traffic injuries.
- For every $1 spent on trail construction, $1.72 annually is supported from those benefits.

Attachment: DCR_Fort Island Trail Project_Economic

Adventure Cycling Association

Florida

Between 2010-11, an economic impact survey (PDF) performed on three trails in Orange County Florida estimated 1.7 million people use the trails each year, providing $32.556 million in economic impact for the county's economy.

Attachment: DCR_Fort Island Trail Project_Economic

DISCOVER CRYSTAL RIVER

Adventure Cycling Association

INTERNATIONAL STUDIES

- Canada
- Europe
- New Zealand
- United Kingdom

DOMESTIC STUDIES

- United States
- Arizona
- Arkansas
- Colorado
- Florida
- Georgia
- Illinois
- Iowa
- Maine

Attachment: DCR_Fort Island Trail Project_Economic

The Business of Trails: A Compilation of Economic Benefits

An analysis of studies and research on the economic benefits of trails: tourism, events, healthcare savings, and community development.

by Terry Eastin, Executive Director, Mississippi River Trail, Inc.

Facebook Twitter More

Case statement

Trails and their users generate substantial economic benefits. With minimal research, a plethora of case studies and economic impact statements are available for review and analysis. The economic impacts of comprehensive trail systems exemplifies the proven assertion that trails bring new business and economic life to American cities, towns, and communities.

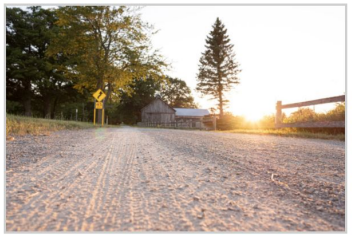
Attachment: DCR_Fort Island Trail Project_Economic

Attachment: DCR_Fort Island Trail Project_Economic

SLEEPING BEAR HERITAGE TRAIL

About | The Trail | News

Active Projects

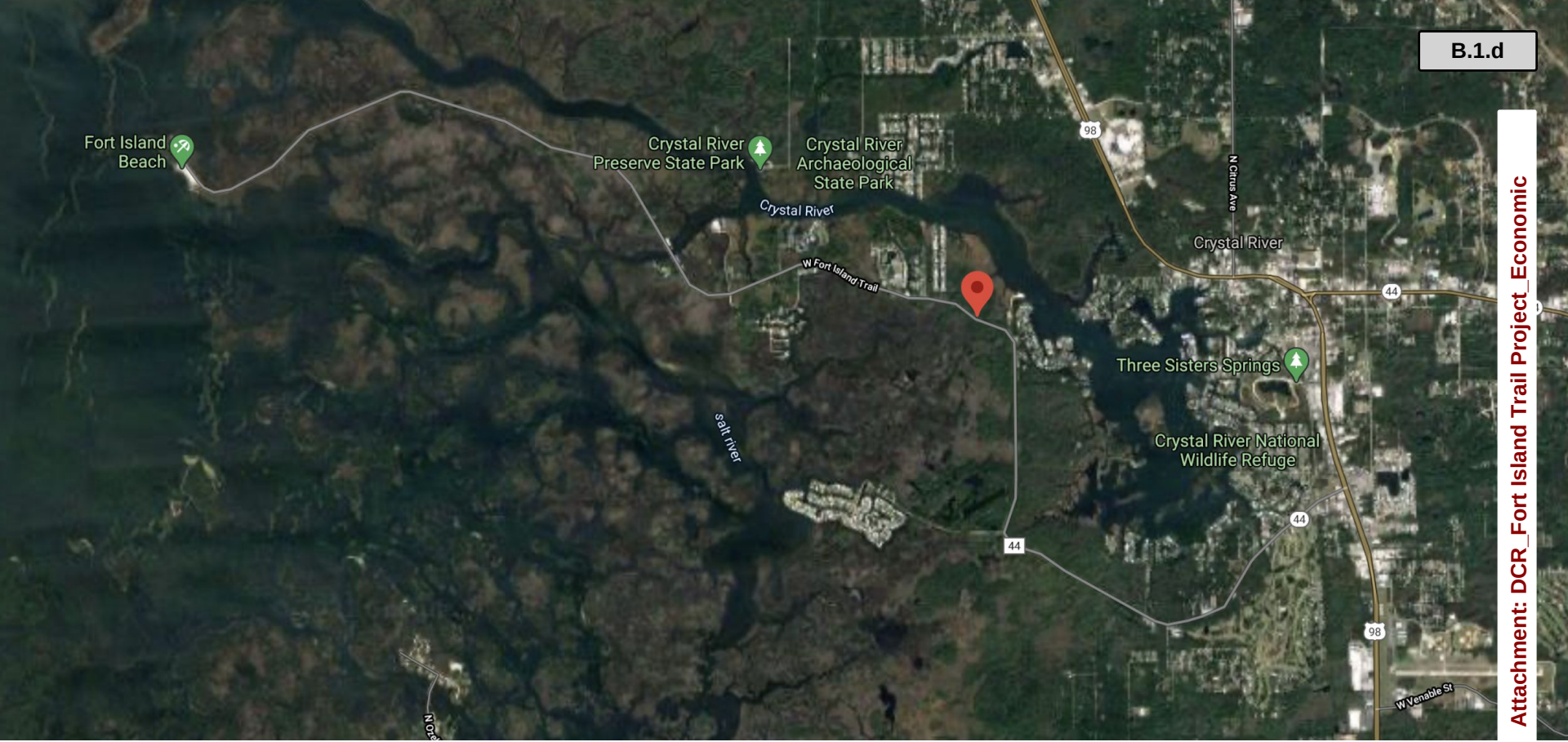


The Pathway to Good Harbor

The upcoming section of the Heritage Trail will extend north from Bohemian Road (CR 669) to Good Harbor Trail (CR 651). This 5-mile section will highlight the best this region has to offer – the natural beauty and rich culture of the Sleeping Bear Dunes National Lakeshore. The trail will span from the Lakeshore's iconic shoreline to a popular trailhead, telling the history of the land while winding through conifer forests and wetlands, along golden meadows, alongside rolling dunes, and by a historic farmstead. This phase will feature both a paved trail and boardwalk pathway separated from the roadway, promoting safe access for all ages and abilities to explore the unique history, culture, flora, and fauna of the Lakeshore and surrounding communities.

Attachment: DCR_Fort Island Trail Project_Economic

Attachment: DCR_Fort Island Trail Project_Economic



Attachment: DCR_Fort Island Trail Project_Economic

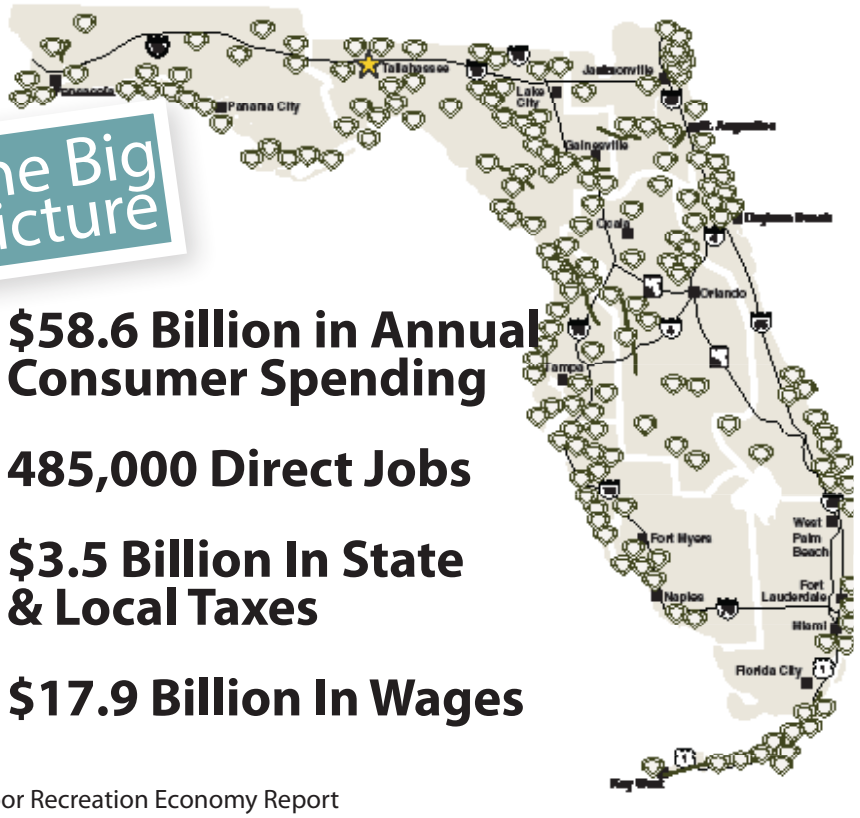
DISCOVER CRYSTAL RIVER

OUTDOOR RECREATION & TRAILS

Connectingthedotsbetween Trails&tourism

OUTDOOR RECREATION GENERATES BIG ECONOMIC IMPACTS FOR FLORIDA

The Big Picture



> **$58.6 Billion in Annual Consumer Spending**

> **485,000 Direct Jobs**

> **$3.5 Billion In State & Local Taxes**

> **$17.9 Billion In Wages**

Recreation has long served as an economic driver in Florida, as the state remains a major destination for national and international tourism.

Outdoor Industries Association, 2017. The Florida Outdoor Recreation Economy Report

FLORIDA STATE PARK VISITATION GENERATES $3 BILLION TO LOCAL ECONOMIES

With more than **1,600 miles of multi-use trails**, Florida State Parks receive over **32 million visitors annually, creating 48,622 jobs.**

The Cross Florida Greenway had the greatest local economic impact totaling $277 million.

Honeymoon Island

x 1,000 VISITORS = **~$101,000**[2] **DIRECT LOCAL IMPACT**

[2]ibid

"The West Orange, Little Econ, and Cady Way trails in Orange County supported 516 jobs and ar estimated economic impact of $42.6 million in 2010."

East Central Florida Regional Planning Council (2011)

Trail Facts

> **Every $1 spent on walking paths and programs could save approximately $3 in medical expenses** (American Heart Association)

> **Every $1 million spent on trails yields 9.6 jobs** (University of Massachusetts, 2011)

Updated 1/2018

Attachment: Florida.2018_10Trails_Economics_Infographic_1 (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Trail Facts

>Trails add value to new homes and are consistently among the top 4 community amenities sought by prospective homeowners of all ages

(National Association of Homebuilders, 2016).

A 2011 study by the University of Cincinnati found that homes within 1000 ft. access to the Little Miami Scenic Trail increased in value by $9K. The scenic, multipurpose trail beckons walkers, hikers, skaters and bicycle enthusiasts and also has horseback riding paths.

WHAT ARE FLORIDA VISITORS & RESIDENTS DOING OUTDOORS?

VIEWING WILDLIFE

The second most popular outdoor activity for both residents and visitors (SCORP 2017) and brings in almost **$5 billion annually** to the state's economy.

Florida's rich diversity of wildlife attracts millions of visitors to public lands such as Florida's 175 State Parks, of which 96 are included as sites on the **Great Florida Birding** and **Wildlife Viewing Trail.**

EQUESTRIAN ACTIVITIES

According to the Florida Department of Agriculture and Consumer Services, the **equestrian industry's economic impact on the gross state product is $6.5 billion.** Florida's State Parks offer 1,889 miles of equestrian trails.

TRAILS

A record **5,775,175 residents and visitors** enjoyed healthy outdoor activities on Florida's eight state trails and Cross Florida Greenway in 2016/17.

BIKING

Bicycle riding on paved roads and trails brings in more than $6 billion in **Florida annually** and riding on unpaved trails brings in almost $2 billion (Balmoral 2017).

Outdoor fitness walking/jogging brings in $13.5 billion annually and paddling activities bring in almost $3 billion annually.

The 2017 Outdoor Recreation Participation study highlights the tight link between recreation and tourism in Florida, determining:

98% of Florida's tourists believe that outdoor recreation is important to them.

97% of tourists are satisfied with outdoor recreation opportunities in the state.

75% of all Florida visitors participate in nature-based activities during their visit (Visit Florida, 2012).

Trails boost fitness and well-being, a connection with the outdoors and economic growth.

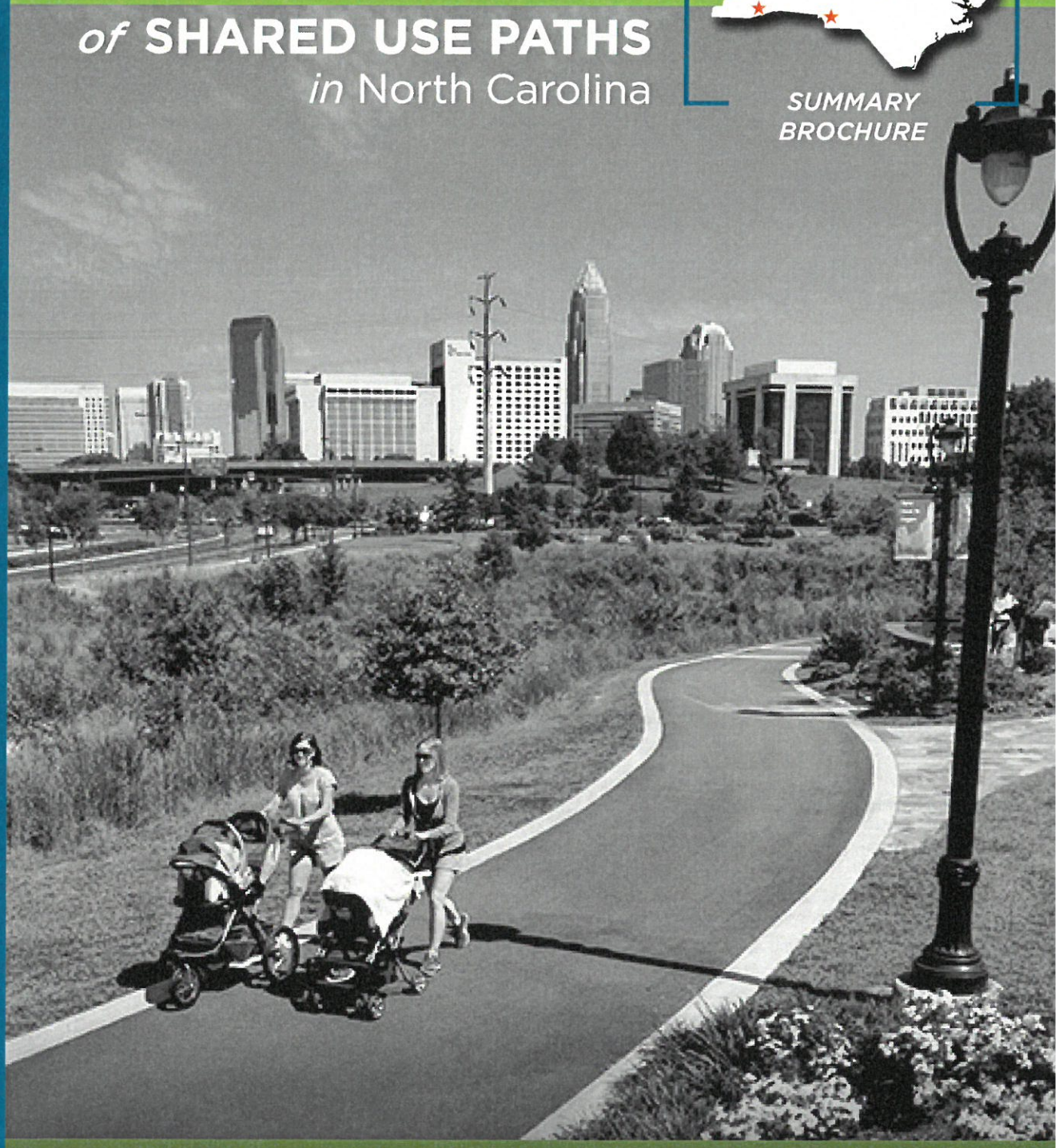
Visit www.dep.state.fl.us/gwt/ to find trail near you.

Attachment: Florida.2018_10Trails_Economics_Infographic_1 (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail Multi-

Evaluating the ECONOMIC IMPACT of SHARED USE PATHS in North Carolina

2015 - 2017

SUMMARY BROCHURE



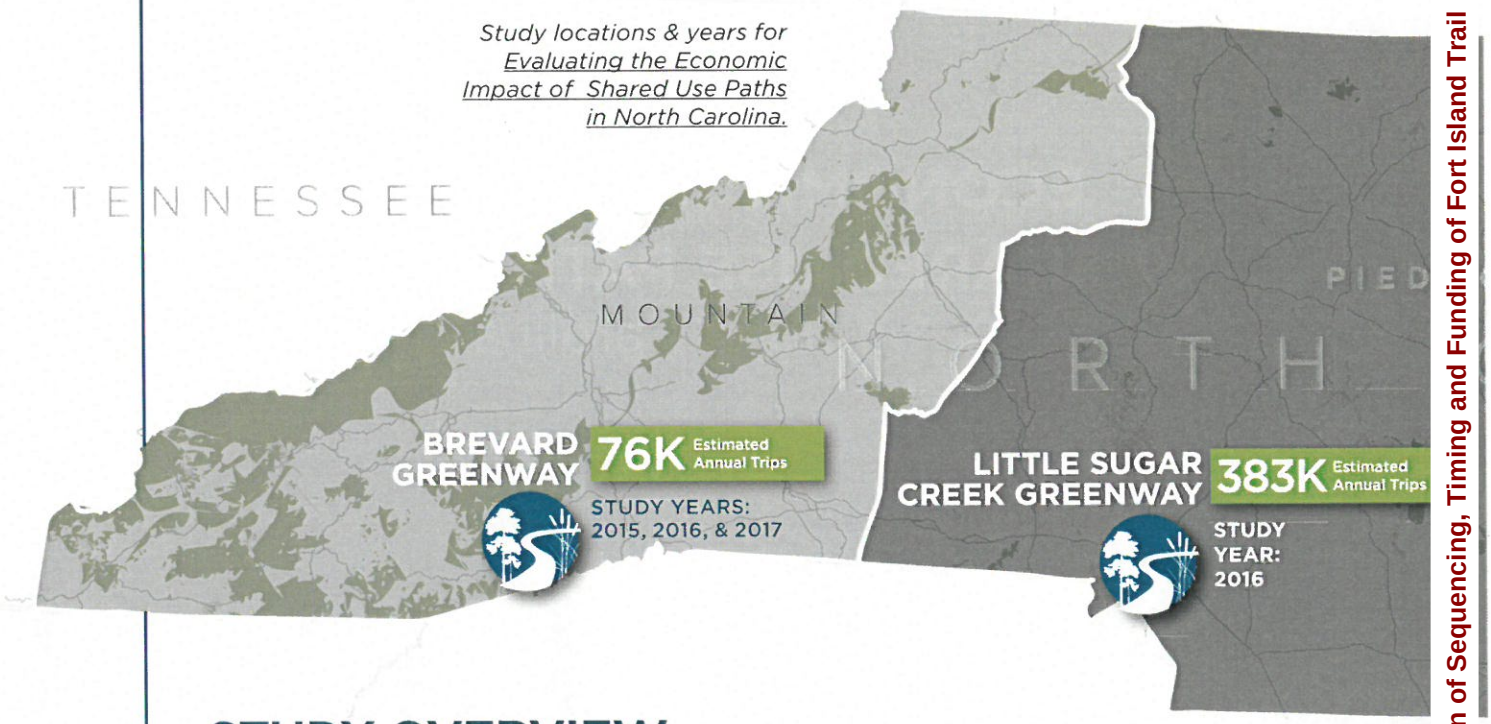
ITRE

alta PLANNING + DESIGN

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Division of Bicycle & Pedestrian Transportation

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail



STUDY OVERVIEW

Shared use paths (SUP), also known as greenways or trails, are unique facilities physically separated from motor vehicle traffic that allow a shared space in which bicyclists, pedestrians, and sometimes equestrian or other non-motorized users can travel.

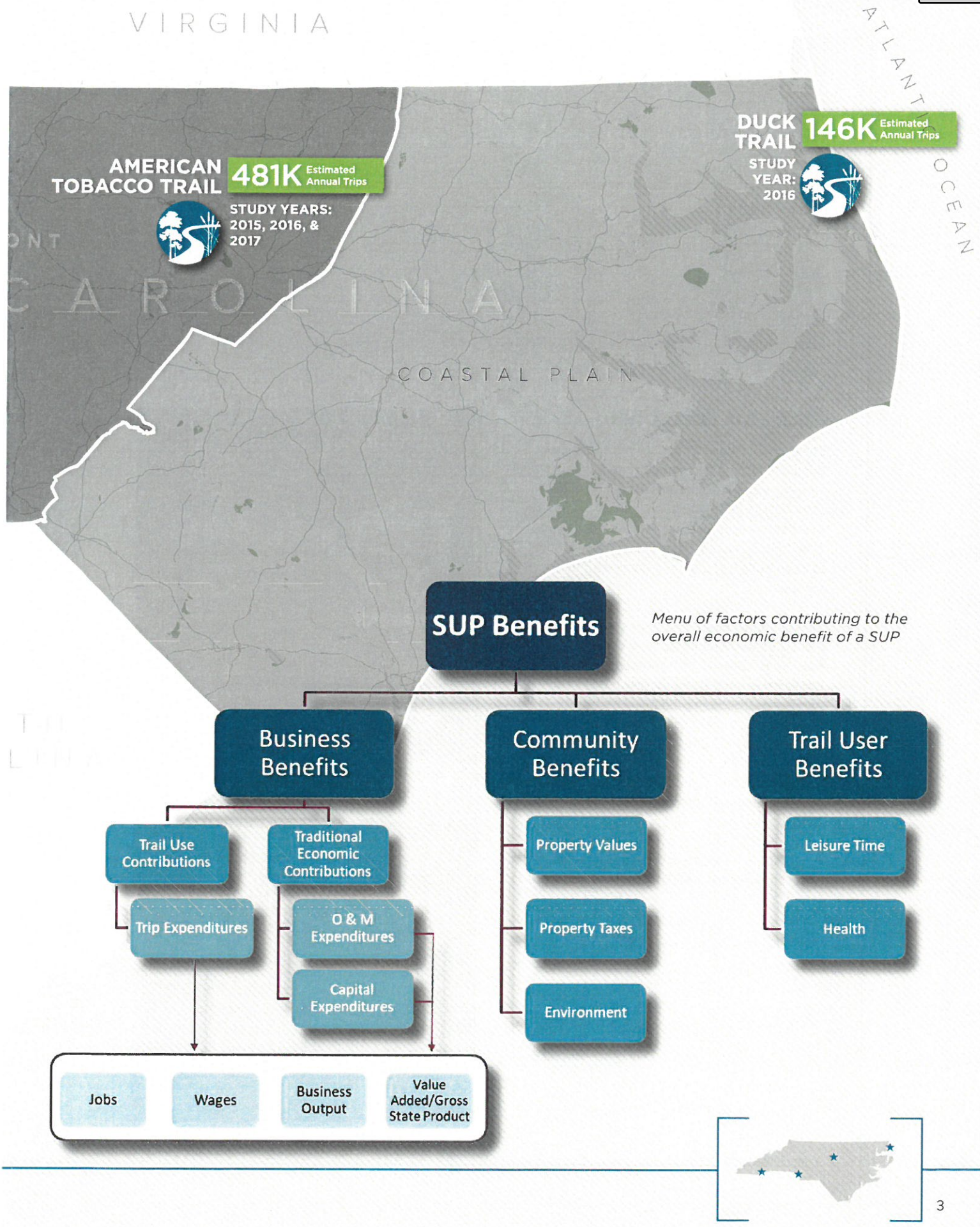
While some research has been conducted in North Carolina to understand the economic contribution that specific facilities like SUPs may have in a community, North Carolina is lacking in a comprehensive approach to evaluate the economic returns currently being generated by existing trails of regional significance that may lead to economic benefits to the state.

The objective of this project was to design and test a methodology for consistently evaluating the economic contribution of shared use paths in North Carolina. Four SUPs were selected to test the methodology. The American Tobacco Trail (ATT) and the Brevard Greenway (BG) were studied iteratively for three years, while the Little Sugar Creek Greenway (LSC) and Duck Trail (DT) served as cross-sectional case studies. The iterative cases allowed for comparison of results across years to test the reliability of the methodology and potentially identify factors that may influence its application, such as seasonality. The additional cross-sectional cases provided a broader mix to test the methodology on different types of SUPs based on their land use contexts, user types, and expected trip purposes. This project structure allowed for eight separate studies to be conducted to test the methodology across three years.

The shared use paths studied were selected because they:

- Have a state or regional significance.
- Have good opportunities to capture economic revenue.
- Were not impacted by construction, significant maintenance, or detouring during the project period.
- Are relatively 'established' (i.e. at least 5 years old with minimal adjacent land use changes anticipated).
- Have the ability to demonstrate a transportation function.
- Are geographically dispersed across North Carolina.
- Are a good mix between urban and rural areas.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail



Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

FIELD DATA COLLECTION

For each SUP case, field data were collected primarily through two sources: intercept surveys and manual counts. The research team administered the survey to trail users. In order to ensure surveyors were consistent in technique, each person was trained in how to intercept a trail user and administer the survey.

Multiple data collection stations were used along each SUP to understand overall trail usage. Survey and count data were collected at each station on each trail. The number of stations varied by trail length and frequency of access points. Spacing of stations was driven by the desire to potentially count each pedestrian on the SUP. This required spacing stations typically no more than 2 miles apart (the average distance a pedestrian travels). Generally, three people worked each station – two surveyors and one counter (see Example Data Collection Station on opposite page).

THIS STUDY *BY THE NUMBERS:*

8,349
Total # of surveys collected across all trails and study years

54,532
Total # of counts collected across all trails and study years

187
The total number of "bodies" or "manpower" needed to gather all the data across this 3-year study.
The actual number of unique individuals that collected data was much lower (108), since some people collected every year and at each SUP.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

DATA COLLECTION SCHEDULE & TOTAL NUMBER OF RECORDS COLLECTED

SHARED USE PATH	# OF STATIONS	YEAR	DAY OF WEEK	TOTAL # OF COUNTS	TOTAL # OF SURVEYS	EST. # OF UNIQUE USERS
American Tobacco Trail	9	2015	Thurs, Oct 8	4,434	905	1,472
			Sun, Oct 11	11,788	1,496	3,539
		2016	Sat, May 14	8,954	1,230	2,525
			Mon, May 16	4,141	766	1,354
		2017	Tues, May 16	4,165	757	1,328
			Sat, May 20	7,745	911	2,274
Brevard Greenway	3	2015	Wed, Oct 14	505	137	240
			Sat, Oct 17	523	133	273
		2016	Thurs, May 19	307	93	135
			Sat, May 21	546	147	261
		2017	Sun, Aug 13	539	131	237
			Mon, Aug 14	411	99	191
Duck Trail	2	2016	Mon, Jun 20	2,127	211	1,009
			Tues, Jun 21	2,212	313	1,020
Little Sugar Creek Greenway	4	2016	Tues, Oct 18	2,521	543	1,188
			Sat, Oct 22	3,614	477	1,768

EXAMPLE DATA COLLECTION STATION

KEY DATA POINTS COLLECTED WITH SURVEYS

- Trip origin and destination or turnaround points on the trail
- Trip purpose
- Mode of travel
- Physical activity indicators
- Economic activity indicators
- Demographic information
- Residential or visitor status

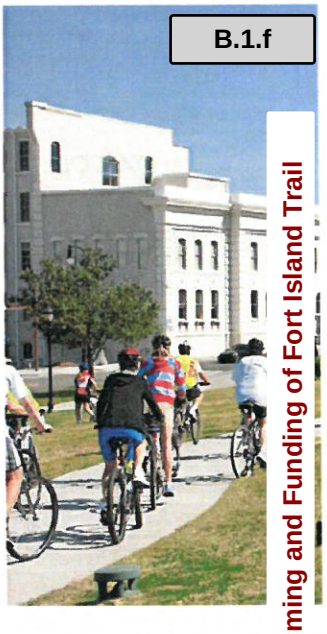
KEY DATA POINTS COLLECTED WITH COUNTS

Manual counts also were conducted by the research team and included recording characteristics such as:

- Mode of travel
- Direction of travel
- Age category
- Gender
- Group size

For more on this topic, see the Field Data Collection section of the Final Report, starting on page 55.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail



Typically, data were collected on one weekday and one weekend day during daylight hours. The exact days and collection period time was informed by the season and travel patterns seen in volume data collected on each SUP using automated technology (pneumatic tubes, infrared, and/or inductive loops.) Since survey data are extrapolated to understand annual usage of the SUP and its annual economic contributions, understanding how volume fluctuates on a given trail ensures that survey data are collected during peak using, thereby maximizing staff time on the trail collecting the data. It also ensures that the full range of typical trail users are intercepted so that the data are more likely to be representative of the population of trail users.

All completed survey and count forms were manually reviewed for errors, omissions, and quality control prior to entering the data into spreadsheets.

ESTIMATING UNIQUE USERS AND ANNUAL TRIPS

A simple summation of counts from each station would result in double or multi-counting people who passed more than one station during their trip. When combining raw counts from each station to develop a comprehensive estimate of trail usage, survey data were used to define where respondents entered, exited and/or turned around on the trail to reduce the raw count at each station by the people who would have been counted at another station. Using several calculations, the number of unique users on each SUP was determined.

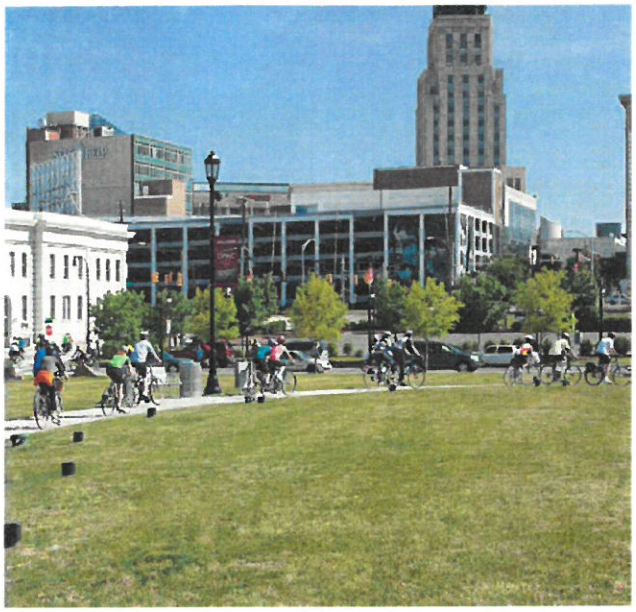
Note that adjustments for users making roundtrips or those making longer distance trips (thereby passing more stations) does not result in a true count of individual persons using the trail. Some may have visited the SUP on more than one data collection day, or made more than one trip per day, or traced a unique travel pattern not otherwise captured in the survey responses. Unique users can only be understood on a per day basis. Count data from continuous count stations on each SUP were adjusted to convert unique users to an estimate of annual trips.

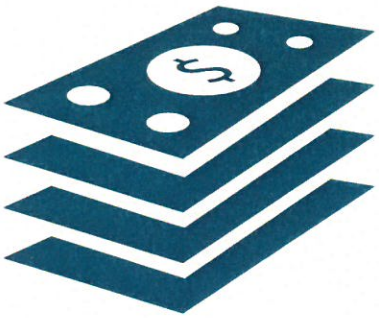
STUDY RESULTS

BUSINESS AND EMPLOYEE BENEFITS

Findings from this project demonstrated that SUPs support substantial economic benefits to businesses and their employees. Bicyclists and pedestrians who used the American Tobacco Trail, the Brevard Greenway, the Little Sugar Creek Greenway, and the Duck Trail made purchases at businesses along these trails, which increased the productivity of these regions and contributed to the state's overall economy. For example, trail users made purchases that supported jobs, wage income, and business output in the grocery, retail, bike rental, real estate, restaurant, and entertainment industrial sectors in North Carolina. The economic activity that arose from trip expenditures captured via the intercept surveys includes direct, indirect, and induced/multiplier impacts. **These benefits are highlighted for each SUP, on pages 12-19 of this summary brochure.**

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail





$19.4M

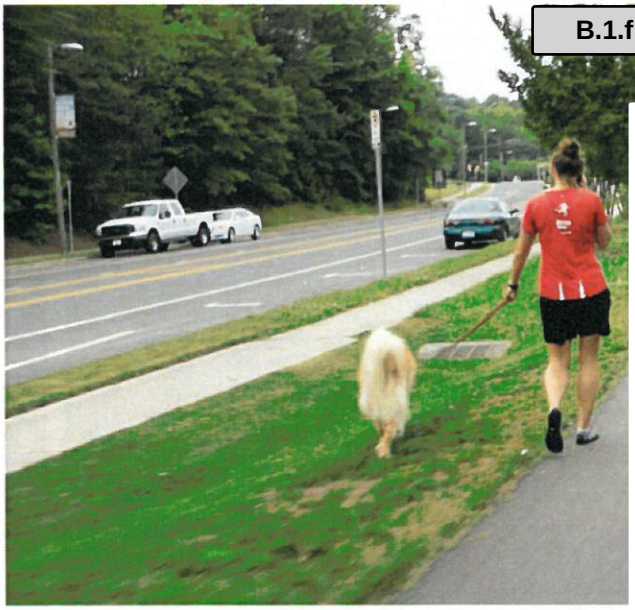
In total estimated annual business output resulting from sales revenue at businesses along all four SUPs in this study.

790 JOBS

Are supported annually through construction* of all four SUPs and direct expenditures of people using the trails in this study.

**530 construction jobs may be the labor equivalent to full-time employment over the course of one year; assumes different crews were utilized to build each trail.*

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail



$684K

In total estimated annual local & state tax collections resulting from trip expenditures for all four SUPs in this study.

RETAIL SALES TAX BENEFITS

When bicyclists and pedestrians make purchases at stores, restaurants, hotels, or various other types of commercial establishments it also generates retail tax revenue for local and state governments. Sales tax impacts were estimated by considering expenditures on different types of goods and services, and modeling the tax revenue generated from these transactions using IMPLAN. **The total annual estimated local and state tax collections resulting from trip expenditures for all four SUPs is $$683,900.**

$48.7M

In total estimated business output resulting from construction of all four SUPs in this study.

TRAIL CONSTRUCTION BENEFITS

The construction of SUPs supports economic activities including preliminary engineering, design and environmental review, construction, inspection, and oversight. Expenditures made in each of these categories support jobs, wages, and business output. Of these categories, business output was most significant, **with $48.7 million in total business output from construction for all four SUPs.**

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

$25.7M

In total estimated savings associated with increased physical activity and reduction in congestion, traffic injuries, and air pollution from use of all four SUPs in this study.

HEALTH, CONGESTION, AND POLLUTION REDUCTION BENEFITS

Examples of benefits measured under this category include, but are not limited to:

- Annual Regional Cost Savings Attributable to Physical Activity
- Annual Regional Cost Savings Attributable to Decreased Risk of Road Traffic Injuries
- Reduced Household Vehicle Operation Costs
- Annual Reduced CO_2 Emissions (lbs)

PROPERTY VALUE IMPACTS

This project applied and examined two methods to explore the impact of SUPs on property values: 1) comparing property values for residential properties that are near to a SUP to those that are far from a SUP using a buffer analysis, and 2) using linear regression to determine the effect of SUP proximity on property sales prices by controlling for neighborhood characteristics, including proximity to other "property value boosters" (e.g. schools, parks, bodies of water, shopping, employment centers, and socioeconomic demographics). While the results from the buffer analysis indicated that proximity to the SUP had a positive effect on assessed property values for the ATT and LSC, further hedonic price modeling showed that proximity to a SUP had no statistically significant effect on sales prices when controlling for factors such as other environmental and neighborhood features. **These results underline how difficult it is to isolate the true effect of SUP proximity on property values, particularly given each SUP's unique location and context.** If a property values benefits analysis is desired for a trail, the effect of competing features must be considered when interpreting the results.

For more on these and other SUP economic benefit results, see Chapter 5: Study Results in the main report.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

ECONOMIC VALUATION METHODOLOGIES

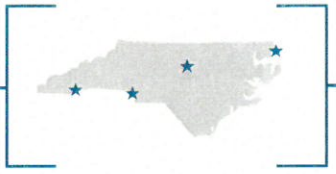
This table represents the recommended approach to estimate economic contributions of SUPs based on testing these and other methods to derive specific types of benefits from each of the eight case studies conducted. The matrix allows one to select from a menu of benefit types and quickly see at a high-level the types of data sources and key steps it would take to implement the recommended method in order to calculate the value of the economic benefit of interest.

Category	Sub-category	Data Required	Methodology or Value Used
Impacts to SUP-related businesses and employees	***Trail User Expenditures*** *(includes special events and tourism expenditures that result from existence of trail)*	***Intercept Survey*** • Expenditures by type and trail user • Frequency of trips per user ***Manual Count*** • User count by mode, age, and gender ***Automated Count*** • Expanded count of users by mode for extrapolation	Step 1: Estimate average expenditures per user type from intercept survey Step 2: Evaluate sample of completed surveys with manual user counts for representativeness of the survey (further analysis if adjustments are needed) Step 3: Extrapolate average expenditures to an annual amount with automated counts and predictive model (if needed) Step 4: Estimate multiplier effects of annual expenditures using IMPLAN
	Retail Sales Tax Benefits *(function of trail user expenditures)*	***Intercept Survey*** • Expenditures by type ***NC Department of Revenue*** • State and local tax rates ***Municipal Real Estate Schedule of Values*** • Regional average of competitive space	Step 1: Use estimated expenditures per user typ derived from steps 1-3 above (Trail User Expenditures) Step 2: Estimate the local and state tax contribution resulting from these expenditures, based their respective tax rates Step 3: Divide expenditures by regional average of competitive space to get retail square footag supported
Impacts to NC's Economy from SUP Investment	***Capital Expenditure***	***NC Department of Transportation*** • SUP capital expenditures ***Local Agency*** • SUP capital expenditures	Step 1: Obtain and summarize capital expenditures data Step 2: Normalize data to economic base year Step 3: Estimate multiplier effects of capital expenditures using IMPLAN
	Operational Expenditure	***NC Department of Transportation*** • SUP operational expenditures ***Local Agency*** • SUP operational expenditures	Step 1: Obtain and summarize operational expe ditures data Step 2: Normalize data to economic base year Step 3: Estimate multiplier effects of operationa expenditures using IMPLAN or TREDIS
Impacts to Land Values for Properties within SUP Proximity	***Property Value Impacts*** *- Rough Assessment*	***County Parcel Data Records*** • Property assessed values in proximity to trail • Assessed values of similar properties not in proximity to the trail	Step 1: Evaluate property values in ½ mile proximity to SUP relative to similar property values ½-1 mile away from SUP Step 2: Use GIS to create a ½ mile buffer aroun SUPs (influence area). Create another ring buffe ½ -1 mile out (outside area). Compare the differ ence in values of the two areas.
	Property Value Impacts *- Hedonic Pricing Method*	***Real Estate Sales Data*** • Property neighborhood factors • Property structural factors (bedrooms, bathrooms, square footage) • Property sales prices ***American Community Survey*** • Block group demographics • Vacancy rate ***Public Tax Records*** • Assessed tax value	Step 1: Generate base linear model by regressir the sales price on the core predictors for prope ties within ½ mile of SUP Step 2: Evaluate geospatial residual pattern for under- or over-predicted areas to identify additional control variables based on SUP context Step 3: Iteratively refine and re-run model with customized variables to test their inclusion for best fit. Step 4: Test for statistical significance of effect on sales prices from proximity to SUP.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

Category	Sub-category	Data Required	Methodology or Value Used
User and Societal Benefits	*Health Benefits*	***Federal Highway Administration*** • Statistical value of human life ***Centers for Disease Control and Prevention*** • Burden of Disease ***Intercept Survey*** • Average time spent on SUP (duration, trip frequency, and/or distance) • Average exercise met from SUP use	Step 1: Estimate total number of SUP users and their average trip lengths from counts and intercept surveys. Step 2: Use number of users, their trip length, FHWA's value of statistical life, and CDC's mortality rates by cause as inputs into the Integrated Transport and Health Impact Modeling Tool (ITHIM) to derive the economic value of mortality rate improvements that result from SUP use.
	Congestion Benefits	***Intercept Survey*** • Mode to/from SUP • Trip purpose • Number of users who would make same trip by driving if SUP didn't exist ***Tiger Benefit-Cost Analysis Resource Guide*** • Congestion cost per vehicle mile	Step 1: Survey trail users about travel mode, trip purpose, and whether they would have made that trip if the SUP did not exist. Step 2: Calculate vehicle miles traveled from origin to destination for users who would have made trip with another mode. Step 3: Use info from steps 1-2 to estimate societal benefits that arise from avoided motorized transport external costs
	Air Pollution Reduction Benefits	***Intercept Survey*** • Mode to/from SUP • Number of users who would make same trip by driving if SUP didn't exist ***Environmental Protection Agency*** • Exposure to fine particulate matter	Step 1: Survey trail users about travel mode and whether they would have made that trip if the SUP did not exist. Step 2: Use info from step 1 to estimate societal benefits that arise from avoided motorized transport external costs.
	Safety Benefits	***Intercept Survey*** • Average time spent on SUP (duration, trip frequency, and/or distance) ***NC Division of Motor Vehicles*** • Serious and fatal collisions ***Federal Highway Administration*** • Statistical value of human life	Step 1: Survey trail users about trip duration, frequency, and distance. Step 2: Collect collision data for the study area and parallel paths. Step 3: Use info from steps 1-2 to estimate societal benefits that arise from avoided motorized transport collision costs

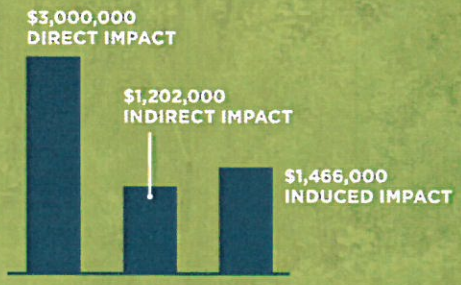


AMERICAN TOBACCO TRAIL (ATT)

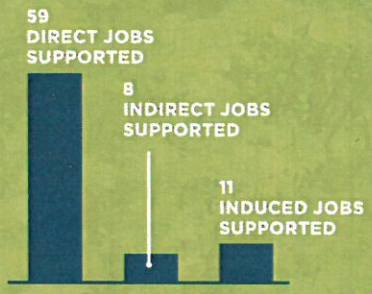
Approximately **480,800** annual ATT trips* made by bicyclists and pedestrians were estimated to contribute to the following economic activity in North Carolina on an annual basis:

$5,668,000

GENERATED IN **BUSINESS OUTPUT** (SALES REVENUE).

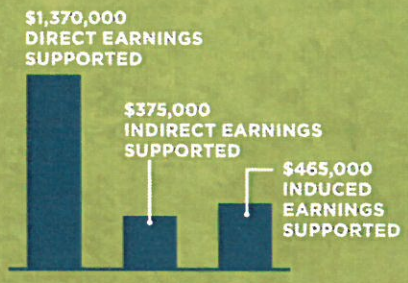


78 JOBS SUPPORTED THROUGH TRAIL USER EXPENDITURES



$2,211,000

GENERATED IN **LABOR INCOME**



Annual trips reported here are an average for the three-year study of the ATT.

The American Tobacco Trail, Durham, NC.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

Map of ATT Survey Stations

$220K
Total estimated annual local and state tax collections resulting from ATT trip expenditures

$1.4M
Total estimated healthcare cost savings associated with increased physical activity from use of the ATT

For more on these and other ATT economic benefit results, see Chapter 5: Study Results in the main report.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

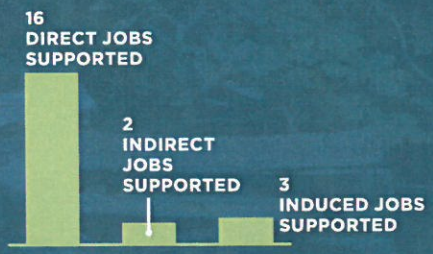
BREVARD GREENWAY (BG)

Approximately **76,000** annual Brevard Greenway trips* made by bicyclists and pedestrians were estimated to contribute to the following economic activity in North Carolina on an annual basis:

$1,566,000

GENERATED IN **BUSINESS OUTPUT** (SALES REVENUE).

21 **JOBS SUPPORTED THROUGH TRAIL USER EXPENDITURES**



$614,000

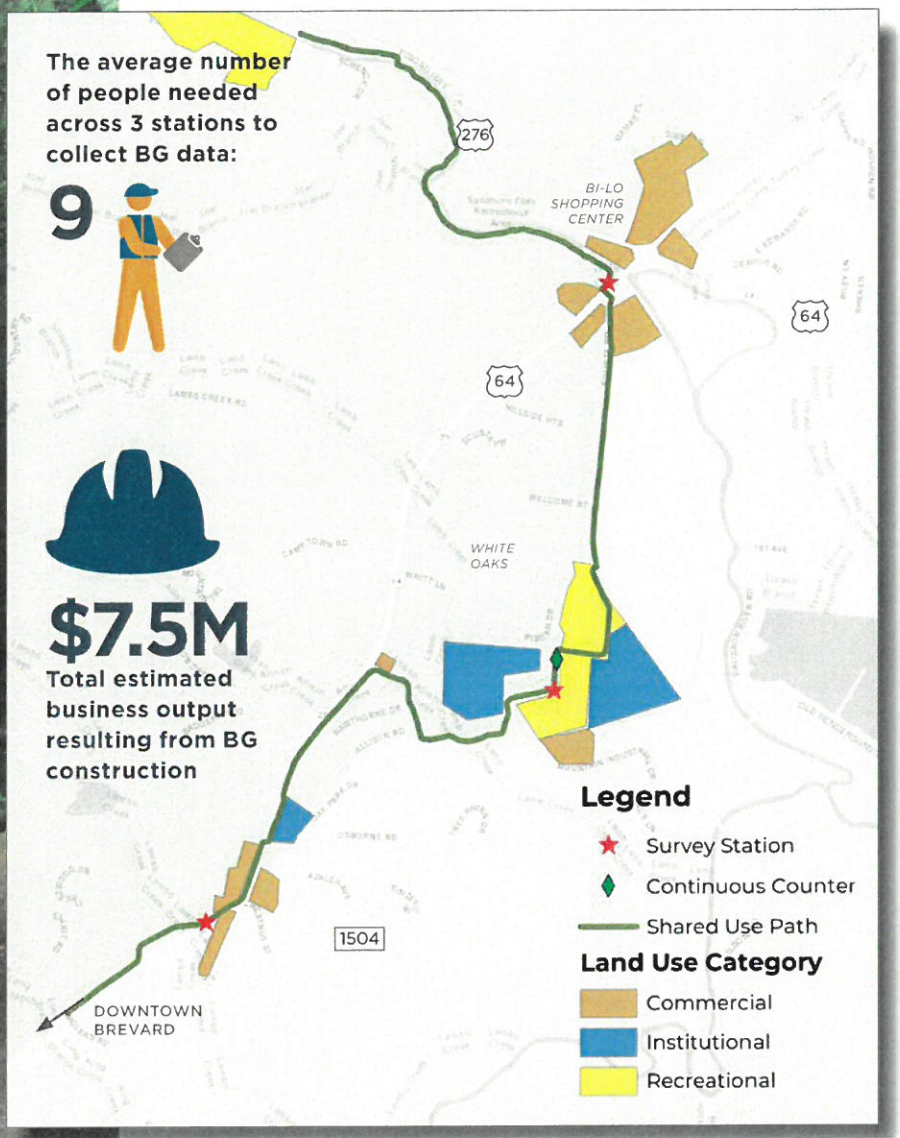
GENERATED IN **LABOR INCOME**

*Annual trips reported here are an average for the three-year study of the BG.

The Brevard Greenway, Brevard, NC.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

Map of BG Survey Stations



$53K
Total estimated annual local and state tax collections resulting from BG trip expenditures

$51K
Total estimated healthcare cost savings associated with increased physical activity from use of the BG

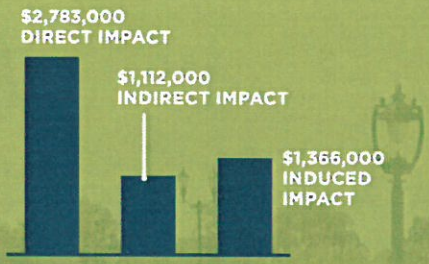
For more on these and other BG economic benefit results, see Chapter 5: Study Results in the main report.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

LITTLE SUGAR CREEK GREENWAY (LSG)

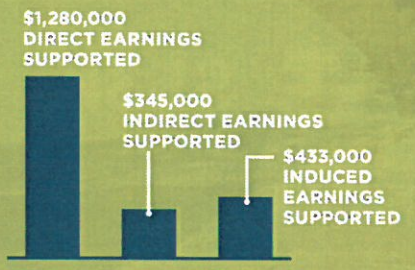
Approximately **382,600** annual LSG trips made by bicyclists and pedestrians were estimated to contribute to the following economic activity in North Carolina on an annual basis:

$5,261,000
GENERATED IN **BUSINESS OUTPUT** (SALES REVENUE).



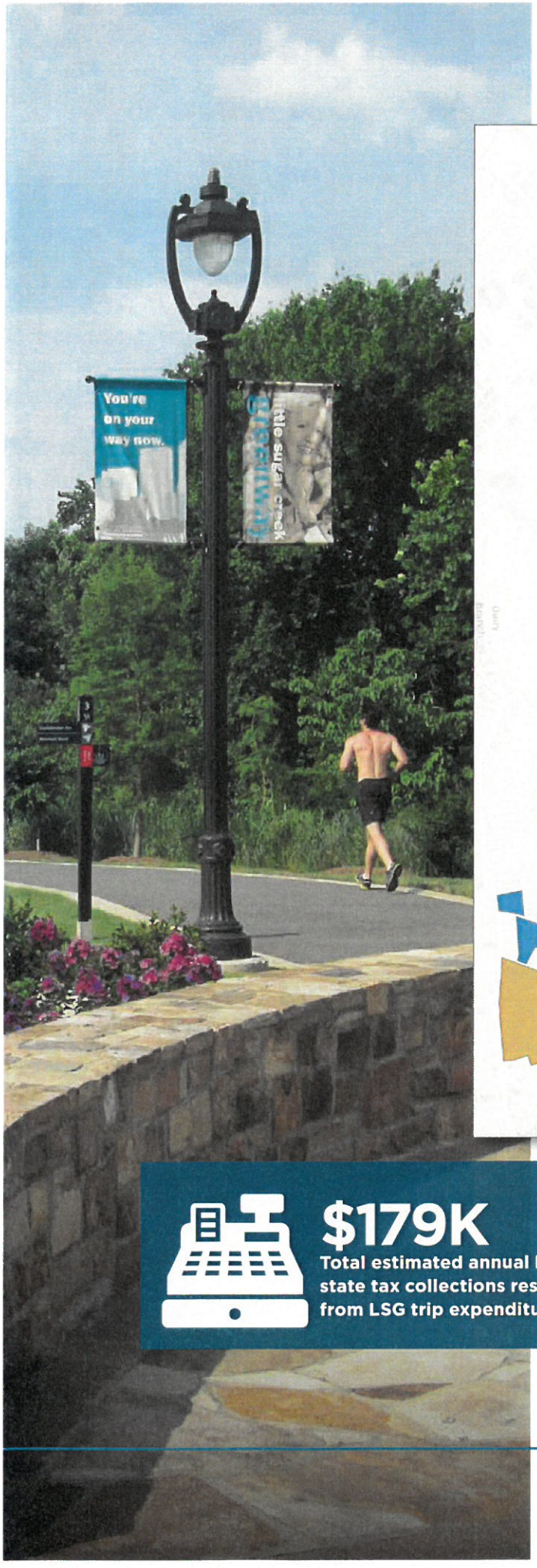
73 **JOBS SUPPORTED** THROUGH TRAIL USER EXPENDITURES

$2,059,000
GENERATED IN **LABOR INCOME**

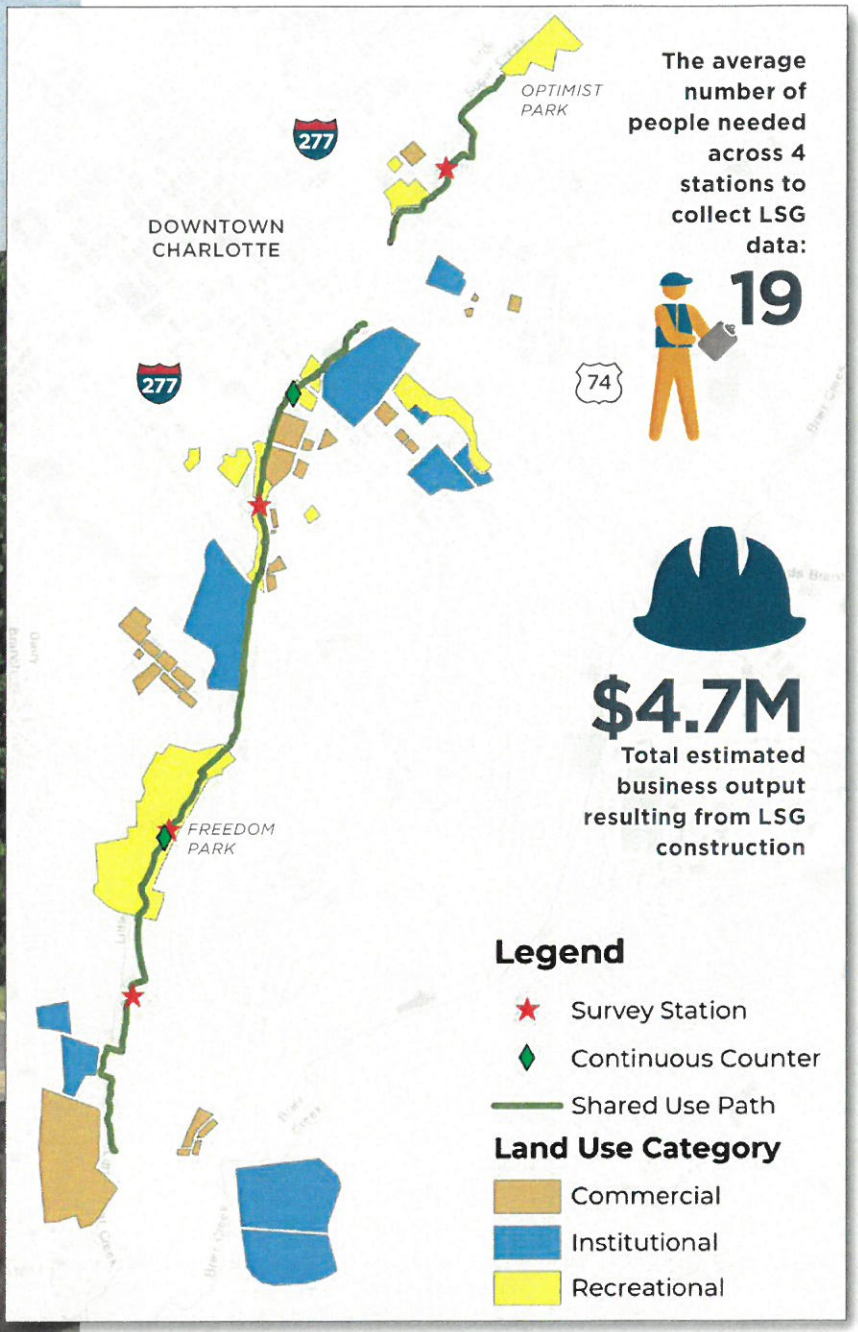


Little Sugar Creek Greenway, Charlotte, NC.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail



Map of LSG Survey Stations



$179K
Total estimated annual local and state tax collections resulting from LSG trip expenditures

$243K
Total estimated healthcare cost savings associated with increased physical activity from use of the LSG

For more on these and other LSG economic benefit results, see Chapter 5: Study Results in the main report.

Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

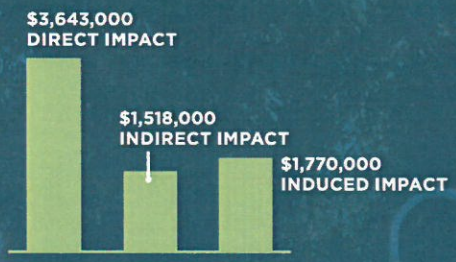
Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

DUCK TRAIL (DT)

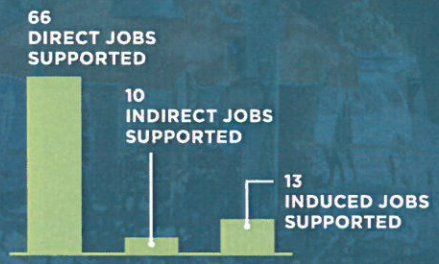
Approximately **145,700** annual Duck Trail trips made by bicyclists and pedestrians were estimated to contribute to the following economic activity in North Carolina on an annual basis:

$6,931,000

GENERATED IN **BUSINESS OUTPUT** (SALES REVENUE).

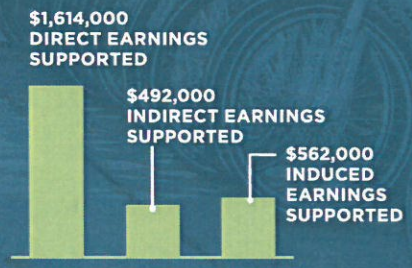


89 JOBS SUPPORTED THROUGH TRAIL USER EXPENDITURES



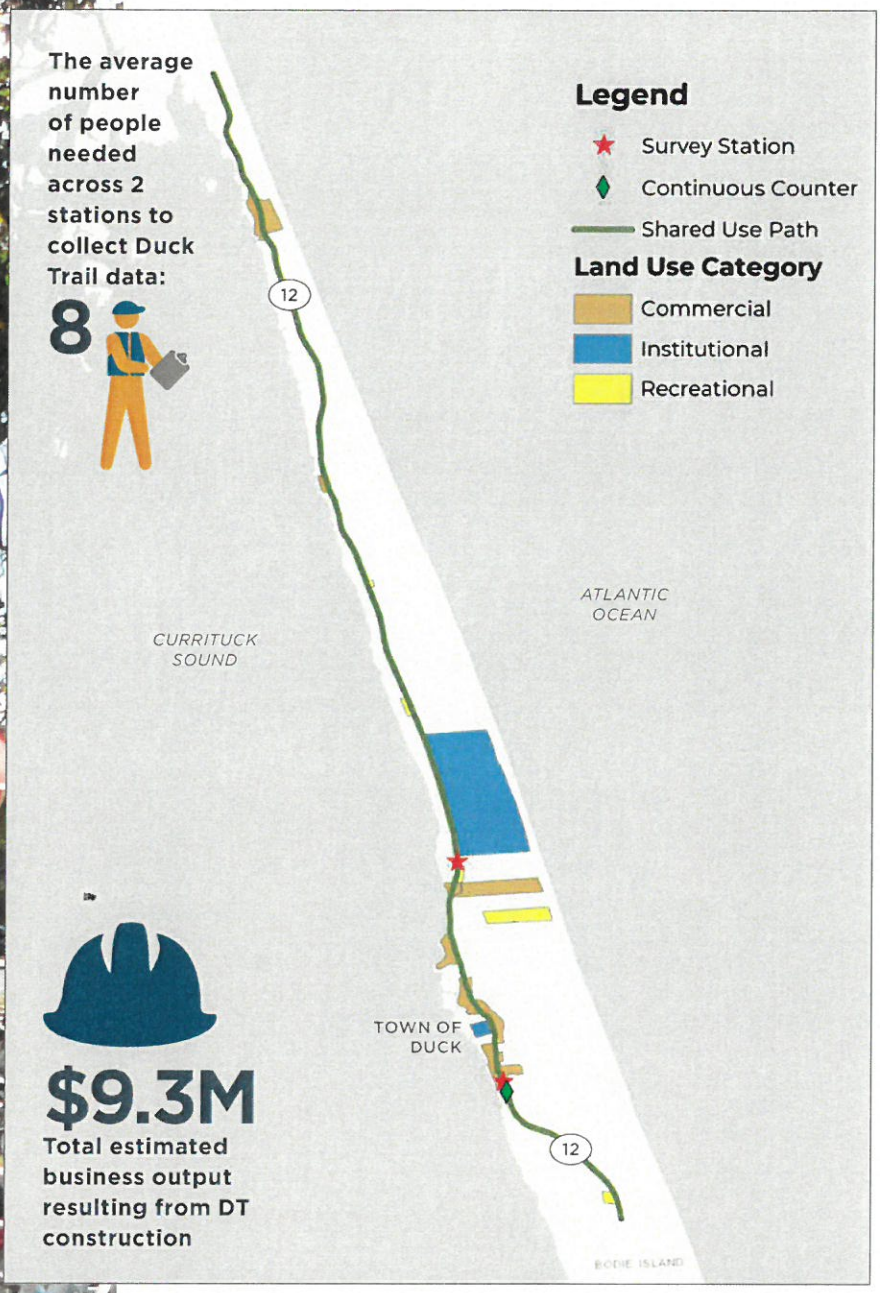
$2,668,000

GENERATED IN **LABOR INCOME**



Bicycle shop along the Duck Trail in Duck, NC.

Map of Duck Trail Survey Stations

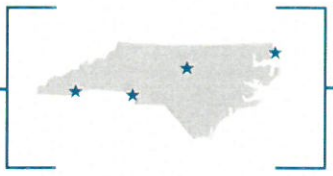


$9.3M
Total estimated business output resulting from DT construction

$232K
Total estimated annual local and state tax collections resulting from DT trip expenditures

$2K
Total estimated healthcare cost savings associated with increased physical activity from use of the DT

For more on these and other DT economic benefit results, see Chapter 5: Study Results in the main report.



Attachment: NCDOT-2015-44_SUP-Project_Brochure_optimized (12544 : Discussion of Sequencing, Timing and Funding of Fort Island Trail

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Prepared by

Institute for Transportation Research and Education
and Alta Planning + Design

Prepared for

North Carolina Department of Transportation,
Division of Bicycle and Pedestrian Transportation,
Hanna Cockburn, Director

For more details on the methods tested to evaluate the economic contribution of shared use paths and all the study results, please visit the full report at https://itre.ncsu.edu/focus/bike-ped/SUP-Economic-Impacts/

ITRE alta PLANNING + DESIGN

Division of Bicycle & Pedestrian Transportation

FEBRUARY 2018

Economic Modeling

- ✓ A 2013 study by the **Outdoor Industry Association** surveyed 3,133 participants (distributed across regions) in non-motorized recreational activities found tha participants in CT spent an average of $60.26 per trip on trail-based recreational day trips and **$43.81** on bicycle related recreational day trips. (Gas, food, etc.)
- ✓ Overnight trips averaged $148.89 for trail based trips and $150.93 for bicycle related trips.

Attachment: OutdoorIndustryAssociation.EconomicModelingNumbers (12544 :

Economic Modeling

- ✓ Participants in trail based recreation spent an average of $119.30 annually on equipment and accessories.
- ✓ The impact of tourism is difficult to determine although various reports show approximately 1.6% of state visitors bikin. There were slightly more hikers in CT. Visitor parties spent an average of **$623** during each trip.*

**Connecticut Department of Community & Economic Development, Witan Intelligence and H2R Market Research in 2015.*

Attachment: OutdoorIndustryAssociation.EconomicModelingNumbers (12544 :

Extrapolated FCHT Data

622,868 users on 42 miles of non-contiguous trail i
2015:

Local Day Trips @ $44 = $26,967,693

Tourist Trips @ $623 = $6,208,749

Base Return: $33,176,442/Yr.

Much more detailed, scientific studies are coming soo
through NVCOG and UCONN.

Attachment: OutdoorIndustryAssociation.EconomicModelingNumbers (12544 :